

**DRAFT**  
**PROGRAM ENVIRONMENTAL IMPACT REPORT**  
*(Volume 1)*

**FOR THE**  
**BBARWA, BBCCSD, BBLDWP, AND BBMWD**  
**REPLENISH BIG BEAR PROGRAM**

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**ACRONYMS**

°C	Degrees Celsius
°F	Degrees Fahrenheit
2D	Two-Dimensional
AADT	Average Annual Daily Traffic
AAM	American Association of Museums
AB	Assembly Bill
ACE	Affordable Clean Energy
ACM	Asbestos-Containing Material
ACS	American Community Survey
AF	Acre Feet
AFY	Acre Feet per Year
AGR	Agricultural Supply
ALUCP	Airport Land Use Compatibility Plan
AMMP	Adaptive Management and Mitigation Plan
Amsl	Above Mean Sea Level
ANSI	American National Standards Institute
AOP	Advanced Oxidation Process
APE	Area of Potential Effect
AQIA	Air Quality Impact Analysis
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
AV	Autonomous Vehicles
AWPF	Advanced Water Purification Facility
B.P.	Before Present
BACM	Best Available Control Measures
BAEA	Bald Eagle
BBARWA	Big Bear Area Regional Wastewater Agency
BBCCSD	Big Bear City Community Services District
BBLDWP	City of Big Bear Lake, Department of Water and Power
BBVPRD	Big Bear Valley Parks and Recreation District
BCM	Basin Characterization Model
BLM	United States Department of the Interior, Bureau of Land Management
BBMWD	Big Bear Municipal Water District
BGS	Below Ground Surface
BMP	Best Management Practice
BO	Biological Opinion
BOR	United States Bureau of Reclamation
BPELS	Board for Professional Engineers, Land Surveyors, and Geologists
BRA	Biological Resources & Jurisdictional Delineation Assessment
BTS	Backbone Transmission System

BTU	British Thermal Units
BVBGSA	Bear Valley Basin Groundwater Sustainability Agency
BVES	Bear Valley Electric Service, Inc.
C&D	Construction and Debris
C <sub>2</sub> F <sub>6</sub>	Hexafluoroethane
C <sub>2</sub> H <sub>3</sub> Cl	Vinyl Chloride
CA	California
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CA-BCM	California Basin Characteristic Model
CaCO <sub>3</sub>	Calcium Carbonate
CADnaA	Computer Aided Noise Abatement
CAFE	Corporate Average Fuel Economy
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Division of Occupational Safety and Health
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALGAPS	California Lawrence Berkeley National Library Greenhouse Gas Analysis of Policies Spreadsheet
CalGreen Code	California Green Building Standards Code
Cal OES	California Office of Emergency Services
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBC	California Building Code
CBRP	Comprehensive Bacteria Reduction Plan
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CE-QUAL-W2	Hydrodynamic-Water Quality Model
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CF <sub>4</sub>	Tetrafluoromethane
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CGP	National Pollutant Discharge Elimination System Construction Stormwater General Permit
CGS	California Geological Survey
CH <sub>2</sub> FCF	Tetrafluoroethane
CH <sub>3</sub> CF <sub>2</sub>	1-Difluoroethane

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CH <sub>4</sub>	Methane
CHF <sub>3</sub>	Chloroform
CHL	California Historical Landmarks
CHP	California Highway Patrol
CHRIS	California Register of Historical Resources Information System
CIMIS	California Irrigation Management Information System
CIWMB	California Integrated Waste Management Board (now CalRecycle)
CMU	Concrete Masonry Unit
CNDDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CNPSEI	California Native Plant Society Electronic Inventory
CNRA	California Natural Resources Agency
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2e</sub>	Carbon Dioxide Equivalent
COD	Chemical Oxygen Demand
COG	Council of Government
COHb	Carboxyhemoglobin
COI	Constituents of Interest
COLD	Cold Freshwater Habitat
COMM	Commercial and Sport Fishing
COP	Conference of the Parties
CPUC	California Public Utilities Commission
CSA	County Service Area
CTA	Core Transport Agent
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CY	Cubic Yards
D.C.	District of Columbia
Db	Decibel
dBA	Weighted Decibel
dBA L <sub>eq</sub>	Equivalent Reference Noise Level
dBA L <sub>w</sub>	Reference Power Level
DBH	Diameter at Breast Height
DDW	California State Water Resources Control Board Division of Drinking Water
DEIR	Draft Environmental Impact Report
DigAlert	Underground Services Alert of Southern California
DMR	California Department of Conservation, Division of Mine Reclamation
DMV	California Department of Motor Vehicles
DOC	California Department of Conservation
DOD	United States Department of Defense
DOT	United States Department of Transportation
DPEIR	Draft Program Environmental Impact Report

DWR	California Department of Water Resources
EA	Energy Analysis
EIA	United States Energy Information Administration
EIC	Eastern Information Center
EID	Environmental Information Document
EIR	Environmental Impact Report
EMFAC	Emissions Factor Model
EMFAC2021	2021 Emissions Factor Model
EO	Executive Order
EOP	Emergency Operations Plan
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
EV	Electric Vehicle
EVWD	East Valley Water District
FAA	Federal Aviation Administration
FAC	Facultative
FACW	Facultative Wetland
FAO	Food and Agricultural Organization
FAR	Firm Access Rights
FBFM	Flood Boundary and Floodway Map
FEHA	Fair Employment and Housing Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FESA	Federal Endangered Species Act
FGC	California Fish and Game Code
FHA	Fire Hazard Abatement
FHBM	Flood Hazard Boundary Map
FHSZ	Fire Hazard Severity Zones
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
FONSI	Findings of No Significant Impact
FPA	Free Production Allowance
FRA	Federal Responsibility Area
FT	Feet
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
FUDS	Formerly Used Defense Sites
GCC	Global Climate Change
GEI	GEI Consultants, Inc.
GHG	Greenhouse Gas
GHGIA	Greenhouse Gas Impact Analysis
GIS	Geographical Information System
GMZ	Groundwater Management Zone

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GPCD	Gallon per Capita per Day
GPD	Gallons per Day
GPM	Gallon Per Minute
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GT&S	Gas Transmission and Storage
GWh	Gigawatt Hours
GWP	Global Warming Potential
GWR	Groundwater Recharge
H <sub>2</sub> S	Hydrogen Sulfide
ha	Hectares
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HAZWOPER	Hazardous Waste Operations and Emergency Response
HCD	California Department of Housing and Community Development
HD	Heavy-Duty
HDT	Heavy-Duty Truck
HFC	Hydrofluorocarbons
HHDT	Heavy-Heavy Duty Trucks
HI	Hazard Index
HMBP	Hazardous Materials Business Plan
HP	Horsepower
HP-HR-GAL	Horsepower Hour per Gallon
HRA	Health Risk Assessment
HSA	Hydrologic Sub-Area
HSR	High-Speed Rail
HUC	Hydrologic Unit Code
HUD	United States Department of Housing and Urban Development
HWCA	California Hazardous Waste Control Act
I/I	Infiltration and Inflow
IEPR	Integrative Energy Policy Report
IGP	Industrial General Permit
IND	Industrial Supply
InSAR	Interferometric Aperture Radar
IP	Individual Permit
IpaC	United States Fish and Wildlife Service Information for Planning and Consultation System
IPCC	Intergovernmental Panel on Climate Change
IRWM	Integrated Regional Water Management
ISA	International Society of Arboriculture
ISO	Independent System Operator
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
K-8	Kindergarten through 8 <sup>th</sup> Grade
K-12	Kindergarten through 12 <sup>th</sup> Grade
kBTU	One Thousand British Thermal Units



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kWh	Kilowatt Hours
LAFCO	Local Agency Formation Commission
LBNL	Lawrence Berkeley National Laboratory
lbs	Pounds
LCA	Life-Cycle Analysis
LCD	Liquid Crystal Display
LCFS	Low Carbon Fuel Standards
LDA	Light-Duty-Auto Vehicles
LDN	Day-Night Average Noise Level
LDT	Light-Duty-Trucks
$L_{eq}$	Equivalent Sound Level
LESA	Land Evaluation and Site Assessment
LEV III	Low-Emission Vehicle Program
LF	Linear Feet
$L_{max}$	Maximum Sound Level
LOS	Level of Service
LPB	Lead-Based Paint
L RTP	Longe Range Transit Plan
LS	Less than Significant
LSA	Lake or Streambed Alteration Agreement
LSM	Less than Significant with Mitigation Measures
LST	Localized Significance Thresholds
LUP	Linear Underground Projects
LUST	Leaking Underground Storage Tank
LV Site	Lucerne Valley Site
LVEDA	Lucerne Valley Economic Development Association
MBA	Mojave Basin Area
MBAS	Methylene Blue Active Substances
MBTA	Mandatory Bird Treaty Act
MCL	Maximum Contaminant Levels
MDAQMD	Mojave Desert Air Quality Management District
MDL	Method of Detection Limit
MDRCD	Mojave Desert Resource Conservation District
MDT	Medium-Duty Trucks
MF	Microfiltration
MG	Million Gallons
MGD	Million Gallon(s) per Day
MHDT	Medium-Heavy Duty Trucks
MICR	Maximum Individual Cancer Risk
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
MLD	Most Likely Descendant
MLE	Modified Ludzack-Ettinger Configuration
MM	Mitigation Measure
MMcfd	Million Cubic Feet per Day

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MMI	Modified Mercalli Intensity
MND	Mitigated Negative Declaration
MOU	Memorandum of Understanding
MPG	Miles per Gallon
MPH	Miles per Hour
MPO	Metropolitan Planning Organizations
MRR	Mandatory Reporting Rule
MRZ	Mineral Resource Zone
MS4	Municipal Separate Stormwater Sewer Standards
MSHCP	Multiple Species Habitat Conservation Plan
MT/YR	Metric Tons per Year
MTBE	Methyl Tert-Butyl Ether
MTCO <sub>2e</sub> /yr	Million Metric Tons of Carbon Dioxide per Year
MUN	Municipal and Domestic Supply
MW	Megawatt
MWA	Mojave Water Agency
MWELO	California Department of Water Resources' Model Water Efficient Landscape Ordinance
MWh	Megawatt per Hour
MY	Model Year
N	Nitrogen
N/A	Not Applicable
N <sub>2</sub> O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NDC	Nationally Determined Contributions
NDN	Nitrification-Denitrification
NEHRP	National Earthquake Hazard Reduction Program
NEPA	National Environmental Protection Act
NF <sub>3</sub>	Nitrogen Trifluoride
NFIP	National Flood Insurance Program
NFP	National Fire Plan
NHMLAC	Natural History Museum of Los Angeles County
NHPA	National Historic Preservation Act of 1966
NHTSA	United States Department of Transportation National Highway Traffic Safety Administration
NIA	Noise Impact Analysis
NIMS	National Incident Management System
NIOSH	National Institute for Occupational Safety and Health
NMFS	National Marine Fisheries Service
NO	Nitric Oxide
NO <sub>2</sub>	Nitrogen Dioxide
NOD	Notice of Determination

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NOI	Notice of Intent
NOP	Notice of Preparation
NO <sub>x</sub>	Nitrogen Oxides
NPA	No Program Alternative
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NPPA	Native Plant Protection Act
NRC	Noise Reduction Coefficient
NRCS	Natural Resource Conservation Service
NRF	National Response Framework
NS	Not Sampled
NWP	Nationwide Permit
O <sub>2</sub>	Oxygen
O <sub>3</sub>	Ozone
OAC	Operation and Control Building
OAL	Office of Administrative Law
OBL	Obligate Wetland
OEHHA	California Office of Environmental Health Hazard Assessment (Proposition 65 Implementation)
OES	Office of Emergency Services
OHP	California Office of Historic Preservation
OHWM	Ordinary High Watermark
OPR	California Office of Planning and Research
OSHA	Occupational Safety and Health Administration
Pb	Lead
PCB	Polychlorinated Biphenyls
PCE	Primary Constituent Elements
PDO	Pacific Decadal Oscillation
PEIR	Program Environmental Impact Report
PFC	Perfluorocarbons
PG&E	Pacific Gas & Electric
pH	Potential of Hydrogen
PHI	California Points of Historical Interest
PHMSA	Pipeline and Hazardous Materials Safety Administration
PM	Particulate Matter
POST	California Commission on Peace Officer Standards and Training
PPB	Parts per Billion
PPCP	Personal Care Products
PPM	Parts per Million
PPT	Parts per Trillion
PPV	Peak Particle Velocity
PROC	Industrial Process Supply
PSI	Pounds per Square Inch
PSY	Production Safe Yield
PVC	Polyvinyl chloride

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Q	Very Young Surficial Deposits Dating to the Late Holocene, Including Wash, Fan, Colluvium, and Alluvial-Valley Deposits
QI	Very Young Lacustrine Deposits (Lake Deposits) of Holocene Age
Qod	Alluvial Fan Sediments
Qyf	Young Alluvial Fan Deposits of Holocene and Late Pleistocene Age
RARE	Rare, Threatened, or Endangered Species
RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
REC1	Water Contact Recreation
REC2	Non-Contact Water Recreation
RHNA	Regional Housing Needs Assessment
RMP	Risk Management Plan
RMS	Representative Monitoring Site
RO	Reverse Osmosis
ROG	Reactive Organic Gases
ROW	Right(s)-of-Way
ROWD	Report of Waste Discharge
RPS	California's Renewable Portfolio Standard
RTP	Regional Transportation Plan
RV	Recreational Vehicle
RWQCB	Regional Water Quality Control Board
SAFE	Safer Affordable Fuel-Efficient
SANBAG	San Bernardino Associated Governments
SARA	Superfund Amendments and Reauthorization Act
SAWPA	Santa Ana Watershed Project Authority
SB	Senate Bill
SBCFCD	San Bernardino County Flood Control District
SBCFD	San Bernardino County Fire Department
SBCM	San Bernardino County Museum
SBCOAE	San Bernardino County Operational Area Emergency Response Plan
SBCOG	San Bernardino Council of Governments
SBCSD	San Bernardino County Sheriff's Department
SBCSS	San Bernardino County Superintendent of Schools
SBCTA	San Bernardino County Transportation Authority
SBNF	San Bernardino National Forest
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coastal Information Center
SCOTUS	Supreme Court of the United States
SCS	Sustainable Communities Strategy
SDC	Seismic Design Category
SDG&E	San Diego Gas & Electric
SDHNM	San Diego Natural History Museum
SDWA	Safe Drinking Water Act

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SEMS	Standardized Emergency Management System
SF	Square Foot
SF <sub>6</sub>	Sulfur Hexafluoride
SFHA	Special Flood Hazard Area
SGMA	Sustainable Groundwater Management Act
SHMP	State Multi-Hazard Mitigation Plan
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SLPS	Short-Lived Climate Pollutant Strategy
SMARA	Surface Mining and Reclamation Act of 1975
SMGB	California State Mining and Geology Board
SMP	Sewer Master Plan
SNMP	Salt and Nutrient Management Plan
SO <sub>2</sub>	Sulfur Dioxide
SO <sub>4</sub>	Sulfate
SoCalGas	Southern California Gas
SO <sub>x</sub>	Sulfur Oxides
SP	Service Populations
SPOW	California Spotted Owl
SPWN	Spawning, Reproduction, and/or Early Development
SR	State Route
SSC	Species of Special Concern
STC	Sound Transmission Loss
SWANCC	Solid Waste Agency of Northern Cook County
SWIS	Solid Waste Information System
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants
TBA	Tertiary Butyl Alcohol
TCP	Timberland Conversion Permit
TCR	Tribal Cultural Resource
TDA	Tom Dodson & Associates
TDM	Transportation Demand Management
TDS	Total Dissolved Solids
TEA-21	The Transportation Equity Act for the 21 <sup>st</sup> Century
THP	Timber Harvesting Plan
TIN	Total Inorganic Nitrogen
TMDL	Total Maximum Daily Load
TMP	Transportation Management Plan
TN	Total Nitrogen
TOT	Transient Occupancy Tax
TP	Total Phosphorus
TSCA	Federal Toxic Substances Control Act

U.N.	United Nations
U.S.	United States
U.S.C.	United States Code
UF	Ultrafiltration
UFC	Uniform Fire Code
UNFCCC	United Nation's Framework Convention on Climate Change
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
UWMP	Urban Water Management Plan
VdB	Vibration Decibel Notation
VFD	Variable Frequency Drive
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
VSEP	Vibratory Shear-Enhanced Processing
WARM	Warm Freshwater Habitat
WCI	Western Climate Initiative
WDR	Waste Discharge Requirement
WIFIA	Water Infrastructure Finance and Innovation Act
WILD	Wildlife Habitat
WLA	Waste Load Allocation
WOTUS	Waters of the United States
WQCP	Water Quality Control Plan
WQO	Water Quality Objective
WRI	World Resources Institute
WRR	Water Recycling Requirements
WSC	Water Systems Consulting, Inc.
WWII	World War II
WWTP	Wastewater Treatment Plant
YSMN	Yuhaaviatam of San Manuel Nation
ZE/NZE	Zero- and Near-Zero-Emission
ZEV	Zero-Emissions Vehicle
µg/L	Micrograms per Liter

## CHAPTER 1 – EXECUTIVE SUMMARY

This Executive Summary for the Big Bear Area Regional Wastewater Agency (BBARWA), Big Bear City Community Services District (BBCCSD), City of Big Bear Lake Department of Water and Power (BBLDWP), and Big Bear Municipal Water District (BBMWD), collectively known as the Program Team, Replenish Big Bear Program (Program) Draft Program Environmental Impact Report (DPEIR) summarizes the potential environmental effects that are forecast to occur from implementation of the proposed Program. It also contains a summary of the Program background, Program objectives, and Program description. A table summarizing the potentially significant environmental impacts, mitigation measures (**MMs**), and mitigation responsibility is included at the end of this Executive Summary (**Table 1.5-1**).

BBARWA as the Lead Agency, together with the following agencies—BBCCSD, BBLDWP, and BBMWD henceforth referred to jointly as the Program Team—is proposing to implement the Program, which includes upgrades and additions to BBARWA’s WWTP to produce Program Water through full advanced treatment via a new advanced water purification facility (AWPF).

### 1.1 PROGRAM BACKGROUND

Natural precipitation provides the sole source of water supply for the Big Bear Valley, and is relied on for potable groundwater supplies, replenishing Big Bear Lake and Stanfield Marsh Wildlife and Waterfowl Preserve (Stanfield Marsh), and supporting the rare and diverse habitat and species in the Big Bear Valley. Drought conditions and a long-term decline in precipitation trends have led the local water management agencies to investigate opportunities for supplemental water supplies, which are extremely limited due to its isolated location at the top of the Santa Ana River watershed (refer to **Figure 3-18**). As such, the Program has been designed to retain local water in the Big Bear Valley to increase the sustainability of water supplies.

Currently, wastewater generated within the Big Bear Valley undergoes preliminary and secondary treatment. Treated undisinfected secondary effluent is discharged to BBARWA’s 480-acre site in Lucerne Valley (LV Site)—about 20 miles north of the Big Bear Valley and outside the Santa Ana Watershed—for irrigation of fodder and fiber crops that are used as feed for livestock. The LV Site referred to herein is the 480-acre portion of the larger 630-acre BBARWA owned site in Lucerne Valley that is regulated by a Colorado River Basin Regional Water Quality Control Board (Colorado Regional Board) Waste Discharge Permit (WDR). The WDR stipulates that 340 acres of the LV Site can be irrigated with recycled water from BBARWA’s Wastewater Treatment Plant (WWTP), with an additional 140 acres available for irrigation utilizing other water sources. Retaining recycled water in the watershed for beneficial use would significantly increase the sustainability of local water supplies. The Program Team has partnered to develop a Program that will retain this water resource in Big Bear Valley for beneficial reuse.

The Program Team intends to implement the Program, which was first discussed in detail in **Appendix 2** “Bear Valley Water Sustainability Project Final Draft Lake Alternative Evaluation” prepared by Water Systems Consulting, Inc. (WSC) dated December 19, 2018. Since 2018, some aspects of the Program have been modified. However, the objectives of the Program remain the same and include the following uses and benefits:

- Sustain Stanfield Marsh Habitat and Increase Educational Opportunities: By providing a consistent water source to Stanfield Marsh through the discharge of Program Water to Stanfield Marsh, the habitat therein would be sustained and educational opportunities for the community and visitors would be created;

- Enhance Big Bear Lake Benefits: The Program would discharge Program Water to Stanfield Marsh, allowing the Program Water to flow through Stanfield Marsh and provide new inflow to Big Bear Lake. The Program will increase inflows and Lake level, thereby enhancing recreational opportunities and aquatic habitat in both Big Bear Lake and Stanfield Marsh, and would support water quality improvements;
- Expand Local Water Supplies: When there is space in the groundwater basin to increase water levels and there is available Program Water stored in Big Bear Lake, Program Water could be pumped to Sand Canyon to recharge the groundwater basin to strengthen the sustainability of the groundwater basin. The Program Team, in coordination with the Big Bear Watermaster, will negotiate an accounting framework to track the volume of Program Water stored in Big Bear Lake over time, which will account for inputs, extractions, evaporation and releases of Program Water, and will be negotiated with the existing accounting and reporting framework used by the Big Bear Watermaster. This framework is envisioned to include a provision for some Program Water to be stored in Big Bear Lake and subsequently used for recharge in Sand Canyon when conditions are favorable for recharge;
- Sustain Unarmored Threespine Stickleback Fish with Program Water: To sustain the habitat for the Federally listed Unarmored Threespine Stickleback (Stickleback) fish with a new sustainable water source, Program Water will be discharged to Shay Pond in place of potable groundwater. While this part of the Program is included in this DPEIR for analysis purposes, this Program component is not anticipated to be completed in the near term. Therefore, a full analysis was not completed;<sup>1</sup>

### **1.1.1 Program Objectives**

The goal of the Program Team is to partner to recover a water resource that is currently being disposed of outside the Big Bear Valley to Lucerne Valley, close the water loop cycle, and keep the water in Big Bear Valley for beneficial reuse. This goal will be achieved through development of a multi-benefit water reuse Program that:

- Augments natural recharge for water supply sustainability;
- Protects the rare and diverse habitat and species in the Big Bear Valley;
- Promotes a thriving community through enhanced recreation;
- Creates a new and sustainable water supply;
- Educates the community about the water cycle, recycled water treatment process, and water quality to gain public support;
- Creates a Program that benefits the Program Team, and thereby benefits the community served by the members of the Program Team;
- Develops a cost-effective project to offset potable water demands; and
- Takes advantage of current outside funding opportunities.

### **1.1.2 Program Characteristics**

The Program Team envisions the facilities described in this Section as a key element in the long-term sustainability of local water supplies for the whole of Big Bear Valley. An overview of the Program components is shown on **Figure 1-1**.

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<sup>1</sup> The utilization of the Program Water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*), which is a Federally and state endangered species.





FIGURE 1-1

The Program Team has prepared this DPEIR for the Program, which evaluates the potential environmental impacts that would result from constructing and implementing the Program. The purpose of an environmental impact report is to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project. The focus of the analysis, in accordance with Section 15146 of the California Environmental Quality Act (CEQA) Guidelines, is to address the specific effects of the Program as presented in **Chapter 3, Program Description**. CEQA is intended to inform government decisionmakers and the public about the potential environmental effects of proposed activities and to prevent significant, avoidable environmental damage. However, it is the combination of authorizations and entitlements requested for this Program that must be approved by the Program Team that will enable the Program to be implemented.

While this DPEIR has been prepared at the programmatic level, due to the fact that Replenish Big Bear is, in and of itself, a Program with many components, project-level detail is provided for nearly every component of this Program. This is because sufficient detail is known for most of the Program facilities to analyze each facility at the project level. The only projects that have not been analyzed at the project level are as follows: the Sand Canyon Monitoring Wells have been analyzed at a more general level because the project sites for the monitoring wells have not yet been selected, though the general locations for the monitoring wells are known to be downstream of the Sand Canyon Recharge Area; and, the change in water source at Shay Pond has been analyzed at a more general level because of the regulatory costs and hurdle that would be necessary to modify the water source supporting the Stickleback. Impacts will be quantitatively addressed in project-specific second tier environmental evaluations once specific aspects of the Program are proposed for implementation and designed. Sufficient detail is known for the remaining projects proposed under this Program to forecast impacts at the project level.

Replenish Big Bear includes permitting, design, and construction of an AWPf at the existing BBARWA WWTP, about 6.59 miles of pipeline for product water and reverse osmosis (RO), brine minimization, three pump stations, a groundwater recharge facility, and up to four monitoring wells. The Program is currently estimated to produce approximately 1,950 acre-feet per year (AFY) of high-quality Program Water, and may produce up to 2,200 AFY by 2040 through utilization of a high-recovery brine minimization technology. Piloting is currently being conducted to confirm the feasibility of the higher yield estimates. For the purposes of this document, 2,200 AFY is used to be conservative in evaluating environmental impacts. The Program components are described below.

### **BBARWA WWTP Upgrades Project**

As part of the Program, upgrades and additions to BBARWA's WWTP including an AWPf to produce purified water (i.e., Program Water) through full advanced treatment will be completed to meet the stringent regulatory requirements for Big Bear Lake, particularly for nutrients (specifically total phosphorus [TP] and total inorganic nitrogen [TIN]) and total dissolved solids [TDS]). The Program will require significant upgrades to the treatment process at the WWTP to meet stringent discharge requirements for the Stanfield Marsh/Big Bear Lake Discharge, Shay Pond Discharge, and the Sand Canyon Recharge. To achieve the anticipated effluent limits, BBARWA will need to implement a series of upgrades to existing unit processes and integrate new unit processes at its WWTP:

- Upgrade the existing oxidation ditches to increase biological nutrient removal process;
- Tertiary filtration and nutrient removal via denitrification filters;
- Ultrafiltration (UF) and reverse osmosis (RO) membrane filtration;

- Brine pellet reactor for brine minimization; and
- Ultraviolet disinfection and an advanced oxidation process (UV/AOP).

A visual representation of the scope of the AWPf upgrades is shown on **Figures 1-2 and 1-3**.

Other improvements at BBARWA's WWTP includes the installation of 2 megawatt (MW) of solar panels at BBARWA's WWTP, Operation and Control Building (OAC), and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building. A visual representation of the BBARWA WWTP Solar Array Project is shown on **Figure 1-4**.

#### **Solar Evaporation Ponds Project**

As part of the Program, the Program Team is considering the use of solar evaporation pond(s). Solar evaporation ponds rely on solar energy to evaporate water from the brine concentrate stream, leaving behind precipitated salts, which ultimately are disposed of in a landfill. Pond size requirements can be quite high depending on the brine flow and evaporation rates and the regulatory requirement for impervious liners of clay or synthetic membranes substantially increases the cost of construction. The preliminary RO brine management option for the Program is a brine minimization pellet reactor to reduce the volume of brine waste from the RO process. The reduced brine stream from the pellet reactor will be conveyed to Solar Evaporation Ponds located on BBARWA WWTP property. Using an RO recovery of 90% at 2.2 million gallons per day (MGD) influent flow would result in 0.22 MGD of RO brine to be minimized through the pellet reactor, and approximately 0.022 MGD of brine to be conveyed to the evaporation pond based on a pellet reactor recovery of 90%. A total evaporation pond area of 23 acres is needed for the brine stream. However, if the higher yield cannot be achieved up to a total evaporation pond area of 57 acres would be required. Additionally, up to two monitoring wells will be required to be installed to verify that seepage from the ponds is not contaminating underlying groundwater. A visual representation of the Solar Evaporation Ponds Project is shown on **Figure 1-5**.

#### **Stanfield Marsh/Big Bear Lake Discharge Project**

As part of the Program, up to 2,200 AFY of Program Water is proposed to be discharged to the east end of Stanfield Marsh, which will then flow into Big Bear Lake. Stanfield Marsh and Big Bear Lake are connected through a set of culverts under Stanfield Cutoff. The Stanfield Marsh/Big Bear Lake Discharge Project evaluated several alignment options to convey the purified water from the AWPf to Stanfield Marsh and subsequently Big Bear Lake. The Stanfield Marsh/Big Bear Lake Discharge Project would require installation of up to 12" 19,940 LF, with the length of pipeline being determined based on the Alignment Option BBARWA ultimately selects. Each Alignment Option has been evaluated as part of this DPEIR. The Stanfield Marsh/Big Bear Lake Discharge Project pipeline alignment options are shown on **Figure 1-10**, and listed below for reference:

##### **Alignment Option 1 to Discharge Point 1**

- ***Baldwin Lake Pipeline Alignment Option:*** this Alignment Option traverses through Baldwin Lake from the BBARWA WWTP site to connect with the Meadow Lake Pipeline Alignment Option.
- ***Meadow Lane Pipeline Alignment Option:*** this Alignment Option connects with the Baldwin Lake Pipeline Alignment Option, traverses along South Paradise Way south to West Arbor Lane, along West Arbor Lane at South Paradise Way west to Sequoia Drive, along Sequoia Drive at West Arbor Lane south to West Meadow Lake, and along West Meadow Lane west to Discharge Point 1 at Stanfield Marsh.

# Scope of Upgrades

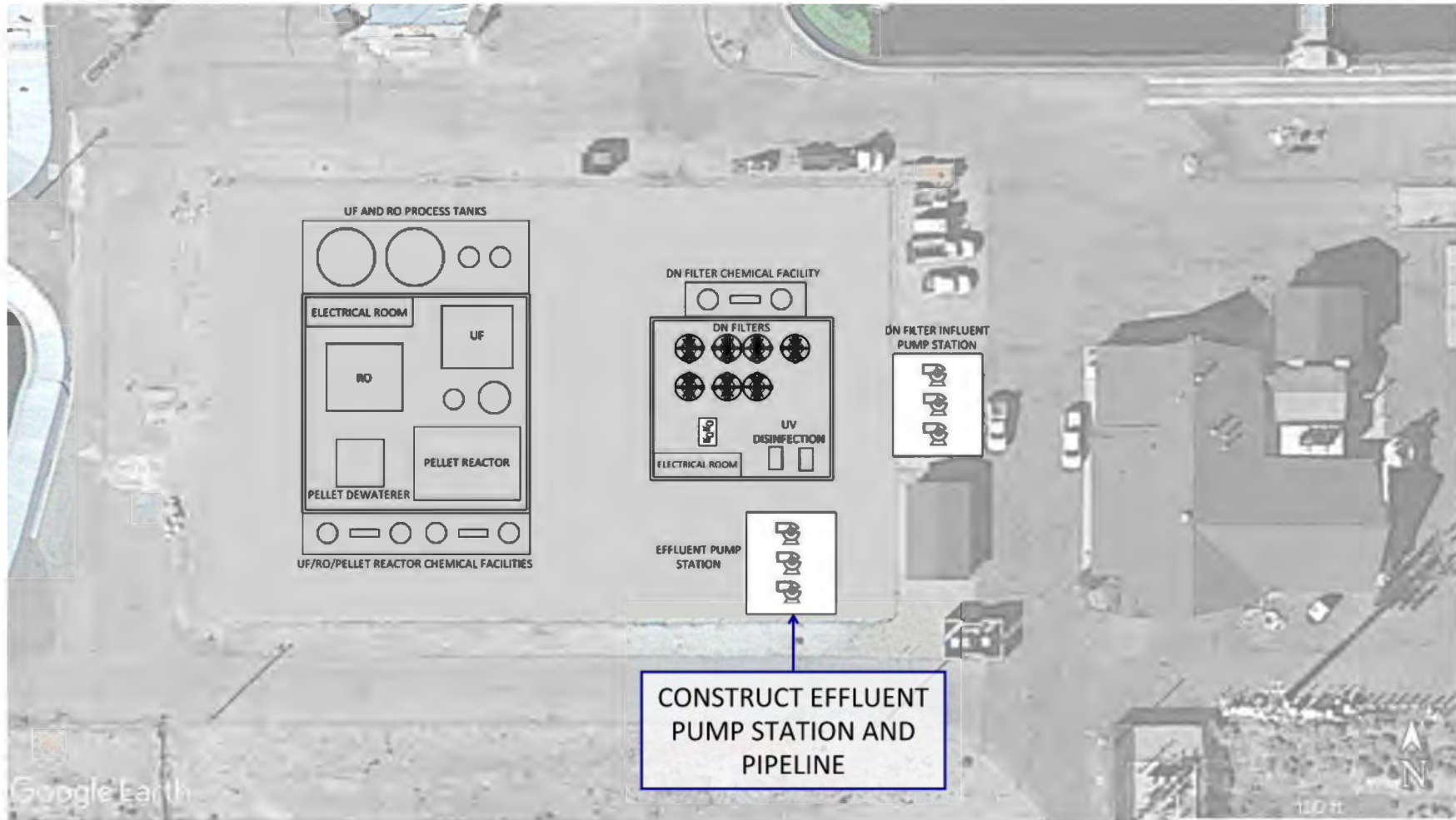


FIGURE 1-2



# Scope of Upgrades

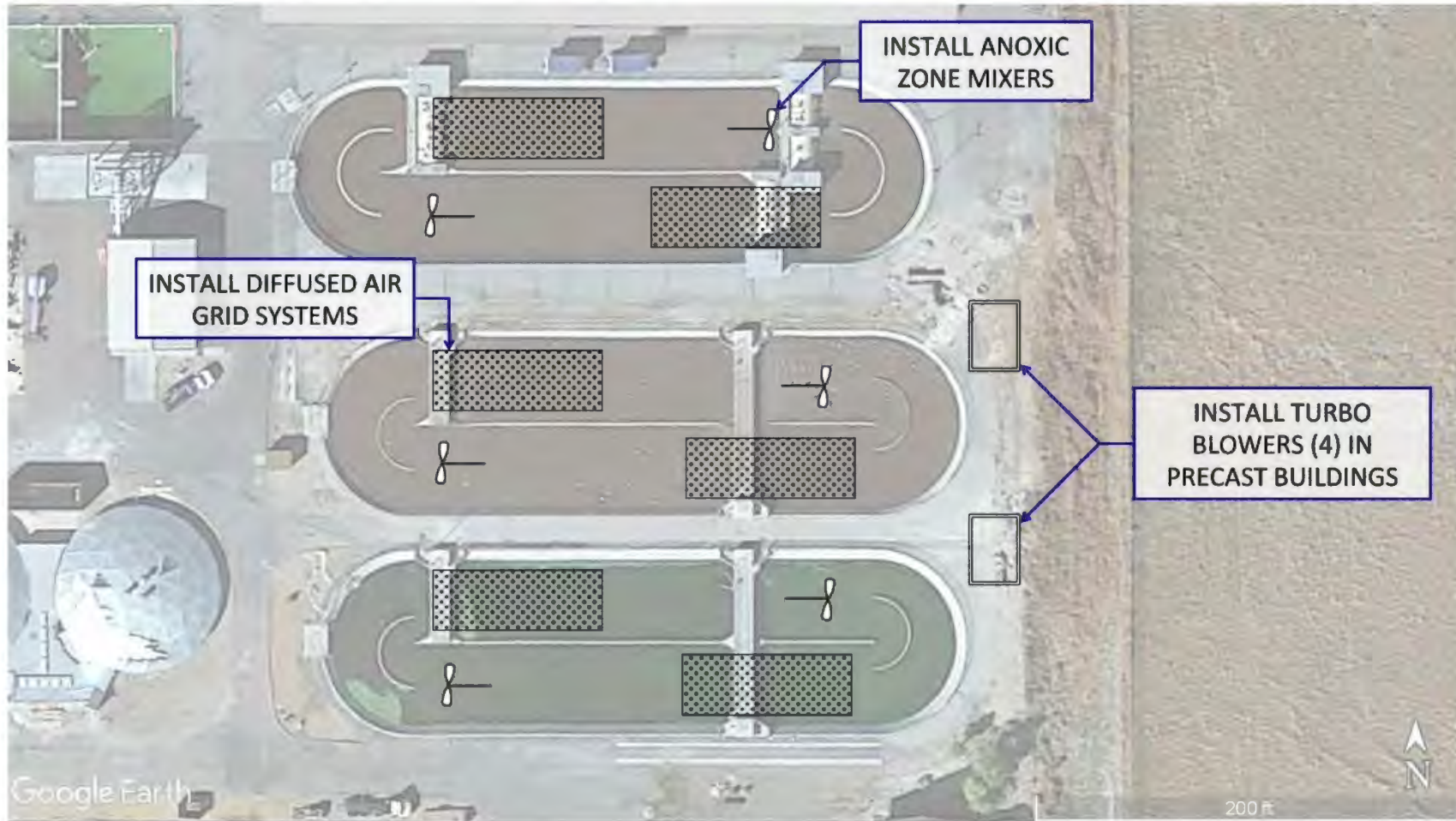


FIGURE 1-3



**Replenish Big Bear Program**

Possible Solar Locations



**FIGURE 1-4**



# Scope of Upgrades



FIGURE 1-5

### **Alignment Option 2 to Discharge Point 2**

- ***East Neighborhoods Pipeline Alignment Option:*** this Alignment Option traverses south from the BBARWA WWTP site south along Palomino Drive to Shay Road, along Shay Road west to Barranca Boulevard, along Barranca Boulevard south/southwest to East Country Club Boulevard, along East Country Club Boulevard west to Bufflehead Drive, along Bufflehead Drive north to East Barker Boulevard, along East Barker Boulevard west to Teal Drive, along Teal Drive north to Mountain View Boulevard, along Mountain View Boulevard west to Shore Drive, along Shore Drive north to Elysian Boulevard, along Elysian Boulevard west to Pintail Drive, along Pintail Drive south to East Mountain View Boulevard, along East Mountain View Boulevard west to Eider Drive, along Eider Drive south to Angeles Boulevard, along and through Angeles Boulevard west to South Paradise Way. At Angeles Boulevard and South Paradise Way, this Alignment Option connects with the West Neighborhoods Pipeline Alignment Option.
- ***West Neighborhoods Pipeline Alignment Option:*** this alignment option traverses east from its connection with the East Neighborhoods Pipeline Alignment Option at Angeles Boulevard and South Paradise, and traverses west along East Angeles Boulevard to Mount Doble Drive, along Mount Doble Drive south to East Country Club Boulevard, along East Country Club Boulevard west to Big Tree Drive, along Big Tree Drive south to Valley Boulevard, along Valley Boulevard west to Bowles Drive, along Bowles Drive southwest to West Aeroplane Boulevard, along West Aeroplane Boulevard northwest and west to Division Drive, along Division Drive north to approximately Fairway Boulevard where the pipeline traverses west to Discharge Point 2 at Stanfield Marsh.

### **Sand Canyon Recharge Project**

As part of the Program, up to 380 AFY of Program Water stored in Big Bear Lake will be used for groundwater recharge at the Sand Canyon Recharge Area over a six-month dry weather period.

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake and discharging it into Sand Canyon, which serves as a flood control channel (refer to **Figure 1-6**). The recharge operation would only occur during summer months when needed to supplement groundwater supply and would be operated intermittently as needed to avoid interference with flood flows. The operation would also be limited by availability of Program Water stored in Big Bear Lake, which would be tracked by BBMWD in accordance with the negotiated accounting framework that will be developed prior to implementation. The Program Team does not have rights to native water in Big Bear Lake and will only use Program Water for recharge.

No channel modifications to the channel bottom are anticipated since it is expected that the Program Water stored in Big Bear Lake will percolate within the defined Sand Canyon Recharge Area. If the Program Water does not fully percolate within the defined recharge area, the surface application discharge rate will be reduced using a variable frequency drive (VFD) on the Sand Canyon Booster Station until the water does percolate within the defined recharge area. Recharge to Sand Canyon would occur through a discharge via a new pipe outlet at the top of the Sand Canyon Recharge Area at the top of the channel bank that discharges down the side slope of the channel into the channel bottom. All of these concepts will need to be coordinated with the San Bernardino County Flood Control District (SBCFCD) to ensure that the capacity of the flood control channel remains sufficient to meet the primary purpose of providing flood protection.



If these improvements resulted in a decrease in surface flow entering Big Bear Lake, the impact to surface water rights under the 1977 Judgment will be evaluated.<sup>2</sup>

When water is needed for recharge in Sand Canyon, it is assumed that the existing lake pump station owned by the Resorts could be used to transfer water through an existing pipeline into the existing storage pond located at Bear Mountain Ski Resort. Then the Program Water would be conveyed utilizing a new 471 gallon per minute (gpm) booster pump station at the existing storage pond located at the Bear Mountain Ski Resort via a new pipeline from Resort Storage Pond to Sand Canyon 8" 7,210 lineal feet (LF)(refer to **Figures 1-6 and 1-7**). The existing lake pump station and storage pond located at Bear Mountain Ski Resort are used primarily for snowmaking in the winter and are expected to be available for the proposed recharge operation, which would only occur from April through October when the Resorts are not making snow. It is anticipated that a separate WDR permit by BBLDWP will be obtained to regulate the Sand Canyon Recharge Project.

The Program Water will be discharged at the top of the Sand Canyon Recharge Area. The discharge will consist of a pipe outlet at the top of the channel bank that discharges down the side slope of the channel into the channel bottom. The channel slope will be protected from erosion using rip rap or similar erosion control methods.

### **Shay Pond Discharge Project**

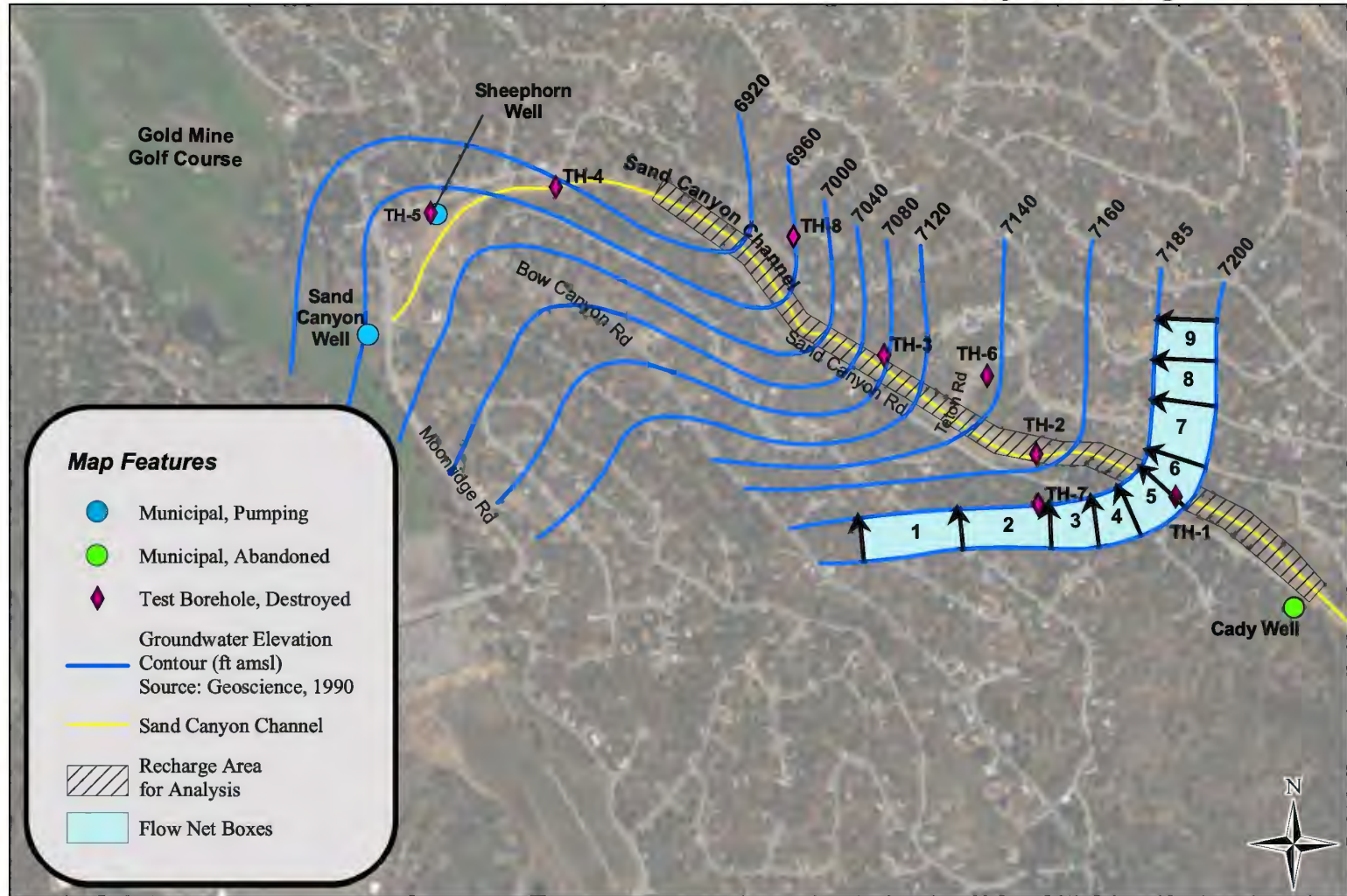
The Shay Pond Discharge Project would replace the potable water source that is currently discharged to the Shay Pond with Program Water as the new water source to maintain the water flow through the Pond. Up to 80 AFY of Program Water may be sent to Shay Pond to support the Stickleback, and any remaining Program Water will be sent to Stanfield Marsh, a tributary of Big Bear Lake. Based on the average volumes of discharges between 2012 and 2022, BBCCSD discharges approximately 50 AFY of potable water into Shay Pond to maintain the endangered Stickleback population. While this part of the Program is included in this DPEIR for analysis purposes, the Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*), which is a Federally and state endangered species.

There is an existing 6-inch C-900 polyvinyl chloride (PVC) pipeline that begins at the intersection of Shay Road and Palomino Drive and terminates near Shay Pond that can be used to convey the Program Water, with an extension of approximately 710 feet to reach Shay Pond. This nearby pipeline was constructed in 1986 for future use, but has never been put into service. It is possible that this pipeline may not be useable, and as such, a pipeline traversing this same alignment and sized comparably to the existing pipeline may be required, in addition to the proposed 710-foot extension to reach Shay Pond (new Shay Pond Conveyance Pipeline). The length of this pipeline would be 5,600 feet (Shay Pond Replacement Pipeline). A visual representation of the Shay Pond Discharge Project is shown on **Figure 1-9**.

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<sup>2</sup> The Big Bear Dam was originally constructed to provide water storage for Bear Valley Mountain which was formed in 1903 by the citrus growers of the Redlands/Highland area to ensure water supply for irrigation needs. The historic operation of the Big Bear Lake as an irrigation reservoir resulted in drastic fluctuations in lake levels, which conflicted with the goals of BBMWD and the community of Big Bear Valley. A legal conflict over the water rights and management of the lake was ultimately settled out of court through the 1977 Judgement. Under the terms of this judgement, BBMWD purchased the lake bottom, Bear Valley Dam, and the right to utilize and manage the surface of Big Bear Lake from Bear Valley Mutual. Bear Valley Mutual retained a storage right and ownership of all water inflow into Big Bear Lake.

**Sand Canyon Recharge Evaluation**



29-Nov-17

**Thomas Harder & Co.**  
 Groundwater Consulting

0 250 500 1,000 Feet

**Sand Canyon Underflow Analysis**

NAD 83 UTM Zone 11




Figure 3

FIGURE 1-6



# Sand Canyon Recharge Project Booster Pump Station

## Legend

-  New 8-inch Pipeline to Sand Canyon
-  Bear Mt. Resort Pond
-  New Pump Station

New booster pump station at 471 gpm

Bear Mt. Resort Pond

Google Earth

400 ft

FIGURE 1-7



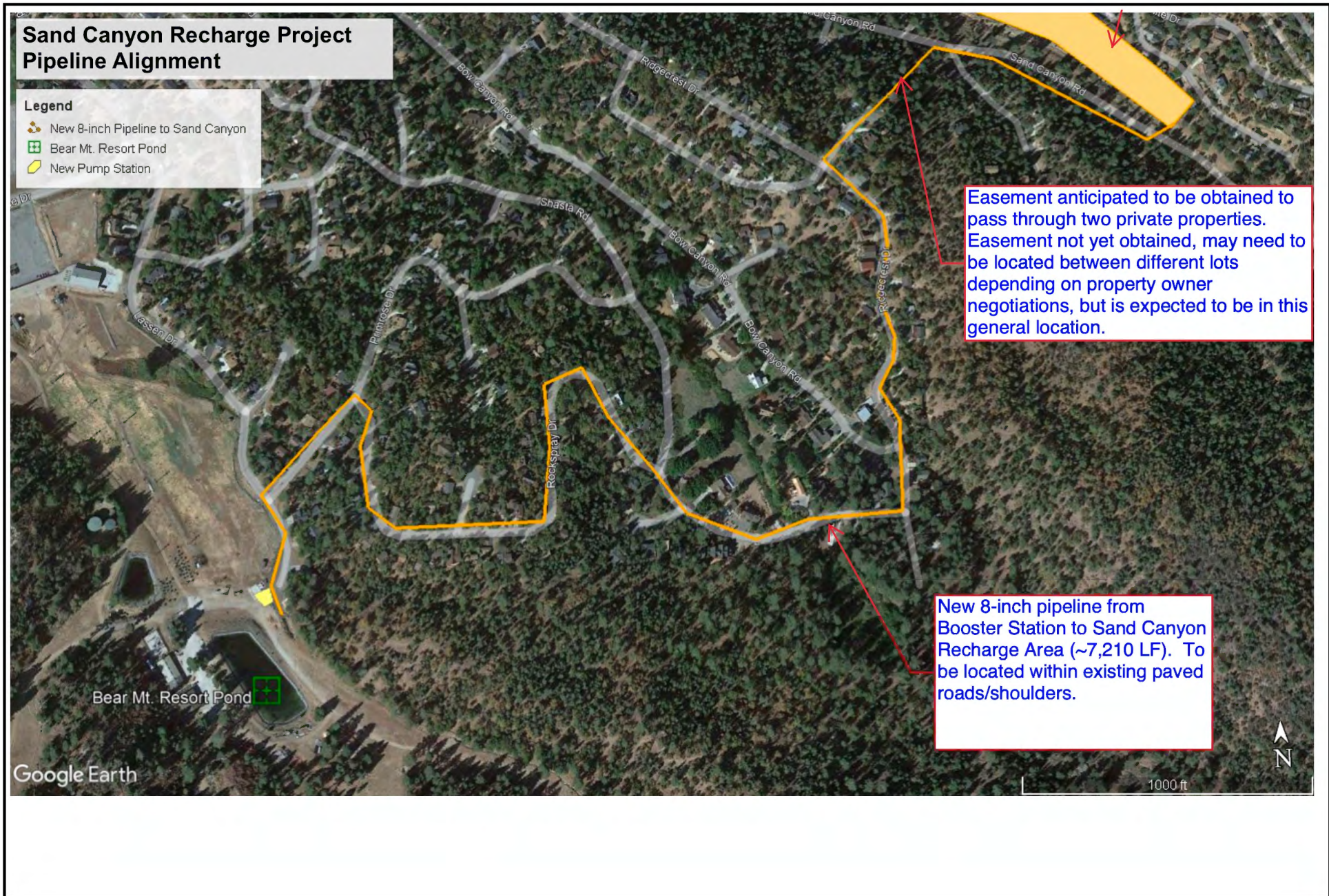
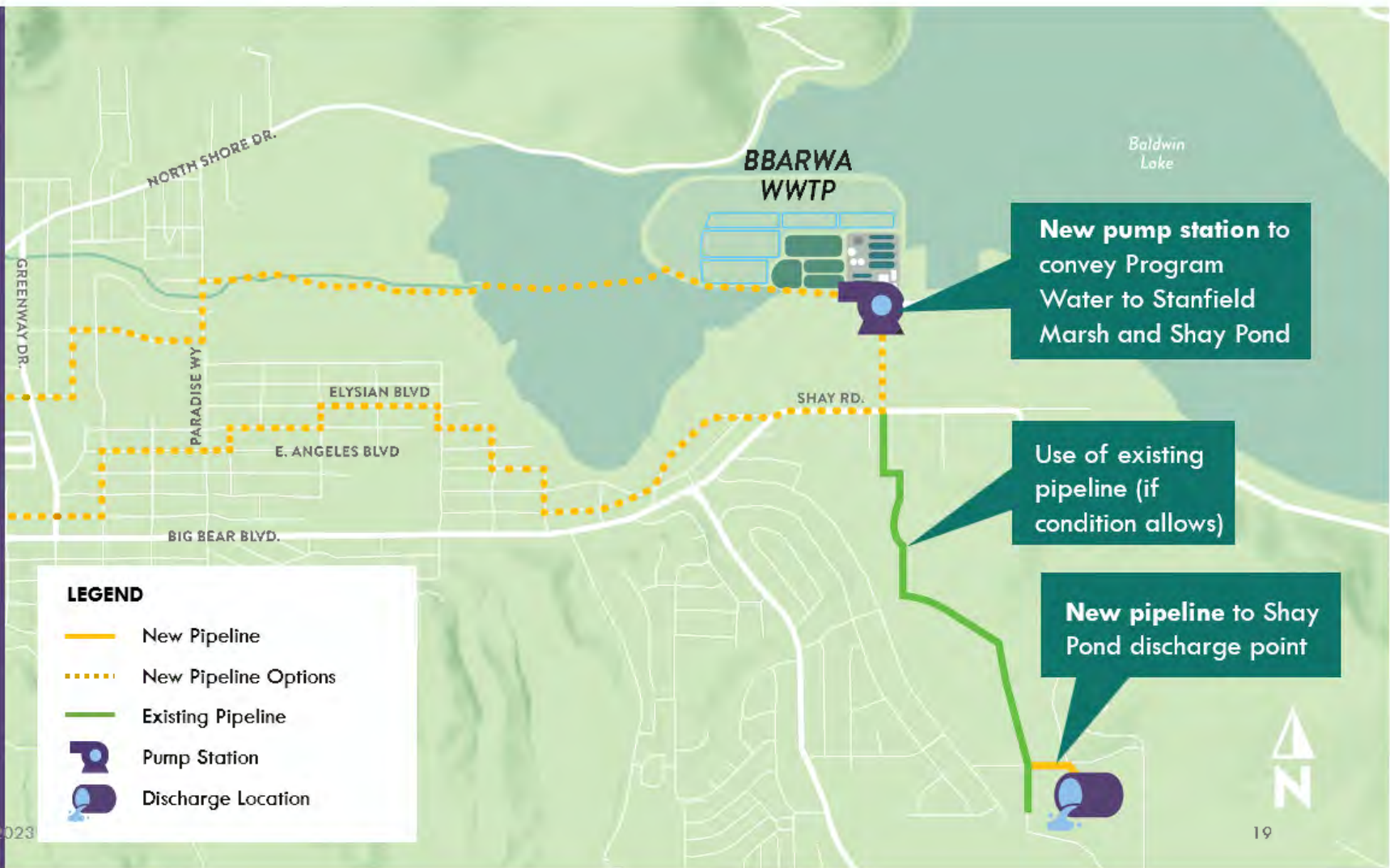


FIGURE 1-8



# Shay Pond Discharge

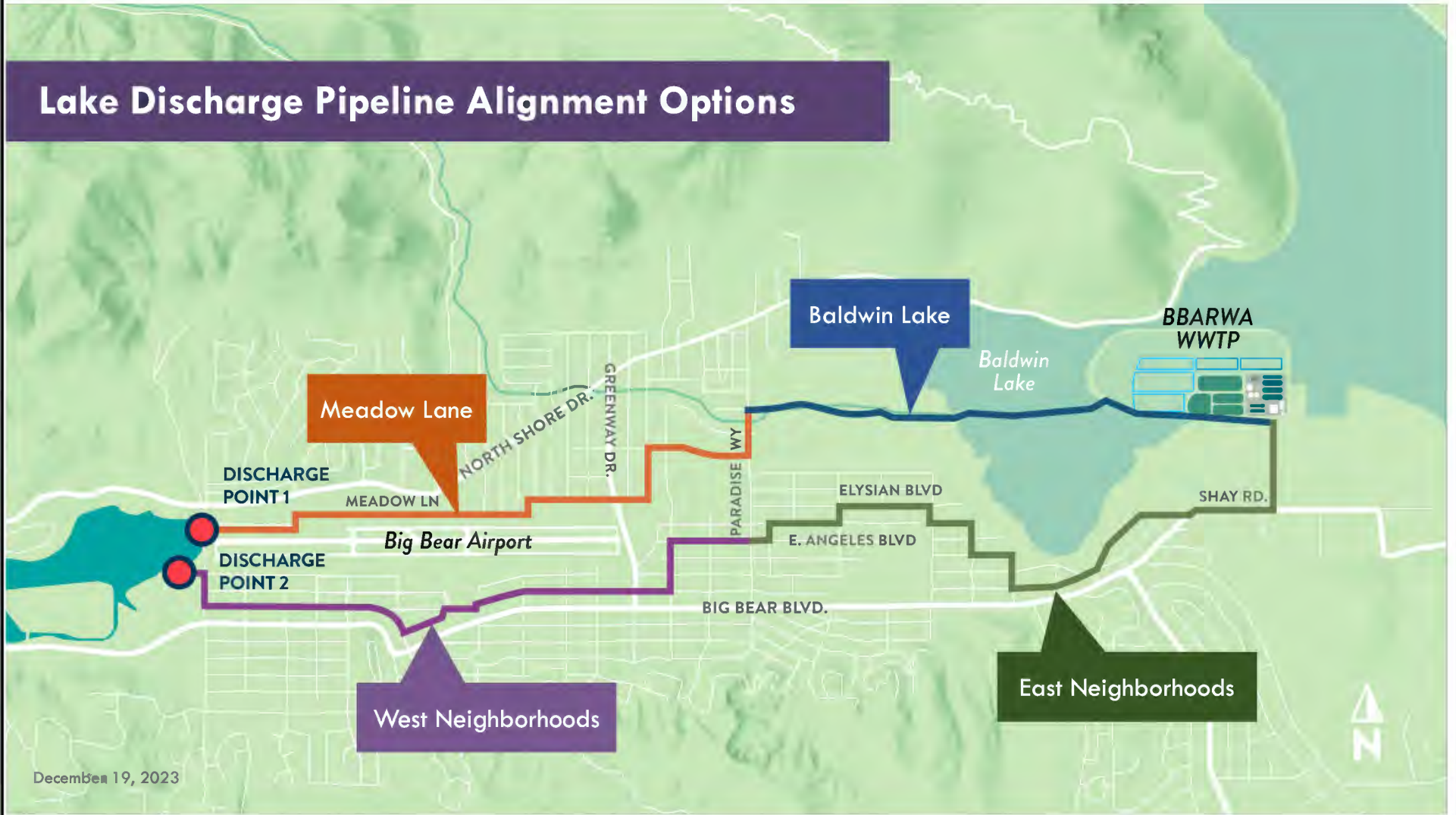


December 19, 2023

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FIGURE 1-9

# Lake Discharge Pipeline Alignment Options



December 19, 2023

FIGURE 1-10

### **LV Site Discharge Reduction**

Between 2012 and 2022, the average amount of effluent BBARWA sent to the LV Site is about 2,190 AFY or about 2.0 million gallons per day (MGD). With the implementation of the Program, BBARWA plans to only send water flows in excess of the 2.2 MGD treatment capacity to the LV Site. For redundancy purposes, BBARWA plans to maintain its current discharge location in Lucerne Valley, where undisinfected secondary effluent is currently conveyed to irrigate fodder crops used for livestock feed. However, the discharge to the LV Site would be reduced as a result of implementation of the Program. The reduction in flow to Lucerne Valley would be altered from about 2,190 AFY to about 340 AFY with the implementation of the proposed Program. A visual representation of the LV Site operations is shown on **Figures 3-35 and 3-36**.

#### **1.1.3 Program Facilities**

The implementation of the facilities proposed as part of the Program consists of construction and operation of the various facilities summarized below in order to implement the individual projects described under **Subsection 1.1.2, Program Characteristics**, above.

Each Program Category has been formed utilizing the greatest number, intensity, lengths, and capacities for each type of facility proposed under the Program. For example, the pipeline lengths and sizes considered under Program Category 1 represent the option(s) that would require the greatest pipeline length to achieve that “Component” of the Program.

#### **Program Category 1: Conveyance Pipelines**

The Program would ultimately install a total of about 6.59 miles or 34,810 LF of various types of pipelines. Potential alignments include the following:

- **Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment:** Pipeline to Big Bear Lake: up to 12” 19,940 LF
  - Alignment Options include:
    - **Alignment Option 1 to Discharge Point 1**
      - Baldwin Lake Pipeline Alignment Option
      - Meadow Lane Pipeline Alignment Option
    - **Alignment Option 2 to Discharge Point 2**
      - East Neighborhoods Pipeline Alignment Option
      - West Neighborhoods Pipeline Alignment Option
- **Shay Pond Conveyance Alignments:**
  - New Shay Pond Conveyance Pipeline: a new 4” 710 LF pipeline would be constructed between the existing BBARWA to Shay Pond pipeline alignment to Shay Pond.
  - Shay Pond Replacement Pipeline: a possible additional 6” 5,600 LF of pipeline to replace the stretch of pipeline between BBARWA’s WWTP site to Shay Pond, which will only be required to implement the Shay Pond Discharge Project if the existing pipeline cannot be utilized.
- **Sand Canyon Recharge Conveyance Pipeline:**
  - Pipeline from the Resort Storage Pond to Sand Canyon: 8” 7,210 LF of pipeline
- **BBARWA WWTP Upgrades Project:**
  - Brine Pipeline (within BBARWA WWTP property): 8” 1,350 LF of pipeline

#### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

The Program would ultimately install monitoring wells in order to facilitate project operation as follows:

- Up to four (4) monitoring wells

- **Sand Canyon Recharge Project:**
  - Two monitoring wells downstream of the Sand Canyon Recharge Area.
- **Solar Evaporation Ponds Project:**
  - Two monitoring wells near the Solar Evaporation Ponds at the BBARWA WWTP site.

The Program would also install three pump stations in order to facilitate project operation as follows:

- **BBARWA WWTP Upgrades Project:**
  - Effluent Pump Station @ WWTP 1,520 gallons per minute
  - Brine Pump Station @ WWTP: 20 gpm
- **Sand Canyon Recharge Project:**
  - Pump Station @ Resort Storage Pond 471 gpm

The Program would install a pipe outlet at the top of the channel bank at Sand Canyon that discharges down the side slope of the channel into the channel bottom as part of the Sand Canyon Recharge Project. The channel slope will be protected from erosion using rip rap or other erosion control methods, similar to that which is shown on **Exhibit 3-1**.

### **Program Category 3: Solar Evaporation Ponds Project**

The Program would construct between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine.

### **Program Category 4: BBARWA WWTP Upgrades Project**

This Program Category includes upgrades to the BBARWA WWTP, to include 2.2 MGD of full advanced treatment, producing up to 2,200 AFY of Program Water. The AWP includes the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

This Program Category also accounts for the installation of 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

## **1.2 INTENDED USE OF THIS ENVIRONMENTAL IMPACT REPORT**

This DPEIR has been prepared in accordance with the CEQA Statutes and Guidelines, 2022, pursuant to Section 21151 of CEQA. BBARWA is the Lead Agency for the Program and has supervised the preparation of this DPEIR. This DPEIR is an information document which will inform public agency decision makers and the general public of the potential environmental effects, including any significant impacts that may be caused by implementing the Program. Possible ways to minimize significant effects of the Program and reasonable alternatives to the Program are also identified in this DPEIR.



This document assesses the impacts, including unavoidable adverse impacts and cumulative impacts, related to the construction and operation of the Program. This DPEIR is also intended to support the permitting process of all agencies from which discretionary approvals must be obtained for particular elements of this Program. There are a wide range of other agencies that may have an interest in or may be involved in the review and approval of the facilities outlined above. The following list is not intended to be exhaustive, but it provides a sense of the agencies that may participate in the review or approval of this Program and specific projects. The potential participating agencies are arranged based on the individual topics contained in the standard CEQA Initial Study Environmental Checklist Form.

Aesthetics: Permits for tree removal may be required from San Bernardino County or the City of Big Bear Lake pursuant to the San Bernardino County Development Code or City of Big Bear Lake Municipal Code, depending on the location of the individual facility. Additionally, the California Department of Forestry and Fire Protection (CAL FIRE) regulates the removal of clusters of trees pursuant to CAL FIRE timberland conversation regulations. The facilities proposed under this Program are anticipated to either require obtaining an exemption or must submit a Timberland Conversion Permit (TCP) pursuant to California Public Resources Code 4621(a) and a Timber Harvesting Plan (THP) pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.

Agriculture &  
Forestry

Resources: See the CAL FIRE regulation discussion under Aesthetics, above.

Air Quality: South Coast Air Quality Management District (SCAQMD), permit the operation of the Upgraded BBARWA WWTP and possibly individual pieces of equipment (ex: stand-by emergency generator).

Biology: The U.S. Fish and Wildlife Service (USFWS) and/or California Department of Fish and Wildlife (CDFW) may have to issue incidental take permits. Local jurisdictions issue plant removal permits. The U.S. Army Corps of Engineers (USACE), CDFW and Colorado Regional Board) and Santa Ana Regional Water Quality Control Board (Santa Ana Regional Board) will participate in review of discharge of fill into or alteration of a streambed.

Hydrology &  
Water Quality:

A wide range of participation will occur for these issues. A National Pollutant Discharge Elimination System (NPDES) Permit is required to regulate the Stanfield Marsh/Big Bear Lake Discharge, which will be issued by the Santa Ana Regional Board; the Colorado Regional Board will issue a modified WDR to BBARWA; the Santa Ana Regional Board will issue a WDR and Water Recycling Requirements (WRR) for use of recycled water. The California State Water Resources Control Board Division of Drinking Water (DDW) must also review and approve the future use of recycled water. San Bernardino County and local jurisdictions must ensure that stormwater discharges from each of the facility sites meet the current municipal separate stormwater sewer standards (MS4); and Stormwater Pollution Prevention Plan(s) (SWPPP) must be implemented for each location where disturbance exceeds one acre. To construct the facilities a Notice of Intent must be submitted to the State Water Resources Control Board (SWRCB) for a General Construction Permit, which is then enforced by the Colorado Regional Board, only for construction of any facilities located within

Lucerne Valley and the Santa Ana Regional Board for all other facilities proposed as part of the Program within Big Bear Valley; the NPDES Permit Program controls water pollution by regulating point sources that discharge pollutants into waters of the United States (U.S.). Finally, if any flood hazard areas are affected by the proposed Program, SBCFCD, the City of Big Bear Lake, and the Federal Emergency Management Agency (FEMA) may perform reviews for this Program.

Transportation: The proposed Program may require encroachment permits from San Bernardino County, City of Big Bear Lake, and possibly the California Department of Transportation (Caltrans) to construct the pipeline within existing road rights-of-way (ROW).

Other: The proposed Program has been awarded a grant for the Program from the U.S. Bureau of Reclamation (BOR). The proposed Program may seek grants or loan from other Federal agencies, such as the United States Environmental Protection Agency (EPA).

No other reviewing or permitting agencies have been identified.

### **1.3 PROGRAM APPROVALS**

This DPEIR will be used as the information source and CEQA compliance document for the following discretionary actions or approvals by the CEQA Lead Agency, BBARWA. CEQA requires that the BBARWA, the CEQA Lead Agency, consider the environmental information in the Program record, including this DPEIR, prior to making a decision regarding whether or not to approve and implement the Program. The decision that will be considered by BBARWA is whether to approve the Program defined in **Chapter 3** of this document. The Program has several components: BBARWA WWTP upgrades to AWWP; installation of pipeline from the BBARWA WWTP to convey Program Water to Stanfield Marsh, which is hydrologically connected to Big Bear Lake; utilization of an existing pipeline and pump station to distribute Program Water stored in Big Bear Lake to a new pump station near the Resorts; installation of a new pump station to convey Program Water stored in Big Bear Lake to the Sand Canyon Recharge Area from a new pipeline; installation of erosion control using rip rap or similar erosion control methods at Sand Canyon in addition to a new pipe outlet at the Sand Canyon Recharge Area; utilization of an existing or replacement of an existing pipeline to Shay Pond; installation of between 23 and 57 acres of Solar Evaporation Ponds to accommodate 22,000 gallons per day (gpd) to 55,000 gpd of brine concentrate; installation of a 20 gpm pump station to convey brine to the Solar Evaporation Ponds; installation of an additional 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building; and maintenance of the existing discharge to the LV Site for flows in excess of the new treatment train's 2.2 MGD capacity. Alternatively, BBARWA can reject the Program as proposed. This DPEIR evaluates the environmental effects as outlined above.

BBARWA will serve as the CEQA Lead Agency pursuant to the State CEQA Guidelines Section 15051(b)(1). In all future circumstances, BBARWA will remain the Lead Agency for the Replenish Big Bear Program CEQA document. A CEQA Responsible Agency—those defined in Chapter 3, the Program Description of this DPEIR—shall coordinate with BBARWA if and when it assumes CEQA Lead Agency status for a future specific project. The CEQA responsible agencies include the following:

- Partner Agencies: BBCCSD, BBLDWP, and BBMWD
- Other Potential Responsible Agencies: San Bernardino County, City of Big Bear Lake, Santa Ana Regional Board, Colorado Regional Board, CDFW, USFWS, SCAQMD, USACE, DDW, SBCFCD, and Big Bear Airport District (Big Bear Airport)
- Federal Agencies: BOR and EPA

DPEIR has been prepared by Tom Dodson & Associates (TDA) under the direction of the Program Team. TDA was retained to assist the Program Team to perform the independent review of the Program required by CEQA before the DPEIR is released. The Program Team has reviewed the content of the DPEIR and concurs in the conclusions and findings contained herein.

## 1.4 IMPACTS

The Program Team concluded that an Environmental Impact Report (EIR) should be prepared to address any potential significant impacts that may result from the implementation of the proposed Program. This DPEIR has been prepared for the proposed Program.

Based on data and analysis provided in this DPEIR, it is concluded that the Program could result in potentially significant adverse environmental impacts to the following environmental issues: ***Agriculture and Forestry Resources, Biological Resources, Hydrology and Water Quality, and Utilities and Service Systems***. All other potential impacts were determined to be less than significant without mitigation or can be reduced to a less than significant level with implementation of the **MMs** identified in this DPEIR. Note that the cumulative significant impacts are identified in this DPEIR based on findings that the Program's contributions to such impacts are considered to be cumulatively considerable which is the threshold identified in the State CEQA Guidelines Section 15130. **Table 1.5-1** summarizes all of the environmental impacts and proposed mitigation and monitoring measures identified in this DPEIR and will be provided to the decision-makers and the public prior to finalizing the DPEIR.

**The following issues evaluated in the DPEIR have been determined to experience less than significant impacts—either with or without mitigation—based on the facts, analysis and findings in this DPEIR.**

**Aesthetics:** As described in **Subchapter 4.2**, all potential aesthetic impacts associated with the Program can be mitigated to a less than significant impact level. Aesthetic impacts to scenic vistas and resources from disturbance would be potentially significant, but can be reduced to less than significant by shielding facilities and landscaping or revegetating disturbed areas either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area, as specified in **MMs AES-1, AES-5, and AES-6**. Program facilities shall be located outside of scenic viewsheds or otherwise undergo subsequent CEQA documentation **MM AES-2**. Additionally, under the Program implementation of **MM AES-3** is required to ensure that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a less than significant level, and **MM AES-4** is required to ensure that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof. **MM AES-7** and **AES-8** would minimize light and glare conflicts from future facility construction and operation. As a result, there will not be any unavoidable Program specific or cumulative adverse impacts to aesthetics from implementing the Program as proposed. Impacts would be less than significant through the implementation of mitigation.

**Air Quality:** As described in **Subchapter 4.4**, with the implementation of mitigation, construction of the proposed Program would reduce impacts for all criteria pollutants below SCAQMD significance thresholds. Additionally, the regional operational emissions that would result from Program implementation would be less than significant without the need for mitigation. Mitigation is required to reduce nitrogen oxide (NO<sub>x</sub>) emissions, which would reduce construction related emission to a level of less than significant. Furthermore, the Program would be consistent with the SCAQMD 2022 Air Quality Management Plan (AQMP), and as such would not result in or cause National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) violations. Construction- and operation-source emissions would not exceed the applicable SCAQMD Localized Significance Thresholds (LSTs) and would be less than significant. **MMs** would: reduce NO<sub>x</sub> emissions below SCAQMD thresholds, implement a fugitive dust plan at the LV Site, and ensure that the only potential source of new odor generated by the Program—the Solar Evaporation Ponds at BBARWA’s WWTP—would be minimized through an odor complaint and response program. As a result, there will not be any unavoidable Program specific or cumulative adverse impacts to air quality from implementing the Program as proposed. Impacts would be less than significant through the implementation of mitigation.

**Cultural Resources:** As described in **Subchapter 4.6**, Big Bear Valley is a large area that may contain historical, archaeological, tribal, or paleontological resources. As such, future Program projects may be developed within sites that contain such resources. The site-specific cultural resources report determined that no significant resources were known to occur within the Program Area of potential effects (APE), but that due to the high sensitivity of Big Bear Valley, mitigation is necessary to reduce impacts from Program implementation. **MM CUL-1** would exclude highly disturbed sites from requiring further cultural resource evaluation, in addition to those sites for which a cultural resource evaluation has already been prepared (all Program facilities except the Sand Canyon Monitoring Wells). **MM CUL-2** would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered during earthmoving activities. **MM CUL-3** would ensure that the Sand Canyon Monitoring Wells that are located within undisturbed areas, within a site that will require substantial earthmoving activities and/or excavation, and/or where the implementing agency is seeking State funding, will require a follow-on Phase I Cultural Resources Investigation. This **MM** includes several phases or steps beyond the completion of a Phase I Cultural Resources Investigation that would cover the identification, evaluation, mitigation, and monitoring associated with a given Program where resources may be located. This would ensure that adequate mitigation is provided in the event that significant cultural resources are located within the Sand Canyon Monitoring Wells sites. **MM CUL-4** would ensure that, after each phase of the studies required by **MM CUL-3** has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures is prepared and submitted to the South Central Coastal Information Center (SCCIC), the Eastern Information Center (EIC), Natural History Museum of Los Angeles County (NHMLAC), and/or San Bernardino County Museum (SBCM). This would ensure that any discoveries are properly documented for future researchers that may seek information regarding the Program Infrastructure project site. **MM CUL-5** would require archaeological monitoring where the Yuhaaviatam of San Manuel Nation (YSMN) deems the Program activity to have a high potential for archaeological sensitivity. The monitor would ensure that any uncovered resources are handled appropriately, and thereby minimizing any potential significant impacts thereof. As described in **Subchapter 4.6**, no unavoidable significant impact to cultural resources will result from implementing the proposed Program. Impacts would be less than significant through the implementation of mitigation.

**Energy:** As discussed in **Subchapter 4.7**, Program construction and operation would not result in inefficient, wasteful or unnecessary consumption of energy and would not conflict with or

obstruct a state or local plan for renewable energy or energy efficiency. This is because the Program would install a 2 MW solar array that would be capable of generating about 3,652,117 kilowatt hour (kWh) per year, which is more than 95% of the necessary energy to accommodate the proposed Program. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on- road and off-road diesel-powered equipment and are enforced by the California Air Resources Board (CARB). The proposed Program would comply with these regulations. Thus, it is anticipated that construction of the proposed Program would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. The Program would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation. Compliance with mandatory measures would ensure that future facilities proposed under the Program would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. As BBARWA would use on-site renewable energy to accommodate more than 95% of the operational energy needs, the Program would not obstruct Federal and State regulations pertaining to energy conservation. Impacts would be less than significant. With compliance with current Federal and State regulations pertaining to energy conservation, the proposed Program is anticipated to have a less than significant impact on energy demand and resources.

Geology and Soils: The Big Bear Valley contains substantial geological and soils constraints. Due to these substantial constraints and the installation of future Program related facilities in locations where such constraints may occur, a potential for significant geology and soils resources impacts from implementation of the Program was identified in **Subchapter 4.8**. However, several **MMs** were identified to minimize geology and soils impacts from implementation of the Program, including those **MMs** that would: reduce potential impacts from geological hazards through a design level geotechnical investigation with implementation of specific design recommendations, relocation of the site, or subsequent CEQA documentation; minimize impacts to paleontological resources through requiring site-specific studies, where necessary. As described in **Subchapter 4.8**, no unavoidable significant impact to geology and soils will result from implementing the proposed Program. Impacts would be less than significant through the implementation of mitigation.

Greenhouse Gas: As described in **Subchapter 4.9**, implementation of the proposed Program will result in approximately 1,499.63 MTCO<sub>2</sub>e/yr (million metric tons of carbon dioxide per year) from construction and operational activities. As such, the Program would not exceed the SCAQMD's recommended numeric threshold of 3,000 MTCO<sub>2</sub>e or 10,000 MTCO<sub>2</sub>e/yr if it were applied. Thus, the Program would not result in a cumulatively considerable impact with respect to greenhouse gas (GHG) emissions. By augmenting local water supplies, the Program would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan.<sup>3</sup> Therefore, the Program would not conflict with the 2022 Scoping Plan,

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<sup>3</sup> The 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) lays out a path to achieve targets for carbon neutrality and reduce anthropogenic greenhouse gas (GHG) emissions by 85 percent below 1990 levels no later than 2045, as directed by Assembly Bill 1279. The actions and outcomes in the plan will achieve: significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon. (CARB, 2023. 2022 Scoping Plan

and no impact would occur. As concluded in **Subchapter 4.9**, the proposed Program would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Program will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Program-related GHG emissions are not considered to be significant or adverse and would not result in an unavoidable significant adverse impact on global climate change. Impacts would be less than significant.

Hazards and Hazardous Materials: The Program contains substantial hazards and hazardous materials issue constraints. Due to these substantial constraints and the installation of future Program infrastructure facilities in locations where such constraints may exist, a potential for significant hazards and hazardous materials issue impacts from implementation of the Program were identified in **Subchapter 4.10**. However, several **MMs** were identified to minimize hazards and hazardous materials impacts, which would apply to both the Program and the Groundwater Recharge at Greenspot Alternative (Greenspot Alternative). Those **MMs** include those that would: ensure that applicable facilities Business Plans incorporate best management practices (BMPs) designed to minimize the potential for accidental release of such chemicals; ensure that applicable facilities Business Plans identify the equipment and response capabilities required to provide immediate containment, control and collection of any released material; ensure sensitive receptors will not be exposed to significant health threat by modeling the pathways of release and implementing specific measures that would minimize potential exposure to acutely hazardous materials; ensure hazardous materials are disposed of and delivered to licensed facilities; ensure the establishment of and adherence to specific thresholds of acceptable clean-up of hazardous materials; ensure the preparation of and adherence to vector management plans; ensure remediation of an accidental spill or discharge of hazardous material in compliance with State and local regulations; ensure that any unknown contamination is remediated and handled according to the local Certified Unified Program Agency (CUPA); ensure that construction traffic is managed safely; and ensure that fire hazard reduction measures are enforced. Therefore, though there will be some adverse impacts as a result of implementing the Program, specific **MMs** have been identified to reduce potential Program specific and cumulative (direct and indirect) impacts to a less than significant level for hazards and hazardous material issues. Thus, the Program is not forecast to cause any unavoidable significant adverse hazards or hazardous material impacts. Impacts would be less than significant through the implementation of mitigation.

Land Use and Planning: As described in **Subchapter 4.12**, impacts related to land use and planning are minimal; however, mitigation is provided to address the potential for conflicts with land use from Program related facilities. This mitigation would ensure that the facilities associated with the Program are developed in appropriate areas, and conform with the surrounding land uses or are developed to minimize conflicts with adjacent land uses. While the potential loss of agricultural operations and agricultural lands at the LV Site that is projected to occur as a result of Program implementation would be significant and unavoidable, given that the continued agricultural operation of the whole of the site (190 acres) would not be sustainable or feasible once the Program is implemented, the proposed Program does not conflict with any General Plan goal and policy. The Program is anticipated to result in a less than significant impact to scenic resources, and furthermore, would preserve and enhance Big Bear Lake and Stanfield Marsh through the provision of additional water, which would result in higher lake levels, enhance recreational opportunities and aquatic habitat, and support water quality improvements, thereby complying the General Plan goals and policies pertaining to preservation of scenic resources. Furthermore, the San Bernardino Countywide Plan and City of Big Bear Lake General Plan

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Documents <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents> accessed 10/18/23)

contain several goals and policies pertaining to the provision of adequate water supply, adapting to climate change, and addressing long-range water supply challenges, in fact, the City of Big Bear Lake identifies retaining BBARWA effluent on the mountain for Big Bear Valley use as a policy. As such, the proposed Program would not conflict with goals and policies pertaining to this topic. Therefore, with implementation of this **MM**, the Program-related land use and planning impacts can be reduced below a level of significance, and as such, the proposed Program will not cause unavoidable significant land use and planning impacts. Impacts would be less than significant through the implementation of mitigation.

**Mineral Resources:** As described in **Subchapter 4.13**, a review of mining operations shown on **Figure 4.13-1**, indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no active mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program footprint are designated for mineral extraction, the proposed Program would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Furthermore, implementation of the Program will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State. Thus, Program-related mineral resource impacts can be reduced below a level of significance, and as such, the proposed Program will not cause unavoidable significant mineral resource impacts. Impacts would be less than significant.

**Noise:** The Big Bear Valley contains extensive areas with noise sensitive land uses. Due to these substantial noise constraints and the installation of future noise-producing Program facilities in locations where such noise sensitive uses may exist, a potential exists for significant noise impacts from implementation of the Program. However, operational and off-site traffic noise is considered less than significant as described below. Additionally, construction vibration and aircraft noise impacts were determined to be less than significant. The Program will include several improvements at the BBARWA WWTP; however, all new noise sources would be housed inside the new building and the two pumps at the BBARWA WWTP would be housed in concrete masonry unit (CMU) buildings. Similarly, the proposed Sand Canyon pump station would be housed in a CMU building. The proposed structures would achieve between 40 and 50 decibels (dBA) in noise reduction from pump noise to exterior locations. The proposed pumps are anticipated to generate up to 60 dBA at 32 feet. Based on the anticipated reduction, pump noise would be 30 dBA  $L_{eq}$  less outside the building. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases.

Furthermore, the limited number of trips would not have the potential to double traffic volumes even on low-volume local roadways. Thus, it is unlikely that individual projects implemented under the Program would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

The highest construction noise levels during the evaporation pond and Sand Canyon monitoring well drilling activities noise levels are expected to exceed the daytime and nighttime noise level limit at the nearest receiver locations within 125 feet and 325 feet, respectively. Since the exact locations of these activities are unknown, and these activities would occur for 24 hours a day for up to two weeks, without mitigation these activities will exceed the applicable noise level limit during the nighttime if located within 325 feet of residences. This would be considered a significant impact. Therefore, mitigation is required for nighttime monitoring well drilling activities at the Sand

Canyon Recharge Area. With implementation of the barrier noise levels would be reduced to a maximum noise level of 69 dBA  $L_{eq}$  at 50 feet. None of the potential monitoring well locations would be located within 50 feet of residences. With implementation of these **MMs**, the Program-related noise impacts can be reduced to a less than significant impact level.

Population and Housing: As described in **Subchapter 4.15**, implementation of the Program would not significantly induce growth within the Big Bear Valley. It is anticipated that, while the proposed Sand Canyon Recharge Conveyance Pipeline will be required to traverse through residential property, it will not impact the residential structures themselves. The effort to install the proposed pipeline alignment would not displace any persons or housing. Based on the historic growth pattern in Big Bear Valley communities and future forecast of growth in the 2020 Urban Water Management Plans (UWMP), implementation of the proposed Program is not forecast to cause the less than 1% growth forecast for Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in climate is considered growth accommodating, not growth inducing. As such and as stated above, the proposed Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of the proposed Program would result in less than significant impacts related to inducement of substantial population growth. As such, the Program-related population and housing impacts are less than significant, and as such, the proposed Program will not cause unavoidable significant population and housing impacts. Impacts would be less than significant.

Public Services: As described in **Subchapter 4.16**, implementation of the Program would not significantly impact fire protection, police protection (in Big Bear Valley, police protection is provided by the San Bernardino County Sheriff), schools, recreation/parks or other public facilities. However, mitigation was identified to minimize impacts to police protection that would minimize the potential for trespass that could exacerbate demand for police protection services. With implementation of this **MM**, the Program-related police protection and park/recreation impacts can be reduced to a less than significant impact level.

Recreation: As described in **Subchapter 4.17**, implementation of the Program would not significantly impact recreation. As discussed under Population and Housing, there would not be a direct increase in population or a substantial number of new jobs that would result in increased demand for parks and recreational facilities within the Big Bear Valley. Additionally, the majority of construction and operations and maintenance staff for any new facilities can be expected to be drawn from the existing population within the Big Bear Valley. The proposed Program may result in enhanced settings at Stanfield Marsh and Big Bear Lake, which is an objective of the Program and thereby may increase recreational opportunities therein. However, recreational infrastructure and fee mechanisms are in place to accommodate any increase in recreation at these locations. Thus, the Program-related recreation impacts would be less than significant, and proposed Program will not cause unavoidable significant recreation impacts.

Transportation: Since transportation system facilities occur throughout much of Big Bear Valley and the installation of future water infrastructure facilities can directly impact roadways or traffic on such roadways, a potential for significant transportation/traffic impacts from implementation of the Program was identified in **Subchapter 4.18**. Mitigation was identified to minimize impacts to transportation that would reduce the Program's potential construction traffic impacts by requiring all construction activities to be conducted in accordance with an approved construction traffic



management plan. With implementation of this **MM**, the Program-related transportation impacts can be reduced below the level of significance, and as such, the proposed Program will not cause unavoidable significant recreation impacts. Impacts would be less than significant through the implementation of mitigation.

Tribal Cultural Resources: As described in **Subchapter 4.19** of this DPEIR, the Yuhaaviatam of San Manuel Nation (YSMN; [formerly known as the San Manuel Band of Mission Indians]) requested continued participation with this Program's CEQA process and future projects implemented under the Program. Concerns expressed include the following: accidental exposure of subsurface cultural resources and proper management of such resources; concerns over exposure of human remains and proper management; presence of Native American monitors during future ground disturbing activities; education of construction workers on tribal history and the potential for resources; and, consultation on the color of the liner for the Solar Evaporation Ponds. Through incorporation of **MMs**, impacts to Tribal Cultural Resources (TCRs) are considered less than significant. Thus, with implementation of mitigation to protect TCRs, the Program would not cause significant unavoidable adverse impacts to TCRs. Impacts would be less than significant through the implementation of mitigation.

Wildfire: The location of Program facilities would likely be located in designated high and very high fire hazard severity zones, and therefore, it is possible that one or more future facilities could be required to locate within such areas. Mitigation was identified to minimize impacts to wildfire that would: reduce the Program's potential traffic conflicts that could be exacerbating in high fire hazard zones by requiring all construction activities to be conducted in accordance with an approved construction traffic control plan; and, ensure fire hazard reduction measures are incorporated into a fire management plan/fuel modification plan for the proposed facilities. Thus, with implementation of mitigation to minimize wildfire impacts, the Program would not cause significant unavoidable adverse impacts under wildfire. Impacts would be less than significant through the implementation of mitigation.

**The proposed Program could result in significant impacts to the following environmental issues: Agriculture and Forestry Resources, Biological Resources, Hydrology and Water Quality, and Utilities and Service Systems, based on the facts, analysis and findings in this DPEIR.**

Agriculture & Forestry Resources: As described in **Subchapter 4.3**, there are no agricultural resources in the Big Bear Valley, but there are substantial resources at the LV Site that would be impacted, given that the continued agricultural operation of the entire site (190 acres) would not be sustainable or feasible once the Program is implemented. Under the proposed Program, no feasible mitigation is available to account for this loss of Prime Farmland and Farmland of Statewide Importance. The removal of the source of water to support agricultural production at the LV site is an unavoidable consequence of the proposed Program. BBARWA's removal of the undisinfected secondary treated effluent would effectively remove the available water supply enabling the LV Site to remain Prime Farmland and Farmland of Statewide Importance, as an irrigated water source is needed to retain this designation based on the soils underlying the site. BBARWA does not hold any water rights in the Mojave Basin Area (MBA), or more specifically in the Lucerne Valley Groundwater Basin (Lucerne Valley Basin), and therefore, the use of groundwater to continue agricultural production within this site is infeasible. Ultimately, with the implementation of the Program, the 190 acres of Prime Farmland and Farmland of Statewide Importance under agricultural production at the LV Site will be allowed to lie fallow in the future.

In regards to forestry resources, where the Program would have a potential to result in any impacts to forestry as a result of the Sand Canyon Recharge Conveyance Pipeline, mitigation (**MM AGF-1**) to ensure compliance with CAL FIRE regulations would minimize impacts to a level of less than significant. As described in **Subchapter 4.3**, with the implementation of mitigation, the proposed Program would not result in significant and unavoidable forestry resources impacts. The proposed Program will cause Program specific and cumulative unavoidable significant impacts to agricultural resources.

**Biological Resources:** As described in **Subchapter 4.5**, there is a potential that a future Program facility may be developed in an area containing significant biological resources that cannot be avoided. Though substantial mitigation is provided to minimize impacts under most circumstances for future Program facilities, no feasible mitigation exists to completely avoid impacts to biological resources within the Big Bear Valley. A potential to adversely impact bird-foot checkerbloom from Program implementation exists. This is because, while it is recommended that the Program Team avoid implementing the Baldwin Lake conveyance pipeline alternative to further avoid impacts to bird-foot checkerbloom, this Baldwin Lake Pipeline Alignment Option is still being considered by BBARWA. **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. Consequently, the Program could cause an unavoidable significant adverse or cumulatively considerable impact on biological resources. However, impacts to all other species and habitats were determined to be less than significant, through the implementation of **MMs BIO-1** through **BIO-28**. Regardless, because of the potential for the Program to adversely impact the bird-foot checkerbloom, the proposed Program is forecast to cause significant unavoidable adverse impacts to biological resources if the Baldwin Lake Pipeline Alignment Option is selected. However, if the Baldwin Lake Pipeline Alignment Option is not selected, the Program would avoid a significant unavoidable adverse impact to biological resources.

**Hydrology and Water Quality:** The Program will provide a local, drought-resistant water supply with up to 380 AFY used to sustain groundwater levels and storage in the Bear Valley Basin. Furthermore, an analysis of water quality objectives determined that the proposed Program discharge to Big Bear Lake, recharge at Sand Canyon, and discharge to Shay Pond would not conflict with any water quality objectives, and as the proposed Program would also contribute additional groundwater through the Sand Canyon Recharge Area, no significant hydrological impacts are anticipated to occur in the Big Bear Valley from Program implementation. Mitigation has been identified to minimize drainage pattern and flood hazard impacts that may occur under the Program as follows: either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure that pollutants are managed on site and the potential for risk of release thereof due to inundation is minimized, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur; in accordance with the San Bernardino County MS4 Permit, require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the NPDES Construction General Permit (CGP) and SWPPP, which are required for larger projects; ensure that the Sand Canyon Recharge Project operations occur within the defined area on **Figure 3-32**, and that operations would be modified if the recharge was not to fully percolate; require BBLDWP to monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Project operation; and, ensure that monitoring and adaptive mitigation is implemented to protect to beneficial uses of Stanfield Marsh and Big Bear Lake, minimizing impacts thereof. As an identified project within the Bear Valley Basin Groundwater Sustainability Plan (GSP), the Program would not obstruct the implementation of the Bear Valley

Basin GSP, and in fact, it would aid in its implementation. Therefore, there is no potential to conflict with or obstruct the implementation of sustainable groundwater management plan in the Bear Valley Basin.

While the Program would reduce the overall recharge to the Lucerne Valley Basin, this would not conflict with the implementation of sustainable groundwater management plan, as none are applicable to the Lucerne Valley Basin/MBA. The MBA Watermaster, which has the authority to manage the adjudicated MBA, would formulate a response to address the management of the Lucerne Valley Basin as a result of the reduction in recharge to the Lucerne Valley Basin. As this is the MBA Watermaster's responsibility, the Program would not result in a significant potential to conflict with the implementation of a sustainable groundwater management plan. Based on the above discussion, the continued, but reduced, discharge of BBARWA's secondary effluent to the LV Site under the Program will have the potential to contribute to the degradation of water quality in the Lucerne Valley Basin by removing a dilution source, but is not the direct cause of degradation because BBARWA effluent is only a minor contributor and not the primary source of degradation. The Lucerne Valley Basin currently exceeds the MCLs for TDS (recommended) and nitrate, so the reduced flows would not cause the Basin to violate a water quality standard, WDRs or otherwise substantially degrade surface or groundwater quality, but may result in a further exceedance of TDS and Nitrate, which is a potentially significant and unavoidable impact.

The Program has a potential to interfere substantially with groundwater recharge such the Program may impede sustainable groundwater management of the Lucerne Valley Basin as a result of the reduction in discharge to the LV Site. Finally, the Program has a potential to conflict with or obstruct the Colorado Basin Plan for the same reasons the Program has a potential to substantially degrade groundwater quality of the Lucerne Valley Basin discussed above. Thus, the Program would result in cumulatively significant and significant and unavoidable impacts under hydrology and water quality. As such, the Program would result in cumulatively significant and significant and unavoidable impacts under hydrology and water quality as a result of the reduction in discharge to the LV Site. No feasible **MMs** exist to avoid these significant and unavoidable impacts.

Utilities and Service Systems: **Subchapter 4.20** concluded that implementation of the Program would not significantly impact stormwater drainage, energy, natural gas telecommunications, or solid waste. Additionally, mitigation is required to minimize impacts related to stormwater through implementation of a drainage plan to reduce downstream flows for future Program projects. Mitigation is required to address potential impacts related to solid waste including those that would: ensure that construction and demolition materials that are salvageable are recycled, and thereby diverted from the local landfill, which will minimize the potential for Program projects to generate waste in excess of local landfill capacities; and ensure that soils that would generally be exported from a given construction site are salvaged where possible for recycling and ultimately reuse, thereby diverting this waste stream from the local landfill. The construction of infrastructure related to energy and natural gas was analyzed and determined to be less than significant with the implementation of mitigation. This mitigation would ensure that Program projects not located in an area containing adjacent access to electricity and natural gas infrastructure would require subsequent CEQA documentation. With implementation of this mitigation the proposed Program will not cause unavoidable significant adverse impacts to energy or natural gas. The construction of infrastructure related to telecommunications was determined to be less than significant with the implementation of mitigation. This mitigation would ensure that Program projects not located in an area containing adjacent access to telecommunication infrastructure would require subsequent CEQA documentation. With implementation of this mitigation the proposed Program will not cause unavoidable significant adverse impacts to telecommunications.

Based on the facts and findings presented in the DPEIR analysis, the proposed Program will not cause unavoidable significant adverse impacts to stormwater drainage, energy, natural gas, telecommunications, or solid waste.

The topic of water and wastewater infrastructure were also discussed in **Subchapter 4.20**. As determined in the preceding evaluation, the proposed Program would result in significant and unavoidable impacts under utilities and service systems, which pertains both to the Big Bear Valley and to the reduction in discharge of undisinfectated secondary effluent to the LV Site. As described in **Subchapter 4.5, Biological Resources**, the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact if the Baldwin Lake Pipeline Alignment Option is the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option. This is because construction of the Baldwin Lake Pipeline Alignment Option may affect bird-foot checkerbloom, as it is present within the proposed Program Area footprint for this pipeline alignment. While **MMs BIO-1** through **BIO-4** would minimize impacts to bird-foot checkerbloom from construction of the Solar Evaporation Ponds to a level of less than significant, **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. If BBARWA does not select the Baldwin Lake Pipeline Alignment Option, a significant impact under this issue would be avoided. Regardless, as the Baldwin Lake Pipeline Alignment Option may be the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option, impacts under this issue are considered significant and unavoidable. Therefore, the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact.

As described under hydrology and water quality, the action towards addressing groundwater supply challenges, given Big Bear Valley's remote location, that would be addressed by the Program would help provide sufficient supply in the Big Bear Valley.

The proposed Program would result in significant and unavoidable impacts on utilities and service systems because of the reduction in discharge of disinfected secondary effluent to the LV Site. No mitigation is available to reduce the potential for a significant and unavoidable impact to occur to water supplies in the Lucerne Valley Basin as a result of Program Implementation. This is because the Program would reduce the amount of water that would be discharged to the Lucerne Valley Basin, which has a potential to impact the amount of water that could be expected to be recharged to the Lucerne Valley Basin on an annual basis, thereby impacting water supplies. Therefore, the proposed Program would also have a significant and unavoidable potential for the implementation of the Program to substantially impair the availability of water supplies in the Lucerne Valley Basin as a result in the reduction in recharge to the Lucerne Valley Basin.

## **1.5 EXECUTIVE SUMMARY IMPACTS TABLE**

The Executive Summary of potential Program impacts is presented in **Table 1.5-1**.

**Table 1.5-1** provides a summary of all impacts and **MMs** identified in the detailed environmental evaluation presented in Chapter 4 of this DPEIR. This summary is meant to provide a quick reference to proposed Program impacts, but the reader is referenced to Chapter 4 to understand the assumptions, method of impact analysis and rationale for the findings and conclusions presented in **Table 1.6-1**.

**Table 1.5-1  
 SUMMARY OF IMPACTS AND AVOIDANCE, MINIMIZATION AND MITIGATION MEASURES  
 DISCUSSED IN THIS DPEIR**

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>AESTHETICS</b></p> <p>AES-1 Proposed facilities shall be designed in accordance with local design standards and integrated with local surroundings. Landscaping shall be installed in conformance with local landscaping design guidelines as appropriate to screen views of new facilities and to integrate facilities with surrounding areas.</p>	Implementing Agency <sup>4</sup>
<p>AES-2 Future Replenish Big Bear Program facilities at unknown locations shall either (1) be located outside of scenic viewsheds identified in the General Plan or Municipal Code corresponding to a proposed location for a future facility; (2) be unobtrusive to scenic vistas due to height or blending the facility into the natural environment confirmed by a visual simulation that demonstrates this; or (3) where (1) or (2) are not possible, undergo subsequent CEQA documentation to assess potential aesthetic impacts a future Replenish Big Bear Program facility may have upon contain scenic resources.</p>	Implementing Agency
<p>AES-3 Should the removal of trees be required for a specific Program Component, the implementing agency shall comply with the applicable local jurisdiction's municipal code or development code pertaining to the removal of trees. For Program Components within the City of Big Bear Lake, the implementing agency shall comply with the City's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces, where applicable. For Program Components within San Bernardino County, the implementing agency shall comply with the San Bernardino County Development Code Plant Protection and Management (88.01), where applicable.</p>	Implementing Agency
<p>AES-4 Future proposed facilities defined within the Replenish Big Bear Program at unknown locations shall either (1) be located within sites that avoid rock outcroppings and other scenic resources as defined in State CEQA Guidelines Appendix G, or (2) undergo subsequent CEQA documentation to assess potential impacts from locating a future facility in an area that may contain scenic resources.</p>	Implementing Agency
<p>AES-5 When Replenish Big Bear Program above ground facilities are constructed in the future, the local agency design guidelines for the project site shall be followed to the extent that they do not conflict with the engineering and budget constraints established for the facility and except where such compliance is not required by California law.</p>	Implementing Agency
<p>AES-6 When Replenish Big Bear Program above ground facilities are constructed in the future, the local agency design guidelines for the project site shall be followed to the extent that they do not conflict with the engineering and budget constraints established for the facility and except where such compliance is not required by California law.</p>	Implementing Agency
<p>AES-7: Future Replenish Big Bear Program projects shall implement at least the following measures, unless they conflict with the local jurisdiction's light requirements, in which case the local jurisdiction's requirements shall be enforced:</p> <ul style="list-style-type: none"> <li>• Use of low-pressure sodium lights where security needs require such lighting to minimize impacts of glare.</li> <li>• The height of lighting fixtures shall be lowered to the lowest level consistent with the purpose of the lighting to reduce unwanted illumination.</li> <li>• Directing light and shielding shall be used to minimize off-site illumination during both construction or operation of any Program facility.</li> <li>• No light shall be allowed to intrude into sensitive light receptor areas during both construction or operation of any Program facility.</li> <li>• Non-reflective materials and/or coatings shall be used on the exterior of all facilities if constructed in a publicly visible location (such as from a roadway or public facility).</li> </ul>	Implementing Agency
<p>AES-8: A facility lighting plan that shall apply to construction and operation shall be prepared for each Replenish Big Bear Program component and shall demonstrate that glare from construction, operation and safety night lights that may create light and glare affecting adjacent occupied property are sufficiently shielded to prevent light and glare from spilling into occupied structures. This plan shall specifically verify that the lighting doesn't exceed 1.0 lumen at the nearest residence to any lighting site within the project footprint. This plan shall be implemented by the implementing agency to minimize light or glare intrusion onto adjacent properties.</p>	Implementing Agency

<sup>4</sup> Implementing Agency refers to the Agency of the Program Team—BBARWA, BBCCSD, BBLDWP, and BBMWD—implementing the individual facility for which these mitigation measures apply.

Impact Description	Impact After Mitigation
<p><b>AESTHETICS</b></p> <p>The existing visual setting of the proposed program area will be permanently altered. The intensification of development greater than that which presently occurs within the Big Bear Valley will change the visual setting. The impacts to visual resources in the area including scenic resources, trees, rock outcroppings, etc., and from new sources of light and glare were determined to be significant without mitigation. As such, mitigation is required to reduce impacts under this issue.</p>	<p>As described in <b>Subchapter 4.2</b>, aesthetic impacts to scenic vistas and resources from disturbance would be potentially significant, but can be reduced to less than significant by shielding facilities and landscaping or revegetating disturbed areas either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area, as specified in <b>MMs AES-1, AES-5, and AES-6</b>. Program facilities shall be located outside of scenic viewsheds or otherwise undergo subsequent CEQA documentation <b>MM AES-2</b>. Additionally, under the Program implementation of <b>MM AES-3</b> is required to ensure that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a less than significant level, and <b>MM AES4</b> is required to ensure that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof. <b>MM AES-7 and AES-8</b> would minimize light and glare conflicts from future facility construction and operation. As a result, there will not be any unavoidable Program specific or cumulative adverse impacts to aesthetics from implementing the Program as proposed.</p>

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>AGRICULTURE AND FORESTRY RESOURCES</b></p> <p>AGF-1: Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a "Public Agency, Public and Private Utility Right of Way Exemption" (1104.1(b)(c)) or a "Less Than 3 Acre Conversion Exemption" (1104.1(a)). Should an exemption for the removal of trees subject to CAL FIRE timberland conversation regulations be unavailable due to the limitations set forth by CAL FIRE of one exemption per agency per five years, the implementing agency shall prepare and submit a TCP pursuant to California Public Resources Code 4621(a) and a THP pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.</p>	<p>Implementing Agency</p>

Impact Description	Impact After Mitigation
<p><b>AGRICULTURE AND FORESTRY RESOURCES</b></p> <p>As described in <b>Subchapter 4.3</b>, there are no agricultural resources in the Big Bear Valley, but there are substantial agricultural resources at the LV Site. As such, implementation of the proposed Program was determined to have a potentially significant impact to land at the LV Site designated as Prime Farmland, Unique Farmland, and/or Farmland of Statewide Importance. Therefore, impacts at the LV Site would be potentially significant requiring mitigation to minimize impacts to a level of less than significant. Furthermore, the Program would have a potential to result in any impacts to forestry as a result of the Sand Canyon Recharge Conveyance Pipeline if removal of clusters of trees subject to CAL FIRE timberland conversation regulations are completed.</p>	<p>As described in <b>Subchapter 4.3</b>, under the proposed Program, no feasible mitigation is available to account for the loss of Prime Farmland and Farmland of Statewide Importance at the LV Site. The removal of the source of water to support agricultural production at the BBARWA site is an unavoidable consequence of the proposed Program. BBARWA's removal of the undisinfecting secondary treated effluent would effectively remove the available water supply enabling the LV Site to remain Prime Farmland and Farmland of Statewide Importance, as an irrigated water source is needed to retain this designated based on the soils underlying the site. BBARWA does not hold any water rights in the MBA, or more specifically in the Lucerne Valley Basin, and therefore, the use of groundwater to continue agricultural production within this site is infeasible. Ultimately, with implementation of the Program, the 190 acres of Prime Farmland and Farmland of Statewide Importance under agricultural production at the LV Site will be allowed to lie fallow in the future. Where the Program would have a potential to result in any impacts to forestry as a result of the Sand Canyon Recharge Conveyance Pipeline, mitigation to ensure compliance with CAL FIRE regulations would minimize impacts to a level of less than significant. As described in <b>Subchapter 4.3</b>, with the implementation of mitigation, the proposed Program would not result in significant and unavoidable forestry resources</p>

Impact Description	Impact After Mitigation
	impacts. The proposed Program will cause Program specific and cumulative unavoidable significant impacts to agricultural resources.

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>AIR QUALITY</b></p> <p>AQ-1 When using construction equipment greater than 150 horsepower (&gt;150 hp), the Construction Contractor shall ensure that off-road diesel construction equipment complies with the EPA/CARB Tier 4 emissions standards or equivalent and shall ensure that all construction equipment is tuned and maintained in accordance with the manufacturer's specifications.</p>	Implementing Agency
<p>AQ-2: BBARWA shall implement a fugitive dust response plan at the LV Site. This plan shall begin with signage at the LV Site (one along Camp Rock Road and one along Old Woman Springs Road [Highway 247]) notifying the public of a phone number and email address that can be reached if fugitive dust is observed migrating from the site. This same notification and information shall retain a place on BBARWA's website.</p> <p>In response to any notifications from the public that fugitive dust is observed migrating from the LV Site, BBARWA shall implement a plan of response to minimize fugitive dust. This plan can range from short-term in nature (i.e. utilization of chemical stabilization or water to spray on the surfaces from which dust originates at the LV Site) to long-term in nature (i.e. utilization of gravel or like natural materials to stabilize the LV Site surface over the long-term or planting native plants or cover crop to stabilize the soils). The end result of implementation of the fugitive dust response plan shall be to diminish visible dust at the LV Site.</p>	Implementing Agency
<p>AQ-3: BBARWA will establish an odor complaint/response program and will respond to any odor complaints received for this Program by odor levels at the affected receptor following the methodology specified in the American Society for Testing and Materials (ASTM) Recommended Practice E679-04. If the odor levels exceed the odor intensity value of 3.0 or greater on the 8-point n-butanol intensity scale, an odor response plan will be developed and initiated to minimize the potential for odor complaints as a result of the solar brine evaporation pond operations. Odor response shall include, but not be limited to, more frequent precipitated crystal removal from the solar brine evaporation pond shall, and application of odor neutralizing materials.</p> <p>This odor response/complaint program shall begin once the Solar Evaporation Ponds are operational for at least one year thereafter. If no complaints are received within the first year of operations, the program shall conclude. If one or more complaints are received within the first year of operations, the program shall continue on for the duration of Program operations.</p>	Implementing Agency

Impact Description	Impact After Mitigation
<p><b>AIR QUALITY</b></p> <p>The Program-specific evaluation of emissions presented in <b>Subchapter 4.3</b> demonstrates that construction of the proposed Program would result in an exceedance of thresholds for a criteria pollutant: NO<sub>x</sub>. Maximum daily NO<sub>x</sub> emissions would exceed the SCAQMD regional significance threshold throughout the entire duration of Program construction. Operational emissions were modeled to be below significance thresholds without the need for added mitigation. However, a Notice of Preparation (NOP) commenter raised a concern about fugitive dust migrating from the LV Site as a result of a portion of the fields being allowed to go fallow, and without mitigation, fugitive dust impacts could be significant. Additionally, an NOP commenter raised a concern that the Solar Evaporation Ponds may emit a noticeable odor, and while it is not anticipated that odor will be observed by any receptors nearby attributable to the Solar Evaporation Ponds, without an odor response program, a significant impact could occur.</p> <p>The Program would be consistent with the SCAQMD 2022 AQMP, and as such would not result in or cause NAAQS and CAAQS violations. Construction- and operation-source emissions would not exceed the applicable SCAQMD Localized Significance</p>	<p>As described in <b>Subchapter 4.4</b>, with the implementation of mitigation, construction of the proposed Program would reduce impacts for all criteria pollutants below SCAQMD significance thresholds. Mitigation would be required to reduce NO<sub>x</sub> emissions, which would reduce construction related emission to a level of less than significant. <b>MMS</b> would: reduce NO<sub>x</sub> emissions below SCAQMD thresholds, implement a fugitive dust plan at the LV Site, and ensure that the only potential source of new odor generated by the Program—the solar brine evaporation ponds at BBARWA's WWTP—would be minimized through an odor complaint and response program. As a result, there will not be any unavoidable Program specific or cumulative adverse impacts to air quality from implementing the Program as proposed.</p>

Impact Description	Impact After Mitigation
Thresholds and would be less than significant. Mitigation is required to reduce the Program's contribution to significant air quality emissions.	

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<b>BIOLOGICAL RESOURCES</b>	
BIO-1 The Solar Evaporation Ponds shall be designed to avoid areas where bird-foot checkerbloom is known to occur (shown on Figure 4.5-10). Orange construction fencing, or similarly visible material should be installed around the area where bird-foot checkerbloom is located, and this area should be completely avoided.	Implementing Agency
BIO-2 Preconstruction clearance surveys shall be conducted by a qualified biologist who is familiar with the local flora, to determine if any special status plant species are present within the proposed disturbance area prior to construction of any individual Program component. Botanical surveys shall be conducted during the appropriate time of year, when target species are both evident and identifiable.	Implementing Agency
BIO-3 If any listed bird-foot checkerbloom is found by the onsite biological monitor, or by construction personnel who are educated in species avoidance pursuant to MM BIO-16, within the proposed disturbance area(s), then orange construction fencing, or similarly visible material should be installed around the area where they are located, and this area shall be completely avoided. This measure applies to the Solar Evaporation Ponds Project as shown on Figure 4.5-10. This measure does not apply to the Baldwin Lake Pipeline Alignment Option, should this alignment be the selected Alignment Option. If the Baldwin Lake Pipeline Alignment Option is selected, the bird-foot checkerbloom plants shall be handled pursuant to MM BIO-5.	Implementing Agency
BIO-4 If any other listed special status species are found within the proposed disturbance area(s), then orange construction fencing, or similarly visible material should be installed around the area where they are located, and this area shall be completely avoided. This measure does not apply to the Baldwin Lake Pipeline Alignment Option, should this alignment be the selected alternative. If the Baldwin Lake Pipeline Alignment Option is selected, the bird-foot checkerbloom plants shall be handled pursuant to <b>MM</b> BIO-5.	Implementing Agency
BIO-5 Where feasible, the Baldwin Lake Pipeline Alignment Option shall be designed to avoid the areas within BBARWA's property where bird-foot checkerbloom is known to occur (shown on Figure 4.5-10). Otherwise, should BBARWA choose to install the Baldwin Lake Pipeline Alignment Option as it is currently proposed, BBARWA shall proceed as follows: <ul style="list-style-type: none"> <li>• At least 20 days prior to construction within areas containing the bird-foot checkerbloom, BBARWA shall notify USFWS and CDFW of the construction plan, and potential impacts to the bird-foot checkerbloom. BBARWA shall offer USFWS and CDFW a window of 20 days to opt to collect plants and/or plant seeds prior to construction.</li> <li>• If neither CDFW nor USFWS opt to collect plants and/or plant seeds, BBARWA shall transplant the plants to a location where the plants can be conserved and protected outside of the Baldwin Lake Pipeline Alignment Option APE.</li> </ul>	Implementing Agency
BIO-6 In order to change the water source at Shay Pond, an adaptive management and mitigation plan (AMMP) shall be developed by BBARWA. The implementing agency—BBARWA, in association with BBCCSD—shall coordinate with USFWS and CDFW to obtain verbal agreement on the approach to forecast impacts to the Stickleback. Then, the implementing agency or biologist familiar with the Stickleback contracted to the implementing agency shall draft a memorandum of understanding (MOU) (that would be between BBARWA and/or BBCCSD and USFWS and/or CDFW) to the lay a solid framework for the development of an AMMP. The MOU will determine if additional permitting will be required from both the State and Federal government for the take of an endangered species. <p>The AMMP shall identify a sampling and monitoring program for the lifespan of the Program. This will include any triggers or adaptive management strategies that could be implemented to improve conditions for the Stickleback, including alterations to water temperature, inclusion of bubblers to increase dissolved oxygen or other techniques to be identified. The AMMP must be approved by USFWS and CDFW in order to carry out a pilot study in which it will be determined whether the change in water source for the Stickleback is feasible.</p>	Implementing Agency



Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p>BIO-7 Prior to implementation of the replacement pipeline from the BBARWA WWTP to the Shay Pond Conveyance Pipeline and the new Shay Pond Conveyance Pipeline (Figures 4.5-7 through 4.5-8), a site-specific biological resources assessment shall be conducted by a qualified biologist familiar with Big Bear Valley flora and fauna. This survey shall be conducted in accordance with appropriate standards by a qualified biologist/ ecologist. If sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the California Natural Diversity Database (CNDDDB) will be notified and the following subsequent mitigation actions will be taken:</p> <ol style="list-style-type: none"> <li>BBARWA shall provide compensation for sensitive habitat acreage lost by acquiring and protecting in perpetuity (through property or mitigation bank credit acquisition) habitat for the sensitive species at a ratio of not less than 1:1 for habitat lost. The property acquisition shall include the presence of at least one animal or plant per animal or plant lost at the development site to compensate for the loss of individual sensitive species.</li> <li>The final mitigation may differ from the above values based on negotiations between the project proponent and USFWS and CDFW for any incidental take permits for listed species. BBARWA and/or the implementing agency shall retain a copy of the incidental take permit as verification that the mitigation of significant biological resource impacts at a project site with sensitive biological resources has been accomplished.</li> <li>Preconstruction botanical surveys for special-status plant communities and special-status plant species will be conducted in areas that were not previously surveyed because of access or timing issues or project design changes; pre-construction surveys for special-status plant communities and special-status plant species will be conducted before the start of ground-disturbing activities during the appropriate blooming period(s) for the species. If special-status plants or plant communities are identified, the following hierarchy of actions shall be taken: a) find an alternative site; b) avoid the plants and maintain them onsite after completing the project; or c) provide compensatory mitigation offsite.</li> </ol>	<p>Implementing Agency</p>
<p>BIO-8 Appropriate BMPs (e.g., silt fence) should be implemented during construction of the Shay Pond Conveyance Pipeline to ensure that no sediment or pollutants enter Shay Pond/Shay Creek, such that construction does not impact the Stickleback and/or its habitat.</p>	<p>Implementing Agency</p>
<p>BIO-9 All construction activities associated with the proposed Solar Evaporation Ponds shall be conducted when the portion of Baldwin Lake where this Program component will occur is dry.</p>	<p>Implementing Agency</p>
<p>BIO-10</p> <ol style="list-style-type: none"> <li>Preconstruction rubber boa surveys are recommended for each Program component that would provide 100% visual coverage of any undeveloped areas within the proposed Program Area footprint and would consist of a systematic ground search that would focus on moveable surface materials such as rocks, logs, duff, and man-made debris that may provide shelter for rubber boa.</li> <li>Rubber boa exclusion fence (e.g., silt fence) shall be installed around the perimeter of the Sand Canyon Recharge Pipe Outlet construction site prior to commencement of any Program related ground disturbing activities in this area. All construction activities shall be restricted to within the fenced disturbance limits to avoid potential harm to rubber boa that may be present in nearby habitat.</li> <li>A qualified biologist who is familiar with southern rubber boa and its habits shall be present on site during initial ground disturbing activities within or adjacent any potential rubber boa habitat to monitor the clearing/removal of any surface objects that could potentially provide rubber boa refugia or hibernacula (e.g., rotting logs/stumps, duff layer). The biological monitor shall visually inspect under any surface cover objects prior to their removal to ensure no rubber boa are harmed or killed.</li> <li>All open trenches shall be backfilled or covered at the end of the day and ramped to allow rubber boa and other wildlife to escape.</li> <li>If a rubber boa is found during preconstruction presence/absence surveys or during construction activities, all site-specific project activities shall be halted, CDFW shall be contacted, and a California Endangered Species Act (CESA) Incidental Take Permit shall be obtained from CDFW prior to reinitiating project activities.</li> </ol>	<p>Implementing Agency</p>
<p>BIO- 11</p> <ol style="list-style-type: none"> <li>To ensure the Program does not impact flying squirrel, preconstruction surveys for each Program Component (except those occurring at the BBARWA WWTP) shall be conducted to identify potentially suitable cavity nesting sites and foraging habitat, prior to the removal of any trees or downed woody debris.</li> </ol>	<p>Implementing Agency</p>

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<p>2. If suitable flying squirrel cavity nesting sites are detected within the proposed Program Area footprint, then coordination with the CDFW would be necessary to determine appropriate minimization and <b>MMs</b> to offset Program related impacts to this species prior to the commencement of construction within the area within which the suitable flying squirrel cavity nesting sites are located.</p>	
<p>BIO-12 To avoid potential impacts to nocturnal species such as the California Spotted Owl (SPOW) and flying squirrel, due to light pollution, project related night lighting (both temporary and permanent) shall be directed away from adjacent areas to protect nocturnal species from direct night lighting. Shielding shall be incorporated in project designs to ensure ambient lighting in adjacent areas is not increased.</p>	Implementing Agency
<p>BIO-13 During final design and prior to issuance of construction permits each specific infrastructure improvement project, a BRMP shall be prepared to:</p> <ul style="list-style-type: none"> <li>• Assemble the biological resources <b>MMs</b> to be applied for each specific infrastructure improvement in the future;</li> <li>• Specify the terms and conditions from applicable permits and agreements and make provisions for monitoring assignments, scheduling, and responsibility;</li> <li>• Discuss habitat replacement and revegetation, protection during ground-disturbing activities, performance (growth) standards, maintenance criteria, and monitoring requirements for temporary and permanent native plant community impacts; and</li> <li>• The parameters of the BRMP will be formed with the <b>MMs</b> from subsequent CEQA documentation (if required), including terms and conditions as applicable from the USFWS, USACE, SWRCB/Regional Water Quality Control Board (RWQCB), and CDFW.</li> </ul>	Implementing Agency
<p>BIO-14 As part of completion of the final site development, after ground disturbance has occurred within or adjacent to any natural area, the disturbed areas shall be revegetated using a plant mix of native plant species that are suitable for long term vegetation management at the specific site, which shall be implemented in cooperation with regulatory agencies and with oversight from a biologist. The seeds mix shall be verified to contain the minimum amount of invasive plant species seeds reasonably available for the Program Area.</p>	Implementing Agency
<p>BIO-15 During construction, equipment will be washed before entering the project footprint to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species. Mud and plant materials will be removed from construction equipment when working in native plant communities, near special-status plant communities, or in areas where special-status plant species have been identified.</p>	Implementing Agency
<p>BIO-16 Personnel who work onsite will attend a Contractor Education and Environmental Training session conducted by a biologist. The environmental training will cover general and specific biological information on the special-status plant species that may be present near the construction site, including the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws.</p> <p>The Contractor Education and Environmental Training sessions will be given before the initiation of construction activities and repeated, as needed, when new personnel begin work within the project limits. Daily updates and synopsis of the training will be performed during the daily safety ("tailgate") meeting. All personnel who attend the training will be required to sign an attendance list stating that they have received the Contractor Education and Environmental Training, and such tracking sheets shall be maintained for inspection by the implementing agency.</p>	Implementing Agency
<p>BIO-17 Biological monitor to be present during construction activities in areas where impacts to Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. A biological monitor (or monitors) will be present onsite during construction activities that could result in direct or indirect impacts on sensitive biological resources (including listed species) and to oversee permit compliance and monitoring efforts for all special-status resources.</p> <p>A biological monitor (biologist) is any person who has a bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field and/or has demonstrated field experience in and knowledge about the identification and life history of the special-status species or jurisdictional waters that could be affected by project activities. The biological monitor(s) will be responsible for monitoring the Contractor to ensure compliance with the Section 404 Individual Permit, Section 401 Water Quality Certification and the Lake and Streambed Alteration (LSA) Agreement. Activities to ensure compliance would include performing construction-monitoring activities, including monitoring environmental fencing, identifying areas where special-status plant species</p>	Implementing Agency

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<p>are or may be present, and advising the Contractor of methods that may minimize or avoid impacts on these resources. Biological monitor(s) will be required to be present in all areas during ground disturbance activities and for all construction activities conducted within or adjacent to identified Environmentally Sensitive Areas, Wildlife Exclusion Fencing, and Non-Disturbance Zones as defined by the project biologist.</p>	
<p>BIO-18 All food-related trash items (e.g., wrappers, cans, bottles, food scraps) will be disposed of in closed containers and removed at least once a week from the construction site.</p>	Implementing Agency
<p>BIO-19 Use of rodenticides and herbicides in the project footprint will be restricted at the direction of the project biologist. This measure is necessary to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species. Where pesticides must be used, they must be used in full accordance with use instructions for the particular chemical and at the direction of the project biologist.</p>	Implementing Agency
<p>BIO-20 Exclusion barriers (e.g., silt fences) will be installed at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction. The design specifications of the exclusion fencing will be determined through consultation with the USFWS and/or CDFW, as appropriate. Clearance surveys will be conducted for special-status species after the exclusion fence is installed in compliance with USFWS and/or CDFW requirements. The project biologist shall determine the frequency in which clearance surveys will be conducted to determine the efficacy of the exclusion fencing.</p>	Implementing Agency
<p>BIO-21 Prior to the commencement of construction, the implementing agency shall identify staging areas for construction equipment to be utilized during construction that will be located outside sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridors.</p>	Implementing Agency
<p>BIO-22 Plastic mono-filament netting (erosion-control matting) or similar material will not be used in erosion control materials to prevent potential harm to wildlife. Materials such as coconut coir matting or tackified hydroseeding compounds will be used as substitutes.</p>	Implementing Agency
<p>BIO-23 During ground-disturbing activities, project-related vehicle traffic will be restricted within the construction area to established roads, construction areas, and other designated areas to prevent avoidable impacts. Access routes will be clearly flagged; traffic outside of the designated areas will be prohibited. Furthermore, the use of motorized vehicles within sensitive habitat areas and linkages shall be prohibited except for crucial maintenance and/or construction activities.</p>	Implementing Agency
<p>BIO-24 All excavated, steep-sided holes or trenches more than 8 inches deep will be covered at the close of each working day with plywood or similar materials, or a minimum of one escape ramp constructed of earth fill for every 10 feet of trenching will be provided to prevent the entrapment of wildlife. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. All culverts or similar enclosed structures with a diameter of 4 inches or greater will be covered, screened, or stored more than 1 foot off the ground to prevent use by wildlife. Stored material will be cleared for common and special-status wildlife species before the pipe is subsequently used or moved.</p>	Implementing Agency
<p>BIO-25 Prior to the commencement of construction, a Weed Control Plan will be developed for the implementing agency by the project biologist to minimize or avoid the spread of weeds during ground-disturbing activities. In the Weed Control Plan, the following topics will be addressed:</p> <ul style="list-style-type: none"> <li>• A Schedule for noxious weed surveys shall be addressed;</li> <li>• Weed control treatments shall be addressed and ultimately implemented by the implementing agency, including permitted herbicides, and manual and mechanical methods for application; herbicide application will be restricted in Environmentally Sensitive Areas (as defined by the project biologist);</li> <li>• The timing of the weed control treatment for each plant species shall be addressed and</li> <li>• Fire prevention measures shall be addressed.</li> </ul> <p>The implementing agency shall maintain records demonstrating implementation of the Weed Control Plan, and shall make those records available to inspection by the implementing agency upon request.</p>	Implementing Agency

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<p>BIO-26 Any future project that must discharge fill into a channel or otherwise alter a streambed shall be minimized to the extent feasible, and any discharge of fill not avoidable shall be mitigated through compensatory mitigation. Mitigation can be provided by restoration of temporary impacts, enhancement of existing resources, or purchasing into any authorized mitigation bank or in-lieu fee program; by selecting a site of comparable acreage near the site and enhancing it with a native riparian habitat or invasive species removal in accordance with a habitat mitigation plan approved by regulatory agencies; or by acquiring sufficient compensating habitat to meet regulatory agency requirements. Typically, regulatory agencies require mitigation for jurisdictional waters without any riparian or wetland habitat to be mitigated at a 1:1 ratio. For loss of any riparian or other wetland areas, the mitigation ratio will begin at 2:1, and the ratio will rise based on the type of habitat, habitat quality, and presence of sensitive or listed plants or animals in the affected area. This increase in ratio will be determined by the regulatory agency. A Habitat Mitigation and Monitoring Proposal shall be prepared by a biologist or regulatory specialist and reviewed and approved by the appropriate regulatory agencies. These agencies (USACE, RWQCB, CDFW and any other applicable regulatory agency with jurisdiction over the proposed facility improvement) can impose greater mitigation requirements in their permits, but the implementing agency will utilize the ratios outlined above as the minimum required to offset or compensate for impacts to jurisdictional waters, riparian areas or other wetlands.</p>	<p>Implementing Agency</p>
<p>BIO-27 A federal and state jurisdictional water preconstruction survey shall be conducted by a biologist or regulatory specialist at least six months before the start of ground-disturbing activities to identify and map all jurisdictional waters in the project footprint and up to a 250-foot buffer around the project footprint, subject to legal property access restrictions. The purpose of this survey is to confirm the extent of jurisdictional waters as defined by state and federal law are within the project footprint and adjacent up to 250-foot buffer. If possible, surveys would be performed during the spring, when plant species are in bloom and hydrological indicators are most readily identifiable. These results would then be used to calculate impact acreages and determine the amount of compensatory mitigation required to offset the loss of wetland functions and values in accordance with MM BIO-26.</p>	<p>Implementing Agency</p>
<p>BIO-28 To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal will be conducted outside of the state identified nesting season for applicable bird species (nesting season is approximately from February 15 through September 15 of a given calendar year, depending on the species). Alternatively, nesting bird surveys shall be conducted by a qualified avian biologist no more than three (3) days prior to vegetation clearing or ground disturbance activities.</p> <ul style="list-style-type: none"> <li>• Preconstruction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If no active nests are found, no further action would be required. If an active nest is found, the biologist shall set appropriate no-work buffers around the nest which would be based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity, and duration of disturbance. There are no standard nest buffers specified in the Migratory Bird Treaty Act (MBTA) or within the California Fish and Game Code (FGC). Disturbance factors including nest location, human activity, activity duration, and noise level may influence nesting behavior and reproductive success, shall be considered by the project biologist in coordination with CDFW and USFWS (as appropriate) in establishing standard buffer distances for individual species on a project- and site-specific basis. The nest(s) and buffer zones shall be field checked weekly by a qualified biological monitor. The approved no-work buffer zone shall be clearly marked in the field, within which no disturbance activity should commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive;</li> <li>• Preconstruction nesting bird surveys shall include a nighttime component to address the potential for presence of nocturnal species. The nesting bird surveys shall consist of a minimum of five (5) consecutive survey days and shall include an additional three (3) consecutive nights of survey for nocturnal species. Nocturnal surveys shall be conducted between the hours of 9:00 pm. and midnight, during appropriate weather conditions (e.g., no rain or winds); and</li> <li>• Vegetation removal, including any tree removal or pruning, and structure demolition shall be conducted outside the typical nesting season (i.e., between September 1st and January 31st), to the maximum extent feasible. Otherwise, the provisions of the preconstruction nesting bird surveys, above, shall suffice to ensure impacts to nesting birds are minimized.</li> </ul>	<p>Implementing Agency</p>

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BIO-29 To avoid any harm to waterfowl that may utilize the Solar Evaporation Ponds, BBARWA shall install bird deterrents at the Solar Evaporation Ponds to discourage waterfowl use of the ponds. The deterrent shall encompass access control through tarps or screens limiting bird access to the surface of the Solar Evaporation Ponds.	Implementing Agency

Impact Description	Impact After Mitigation
<p><b>BIOLOGICAL RESOURCES</b></p> <p>As described in <b>Subchapter 4.5</b>, there is a potential that a future Program facility may be developed in an area containing significant biological resources that cannot be avoided. Future Program facilities may be installed within sites that contain significant biological resources that may be impacted without mitigation. These impacts may include direct impacts such as the removal or modification of local hydrology, the redirection of flow, and the placement of fill material. Potential indirect impacts on jurisdictional waters include a number of water-quality-related impacts such as erosion and transport of fine sediments or fill downstream of construction to unintentional release of contaminants into jurisdictional waters that are outside of the Program footprint. Temporary impacts on jurisdictional waters include the placement of temporary fill during construction in both man-made and natural jurisdictional waters. In the case of man-made features, these impacts would remove or disrupt the limited biological functions that these features provide. In natural areas, these activities would remove or disrupt the hydrology, vegetation, wildlife use, water quality conditions, and other biological functions provided by the resources. Furthermore, while it is recommended that the Program Team avoid implementing the Baldwin Lake Pipeline Alignment Option to further avoid impacts to bird-foot checkerbloom, the Baldwin Lake Pipeline Alignment Option is still being considered by BBARWA. Consequently, the Program could cause an unavoidable significant adverse or cumulatively considerable impact on biological resources.</p>	<p>As described in <b>Subchapter 4.5</b>, though substantial mitigation is provided to minimize impacts under most circumstances for future Program facilities, no feasible mitigation exists to completely avoid impacts to biological resources within the Big Bear Valley. A potential to adversely impact bird-foot checkerbloom from Program implementation exists. This is because, while it is recommended that the Program Team avoid implementing the Baldwin Lake Pipeline Alignment Option to further avoid impacts to bird-foot checkerbloom, the Baldwin Lake Pipeline Alignment Option is still being considered by BBARWA. <b>MM BIO-5</b> would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. Consequently, the Program could cause an unavoidable significant adverse or cumulatively considerable impact on biological resources. However, impacts to all other species and habitats were determined to be less than significant, through the implementation of <b>MMs BIO-1 through BIO-28</b>. Regardless, because of the potential for the Program to adversely impact the bird-foot checkerbloom, the proposed Program is forecast to cause significant unavoidable adverse impacts to biological resources if the Baldwin Lake Pipeline Alignment Option is selected.</p>

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>CULTURAL RESOURCES</b></p> <p>CUL-1 If the Sand Canyon Monitoring Wells are proposed within existing facilities that has been totally disturbed due to it undergoing past engineered site preparation (such as a well site), the agency implementing the project will not be required to complete a follow on cultural resources report (Phase I Cultural Resources Investigation) unless the implementing agency is seeking additional State or Federal funding, in which case the implementing agency shall prepare a Phase I Cultural Resources Investigation to satisfy State CEQA-plus or Federal agency requirements.</p>	Implementing Agency
<p>CUL-2 Where a Phase I Cultural Resources Investigation is not required or has already been completed (for all Program components except the Sand Canyon Monitoring Wells), the following shall be required to minimize impacts to any accidentally exposed cultural resource materials:</p> <ul style="list-style-type: none"> <li>Should any subsurface cultural resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection shall be performed immediately by a qualified archaeologist meeting the Secretary of Interior Standards for Archaeology. Responsibility for making this determination shall be with the implementing agency's trained onsite inspector. An archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate MMs in accordance with the State CEQA Guidelines.</li> </ul>	Implementing Agency
<p>CUL-3 If the Sand Canyon Monitoring Wells are proposed within undisturbed sites <u>and/or</u> a site that will require substantial earthmoving activities and/or excavation, <u>and/or</u> the implementing agency is seeking state or federal funding, the Implementing Agency shall complete a follow-on cultural resources report (Phase I Cultural Resources Investigation) regardless of whether implementing agency is seeking state or federal funding.</p>	Implementing Agency

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p>Where a Phase I Cultural Resources Investigation is required, the following phases of identification, evaluation, mitigation, and monitoring shall be followed for the Sand Canyon Monitoring Wells:</p> <ol style="list-style-type: none"> <li>1. <b>Phase I (Identification):</b> A Phase I Investigation to identify historical, archaeological, or paleontological resources in a project site shall include the following research procedures, as appropriate:           <ul style="list-style-type: none"> <li>• Focused historical/archaeological resources records searches at SCCIC and/or EIC, depending on the project location, and paleontological resources records searches by NHMLAC, SBCM, and/or the Western Science Center in Hemet;</li> <li>• Historical background research, geoarchaeological profile analysis, and paleontological literature review;</li> <li>• Consultation with the State of California Native American Heritage Commission, Native American tribes in the surrounding area in accordance with Assembly Bill 52 (AB 52), the Native American Historic Resource Protection Act, pertinent local government agencies, and local historic preservation groups;</li> <li>• Field survey of the Program Area by qualified professionals of the pertinent discipline and at the appropriate level of intensity as determined on the basis of sensitivity assessment and site conditions; and</li> <li>• Field recordation of any cultural resources encountered during the survey and proper documentation of the resources for incorporation into the appropriate inventories or databases.</li> </ul> </li> <li>• 2. <b>Phase II (Evaluation):</b> If cultural resources are encountered in a project site and cannot be avoided, a Phase II investigation shall be required to evaluate the potential significance of the resources in accordance with the statutory/regulatory framework outlined above. A typical Phase II study consists of the following research procedures:           <ul style="list-style-type: none"> <li>• Preparation of a research design to discuss the specific goals and objectives of the study in the context of important scientific questions that may be addressed with the findings and the significance criteria to be used for the evaluation, and to formulate the proper methodology to accomplish such goals;</li> <li>• In-depth exploration of historical, archaeological, or paleontological literature, archival records, as well as oral historical accounts for information pertaining to the cultural resources under evaluation;</li> <li>• Fieldwork to ascertain the nature and extent of the archaeological/paleontological remains or resource-sensitive sediments identified during the Phase I study, such as surface collection of artifacts, controlled excavation of units, trenches, and/or shovel test pits, and collection of soil samples; and</li> <li>• Laboratory processing and analyses of the cultural artifacts, fossil specimens, and/or soil samples for the proper recovery, identification, recordation, and cataloguing of the materials collected during the fieldwork and to prepare the assemblage for permanent curation, if warranted.</li> </ul> </li> <li>• 3. <b>Phase III (Mitigation/Data Recovery):</b> For resources that prove to be significant under the appropriate criteria, mitigation of potential project impact is required. The first option is avoidance by selecting and implementing the Sand Canyon Monitoring Wells at an alternative site without significant cultural or paleontological resources. Depending on the characteristics of each resource type and the unique aspects of significance for each individual resource, mitigation may be accomplished through a variety of different methods, which shall be determined by a qualified archaeologist, paleontologist, historian, or other applicable professional in the "cultural resources" field. Typical mitigation for historical, archaeological, or paleontological resources, however, may focus on the following procedures, aimed mainly at the preservation of physical and/or archival data about a significant cultural resource that would be impacted by the project:           <ul style="list-style-type: none"> <li>• Data recovery through further excavation at an archaeological site or a paleontological locality to collect a representative sample of the identified remains, followed by laboratory processing and analysis as well as preparation for permanent curation;</li> <li>• Comprehensive documentation of architectural and historical data about a significant building, structure, or object using methods comparable to the appropriate level of the Historic American Buildings Survey (HABS) and the Historic American Engineering Record (HAER) for permanent curation at a repository or repositories that provides access to the public; and</li> <li>• Adjustments to project plans to minimize potential impact on the significance and integrity of the resource(s) in question.</li> </ul> </li> <li>• 4. <b>Phase IV (Monitoring):</b> At locations that are considered sensitive for subsurface deposits of undetected archaeological or paleontological remains, all earth-moving operations shall be monitored continuously or periodically, as warranted, by qualified</li> </ol>	

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p>professional practitioners. Archaeological monitoring programs shall be coordinated with the nearest Native American groups, who may wish to participate, as put forth in <b>MMs</b> TCR-1 through TCR-3.</p>	
<p>CUL-4 After each phase of the studies required by <b>MM</b> CUL-3 has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures shall be prepared and submitted to SCCIC, EIC, NHMLAC, and/or SBCM, as appropriate and in addition to the implementing agency for the project, for permanent documentation and easy references by future researchers.</p>	<p>Implementing Agency</p>
<p>CUL-5 <u>Archaeological Monitoring</u>                      Due to the heightened cultural sensitivity of the proposed Program Area, an archaeological monitor with at least 3 years of regional experience in archaeology shall be present for ground-disturbing activities that occur within the proposed Program Area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work), for individual Replenish Big Bear Program components that are deemed by YSMN to be located within culturally sensitive areas of the Big Bear Valley. A sufficient number of archaeological monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the archaeological consultant and submitted to the Lead Agency for dissemination to the YSMN Cultural Resources Management Department. Once all parties review and approve the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the Program. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.</p>	<p>Implementing Agency</p>

Impact Description	Impact After Mitigation
<p><b>CULTURAL RESOURCES</b>                      As described in <b>Subchapter 4.6</b>, the Big Bear Valley is a large area that may contain historical, archaeological, tribal or paleontological resources. As such, future Program projects may be developed within sites that contain such resources. This site-specific Cultural Resources Report determined that no significant resources were known to occur within the Program APE, but that due to the high sensitivity of the Big Bear Valley, mitigation is necessary to reduce impacts from Program implementation.</p>	<p>As described in <b>Subchapter 4.6</b>, <b>MM CUL-1</b> would exclude highly disturbed sites from requiring further cultural resource evaluation, in addition to those sites for which a cultural resource evaluation has already been prepared (all Program facilities except the Sand Canyon Monitoring Wells). <b>MM CUL-1</b> would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered during earthmoving activities. <b>MM CUL-2</b> would ensure that the Sand Canyon Monitoring Wells that are located within undisturbed areas, within a site that will require substantial earthmoving activities and/or excavation, and/or where the implementing agency is seeking state funding, will require a follow-on Phase I Cultural Resources Investigation. This <b>MM</b> includes several phases or steps beyond the completion of a Phase I Cultural Resources Investigation that would cover the identification, evaluation, mitigation, and monitoring associated with a given project where resources may be located. This would ensure that adequate mitigation is provided in the event that significant cultural resources are located within the Sand Canyon Monitoring Wells sites. <b>MM CUL-3</b> would ensure that, after each phase of the studies required by <b>MM CUL-2</b> has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures is prepared and submitted to SCCIC, EIC, NHMLAC, and/or SBCM. This would ensure that any discoveries are properly documented for future researchers that may seek information regarding the Program Infrastructure project site. <b>MM CUL-4</b> would require archaeological monitoring where the YSMN deems the project activity to have a high potential for archaeological sensitivity. The monitor would ensure that any uncovered resources are handled appropriately, and thereby minimizing any potential significant impacts thereof. As described in Subchapter</p>

	4.6, no unavoidable significant impact to cultural resources will result from implementing the proposed Program.
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Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<b>ENERGY</b> No Mitigation Required.	--

Impact Description	Impact After Mitigation
<p><b>ENERGY</b></p> <p>As discussed in <b>Subchapter 4.7</b>, Program construction and operation would not result in inefficient, wasteful or unnecessary consumption of energy and would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. This is because the Program would install a 2 MW solar array that would be capable of generating about 3,652,117 kWh per year, which is more than 95% of the necessary energy to accommodate the proposed Program. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on- road and off-road diesel-powered equipment and are enforced by CARB. The proposed Program would comply with these regulations. Thus, it is anticipated that construction of the proposed Program would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. The Program would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation. Compliance with mandatory measures would ensure that future development Programs would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. As BBARWA would use on-site renewable energy to accommodate more than 95% of the operational energy needs, the Program would not obstruct the 2022 Scoping Plan. Impacts would be less than significant. With compliance with current federal and state regulations pertaining to energy conservation, the proposed Program is anticipated to have a less than significant impact on energy demand and resources.</p>	No mitigation is required. Impacts are less than significant.

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>GEOLOGY AND SOILS</b></p> <p><b>GEO-1</b> Prior to the construction of each Program-related improvement, a design-level geotechnical investigation, including the collection of site-specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including ground shaking hazard, and characterize the soil profiles, including liquefaction potential, expansive soil potential, subsidence, and landslide potential as appropriate relative to the type of facility and risk to human life. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and non-seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual projects. If the project specific geotechnical study cannot mitigate potential seismic related impacts, then the facility shall be relocated. If relocation is not possible, a second tier CEQA evaluation shall be completed.</p>	Implementing Agency
<p><b>GEO-2</b> For the Sand Canyon Recharge Area, the Program will develop and implement a recharge monitoring and management plan that will control recharge to ensure that potential liquefaction-ground failure hazards will be controlled to prevent/eliminate the potential for</p>	Implementing Agency



Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p>this type of hazard to be created at the recharge location. This may include pumping groundwater to lower the groundwater table within the recharge impact area. This plan shall be reviewed and approved by the Program managers based on its ability to meet this criterion.</p>	
<p>GEO-3 For each site-specific project that is less than one acre in size requiring ground disturbing activities such as grading, the implementing agencies shall identify and implement BMPs to minimize soil erosion and loss of topsoil comparable to that which would be required under a SWPPP (BMPs may include, but are not limited to hay bales, wattles, detention basins, silt fences, coir rolls, etc.) to ensure that the discharge of the storm runoff from the construction site does not cause erosion downstream of the discharge point. If any substantial erosion or sedimentation occurs as a result of discharging storm water from a project construction site, any erosion or sedimentation damage shall be restored to pre-discharge conditions.</p>	<p>Implementing Agency</p>
<p>GEO-4 For project-level development involving ground disturbance in alluvial deposits, a qualified paleontologist shall be retained to determine the necessity of conducting a study of the Program Area(s) based on the potential sensitivity of the project site for paleontological resources. If deemed necessary, the paleontologist shall conduct a paleontological resources inventory designed to identify potentially significant resources. The paleontological resources inventory would consist of: a paleontological resource records search to be conducted at the SBCM and/or other appropriate facilities; a field survey or monitoring where deemed appropriate by the paleontologist; and recordation of all identified paleontological resources. Treatment of any discovered paleontological resources shall follow current professional standards.</p>	<p>Implementing Agency</p>

Impact Description	Impact After Mitigation
<p><b>GEOLOGY AND SOILS</b>                      The Big Bear Valley contains substantial geological and soils constraints. Due to these substantial constraints and the installation of future Program related facilities in locations where such constraints may occur, a potential for significant geology and soils resources impacts from implementation of the Program was identified.</p>	<p>Significant geology and soils impacts can be reduced through the implementation of mitigation. Several <b>MMs</b> were identified to minimize geology and soils impacts that would be applicable to both the Program, including those <b>MMs</b> that would: reduce potential impacts from geological hazards through a design level geotechnical investigation with implementation of specific design recommendations, relocation of the site, or subsequent CEQA documentation; minimize impacts to paleontological resources through requiring site-specific studies, where necessary. As described in Subchapter 4.8, no unavoidable significant impact to geology and soils will result from implementing the proposed Program.</p>

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>GREENHOUSE GASES</b>                      No Mitigation Required.</p>	<p>--</p>

Impact Description	Impact After Mitigation
<p><b>GREENHOUSE GASES</b>                      As described in <b>Subchapter 4.9</b>, implementation of the proposed Program will result in approximately 1,499.63 MTCO<sub>2</sub>e/yr from construction and operational activities. As such, the Program would not exceed the SCAQMD's recommended numeric threshold of 3,000 MTCO<sub>2</sub>e or 10,000 MTCO<sub>2</sub>e/yr if it were applied. Thus, the Program would not result in a cumulatively considerable impact with respect to GHG emissions. By augmenting local water supplies, the Program would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the Program would not conflict with the 2022 Scoping Plan, and no impact would occur. As concluded in <b>Subchapter 4.9</b>, the proposed Program would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Program will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Program-</p>	<p>No mitigation is required. Impacts are less than significant.</p>

Impact Description	Impact After Mitigation
related GHG emissions are not considered to be significant or adverse and would not result in an unavoidable significant adverse impact on global climate change.	

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<b>HAZARDS AND HAZARDOUS MATERIALS</b>	
HAZ-1 For Program facilities that handle hazardous materials or generate hazardous waste, the Hazardous Materials Business Plan (HMBP) prepared and submitted to the CUPA shall incorporate BMPs designed to minimize the potential for accidental release of such chemicals and shall meet the standards required by California law for HMBPs. The facility managers shall implement these measures to reduce the potential for accidental releases of hazardous materials or wastes. The HMBP shall be approved prior to operation of the given facility.	Implementing Agency
HAZ-2 The HMBP shall assess the potential accidental release scenarios and identify the equipment and response capabilities required to provide immediate containment, control, and collection of any released hazardous material. Prior to issuance of the certificate of occupancy, each facility shall ensure that necessary equipment has been installed and training of personnel has occurred to obtain sufficient resources to control and prevent the spread of any accidentally released hazardous or toxic materials.	Implementing Agency
HAZ-3 Prior to occupancy of any site for which storage of any acutely hazardous material will be required, such as chlorine gas, modeling of pathways of release and potential exposure of the public to any released hazardous material shall be completed and specific measures, such as secondary containment, shall be implemented to ensure that sensitive receptors will not be exposed to significant health threats based on the toxic substance involved.	Implementing Agency
HAZ-4 All hazardous materials during both operation and construction of Program facilities shall be delivered to a licensed treatment, disposal, or recycling facility and be disposed of in accordance with State and Federal law.	Implementing Agency
HAZ-5 Before determining that an area contaminated as a result of an accidental release during project operation or construction is fully remediated, specific thresholds of acceptable clean-up shall be established and sufficient samples shall be taken and tested within the contaminated area to verify that these clean-up thresholds have been met in compliance with State and Federal law.	Implementing Agency
HAZ-6 Vector management plans shall be prepared and use of pesticides shall be reviewed and coordinated with the San Bernardino Vector Control Program for approval prior to implementing vector control at any of the new or expanded storage basins. All pesticides shall be applied in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality.	Implementing Agency
HAZ-7 All accidental spills or discharge of hazardous material during construction activities shall be reported to the local CUPA and shall be remediated in compliance with applicable Federal, State, and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste shall be collected and disposed of at a licensed disposal or treatment facility. This measure shall be incorporated into SWPPP prepared for each future facility developed under the Program, or where an SWPPP is not required due Project size, shall be incorporated as a BMP. Prior to accepting the site as remediated, the area contaminated shall be tested to verify that any residual concentrations meet the standard for future residential or public use of the site.	Implementing Agency
HAZ-8 Should an unknown contaminated site be encountered during construction of Program facilities, all work in the immediate area shall cease; the type of contamination and its extent shall be determined by a hazardous materials specialist, such as an Environmental Scientist; and the local CUPA or other regulatory agencies (such as the California Department of Toxic Substances Control or Santa Ana Regional Board) shall be notified. Based on investigations of the contamination, the site may be closed and avoided or the contaminant(s) shall be remediated to a threshold acceptable to the CUPA or other regulatory agency threshold and any contaminated soil or other material shall be delivered to an authorized treatment or disposal site.	Implementing Agency
HAZ-9 For projects within airport safety zones, facility design shall follow the guidelines of the appropriate airport land use compatibility plan (ALUCP). If a potential conflict with an ALUCP is identified as a result of implementation of the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, the implementing agency shall relocate the facility outside the area of conflict, or if the site is deemed essential, the implementing agency	Implementing Agency

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
shall propose an alternative design that reduces any conflict to a less than significant impact, with no conflicts with the ALUCP.	

Impact Description	Impact After Mitigation
<p><b>HAZARDS AND HAZARDOUS MATERIALS</b></p> <p>The Big Bear Valley contains substantial hazards and hazardous materials issue constraints. Due to these substantial constraints and the installation of future Program infrastructure facilities in locations where such constraints may exist, a potential for significant hazards and hazardous materials issue impacts from implementation of the Program were identified in <b>Subchapter 4.10</b>.</p>	<p>The hazards and hazardous materials evaluation in the DPEIR concluded that the identified hazards in the Program Area can be adequately mitigated to a level of impact that is less significant. Several <b>MMs</b> were identified to minimize hazards and hazardous materials impacts including those that would: ensure that applicable facilities Business Plans incorporate BMPs designed to minimize the potential for accidental release of such chemicals; ensure that applicable facilities Business Plans identify the equipment and response capabilities required to provide immediate containment, control and collection of any released material; ensure sensitive receptors will not be exposed to significant health threat by modeling the pathways of release and implementing specific measures that would minimize potential exposure to acutely hazardous materials; ensure hazardous materials are disposed of and delivered to licensed facilities; ensure the establishment of and adherence to specific thresholds of acceptable clean-up of hazardous materials; ensure the preparation of and adherence to vector management plans; ensure remediation of an accidental spill or discharge of hazardous material in compliance with state and local regulations; ensure that sites for future facilities obtain a Phase I Environmental Site Assessment and either avoid or remediate a site that is contaminated; ensure that any unknown contamination is remediated and handled according to the local CUPA; ensure that construction traffic is managed safely; and ensure that fire hazard reduction measures are enforced. Therefore, though there will be some adverse impacts as a result of implementing the Program, specific <b>MMs</b> have been identified to reduce potential Program specific and cumulative (direct and indirect) impacts to a less than significant level for hazards and hazardous material issues. Thus, the Program is not forecast to cause any unavoidable significant adverse hazards or hazardous material impacts.</p>

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>HYDROLOGY AND WATER QUALITY</b></p> <p>HYD-1 BBARWA, in collaboration with BMWWD and BBCCSD, will collect samples at the pertaining locations. That is BBARWA will monitor the Program Water, BMWWD will collect samples in the Stanfield Marsh and Big Bear Lake, and BBCCSD will collect samples in Shay Pond. BBARWA will develop the AAMP and will coordinate with BMWWD and BBCCSD to implement the AMMP for the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (when implemented). The AMMP will consist of the following;</p> <ul style="list-style-type: none"> <li>• Conduct a monitoring plan to:                     <ul style="list-style-type: none"> <li>○ Collect quarterly boron samples of Program Water (i.e., purified water before it is discharged to Stanfield Marsh or Shay Pond (when implemented)), at the existing total maximum daily load (TMDL) Sampling Station MWDL9, and at Shay Pond (when implemented);</li> <li>○ Monitor the dissolved oxygen and potential of hydrogen (pH) of the Program Water, in Stanfield Marsh (if permitted), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented) during and after re-wetting of Stanfield Marsh or Shay Pond;</li> <li>○ Continuously monitor temperature of the Program Water, Stanfield Marsh, and Shay Pond (when implemented); and</li> <li>○ Collect quarterly chloride samples of Program Water stored in Big Bear Lake at the existing TMDL Sampling Station MWDL9 to assess the impacts on the Bear Valley Basin.</li> <li>○ Collect nutrient (i.e., TIN, TP, TN, ammonia, nitrate as N, nitrite as N) samples of the Program Water at the frequency stated in the NPDES permit.</li> </ul> </li> </ul>	<p>Implementing Agency</p>

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<ul style="list-style-type: none"> <li>• Implement a TP Offset Program, expected to be stipulated in BBARWA's future NPDES permit;</li> <li>• Monitor the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake on at least a bi-yearly basis. If observed, mitigative actions, such as invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions shall be undertaken to remove the invasive species present as a result of introduction of the Program Water. An account of invasive species within Stanfield Marsh and Big Bear Lake shall be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program.</li> </ul> <p>If temperature, dissolved oxygen, boron, or pH levels exceed the NPDES permit requirements, BBARWA shall pursue mitigation actions which may include, but are not limited to the following:</p> <ul style="list-style-type: none"> <li>• Introduction of chemical or mechanical intervention to stabilize pH levels and dissolved oxygen.</li> <li>• Introduction of native plants to absorb boron at Stanfield Marsh or Shay Pond (when implemented).</li> <li>• Introduction of a temperature cooling mechanism to lower the temperature of the Program Water before being introduced to the Stanfield Marsh or Shay Pond (when implemented).</li> </ul> <p>If recharging Program Water stored in Big Bear Lake would result in exceedance of any of the limits set in the future Sand Canyon Recharge Area WDR permit, the discharge of Program Water to the Sand Canyon Recharge Area would be paused until permit conditions are met.</p> <p>The AMMP shall be aligned with the future requirements of the NPDES and WDR permits.</p>	
<p>HYD-2 The Sand Canyon Recharge Project shall occur within the defined Sand Canyon Recharge Area shown on Figure 3-32, and shall <u>not</u> occur during periods where natural surface flows occur in the channel (i.e. the channel is completely dry). If the water discharged into Sand Canyon as a result of Program implementation does not fully percolate within the defined Sand Canyon Recharge Area, discharge to Sand Canyon will be modified (reduced or stopped) to a point at which full percolation occurs within the limits of the defined Sand Canyon Recharge Area.</p>	Implementing Agency
<p>HYD-3 BBLDWP shall monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Area Project operation. The terms of the permit will be defined by the Santa Ana Regional Board and the DDW.</p>	Implementing Agency
<p>HYD-4 Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• The use of silt fences or coir rolls;</li> <li>• The use of temporary stormwater desilting or retention basins;</li> <li>• The use of water bars to reduce the velocity of stormwater runoff;</li> <li>• The use of wheel washers on construction equipment leaving the site;</li> <li>• The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;</li> <li>• The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and</li> <li>• Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.</li> </ul>	Implementing Agency
<p>HYD-5 Prior to commencement of construction of project facilities, the implementing agency shall be required to either:</p> <p>(1) Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the</p>	Implementing Agency

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p>sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall:</p> <p>(2) Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.</p>	
<p>HYD-6 For long-term mitigation of site disturbances at Program facility locations, all areas not covered by structures shall be covered with hardscape (concrete, asphalt, gravel, etc.), native vegetation and/or man-made landscape areas (for example, grass). Revegetated or landscaped areas shall provide sufficient cover to ensure that, after a two-year period, erosion will not occur from concentrated flows (rills, gully, etc.) and sediment transport will be minimal as part of sheet flows.</p>	<p>Implementing Agency</p>

Impact Description	Impact After Mitigation
<p><b>HYDROLOGY AND WATER QUALITY</b></p> <p>As described in <b>Subchapter 4.11</b>, the overall hydrology (watershed, drainage and flood hazards) and water quality impacts that would result from implementation of the Program could be significant without the implementation of substantive <b>MMs</b>. As such, several <b>MMs</b> were identified to minimize impacts related to hydrology and water quality.</p>	<p>The Program will provide a local, drought-resistant water supply with up to 380 AFY used to sustain groundwater levels and storage in the Bear Valley Basin, with even greater potential for water savings through use of Program water stored in Big Bear Lake water to serve the Bear Mountain Golf Course, Snow Summit Bike Park, and other uses. Furthermore, an analysis of water quality objectives determined that the proposed Program discharge to Big Bear Lake, recharge at Sand Canyon, and discharge to Shay Pond would not conflict with any water quality objectives, and as the proposed Program would also contribute additional groundwater through the Sand Canyon Recharge Area, no significant hydrological impacts are anticipated to occur in the Big Bear Valley from Program implementation.</p> <p>Mitigation has been identified to minimize drainage pattern and flood hazard impacts that may occur under the Program as follows: either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure that pollutants are managed on site and the potential for risk of release thereof due to inundation is minimized, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur; in accordance with the San Bernardino County MS4 Permit, require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the NPDES Construction General Permit (CGP) and SWPPP, which are required for larger projects; ensure that the Sand Canyon Recharge Project operations occur within the defined area on Figure 3-32, and that operations would be modified if the recharge was not to fully percolate; require BBLDWP to monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Project operation; and, ensure that monitoring and adaptive mitigation is implemented to protect to beneficial uses of Stanfield Marsh and Big Bear Lake, minimizing impacts thereof. As an identified project within the Bear Valley Basin Groundwater Sustainability Plan (GSP), the Program would not obstruct the implementation of the Bear Valley Basin GSP, and in fact, it would aid in its implementation. Therefore, there is no potential to conflict with or obstruct the implementation of sustainable groundwater management plan in the Bear Valley Basin.</p>

Impact Description	Impact After Mitigation
	<p>While the Program would reduce the overall recharge to the Lucerne Valley Basin, this would not conflict with the implementation of sustainable groundwater management plan, as none are applicable to the Lucerne Valley Basin/MBA. The MBA Watermaster, which has authority to manage the adjudicated MBA, would formulate a response to address the management of the Lucerne Valley Basin as a result of the reduction in recharge to the Lucerne Valley Basin. As this is the MBA Watermaster's responsibility, the Program would not result in a significant potential to conflict with the implementation of a sustainable groundwater management plan. Based on the above discussion, the continued, but reduced, discharge of BBARWA's secondary effluent to the LV Site under the Program will have the potential to contribute to the degradation of water quality in the Lucerne Valley Basin by removing a dilution source, but is not the direct cause of degradation because BBARWA effluent is only a minor contributor and not the primary source of degradation. The Lucerne Valley Basin currently exceeds the MCLs for TDS (recommended) and nitrate, so the reduced flows would not cause the Basin to violate a water quality standard, WDRs or otherwise substantially degrade surface or groundwater quality, but may result in a further exceedance of TDS and Nitrate, which is a potentially significant and unavoidable impact.</p> <p>The Program has a potential to interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the Lucerne Valley Basin as a result of the reduction in discharge to the LV Site. Finally, the Program has a potential to conflict with or obstruct the Colorado Basin Plan for the same reasons the Program has a potential to substantially degrade groundwater quality of the Lucerne Valley Basin discussed above. Thus, the Program would result in cumulatively significant and significant and unavoidable impacts under hydrology and water quality. As such, the Program would result in cumulatively significant and significant and unavoidable impacts under hydrology and water quality as a result of the reduction in discharge to the LV Site. No feasible <b>MMs</b> exist to avoid these significant and unavoidable impacts.</p>

Environmental Category / Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>LAND USE &amp; PLANNING</b></p> <p>LU-1 Following selection of sites for future Replenish Big Bear Program related facilities, each site and associated facility shall be evaluated for potential incompatibility with adjacent existing or proposed land uses. Where future facility operations can create significant incompatibilities (lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses, an alternative site shall be selected, or subsequent CEQA documentation shall be prepared that identifies the specific project design features or MMs that will be utilized to reduce potential incompatible activities or effects to below significance thresholds established in the general plan for the jurisdiction where the facility will be located.</p>	<p>--</p>

Impact Description	Impact After Mitigation
<p><b>LAND USE &amp; PLANNING</b></p> <p>As described in <b>Subchapter 4.12</b>, the Program does not propose any action that could physically divide an established community. The Program would not conflict with the goals and policies of the applicable General Plans. In addition, implementing agency would coordinate directly with local agencies with jurisdiction to ensure compatibility with existing adjacent land uses. While the potential loss of agricultural operations and agricultural lands that is projected to occur as a</p>	<p>As described in <b>Subchapter 4.12</b>, impacts related to land use and planning are minimal; however, mitigation is provided to address the potential for conflicts with land use from Program related facilities. This mitigation would ensure that the facilities associated with the Program are developed in appropriate areas, and conform with the surrounding land uses or are developed to minimize conflicts with adjacent land uses. With implementation of this <b>MM</b>, the Program-related land use and planning impacts can be reduced below</p>

Impact Description	Impact After Mitigation
<p>result of Program implementation would be significant and unavoidable, given that the continued agricultural operation of the whole of the site (190 acres) would not be sustainable or feasible once the Program is implemented, the proposed Program does not conflict with any General Plan goal and policy. The Program is anticipated to result in a less than significant impact to scenic resources, and furthermore, would preserve and enhance Big Bear Lake and Stanfield Marsh through the provision of additional water, which would result in higher lake levels, enhance recreational opportunities and aquatic habitat, and support water quality improvements, thereby complying the General Plan goals and policies pertaining to preservation of scenic resources. Furthermore, the San Bernardino Countywide Plan and City of Big Bear Lake General Plan contain several goals and policies pertaining to the provision of adequate water supply, adapting to climate change, and addressing long-range water supply challenges, in fact Big Bear Lake identifies retaining BBARWA effluent on the mountain for Big Bear Valley use as a policy. As such, the proposed Program would not conflict with goals and policies pertaining to this topic. However, a potential conflict could result from future Program facilities being developed in locations that are incompatible (as a result of lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As such, mitigation is required to reduce potentially significant land use and planning impacts.</p>	<p>a level of significance, and as such, the proposed Program will not cause unavoidable significant land use and planning impacts.</p>

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>MINERAL RESOURCES</b>                      No Mitigation Required.</p>	<p>--</p>

Impact Description	Impact After Mitigation
<p><b>MINERAL RESOURCES</b>                      As described in <b>Subchapter 4.13</b>, a review of mining operations shown on <b>Figure 4.13-1</b>, indicates that there are no existing mining operations within the Program Area (refer to the <b>Figure 3-29</b> for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program footprint are designated for mineral extraction, the proposed Program would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Furthermore, implementation of the Program will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Thus, Program-related mineral resource impacts can be reduced below a level of significance, and as such, the proposed Program will not cause unavoidable significant mineral resource impacts.</p>	<p>No mitigation is required. Impacts are less than significant.</p>

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>NOISE</b>                      NOI-1: To comply with the day- and nighttime noise level limit during the whole of well drilling activities, noise barriers with a minimum height of 14 ft shall be erected surrounding the drilling rig monitoring well locations such that the pumps, compressors, and the drilling rig are completely shielded from nearby residential areas. An effective barrier requires a weight of at least 2 pounds per square foot (sf) of face area with no decorative cutouts, perforations, or line-of-sight openings between shielded areas and the source. Examples of temporary barrier material includes 5/8 inch plywood, 5/8 inch oriented-</p>	<p>Implementing Agency</p>

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
strand board, or sound blankets capable of providing a minimum sound transmission loss (STC) of 27 or a noise reduction coefficient (NRC) of 0.85.	

Impact Description	Impact After Mitigation
<p><b>NOISE</b></p> <p>The Big Bear Valley contains extensive areas with noise sensitive land uses. Due to these substantial noise constraints and the installation of future noise-producing Program facilities in locations where such noise sensitive uses may exist, a potential exists for significant noise impacts from implementation of the Program. However, operational and off-site traffic noise is considered less than significant as described below. Additionally, construction vibration and aircraft noise impacts were determined to be less than significant. The Program will include several improvements at the BBARWA WWTP; however, all new noise sources would be housed inside the new building and the two pumps at the BBARWA WWTP would be housed in CMU buildings. Similarly, the proposed Sand Canyon pump station would be housed in a CMU building. The proposed structures would achieve between 40 and 50 dBA in noise reduction from pump noise to exterior locations. The proposed pumps are anticipated to generate up to 60 dBA at 32 feet. Based on the anticipated reduction, pump noise would be 30 dBA <math>L_{eq}</math> less outside the building. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases.</p> <p>Furthermore, the limited number of trips would not have the potential to double traffic volumes even on low-volume local roadways. Thus, it is unlikely that individual projects implemented under the Program would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.</p> <p>Program construction was modeled to occur simultaneously, and was determined to result in a less than significant impact for all facilities except for the Sand Canyon Monitoring Wells since the locations are unknown, which, without mitigation, could result in significant and unavoidable noise impacts at the nearest sensitive receptors.</p>	<p>As described in <b>Subchapter 4.14</b>, the highest construction noise levels during the installation of the solar evaporation ponds and Sand Canyon Monitoring Wells drilling activities noise levels are expected to exceed the daytime and nighttime noise level limit at the nearest receiver locations within 125 feet and 325 feet, respectively. Since the exact locations of these activities are unknown, and these activities would occur for 24 hours a day for up to two weeks, without mitigation these activities will exceed the applicable noise level limit during the nighttime if located within 325 feet of residences. This would be considered a significant impact. Therefore, mitigation is required for nighttime monitoring well drilling activities at the Sand Canyon Recharge Area. With implementation of the barrier noise levels would be reduced to a maximum noise level of 69 dBA <math>L_{eq}</math> at 50 feet. None of the potential monitoring well locations would be located within 50 feet of residences. With implementation of these <b>MMs</b>, the Program-related noise impacts can be reduced to a less than significant impact level.</p>

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<b>POPULATION AND HOUSING</b> No Mitigation Required.	--

Impact Description	Impact After Mitigation
<p><b>POPULATION AND HOUSING</b></p> <p>As described in <b>Subchapter 4.15</b>, implementation of the Program would not significantly induce growth within the Big Bear Valley. It is anticipated that, while the proposed Sand Canyon Recharge Conveyance Pipeline will be required to traverse through residential property, it will not impact the residential structures themselves. The effort to install the proposed pipeline alignment would not displace any persons or housing. Based on the historic growth pattern in the Big Bear Valley communities and future forecast of growth in the 2020 UWMPs, implementation of the proposed Program is not forecast to cause the less than 1% growth forecast for the Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in</p>	<p>No mitigation is required. Impacts are less than significant.</p>



<p>climate is considered growth accommodating, not growth inducing. As such and as stated above, the proposed Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of the proposed Program would result in less than significant impacts related to inducement of substantial population growth. As such, the project-related population and housing impacts are less than significant, and as such, the proposed Program will not cause unavoidable significant population and housing impacts.</p>	
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Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>PUBLIC SERVICES</b>                      PS-1 The Program facilities shall be fenced or otherwise have access controlled to prevent illegal trespass to attractive nuisances during operation and construction equipment shall be fenced or otherwise have access controlled at the close of each work day. Furthermore, the Program facilities shall include security lighting to deter illegal trespass to attractive nuisances as part of both operation and construction. The security lighting shall be shielded from adjacent sensitive receptors, such as residences per <b>MM AES-7 and AES-8</b>.</p>	Implementing Agency

Impact Description	Impact After Mitigation
<p><b>PUBLIC SERVICES</b>                      Due to the limited population increase that would occur as a result of implementation of the Program, the demand for public services (fire, sheriff, schools, libraries, etc.) would be minimal. However, it is anticipated that all sites containing facilities associated with the proposed Program would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass. Though a significant demand for police protection services is not anticipated, mitigation is proposed to address trespass issues.</p>	<p>As described in <b>Subchapter 4.16</b>, implementation of the Program would not significantly impact fire protection, police protection, schools, recreation/parks or other public facilities. However, mitigation was identified to minimize impacts to police protection that would: minimize the potential for trespass that could exacerbate demand for police protection services. With implementation of this <b>MM</b>, the Program-related police protection and park/recreation impacts can be reduced to a less than significant impact level.</p>

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>RECREATION</b>                      No Mitigation Required.</p>	--

Impact Description	Impact After Mitigation
<p><b>RECREATION</b>                      As described in <b>Subchapter 4.17</b>, implementation of the Program would not significantly impact recreation. As discussed under Population and Housing, there would not be a direct increase in population or a substantial number of new jobs that would result in increased demand for parks and recreational facilities within the Big Bear Valley. Additionally, the majority of construction and operations and maintenance staff for any new facilities can be expected to be drawn from the existing population within the Big Bear Valley. The proposed Program may result in enhanced settings at Stanfield Marsh and Big Bear Lake, which is an objective of the Program and thereby may increase recreational opportunities therein. However, recreational infrastructure and fee mechanisms are in place to accommodate any increase in recreation at these locations. Thus, the Program-related recreation impacts would be less than significant, and proposed Program will not cause unavoidable significant recreation impacts.</p>	<p>No mitigation is required. Impacts are less than significant.</p>

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>TRANSPORTATION</b></p> <p><b>TRAN-1: <u>Prepare and Implement Construction Transportation Management Plan (TMP)</u></b>                      A construction TMP shall be developed and implemented by the implementing agency, in coordination with the respective jurisdictions, the San Bernardino County Transportation Authority (SBCTA), and/or other relevant parties during construction of the proposed project. The TMP shall conform to Caltrans' Transportation Management Plan Guidelines and shall include but is not limited to:</p> <p><u>Construction Traffic Routes and Staging Locations:</u> The TMP shall identify construction staging site locations and potential road closures, alternate routes for detours, and planned truck routes for construction-related vehicle trips, including but not limited to haul trucks, material delivery trucks, and equipment delivery trucks. It shall also identify alternative safe routes and policies to maintain safety along bicycle and pedestrian routes during construction. Construction vehicle routes shall avoid local residential streets and avoid peak morning and evening commute hours to the maximum extent practicable. Staging locations, alternate detour routes, and construction vehicle routes shall avoid other active construction projects within 0.25 mile of the project construction sites to the maximum extent practicable.</p> <p><u>Damage Repair:</u> The TMP shall include the following requirements to minimize damage to the existing roadway network:</p> <ul style="list-style-type: none"> <li>• A list of precautionary measures to protect the existing roadway network, including but not limited to pavements, curbs, gutters, sidewalks, and drainage structures, shall be outlined. The construction contractor(s) shall be required to implement these measures throughout the duration of construction of the water Conveyance Pipelines.</li> <li>• The roadway network along the proposed Program Water distribution alignment(s) shall be surveyed prior to the start of project construction activities, and existing roadway conditions shall be summarized in a brief report.</li> <li>• Any damage to the roadway network that occurs as a result of project construction activities shall be noted, and the implementing agency or its contractors shall repair all damage.</li> </ul> <p><u>Coordination with Emergency Services:</u> The TMP shall include requirements to notify local emergency response providers, including relevant police and sheriff departments, ambulance services, and paramedic services at least one week prior to the start of work within public ROW if lane and/or road closures are required. To the extent practicable, the duration of disruptions/closures to roadways and critical access points for emergency services shall be minimized.</p> <p><u>Coordination with Active Transportation Facilities:</u> The TMP shall require coordination with owners/operators of any affected active transportation facilities to minimize the duration of disruptions/closures to bike paths, pedestrian trails, and adjacent access points.</p> <p><u>Coordination with SBCTA:</u> If the proposed project affects access to existing transit stops, the TMP shall also include temporary, alternative transit stops and directional signage, as determined in coordination with Mountain Transit.</p> <p><u>Coordination with Caltrans:</u> If the proposed project requires lane and/or road closures of State highways or State highway ramps, the TMP shall require coordination with Caltrans to ensure the TMP conforms with Caltrans' Transportation Management Plan Guidelines.</p> <p><u>Coordination with Nearby Construction Sites:</u> The TMP shall identify all active construction projects within 0.25 mile of project construction sites and require coordination with the applicants and/or contractors of these projects during all phases of construction regarding the following:</p> <ul style="list-style-type: none"> <li>• All temporary lane and/or roadway closures shall be coordinated to limit overlap of roadway closures;</li> <li>• All major deliveries and haul truck trips shall be coordinated to limit the occurrence of simultaneous deliveries and haul truck trips; and</li> <li>• The implementing agency, its contractor(s), or its representative(s) shall meet on a regular basis with the applicant(s), contractor(s) or their representative(s) of active construction projects within 0.25 mile of the project construction sites during construction to address any outstanding issues related to construction vehicles.</li> </ul>	<p>Implementing Agency</p>

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><u>Transportation Control and Safety:</u> The TMP shall provide for roadway vehicle control measures including flag persons, warning signs, lights, barricades, cones, and/or detour routes to provide safe passage of vehicular, bicycle, and pedestrian circulation and access by emergency responders.</p> <p><u>Plan Approval:</u> The TMP shall be submitted to SBCTA for review and approval.</p>	

Impact Description	Impact After Mitigation
<p><b>TRANSPORTATION</b></p> <p>Since transportation system facilities occur throughout much of the Big Bear Valley and the installation of future water infrastructure facilities can directly impact roadways or traffic on such roadways, a potential for significant transportation/traffic impacts from implementation of the Program was identified in <b>Subchapter 4.18</b>. Construction requires mitigation to implement a TMP. In the long-term, operation of the Program will generate minimal traffic. Ultimately, operation of the Program would not generate a significant traffic impact and no operational mitigation is required.</p>	<p>Impacts to nearby roadways during construction can be mitigated through implementation of mitigation to ensure that a TMP is put in place. This mitigation would minimize impacts to transportation from construction by requiring all construction activities to be conducted in accordance with an approved construction traffic management plan. With implementation of this <b>MM</b>, the Program-related transportation impacts can be reduced below the level of significance, and as such, the proposed Program will not cause unavoidable significant recreation impacts.</p>

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>TRIBAL CULTURAL RESOURCES</b></p> <p>TCR-1 <u>Tribal Monitoring</u>                      Due to the heightened cultural sensitivity of the proposed Program Area in Big Bear Valley, at the discretion of the Tribe, a Tribal monitor shall be present for all ground-disturbing activities that occur within the proposed Program Area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work). At the discretion of the Tribe, a sufficient number of Tribal monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation (“Cultural Resources” and “Tribal Cultural Resources”) shall be completed by the consultant, as detailed within CUL-1, and submitted to the Lead Agency for dissemination to the YSMN Cultural Resources Management Department. Once all parties review and agree to the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.</p>	<p>Implementing Agency</p>
<p>TCR-2 <u>Treatment of Cultural Resources</u>                      If a pre-contact cultural resource is discovered during archaeological presence/absence testing, the discovery shall be properly recorded and then reburied in situ. A research design shall be developed by the archaeologist that shall include a plan to evaluate the resource for significance under CEQA criteria. Representatives from the YSMN Cultural Resources Management Department, the archaeologist, and the Lead Agency shall confer regarding the research design, as well as any testing efforts needed to delineate the resource boundary. Following the completion of evaluation efforts, all parties shall confer regarding the archaeological significance of the resource, its potential as a TCR, avoidance (or other appropriate treatment) of the discovered resource, and the potential need for construction monitoring during project implementation. Should any significant resource and/or TCR not be a candidate for avoidance or preservation in place, and the removal of the resource(s) is necessary to mitigate impacts, the research design shall include a comprehensive discussion of sampling strategies, resource processing, analysis, and reporting protocols/obligations. Removal of any cultural resource(s) shall be conducted with the presence of a Tribal monitor representing the Tribe, unless otherwise decided by YSMN. All plans for analysis shall be reviewed and approved by the implementing agency and YSMN prior to implementation, and all removed material shall be temporarily curated on-site. It is the preference of YSMN that removed cultural material be reburied as close to the original find location as possible. However, should reburial within/near the original find location during project implementation not be feasible, then a reburial location for future reburial shall be decided upon by YSMN, the landowner, and the Lead Agency, and all finds shall be reburied within this location. Additionally, in this case, reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, all</p>	<p>Implementing Agency</p>

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p>cataloguing and basic recordation of cultural resources have been completed, and a final monitoring report has been issued to Lead Agency, California Historical Resources Information System (CHRIS), and YSMN. All reburials are subject to a reburial agreement that shall be developed between the landowner and YSMN outlining the determined reburial process/location, and shall include measures and provisions to protect the reburial area from any future impacts (vis a vis project plans, conservation/preservation easements, etc.).</p> <p>Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner shall relinquish all ownership and rights to this material and confer with YSMN to identify an American Association of Museums (AAM)-accredited facility within San Bernardino County that can accession the materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 California (CA) Curation Guidelines. A curation agreement with an appropriate qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and the obligation of the Project implementing agency to pay for those fees.</p> <p>All draft records/reports containing the significance and treatment findings and data recovery results shall be prepared by the archaeologist and submitted to the Lead Agency and YSMN for their review and comment. After approval from all parties, the final reports and site/isolate records are to be submitted to the local CHRIS Information Center, the Lead Agency, and YSMN.</p>	
<p>TCR-3 <u>Inadvertent Discoveries of Human Remains/Funerary Objects</u>                      In the event that any human remains are discovered within the Program Area, ground disturbing activities shall be suspended 100 feet around the resource(s) and an Environmentally Sensitive Area physical demarcation/barrier constructed. The on-site lead/foreman shall then immediately who shall notify YSMN and the Lead Agency. The Lead Agency shall then immediately contact the County Coroner regarding the discovery. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the Native American Heritage Commission (NAHC) within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c). The NAHC-identified Most Likely Descendant (MLD), shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and funerary objects shall be treated and disposed of with appropriate dignity. The MLD, Lead Agency, and landowner agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes. The MLD shall complete its inspection and make recommendations within forty-eight (48) hours of the site visit, as required by California Public Resources Code § 5097.98.</p> <p>Reburial of human remains and/or funerary objects (those artifacts associated with any human remains or funerary rites) shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The MLD in consultation with the landowner, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains and funerary objects. All parties are aware that the MLD may wish to rebury the human remains and associated funerary objects on or near the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The Lead Agency/landowner should accommodate on-site reburial in a location mutually agreed upon by the Parties.</p> <p>It is understood by all Parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r).</p>	<p>Implementing Agency</p>
<p>TCR-4 <u>Pre-construction Cultural Sensitivity Training</u>                      Due to the heightened cultural sensitivity of the proposed Program Area in Big Bear Valley, a Tribal monitor representing YSMN or a Tribal representative of YSMN shall conduct a cultural sensitivity training at the start of construction for all on-site project personnel. The training may speak to, but is not limited to, the general cultural sensitivity of the area, the types of cultural resources that may be identified during construction, and the protocols for inadvertent discoveries.</p>	

Environmental Category /Avoidance, Minimization and Mitigation Measures		Responsible Agency
TCR-5	<u>Tribal Consultation for Aesthetics of Treatment Plant Modification</u> The Lead Agency and consultant shall consult with YSMN regarding the aesthetics of the water treatment plant modifications, specifically regarding the color palette. The consultation will address how the design elements can incorporate a natural-looking aesthetic in order to blend into the culturally significant Baldwin Lake landscape.	

Impact Description	Impact After Mitigation
<b>TRIBAL CULTURAL RESOURCES</b> As described in <b>Subchapter 4.19</b> of this DPEIR, as described in <b>Subchapter 4.19</b> of this DPEIR, the YSMN requested continued participation with this Program’s CEQA process and future projects implemented under the Program. Concerns expressed include the following: accidental exposure of subsurface cultural resources and proper management of such resources; concerns over exposure of human remains and proper management; presence of Native American monitors during future ground disturbing activities; education of construction workers on tribal history and the potential for resources; and, consultation on the color of the liner for the Solar Evaporation Ponds.	Through incorporation of <b>MMs</b> , impacts to TCRs are considered less than significant. The <b>MMs</b> would prevent accidental exposure of subsurface cultural resources and proper management of such resources; minimize potential impacts related to exposure of human remains and proper management; require the presence of Native American monitors during future ground disturbing activities; require education of construction workers on tribal history and the potential for resources; and, require consultation on the color of the liner for the Solar Evaporation Ponds. Through incorporation of <b>MMs</b> , impacts to TCRs are considered less than significant. Thus, with implementation of mitigation to protect TCRs, the Program would not cause significant unavoidable adverse impacts to TCRs.

Environmental Category /Avoidance, Minimization and Mitigation Measures		Responsible Agency
<b>UTILITIES AND SERVICE SYSTEMS</b>		
UTIL-1	Prior to issuance of permits for construction of project facilities, the implementing agency shall prepare a drainage plan that shall be incorporated into the final site design for each Program facility, that includes design features to reduce stormwater peak concentration flows exiting the above ground facility sites (consistent with MS4 requirements) so that the capacities of the existing downstream drainage facilities are not exceeded. These design features could include bio-retention, sand infiltration, return of stormwater for treatment within the treatment plant, and/or detention facilities.	Implementing Agency
UTIL-2	For future Replenish Big Bear Program projects that do not have access to electrical or natural gas connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either extension of infrastructure or creation of new infrastructure to meet electricity needs at a future Replenish Big Bear Program facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical infrastructure.	Implementing Agency
UTIL-3	For future Replenish Big Bear Program projects that do not have access to telecommunication connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either extension of infrastructure or creation of new infrastructure to meet telecommunication needs at a future Replenish Big Bear Program facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical or natural gas infrastructure.	Implementing Agency
UTIL-4	The contract with demolition and construction contractors for a given Replenish Big Bear Program project shall include the requirement that all materials that can feasibly be recycled shall be salvaged and recycled. This includes but is not limited to wood, metals, concrete, road base, soil and asphalt. The contractors for a given Replenish Big Bear Program project shall submit a recycling plan to the implementing agency for review and approval prior to issuance of permits for the construction of demolition/construction activities.	Implementing Agency
UTIL-5	The contract with demolition and construction contractors for a given Replenish Big Bear Program project shall include the requirement that all soils that are planned to be exported from the site that can be recycled shall be recycled for re-use; alternatively, soils shall be reused on site to balance soil import/export.	Implementing Agency

Impact Description	Impact After Mitigation
<b>UTILITIES AND SERVICE SYSTEMS</b> <b>Subchapter 4.20</b> concluded that implementation of the Program could significantly impact stormwater drainage, energy, natural gas telecommunications, or solid waste as a result of requiring the construction or extension of such utilities as a result of	<b>Subchapter 4.20</b> concluded that implementation of the Program would not significantly impact stormwater drainage, energy, natural gas telecommunications, or solid waste. Additionally, mitigation is required to minimize impacts related to stormwater through implementation of a drainage plan to reduce downstream flows for future Program

Impact Description	Impact After Mitigation
<p>development of the Program. This is because the proposed Program may be developed within sites that would require extension of or that may impact existing utility service systems. The topic of water and wastewater infrastructure were also discussed in Subchapter 4.20. The extension of water and wastewater related infrastructure was determined to be significant under the Program. The Program would contribute to the provision of sufficient wastewater treatment capacity at BBARWA's WWTP, as the Program is not anticipated to require an increase in overall capacity at the WWTP. Furthermore, as described under Hydrology and Water Quality, the action towards addressing groundwater supply challenges, given the Big Bear Valley's remote location, that would be addressed by the Program would ensure sufficient supply in the Big Bear Valley. The proposed Program would result in significant and unavoidable impacts under utilities and service systems, which pertains only to the reduction in discharge of undisinfected secondary effluent to the LV Site.</p>	<p>projects. Mitigation is required to address potential impacts related to solid waste including those that would ensure that construction and demolition materials that are salvageable are recycled, and thereby diverted from the local landfill, which will minimize the potential for Program projects to generate waste in excess of local landfill capacities; and ensure that soils that would generally be exported from a given construction site are salvaged where possible for recycling and ultimately reuse, thereby diverting this waste stream from the local landfill. The construction of infrastructure related to energy and natural gas was analyzed and determined to be less than significant with the implementation of mitigation. This mitigation would ensure that Program projects not located in an area containing adjacent access to electricity and natural gas infrastructure would require subsequent CEQA documentation. With implementation of this mitigation the proposed Program will not cause unavoidable significant adverse impacts to energy or natural gas. The construction of infrastructure related to telecommunications was determined to be less than significant with the implementation of mitigation. This mitigation would ensure that Program projects not located in an area containing adjacent access to telecommunication infrastructure would require subsequent CEQA documentation. With implementation of this mitigation the proposed Program will not cause unavoidable significant adverse impacts to telecommunications.</p> <p>Based on the facts and findings presented in the DPEIR analysis, the proposed Program will not cause unavoidable significant adverse impacts to stormwater drainage, energy, natural gas, telecommunications, or solid waste.</p> <p>The topic of water and wastewater infrastructure were also discussed in <b>Subchapter 4.20</b>. As determined in the preceding evaluation, the proposed Program would result in significant and unavoidable impacts under utilities and service systems, which pertains both to the Big Bear Valley and to the reduction in discharge of undisinfected secondary effluent to the LV Site. As described in <b>Subchapter 4.5, Biological Resources</b>, the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact if the Baldwin Lake Pipeline Alignment Option is the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option. This is because construction of the Baldwin Lake Pipeline Alignment Option may affect bird-foot checkerbloom, as it is present within the proposed Program Area footprint for this pipeline alignment. While <b>MMs BIO-1</b> through <b>BIO-4</b> would minimize impacts to bird-foot checkerbloom from construction of the Solar Evaporation Ponds to a level of less than significant, <b>MM BIO-5</b> would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. If BBARWA does not select the Baldwin Lake Pipeline Alignment Option, a significant impact under this issue would be avoided. Regardless, as the Baldwin Lake Pipeline Alignment Option may be the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option, impacts under this issue are considered significant and unavoidable. Therefore, the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact.</p> <p>The proposed Program would result in significant and unavoidable impacts under utilities and service systems,</p>

Impact Description	Impact After Mitigation
	<p>which pertains only to the reduction in discharge of undisinfecting secondary effluent to the LV Site. The Big Bear Valley components of the proposed Program, which includes discharging purified water to Big Bear Lake via Stanfield Marsh and to Shay Pond, in addition to utilizing Big Bear Lake water to provide groundwater recharge in Sand Canyon, have been determined to be less than significant with the implementation of mitigation for all utilities and service systems issues.</p> <p>No mitigation is available to reduce the potential for a significant and unavoidable impact to occur to water supplies in the Lucerne Valley Basin as a result of Program Implementation. This is because the Program would reduce the amount of water that would be discharged to the Lucerne Valley Basin, which has a potential to impact the amount of water that could be expected to be recharged to the Lucerne Valley Basin on an annual basis, thereby impacting water supplies. Therefore, the proposed Program would have a significant and unavoidable potential for the implementation of the Program to substantially impair the availability of water supplies in the Lucerne Valley Basin as a result in the reduction in recharge to the Lucerne Valley Basin.</p>

Environmental Category /Avoidance, Minimization and Mitigation Measures	Responsible Agency
<p><b>WILDFIRE</b></p> <p>WF-1 Prior to initiating construction of proposed Conveyance Pipelines or other Program facilities within public ROW, BBARWA or the implementing agency shall prepare and implement a traffic control plan that contains comprehensive strategies for maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The implementing agency shall ensure that the traffic control plan and other construction activities are consistent with the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.</p>	<p>Implementing Agency</p>
<p>WF-2 Prior to construction of facilities located in areas designated as High or Very High FHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.</p>	<p>Implementing Agency</p>

Impact Description	Impact After Mitigation
<p><b>WILDFIRE</b></p> <p>The location of Program facilities would likely be located in designated high and very high FHSZs, and therefore, it is</p>	<p>The analysis of wildfire issues in <b>Subchapter 4.21</b> impacts from implementing the Program are less than significant with mitigation incorporated. Mitigation was identified to minimize impacts to wildfire that would: reduce the Program's potential</p>



Impact Description	Impact After Mitigation
possible that one or more future facilities could be required to locate within such areas.	traffic conflicts that could be exacerbating in high fire hazard zones by requiring all construction activities to be conducted in accordance with an approved construction traffic control plan; and, ensure fire hazard reduction measures are incorporated into a fire management plan/fuel modification plan for the proposed facility. Thus, with implementation of mitigation to minimize wildfire impacts, the Program would not cause significant unavoidable adverse impacts under wildfire.

## 1.6 ALTERNATIVES

The CEQA and the State CEQA Guidelines require an evaluation of alternatives to the proposed action. Section 15126 of the State CEQA Guidelines indicates that the “discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of not significant...” The State CEQA Guidelines also states that “a range of reasonable alternatives to the project which could feasibly attain the basic objectives of the project” and “The range of alternatives required in an EIR is governed by ‘rule of reason’ that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice.” The detailed analyses of the alternatives evaluated are provided in **Chapter 5** of this DPEIR. This evaluation addresses those alternatives for feasibility and a range of alternatives required to permit decision-makers a reasoned choice between the alternatives. Refer to **Table 1.6-1** for a tabular comparison of alternatives (found at end of this section).

The goal of the Program Team is to partner to recover a sustainable water resource that is currently being transported out of Big Bear Valley to Lucerne Valley, close the water loop, and keep the water in Big Bear Valley for beneficial reuse. In this instance, the DPEIR analysis in **Chapter 4** has reached a finding that there are four unavoidable significant adverse effects from implementing the Program as proposed in **Chapter 3**, the Program Description: ***Agriculture and Forestry Resources, Biological Resources, Hydrology and Water Quality, and Utilities and Service Systems***.

### 1.6.1 No Program Alternative

One of the alternatives that must be evaluated in an EIR is the “No Program Alternative (NPA),” regardless of whether it is a feasible alternative to the proposed Program, i.e., would meet the project objectives or requirements. Under this alternative, the environmental impacts that would occur if the proposed Program is not approved and implemented are identified. The NPA is required under CEQA to evaluate the environmental effects associated with no action on the part of the Lead Agency. The NPA would not require any upgrades to the BBARWA WWTP and the secondary effluent would continue to be discharged outside of Big Bear Valley for crop irrigation at the LV Site. The NPA would not provide any benefits to the Big Bear Valley. This alternative evaluates the environmental impacts resulting from a hypothetical continuation of the existing land use and circumstances. The NPA would not result in the Program Team securing a reliable, renewable source of water that could be retained in Big Bear Valley, which would essentially provide security for the future during potential droughts and dry years.

### **1.6.2 Groundwater Recharge at Greenspot Alternative**

The Greenspot Alternative was developed as part of the Bear Valley Water Sustainability Project Recycled Water Facilities Planning Study (**Appendix 20**) prepared by WSC in December of 2016. The Greenspot Alternative analyzes the impacts from a scenario in which the Greenspot Alternative utilizes the similar AWPf upgrades at the BBARWA WWTP as identified under the Program to send blended tertiary and advanced treated water to the Greenspot Recharge Site (**Figure 5-1**). Because the Greenspot Alternative would not discharge to Big Bear Lake, both tertiary and advanced treatment systems would be utilized. It is assumed that 22% of the recharge water would receive tertiary treatment, and 78% would receive advanced treatment.

Analysis of previous drilling and pilot recharge testing at the Greenspot Recharge Site resulted in the following conclusions:

- The Greenspot Recharge Site is located on recent alluvial deposits of permeable sand and gravel and no soil layers were observed beneath the site that would inhibit the downward percolation of recharge water to the ground water table.
- Groundwater levels start at approximately 100 ft below ground surface (bgs), which allows adequate space for mounding and storage of recharge water.
- A one-month pilot recharge test resulted in recharge rates of 3.1 to 3.7 ft/day. For planning purposes, the recharge rate is assumed to be one half of the observed rate to be conservative.
- At the seepage velocities estimated from the artificial recharge test data, ground water recharged at the GreenSpot Recharge Site would reach the nearest production wells (BBLDWP's Lakewood well field) in 8.5 to 17.5 months.
- No fatal flaws were identified during the pilot recharge test.
- The property necessary to support a full-scale program at this site would include more than five acres of area for surface water spreading, plus the necessary additional land for berms and maintenance access.

In a subsequent study, a calibrated groundwater flow model was used to simulate and evaluate a full-scale artificial recharge spreading basin facility at this site. The study evaluated potential changes in groundwater levels that would result from the artificial recharge of 500, 1,000, 1,500 or 2,000 AFY of water, with and without additional groundwater pumping. The study concluded that:

- An additional extraction well field downgradient of the recharge site would be needed to effectively intercept the water that is artificially recharged at the Greenspot Recharge Site. The study assumed six extraction wells at a rate of 100 gpm each.
- Groundwater levels can be maintained below approximately 30 ft bgs with as much as 1,000 AFY of artificial recharge during periods of below normal precipitation, provided that an equivalent amount of water is extracted at the down gradient well field.
- During wet periods, further pumping from the extraction well field and Lakewood Wells is required to artificially lower the ground water levels to maintain storage space within the aquifer in order to continue artificial recharge.
- California Department of Water Resources (DWR) records suggest that some existing private wells are located in the vicinity of the proposed recharge basins and would be within six -months travel time from the proposed basins. However, the exact locations of these wells would have to be verified.

Thus, the Bear Valley Water Sustainability Project Recycled Water Facilities Planning Study anticipated that the recharge capacity at the Greenspot Recharge Site would be 1,000 AFY.

It was assumed that, at a general level, the Greenspot Alternative would require the following infrastructure components to achieve recharge of 1,000 AFY of blended tertiary and advanced treated water:

- 6 extraction wells with a 100 gpm capacity at each well.
- 2 monitoring wells.
- Upgrades to the BBARWA WWTP, to include 1.0 MGD of full advanced treatment, producing up to 1,000 AFY of blended tertiary and advanced treated water. The secondary effluent from the existing WWTP would be fed to the advanced treatment process train consisting of:
  - Microfiltration/ultrafiltration (MF/UF).
  - Reverse Osmosis (RO).
  - Ultraviolet Advanced Oxidation (UV/AOP).
  - Brine Disposal.
- Approximately 16,200 LF of 12-in pipeline.
- 2 MW Solar Array.
- The Greenspot Recharge Site was assumed to be a seven -acre site to allow more than five acres of area for surface water spreading, plus the necessary additional land for berms and maintenance access.
- Solar evaporation ponds (A brine minimization process would be used to reduce the volume of concentrate. The reduced concentrate would then be conveyed to new, lined Solar Evaporation Ponds on the LV Site).

The location of the facilities required for the Greenspot Alternative are shown in **Figure 5-1**.

### **1.6.3 Groundwater Recharge at Greenspot and Sand Canyon Alternative**

The Groundwater Recharge at Greenspot and Sand Canyon Alternative (Greenspot & Sand Canyon Alternative) was developed as part of the Bear Valley Water Sustainability Project Recycled Water Facilities Planning Study (**Appendix 20**) prepared by WSC in December of 2016. The Greenspot & Sand Canyon Alternative analyzes the impacts from a scenario in which the Greenspot & Sand Canyon Alternative utilizes the similar AWPf upgrades at the BBARWA WWTP as identified under the Program to send blended tertiary and advanced treated water to both the Greenspot Recharge Site and Sand Canyon Recharge Area (**Figure 5-2**). Because the Greenspot & Sand Canyon Alternative would not discharge to Big Bear Lake, both tertiary and advanced treatment systems would be utilized. It is assumed that 22% of the recharge water would receive tertiary treatment, and 78% would receive advanced treatment.

The considerations for the feasibility of groundwater recharge at the Greenspot Recharge Site are detailed under **Subsection 5.4**, under the Greenspot Alternative. The feasibility of recharge at the Sand Canyon Recharge Area has been detailed in **Chapter 3, Program Description**, as this option is considered under the Program. The Bear Valley Water Sustainability Project Recycled Water Facilities Planning Study anticipated that the recharge capacity at the Greenspot Recharge Site would be 1,000 AFY, and that the recharge capacity at the Sand Canyon Recharge Area would be 750 AFY. Given that further study of the Sand Canyon Recharge Project has been analyzed in **Appendix 4**, the 2017 Sand Canyon Recharge Evaluation prepared by Thomas Harder & Co., and that Thomas Harder & Co. found that the recharge potential at the Sand Canyon Recharge Area is approximately 380 AFY over a six -month period, based on a recharge area of approximately 4.2 acres and a recharge rate of 2.1 ft/day, this alternative assumes that the Sand Canyon Recharge Area potential is approximately 380 AFY. Thus, the Greenspot & Sand Canyon Alternative assumes that up to 1,380 AFY could be recharged to the Bear Valley

Basin for reuse, and that the upgraded portion of the BBARWA WWTP would be capable of handling at least 1.38 MGD, thereby producing the requisite 1,380 AFY of blended tertiary and advanced treated water.

It is assumed that, at a general level, the Greenspot & Sand Canyon Alternative would require the following infrastructure components:

- 6 extraction wells with a 100 gpm capacity at each well.
- 4 monitoring wells.
- Upgrades to the BBARWA WWTP, to include 1.38 MGD of full advanced treatment, producing up to 1,380 AFY of blended tertiary and advanced treated water. The secondary effluent from the existing WWTP would be fed to the advanced treatment process train consisting of:
  - Microfiltration/ultrafiltration (MF/UF).
  - Reverse Osmosis (RO).
  - Ultraviolet Advanced Oxidation (UV/AOP).
  - Brine Disposal.
- Approximately 50,200 LF of 12-in pipeline (approximately 16,200 LF to Greenspot and 34,000 LF to Sand Canyon).
- 2 MW Solar Array.
- The Greenspot Recharge Site is assumed to be a seven -acre site to allow more than five acres of area for surface water spreading, plus the necessary additional land for berms and maintenance access.
- The Sand Canyon Recharge Area is assumed to be the same as that which has been incorporated as part of the proposed Program.
- Solar evaporation ponds (A brine minimization process would be used to reduce the volume of concentrate. The reduced concentrate would then be conveyed to new, lined Solar Evaporation Ponds on the LV Site).

The location of the facilities required for the Greenspot & Sand Canyon Alternative are shown in **Figure 5-2**.

#### **1.6.4 Discussion**

While the NPA would reduce impacts related to Agriculture and Forestry Resources and Biological Resources, it would not avoid significant Hydrology and Water Quality or Utilities and Service Systems impacts. Additionally, there are a number of goals and policies pertaining to water resources in the San Bernardino Countywide Plan and Big Bear Lake General Plan that the NPA may conflict with through lack of action to manage water supplies in Big Bear Valley.

As such, given that the NPA would conflict with the Bear Valley Basin GSP, San Bernardino Countywide Plan and Big Bear Lake General Plan, a significant Land Use and Planning impact would result from the NPA. Further, although the NPA would reduce potentially significant impacts identified in this DPEIR as compared to the proposed Program, it would lead to greater impacts on Big Bear Valley, and the Bear Valley Basin in some other areas, including Hydrology and Water Quality and Utilities and Service Systems. In the final analysis, the NPA cannot be considered the environmentally superior alternative to the proposed Program from a total environment standpoint, because the environmental damage from not implementing the Proposed Program is forecasted to cause new significant adverse impacts when compared to implementing the Program.

As with the NPA, the Greenspot Alternative has comparable environmental impacts for all of the resource issues to the Program, except for those related to biological resources. Of the significant impacts that would result from the proposed Program, the only impact category that the Greenspot Alternative would eliminate is the Biological Resources impact. This is because this alternative would eliminate the Baldwin Lake Pipeline Alignment Option, thereby preventing impacts to the bird-foot checkerbloom, should BBARWA select the Baldwin Lake Pipeline Alignment Option as the preferred Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option. While the water supply and water quality impacts at the LV Site as a result of the Program would be reduced slightly due to a smaller volume AWPf at the BBARWA WWTP, thereby discharging a larger volume of water to the LV Site than is anticipated under the Program, it would still contribute to significant Agricultural and Forestry, Hydrology and Water Quality, and Utilities and Services Systems impacts. Furthermore, while the Greenspot Alternative would meet nearly all of the Program's objectives, it would not meet some of the BBARWA's basic objectives, which are to develop promote a thriving community through enhanced recreation and protecting diverse habitats in Big Bear Valley. This is because it would not include discharge to Stanfield Marsh or Big Bear Lake, thus failing to meet this project objective. However, as this is the only alternative that would reduce a significant and unavoidable impact without contributing to new significant and unavoidable impacts (as is the case for the NPA creating new Hydrology and Water Quality and Utilities and Service Systems impacts), it would be the environmentally superior alternative, when considered against the scenario in implementing the Program in which BBARWA selects the Baldwin Lake Pipeline Alignment Option, and thereby may result in significant and unavoidable impacts to impacts to the bird-foot checkerbloom.

The Greenspot & Sand Canyon Alternative is comparable to the Program in terms of environmental impacts, as all of the impacts related to this alternative are the same as those identified under the Program. Of the significant impacts that would result from the proposed Program, no significant impacts would be eliminated by the Greenspot & Sand Canyon Alternative, though the severity of the impact to the Lucerne Valley Basin would likely be reduced. The water supply and water quality impacts at the LV Site as a result of the Program would be reduced slightly due to a smaller volume AWPf at the BBARWA WWTP, thereby discharging a larger volume of water to the LV Site than is anticipated under the Program, it would still contribute to significant Agricultural and Forestry, Biological Resources, Hydrology and Water Quality, and Utilities and Services Systems impacts. Furthermore, while the Greenspot & Sand Canyon Alternative would meet nearly all of the Program's objectives, it would not meet some of the BBARWA's basic objectives, which is to develop and promote a thriving community through enhanced recreation and protecting diverse habitats in Big Bear Valley. The discharge to Big Bear Lake via Stanfield Marsh is paramount to enhancing the recreational opportunities outlined in the Program objectives, as the provision of additional water in Big Bear Lake is anticipated to enhance the setting within Big Bear Lake and Stanfield Marsh, making recreation therein more appealing to those living and visiting the area. Additionally, the provision of additional water within Big Bear Lake and Stanfield Marsh would benefit the habitat supported by these water bodies. Therefore, as the Greenspot & Sand Canyon Alternative would not include discharge to Stanfield Marsh or Big Bear Lake, thus failing to meet this project objective.

**Table 1.6-1  
 TABULAR COMPARISON OF PROJECT, NO PROGRAM, GREENSPOT, AND  
 GREENSPOT & SAND CANYON ALTERNATIVES**

	<i>Would the Program Result in Significant Adverse Impact?</i>	<i>Would the Alternative Result in Equal, Greater, or Less Impacts than the Program?</i>		
	<b>Proposed Program</b>	<b>No Program Alternative</b>	<b>Greenspot Alternative</b>	<b>Greenspot &amp; Sand Canyon Alternative</b>
Aesthetics	No Impacts LSM	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Agricultural and Forestry	Yes Impacts would be Significant	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Air Quality	No Impacts LSM	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Biological Resources	Yes Impacts would be Significant	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Cultural Resources	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Energy	No Impacts LSM	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Geology and Soils	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Greenhouse Gas	No Impacts LS	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Hazards and Hazardous Materials	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Hydrology and Water Quality	Yes Impacts would be Significant	Impact level would be greater than the Program	Impact level would be equal	Impact level would be equal
Land Use and Planning	No Impacts LSM	Impacts would be Significant	Impact level would be equal	Impact level would be equal
Mineral Resources	No Impacts LS	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Noise	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Population and Housing	No Impacts LS	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Public Services	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Recreation	No Impacts LS	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Transportation	No Impacts LSM	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Tribal Cultural Resources	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Utilities and Service Systems	Yes Impacts would be Significant	Impact level would be greater than the Program	Impact level would be equal	Impact level would be equal
Wildfire	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal

LSM = less than significant with **MMs**  
 LS = less than significant without **MMs**

## **1.7 AREAS OF CONTROVERSY**

The Big Bear Valley community has expressed only a few concerns related to the Program as it is proposed:

- The community has expressed concerns over projects that would impact natural habitat, especially in the instances in which a project would adversely impact sensitive species or critical habitat.
- The community has expressed concerns over projects in the Big Bear Valley that are costly, due to a perception that there is a lack of funds to support such projects, though often such projects are supported, at least partially, by grant funding from the State or Federal government.
- The community has expressed concerns over how brine would be managed from a Program such as the Program, and how brine storage in the Big Bear Valley might impact the underlying groundwater.
- The community has expressed concerns over odors associated with recycled water treatment.
- The community has expressed concerns over whether pharmaceuticals can be filtered out of the Program Water.

The Lucerne Valley Economic Development Agency (LVEDA) and Mojave Water Agency (MWA) have expressed the following concerns:

- The LVEDA and MWA expressed concerns over the reduction in discharge to BBARWA's LV Site, and the impacts to the underlying groundwater basin (Lucerne Valley Basin), including groundwater quality, that may occur as a result of Program implementation.
- The LVEDA expressed concerns over the implications and changes that may occur at the LV Site as a result of Program implementation.

## CHAPTER 2 – INTRODUCTION

### 2.1 BACKGROUND

#### 2.1.1 Environmental Setting

The Big Bear Valley is located in the San Bernardino Mountains of San Bernardino County, California. The area includes approximately 135 square miles within a 12-mile-long valley surrounded by mountain ridges and rugged slopes. Land surface elevations range from 6,000 to 9,900 feet (ft) and the area is entirely surrounded by the San Bernardino National Forest. Big Bear Lake lies within Big Bear Valley and has a surface area of approximately 10 square miles and 23 miles of shoreline and is connected to Stanfield Marsh. Big Bear Valley is home to approximately 23,000 full time residents. The area is primarily residential with some commercial uses, and experiences an influx of part-time population and vacationers enjoying the seasonal recreational facilities within Big Bear Valley. In recent years, the population of Big Bear Valley can swing on a given day from the base population listed above, to more than four times the number of persons as a result of tourism drawing people to Big Bear Valley<sup>5</sup> to the recreational nature of Big Bear Valley economies, occupancy within Big Bear Valley fluctuates seasonally, typically peaking in July and at the lowest level during the winter.

To provide background context on the community that the Program would support, the California Communities Environmental Health Screening Tool: CalEnviroScreen 4.0 indicates that the Big Bear Valley experiences a low pollution burden, but all of the developed areas of Big Bear Valley experience higher than average poverty rates due to the percentage of people living below twice the poverty level. The areas with the greatest poverty levels in Big Bear Valley are the central portion of the City of Big Bear Lake, the community of Sugarloaf, the western portion of the City of Big Bear Lake, and the community of Big Bear City respectively.

Natural precipitation provides the sole source of water supply for Big Bear Valley, and is relied on for potable groundwater supplies, replenishing Big Bear Lake, and supporting the rare and diverse habitat and species in Big Bear Valley. Drought conditions and a long-term decline in precipitation trends have led the local water management agencies to investigate opportunities for supplemental water supplies, which are extremely limited due to its isolated location at the top of the watershed. Currently, wastewater generated within Big Bear Valley undergoes preliminary and secondary treatment and is discharged outside of the watershed to irrigate alfalfa fields in the Lucerne Valley, located approximately 20 miles north of Big Bear Valley.

#### 2.1.2 CEQA Process Background

The Program Team—which includes BBARWA, BBCCSD, BBLDWP, and BMWWD, has developed the Replenish Big Bear Program with the goal of retaining Program Water within Big Bear Valley for beneficial use. By doing so, this will provide a supplemental and drought proof source of water for current and future Big Bear Valley residents and businesses. The Replenish Big Bear Program (Program) incorporates and leverages prior recycled water planning efforts in the region and represents opportunities in the context of current and prospective future regulations.

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<sup>5</sup> BBLDWP 2020 Urban Water Management Plan



Based on the findings of the Notice of Preparation (NOP), BBARWA concluded that a Program Environmental Impact Report (PEIR) should be prepared to address the potential impacts from the proposed Program. However, project-level detail is provided throughout the analysis in this PEIR for all Program facilities, except for the Sand Canyon Monitoring Wells, which have been analyzed on a more general level given that the specific locations for the monitoring wells have not yet been determined, though the general locations of the wells are known to be downstream from the Sand Canyon Recharge Area (refer to **Figure 3-32**). The decision to prepare a DPEIR was based on the finding that the proposed Program may have one or more significant effects on the existing environment and surrounding environment as is documented in the NOP, provided as **Subchapter 8.1** of this document.

BBARWA has prepared the Replenish Big Bear Program DPEIR that evaluates the potential environmental impacts that would result from constructing and implementing the proposed Program.

## **2.2 PURPOSE AND USE OF AN EIR**

CEQA was adopted to assist with the goal of maintaining the quality of the environment for the people of the State. Compliance with CEQA, and its implementing guidelines, requires that an agency making a decision on a project (defined as an action that can change the physical environment) must consider its potential environmental effects/impacts before granting any approvals or entitlements. Further, the State adopted a policy "that public agencies should not approve projects as proposed if there are feasible alternatives or feasible **MMs** available which would substantially lessen the significant environmental effects of such projects." Thus, an agency, in this case BBARWA, must examine feasible alternatives and identify feasible **MMs** as part of the environmental review process. CEQA also states "that in the event specific economic, social, or other conditions make infeasible such project alternatives or such **MMs**, individual projects may be approved in spite of one or more significant effects thereof." (§21002, California Public Resources Code)

When applied to a specific project, such as the proposed Program, BBARWA is required to identify the potential environmental impacts of implementing the project; and, where potential significant impacts are identified, BBARWA must determine whether there are feasible **MMs** or alternatives that can be implemented to avoid or substantially lessen significant environmental effects of a project. The first step in this process, determination that an EIR is required and issuance of a NOP, has been completed for the Program. Completion of the first step constitutes the "project being considered for approval and implementation" by BBARWA. Based on the information in the NOP, BBARWA concluded an EIR should be prepared to address any potential significant impacts that may result from implementation of the proposed Program.

The following environmental issues will be analyzed in this DPEIR: aesthetics, agricultural and timberland resources, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation and traffic, tribal cultural systems, utilities and service systems, and wildfire.

BBARWA prepared and circulated a NOP for the Program. The NOP public review period through the State Clearinghouse began on November 30, 2022 and ended on January 17, 2023. The Program Team felt that an extended 45-day NOP Comment Period, in addition to holding two Scoping Meetings, would enable adequate time for public participation and understanding of the

Program at hand. Respondents were requested to send their input as to the scope and content of environmental information and issues that should be addressed in the Program no later than 45 days after receipt of the NOP. The NOP was distributed to interested agencies, the State Clearinghouse (SCH# 2022110595), and a list of interested parties compiled by BBARWA. As previously stated, BBARWA held two Scoping Meetings—one on each end of Big Bear Valley. The first was held at BBLDWP (41972 Garstin Drive, Big Bear Lake, CA 92315) on January 5, 2023 at 6:00 PM and the second was held at BBARWA (121 Palomino Drive, Big Bear City, CA 92314) on January 10, 2023 at 6:00 PM (the NOP and Scoping Meeting Information are provided in **Subchapter 8.1** of this DPEIR).

The date and location of the Scoping Meetings were announced in the NOP, and although not required, a legal advertisement announcing the Scoping Meetings was published in a newspaper of general circulation prior to the Scoping Meeting. BBARWA received 14 written comments in response to the NOP. A copy of each letter and a summary of the Scoping Meeting comments is provided in **Subchapter 8.2**. Additionally, a brief response to each issue raised in the NOP and Scoping Meeting comments that has been organized by environmental topic is provided in **Subchapter 8.2**.

The Replenish Big Bear Program DPEIR was prepared in order to address all of the issues identified in the NOP and to provide information intended for use by BBARWA and the agencies that make up the Program Team, in addition to interested and responsible agencies and parties, and the general public in evaluating the potential environmental effects of implementing the proposed Program.

CEQA requires that BBARWA consider the environmental information in the Program record, including this DPEIR, prior to making a decision on the proposed Program. BBARWA must consider and decide to approve or reject the Program as proposed and described in Chapter 3, Program Description of this DPEIR. BBARWA also has the authority to modify the Program based on input provided during the public review process.

Because BBARWA determined that it would conduct a DPEIR, issues raised in the comment letters did not alter the scope of the document to include any issue areas that were not already intended to be included. This DPEIR was prepared in order to address all of the issue areas identified in Appendix G of the State CEQA Guidelines; this provides an informational document intended for use by BBARWA and the agencies that make up the Program Team, interested and responsible agencies and parties, and the general public in evaluating the potential environmental effects of implementing the Program.

CEQA requires that BBARWA, the CEQA Lead Agency, consider the environmental information in the Program record, including this DPEIR, prior to making a decision on the proposed Program. The decision that will be considered by BBARWA is whether to approve the Program for implementation, or to reject the proposed Program.

As stated above, BBARWA will serve as the CEQA Lead Agency pursuant to the State CEQA Guidelines Section 15051(b)(1). The Replenish Big Bear Program DPEIR was prepared by TDA for the Program Team of BBARWA, BBCCSD, BBLDWP, and BBMWD. TDA was retained to assist the BBARWA and the Program Team to conduct the independent review of the Program required by CEQA before the DPEIR is released. BBARWA has reviewed the content of the DPEIR and concurs in the conclusions and findings contained herein.

## 2.3 SCOPE AND CONTENT OF THIS EIR

As stated previously, this DPEIR evaluates the environmental effects of the proposed Program based on Appendix G of the State CEQA Guidelines as follows: aesthetics, agriculture and forestry resources, air quality, biological resources, cultural resources, energy, geology/soils, greenhouse gas emissions/climate change, hazards and hazardous materials, hydrology/water quality, land use/planning, mineral resources, noise, population/housing, public services, recreation, transportation, tribal cultural resources, utilities/service systems, and wildfire.

Based on data and analysis provided in this DPEIR, it is concluded the proposed Program could result in significant adverse environmental impacts to the following environmental issues: ***Agriculture and Forestry Resources, Biological Resources, Hydrology and Water Quality, and Utilities and Service Systems***. All other potential impacts were determined to be less than significant without mitigation or can be reduced to a less than significant level with implementation of the **MMs** identified in this DPEIR.

In addition to evaluating the environmental issues listed above, this DPEIR contains all of the sections mandated by CEQA and the State CEQA Guidelines. **Table 2.3-1** provides a listing of the contents required in an EIR along with a reference to the chapter and page number where these issues can be reviewed in this document. This DPEIR consists of two volumes. Volume 1 contains the CEQA mandated sections and some pertinent appendices. Volume 2 contains the technical appendices.

**Table 2.3-1  
 REQUIRED EIR CONTENTS**

Required Section (CEQA)	Section in EIR	Page Number
Table of Contents (Section 15122)	Same	Beginning ii
Summary (Section 15123)	Chapter 1	Beginning 1-1
Program Description (Section 15124)	Chapter 3	Beginning 3-1
Environmental Setting (Section 15125)	Chapter 4	Beginning 4-1
Significant Environmental Effects of Proposed Program, i.e., Environmental Impacts (Section 15126(a))	Chapter 4	Beginning 4-1
Unavoidable Significant Environmental Effects (Section 15126(b))	Chapter 4	Beginning 4-1
Mitigation Measures (Section 15126(e))	Chapter 4	Beginning 4-1
Cumulative Impacts (Section 15130)	Chapter 4	Beginning 4-1 and 6-2
Alternatives to the Proposed Action (Section 15126(f))	Chapter 5	Beginning 5-1
Growth-Inducing Impacts (Section 15126(d))	Chapter 6	Beginning 6-1
Irreversible Environmental Changes (Section 15126(c))	Chapter 6	6-1
Effects Found Not to be Significant (Section 15128)	Chapter 1	6-1
Organizations and Persons Consulted (Section 15129)	Chapter 7	Beginning 7-1
Appendices <sup>6</sup>	Chapter 8	Beginning 8-1

<sup>6</sup> Chapter 8 includes: **Subchapter 8.1:** NOP, **Subchapter 8.2:** NOP comment letters and responses to comments, **Subchapter 8.3:** Distribution List

## 2.4 DPEIR FORMAT AND ORGANIZATION

The Replenish Big Bear Program DPEIR eight chapters in Volume 1 and a set of technical appendices in Volume 2, which, when considered as a whole, provide the reviewer with an evaluation of the potential significant adverse environmental impacts from implementing the proposed Program. Note that Chapter 8 contains those materials referenced as essential appendices to the DPEIR, such as the NOP. Technical Appendices are provided in Volume 2 of the DPEIR, under separate cover. Appendix materials are referenced at appropriate locations in the text of this DPEIR.

The following paragraphs provide a summary of the content of each chapter of the DPEIR.

Chapter 1 contains the Executive Summary for the DPEIR. This includes an overview of the proposed Program and a tabular summary of the potential adverse impacts and **MMs**.

Chapter 2 provides the reviewer with an Introduction to the document. This chapter of the document describes the background of the proposed Program, its purpose, and its organization. The CEQA process to date, including the comments on the NOP and Scoping Meeting comments and responses thereof, is summarized and the scope of the DPEIR is identified.

Chapter 3 contains the Program Description used to forecast environmental impacts. This chapter describes for the reviewer how the existing environment will be altered by the proposed Program. Chapter 3 sets the stage for the environmental impact forecasts set out in the following chapter.

Chapter 4 presents environmental impact forecasts for each environmental issue identified in Section 2.3 of this DPEIR. Chapter 4 sets out for the reviewer an impact evaluation for each issue in the following manner: an introduction; the environmental setting; thresholds of significance; the potential impacts that may occur if the Program is implemented; proposed **MMs**; cumulative impacts; and significant and unavoidable impacts.

Chapter 5 contains the evaluation of range of alternatives to the proposed Program. Included in this section is an analysis of the mandatory NPA plus two additional alternatives.

Chapter 6 presents the topical issues that are required in an EIR. These include any significant irreversible environmental changes and any growth inducing effects of the proposed Program.

Chapter 7 describes the resources used in preparing this DPEIR, including persons and organizations contacted; list of preparers; and bibliography.

Chapter 8 contains those materials referenced as essential appendices to the DPEIR, such as the NOP, a summary of comments received at the scoping meeting, and responses to the NOP and scoping meeting comments.

Volume 2 contains the Technical Appendices under separate cover. Appendix materials are referenced at appropriate locations in the text of this DPEIR.

## 2.5 AVAILABILITY OF THE REPLENISH BIG BEAR PROGRAM DPEIR

This DPEIR is being distributed directly to all public agencies and interested persons identified in the NOP mailing list (see **Subchapter 8.1**), the State Clearinghouse, as well as any other

requesting agencies or individuals. All reviewers will be provided 45 days to review the DPEIR and submit comments to BBARWA for consideration and response. The DPEIR is also available for public review at the following web address: <https://www.replenishbigbear.com/documents> and at <https://www.bbarwa.org/ceqa-documents> and at the following location during the 45-day review period:

Big Bear Area Regional Wastewater Agency  
 (Physical Address) 121 Palomino Drive,  
 (Mailing Address) P.O. Box 517  
 Big Bear City, CA 92314

**2.6 REVIEW PROCESS**

After receiving comments on the DPEIR, BBARWA will prepare a Final PEIR for certification prior to making a recommendation to the BBARWA Governing Board regarding approval of the Replenish Big Bear Program. Information concerning the Final PEIR public review schedule and BBARWA meetings for this Program can be obtained by contacting Ms. Bridgette Burton, BBARWA. Questions and comments submitted by mail or email shall be addressed to:

Big Bear Area Regional Wastewater Agency  
 Attn: Bridgette Burton  
 P.O. Box 517  
 Big Bear City, CA 92314  
 Email: [bburton@bbarwa.org](mailto:bburton@bbarwa.org) | Telephone: 909-584-4524

Implementation of future individual project(s) in accordance with the Replenish Big Bear Program may require a variety of approvals from other agencies. This section summarizes agency approvals that have been identified to date. This list may be expanded as the environmental review proceeds. Consequently, it should not be considered exhaustive. The potential participating agencies are arranged based on the individual topics contained in the standard CEQA Initial Study Environmental Checklist Form. **Table 2.6-1** outlines the other agency approvals that may be necessary to implement the proposed Program.

**Table 2.6-1  
 OTHER AGENCY APPROVALS**

Agency	Approvals Necessary
<b>STATE &amp; LOCAL AGENCIES:</b> SWRCB	Notice of Intent (NOI) to the SWRCB) for a NPDES general construction stormwater discharge permit. This permit is granted by submittal of an NOI to the SWRCB, but is enforced through a Storm Water Pollution Prevention Plan (SWPPP) that identifies construction BMPs for the site. In Big Bear Valley, the Santa Ana Regional Board enforces the BMP requirements contained in the NPDES permit by ensuring construction activities adequately implement a SWPPP. Implementation of the SWPPP is carried out by the construction contractor under contract to BBARWA, BBMWD, BBLDWP, or BBCCSD, with the Regional Board providing enforcement oversight.

Agency	Approvals Necessary
Jurisdictional Waters	The Program includes the potential discharge of fill into or alterations of “waters of the United States,” “waters of the State,” and stream beds of the State of California. Regulatory permits to allow fill and/or alteration activities due to Program activities such as pipeline installation are likely be required.
USACOE	<ul style="list-style-type: none"> <li>• A Section 404 permit for the discharge of fill material into “waters of the United States” may be required from the USACOE.</li> </ul>
Santa Ana Regional Board	<ul style="list-style-type: none"> <li>• A Section 401 Water Quality Certification may be required from the Regional Board.</li> </ul>
CDFW	<ul style="list-style-type: none"> <li>• 1600 Streambed Alteration Agreement may be required from the CDFW.</li> </ul>
USFWS CDFW	These agencies may need to be consulted regarding threatened and endangered species documented to occur within an area of potential impact for future individual projects. This could include consultations under the Fish and Wildlife Coordination Act.
San Bernardino County City of Big Bear Lake	Tree removal permits may be required from local jurisdictions; and, San Bernardino County and local jurisdictions must ensure that stormwater discharges from each of the facility sites meet the current MS4.
SCAQMD	Air quality permits may be required from the SCAQMD.
Caltrans San Bernardino County City of Big Bear Lake SBCFCD Bear Valley Electric Service, Inc. (BVES) Southwest Gas	Encroachment permits may be required.
CAL FIRE	CAL FIRE regulates the removal of clusters of trees pursuant to CAL FIRE timberland conversation regulations. The facilities proposed under this Program are anticipated to either require obtaining an exemption or must submit a TCP pursuant to California Public Resources Code 4621(a) and a THP pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.
Colorado Regional Board	The Colorado Regional Board will issue a modified WDR to BBARWA, as will the Santa Ana Regional Board will issue a WDR and WRR for use of recycled water.
Santa Ana Regional Board	The Santa Ana Regional Board will issue a WDR and WRR for use of recycled water.
California Department of Public Health	The California Department of Public Health must review and approve the future use of recycled water
SBCFCD City of Big Bear Lake FEMA	If any flood hazard areas are affected by the proposed Program, SBCFCD, the City of Big Bear Lake, and FEMA may perform reviews for this Program.
<b>FEDERAL AGENCIES:</b> BOR EPA	The proposed Program has been awarded a grant for the Program from the BOR. The proposed Program may seek grants or loan from other Federal agencies, such as the EPA.

No other reviewing or permitting agencies have been identified.

## **2.7 CEQA RESPONSIBLE AGENCIES**

### Partner Agencies

BBCCSD

BBLDWP

BBMWD

Bear Valley Groundwater Sustainability Agency

### Other Potential Responsible Agencies

San Bernardino County

City of Big Bear Lake

Santa Ana Regional Board

Colorado Regional Board

CDFW

USFWS

SCAQMD

USACE

DDW

SBCFCD

Big Bear Airport

### Federal Agencies

BOR

EPA

## CHAPTER 3 – PROGRAM DESCRIPTION

### 3.1 INTRODUCTION

Together the following agencies—BBARWA, BBCCSD, BBLDWP, and BBMWD, henceforth referred to jointly as the Program Team—are proposing to implement the Replenish Big Bear Program (Program), previously known as the Bear Valley Water Sustainability Project. The Program includes upgrades and additions to BBARWA’s WWTP to produce Program Water through full advanced treatment to protect the receiving waters and their beneficial uses.

The agency leading the Program Team is BBARWA, who will take the position of Lead Agency for compliance with CEQA on behalf of this Program. The Program has been awarded Federal grants, so compliance with the National Environmental Protection Act (NEPA) is also needed. Therefore, this document has been prepared to meet NEPA standards to enable BOR and other Federal agencies to process this Program under a separate NEPA documentation process. NEPA compliance will also be carried forth by BBARWA as the Lead Agency, while BBCCSD, BBLDWP, and BBMWD would remain responsible agencies. The Program would upgrade BBARWA’s existing WWTP to an AWWP. The AWWP would produce purified water, henceforth referred to as “Program Water” that would be retained within the Big Bear Valley watershed to be used to increase the sustainability of local water supplies. In turn, the secondary effluent that is currently delivered to BBARWA’s LV Site will be reduced.

As detailed in this Program Description, many of the activities that make up the Program are in the planning and design phase. This DPEIR analysis focuses on both the plan level and project level implementation, including site-specific construction and operation details of individual program elements, where individual elements are known. As such, the level of information and analysis provided for each individual action is commensurate with this DPEIR approach.

### 3.2 PROGRAM LOCATION

The Big Bear Valley is located in the San Bernardino Mountains of San Bernardino County, California. The area includes approximately 135 square miles within a 12-mile-long valley surrounded by mountain ridges and rugged slopes. Land surface elevations range from 6,000 to 9,900 ft and the area is entirely surrounded by the San Bernardino National Forest. The proposed Program is located within the Big Bear Valley Groundwater Management Zone (GMZ or Bear Valley Basin). Big Bear Lake and Baldwin Lake are located in the middle of the Bear Valley Basin. The overall Program Area consists of Big Bear Valley. The BBARWA sewer service area and the Big Bear Valley potable water service areas are shown on **Figure 3-1** to illustrate the regional context of the proposed Program. The proposed elements of the Program that are located within the Big Bear Valley are shown on **Figures 3-2 through 3-17**, which depict the Program Area from a regional and site-specific level. The site-specific Figures depict areas in which new infrastructure is required in support of the Program and also depicts portions of the Program that will utilize existing infrastructure that will be required in support of Program operation.



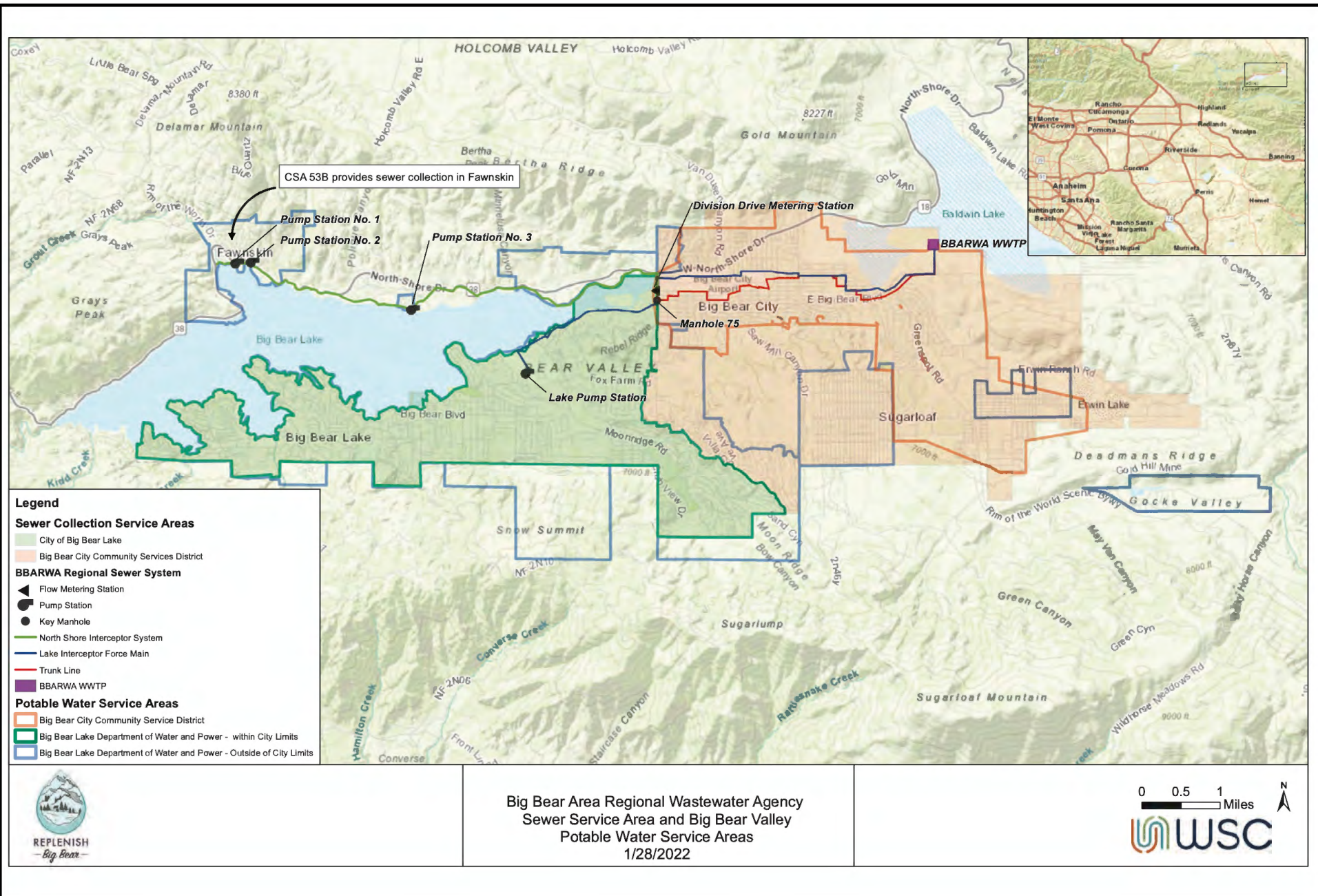


FIGURE 3-1



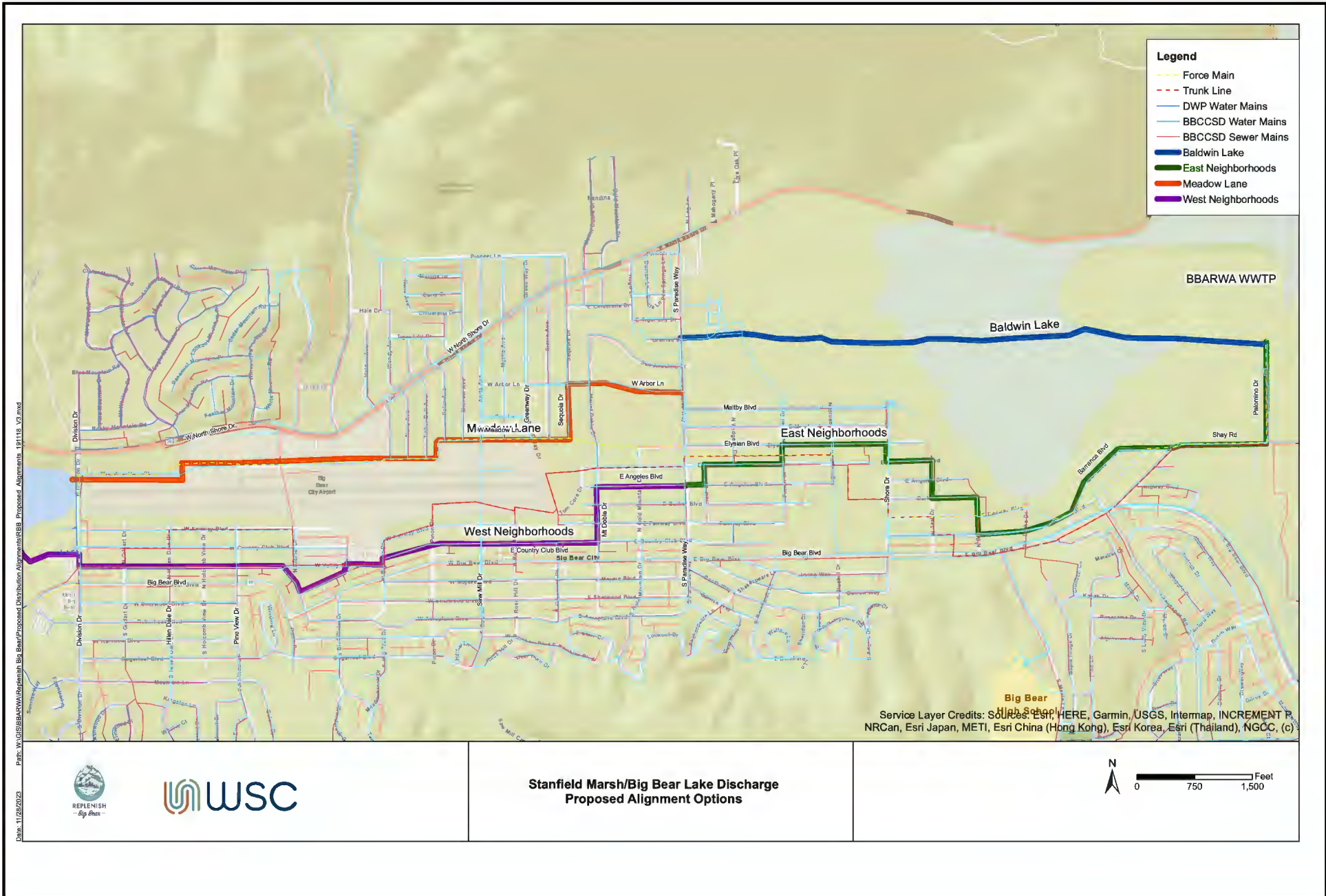
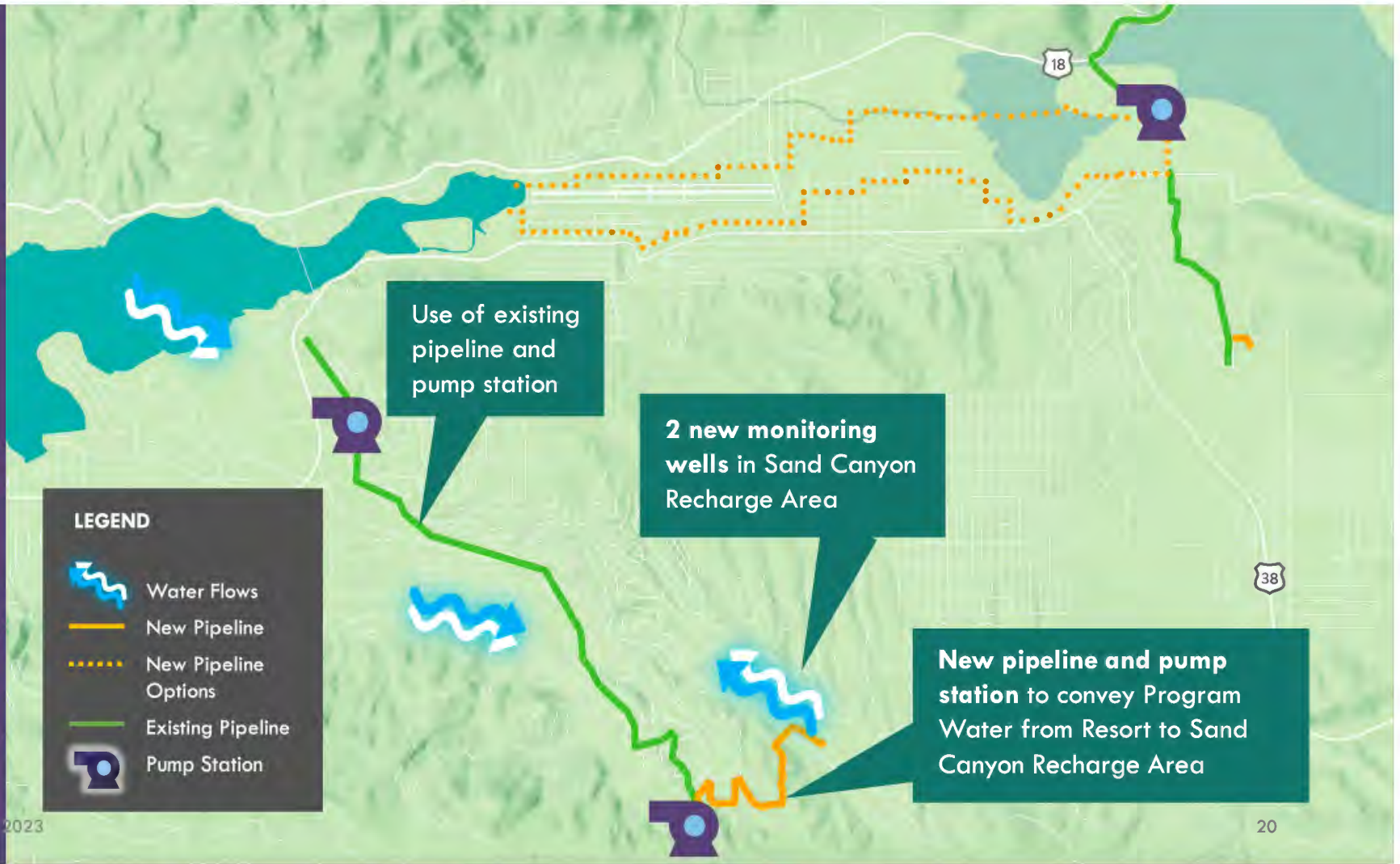


FIGURE 3-2

# Sand Canyon Recharge



December 19, 2023

20

FIGURE 3-3





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
- Big Bear -



FIGURE 3-4





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-5





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-6





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-7





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-8



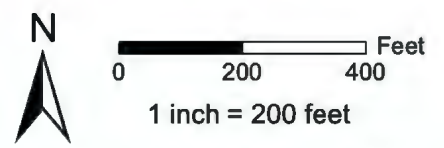


FIGURE 3-9





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Replenish Big Bear



REPLENISH  
- Big Bear -



FIGURE 3-10





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-11





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-12





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
- Big Bear -



FIGURE 3-13





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-14





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-15





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
- Big Bear -



FIGURE 3-16





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-16





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
- Big Bear -



FIGURE 3-17

The Program will span just east of Big Bear Lake to the WWTP at Baldwin Lake and then south to Shay Pond, and southeast of Big Bear Lake to the southeast to the Resort Storage Pond and Sand Canyon Recharge Area. Each of these elements are discussed in further detail below. The Program is located within several U.S. Geological Survey (USGS) 7.5-minute topographic maps, including the following: Big Bear City, CA; Big Bear Lake, CA Moonridge, CA; San Geronio, CA; and, Lucerne Valley, CA. The central point for this Program is the BBARWA WWTP, for which the geographic coordinates of the proposed Program are 34.268906, -116.815575, which is located in Section 7, Township 2 North, Range 2 East of the Big Bear City, CA USGS 7.5-minute topographic map.

### **3.3 PROGRAM PURPOSE AND OBJECTIVES**

The goal of the Program Team is to partner to recover a water resource that is currently being transported out of the Big Bear Valley to Lucerne Valley, close the water loop, and keep the water in the Big Bear Valley for beneficial reuse. This goal will be achieved through development of a multi-benefit water reuse Program that:

- Augments natural recharge for water supply sustainability;
- Protects the rare and diverse habitat and species in the Big Bear Valley;
- Promotes a thriving community through enhanced recreation;
- Creates a new and sustainable water supply;
- Educates the community about the water cycle, recycled water treatment process, and water quality to gain public support;
- Creates a Program that benefits the Program Team, and thereby benefits the community served by the members of the Program Team;
- Develops a cost-effective Program to offset potable water demands; and

Furthermore, beyond the Program Objectives, the Program includes the following uses and benefits:

- Sustain Stanfield Marsh Habitat and Increase Educational Opportunities: By providing a consistent water source to Stanfield Marsh through the discharge of Program Water to Stanfield Marsh, the habitat therein would be sustained and educational opportunities for the community and visitors would be created;
- Enhance Big Bear Lake Benefits: The Program would discharge Program Water to Stanfield Marsh, allowing the Program Water to flow through Stanfield Marsh and provide new inflow to Big Bear Lake. The Program will increase inflows and Lake level, thereby enhancing recreational opportunities and aquatic habitat in both Big Bear Lake and Stanfield Marsh, and would support water quality improvements;
- Expand Local Water Supplies: When there is space in the groundwater basin to increase water levels and there is available Program Water stored in Big Bear Lake, Program Water could be pumped to Sand Canyon to recharge the groundwater basin to strengthen the sustainability of the groundwater basin. The Program Team, in coordination with the Big Bear Watermaster, will negotiate an accounting framework to track the volume of Program Water stored in Big Bear Lake over time, which will account for inputs, extractions, evaporation and releases of Program Water, and will be negotiated with the existing accounting and reporting framework used by the Big Bear Watermaster. This framework is envisioned to include a provision for some Program Water to be stored in Big Bear Lake and subsequently used for recharge in Sand Canyon when conditions are favorable for recharge;
- Sustain Unarmored Threespine Stickleback Fish with Program Water: To sustain the habitat for the Federally listed Unarmored Threespine Stickleback (Stickleback) fish with

a new sustainable water source, Program Water will be discharged to Shay Pond in place of potable groundwater. While this part of the Program is included in this DPEIR for analysis purposes, this Program component is not anticipated to be completed in the near term. Therefore, a full analysis was not completed;<sup>7</sup>

### **3.3.1 Program Characteristics**

The Program Team envisions the facilities described in this Section as a key element in the long-term sustainability of local water supplies for the whole of the Big Bear Valley. Drought conditions and a long-term decline in precipitation trends have led the local water management agencies to investigate opportunities for supplemental water supplies, which are extremely limited due to its isolated location at the top of the Santa Ana River watershed (**Figure 3-18**). As such, the Program has been designed to retain local water in the Big Bear Valley to increase the sustainability of water supplies. The following agencies within the Big Bear Valley have partnered to jointly fund and develop the Program; though the Lead Agency for this Program is BBARWA:

- BBARWA: provides wastewater treatment to the entire Valley (79,000 acres).
- BBCCSD: Services include water, wastewater collection, fire protection & emergency medical services, solid waste collection, and street lighting services. BBCCSD's water service area includes Big Bear City and portions of San Bernardino County. BBCCSD's wastewater collection area includes Big Bear City and portions of unincorporated communities such as Sugarloaf, Erwin Lake, Whispering Forest, and Moonridge.
- BBLDWP: Formed in 1989 with the purchase of the retail water system from Southern California Water Company and currently provides water service to the City of Big Bear Lake, located along the south side of Big Bear Lake, as well as the unincorporated communities of Fawnskin, Sugarloaf, Erwin Lake and Lake Williams.
- BBMWD: An independent special district that is responsible for the overall management of Big Bear Lake.

While this DPEIR has been prepared at the programmatic level, due to the fact that Replenish Big Bear is, in and of itself, a Program with many components, project-level detail is provided for nearly every component of this Program. This is because sufficient detail is known for most of the Program facilities to analyze each facility at the project level. The only projects that have not been analyzed at the project level are as follows: the Sand Canyon Monitoring Wells have been analyzed at a more general level because the project sites for the monitoring wells have not yet been selected, though the general locations for the monitoring wells are known to be downstream of the Sand Canyon Recharge Area; and the change in water source at Shay Pond has been analyzed at a more general level because of the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. Sufficient detail is known for the remaining projects proposed under this Program to forecast impacts at the project level.

A visual overview of the whole of that which is proposed by this Program is shown on **Figure 3-29**.

#### **BBARWA WWTP Upgrades Project**

Replenish Big Bear includes permitting, design, and construction of AWPf at the existing BBARWA WWTP, about 6.59 miles of pipeline for product water and RO brine minimization, three pump stations, a groundwater recharge facility, and up to four monitoring wells. The Program is

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<sup>7</sup> The utilization of the Program Water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*), which is a Federally and state endangered species.



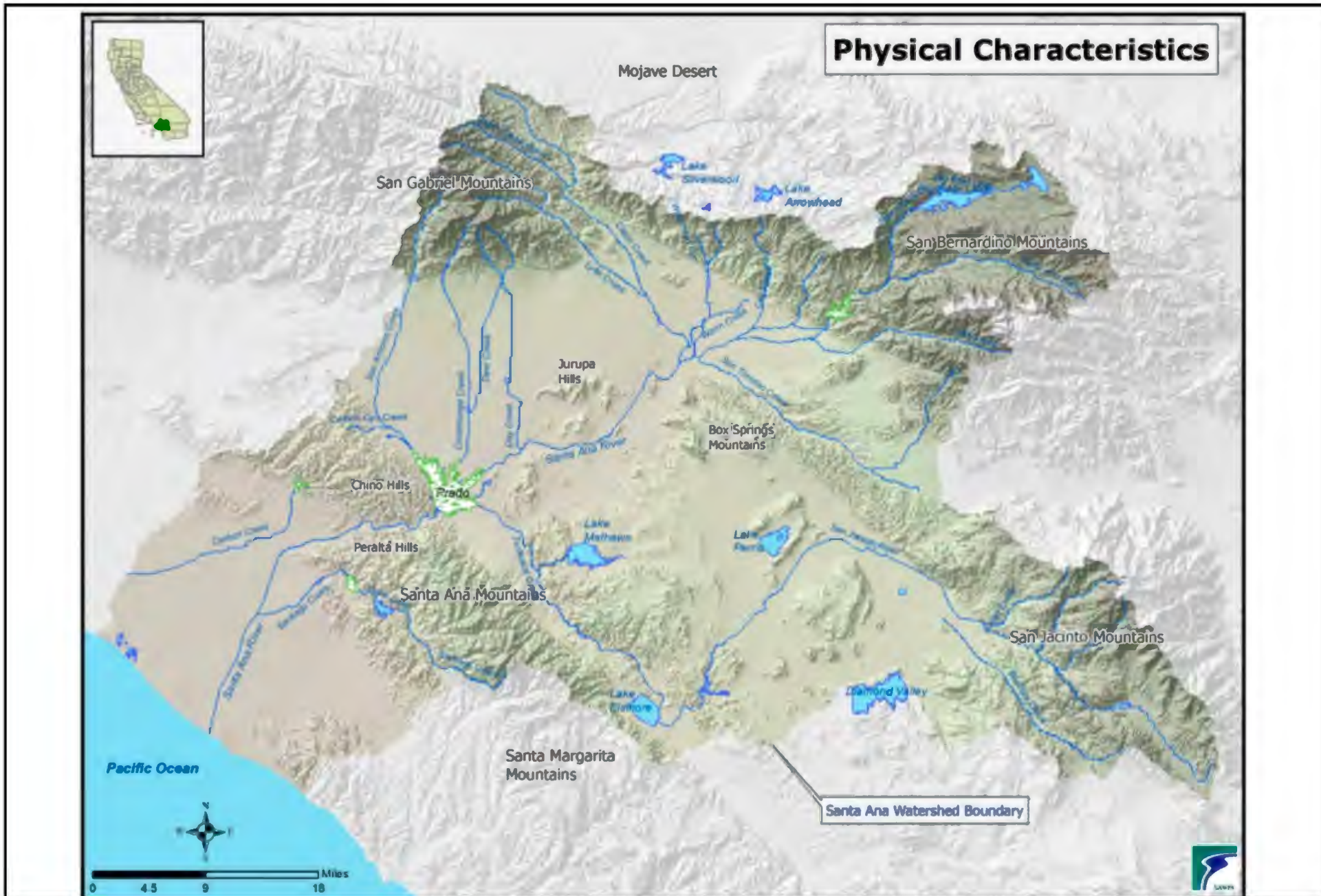


FIGURE 3-18



FIGURE 3-29



currently estimated to produce approximately 1,950 AFY of high-quality Program Water, and may produce up to 2,200 AFY by 2040 through operation of a high-recovery brine minimization technology. Piloting will be conducted to confirm the feasibility of the higher yield estimates. For the purposes of this document, 2,200 AFY is used to be conservative in evaluating environmental impacts. Between 2012-2022, the average amount of effluent BBARWA sent to the LV Site is about 2,190 AFY or about 2.0 MGD. With the implementation of Replenish Big Bear, BBARWA plans to only send water flows in excess of the 2.2 MGD treatment capacity to the LV Site. For redundancy purposes, BBARWA plans to maintain its current discharge location in Lucerne Valley, where undisinfectated secondary effluent is currently conveyed to irrigate fodder crops used for livestock feed.

The Program includes upgrades and additions to BBARWA's WWTP including an AWPf to produce purified water (i.e., Program Water) through full advanced treatment that would meet the stringent regulatory requirements for Big Bear Lake, particularly for nutrients (specifically TP, TIN and TDS). To achieve the anticipated effluent limits, BBARWA will need to implement a series of upgrades to existing unit processes and integrate new unit processes at its WWTP:

- Upgrade the existing oxidation ditches to increase biological nutrient removal process;
- Tertiary filtration and nutrient removal via denitrification filters;
- UF and RO membrane filtration;
- Brine pellet reactor for brine minimization; and
- UV/AOP.

The Program will require significant upgrades to the treatment process at the WWTP to meet stringent discharge requirements for the Big Bear Lake Discharge and the Sand Canyon Recharge.

A visual representation of the scope of the AWPf upgrades is shown on **Figures 3-23 and 3-24**.

Other improvements at BBARWA's WWTP includes the installation of 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building. A visual representation of the BBARWA WWTP Solar Array Project is shown on **Figure 3-37**.

### **Solar Evaporation Ponds Project**

The Program Team is considering the use of solar evaporation pond(s), while all other methods of brine disposal have been ruled infeasible. Solar evaporation ponds rely on solar energy to evaporate water from the brine concentrate stream, leaving behind precipitated salts, which ultimately are disposed of in a landfill. Pond size requirements can be quite high depending on the brine flow and evaporation rates and the regulatory requirement for impervious liners of clay or synthetic membranes substantially increases the cost of construction. The preliminary RO brine management option for the Program is a brine minimization pellet reactor to reduce the volume of brine waste from the RO process. The reduced brine stream from the pellet reactor will be conveyed to Solar Evaporation Ponds located on BBARWA WWTP property. Using an RO recovery of 90% at 2.2 MGD influent flow would result in 0.22 MGD of RO brine to be minimized through the pellet reactor, and approximately 0.022 MGD of brine to be conveyed to the evaporation pond based on a pellet reactor recovery of 90%. A total evaporation pond area of 23 acres is needed for the brine stream. However, if the higher yield cannot be achieved up to a total evaporation pond area of 57 acres would be required. Additionally, up to two monitoring wells

# Scope of Upgrades

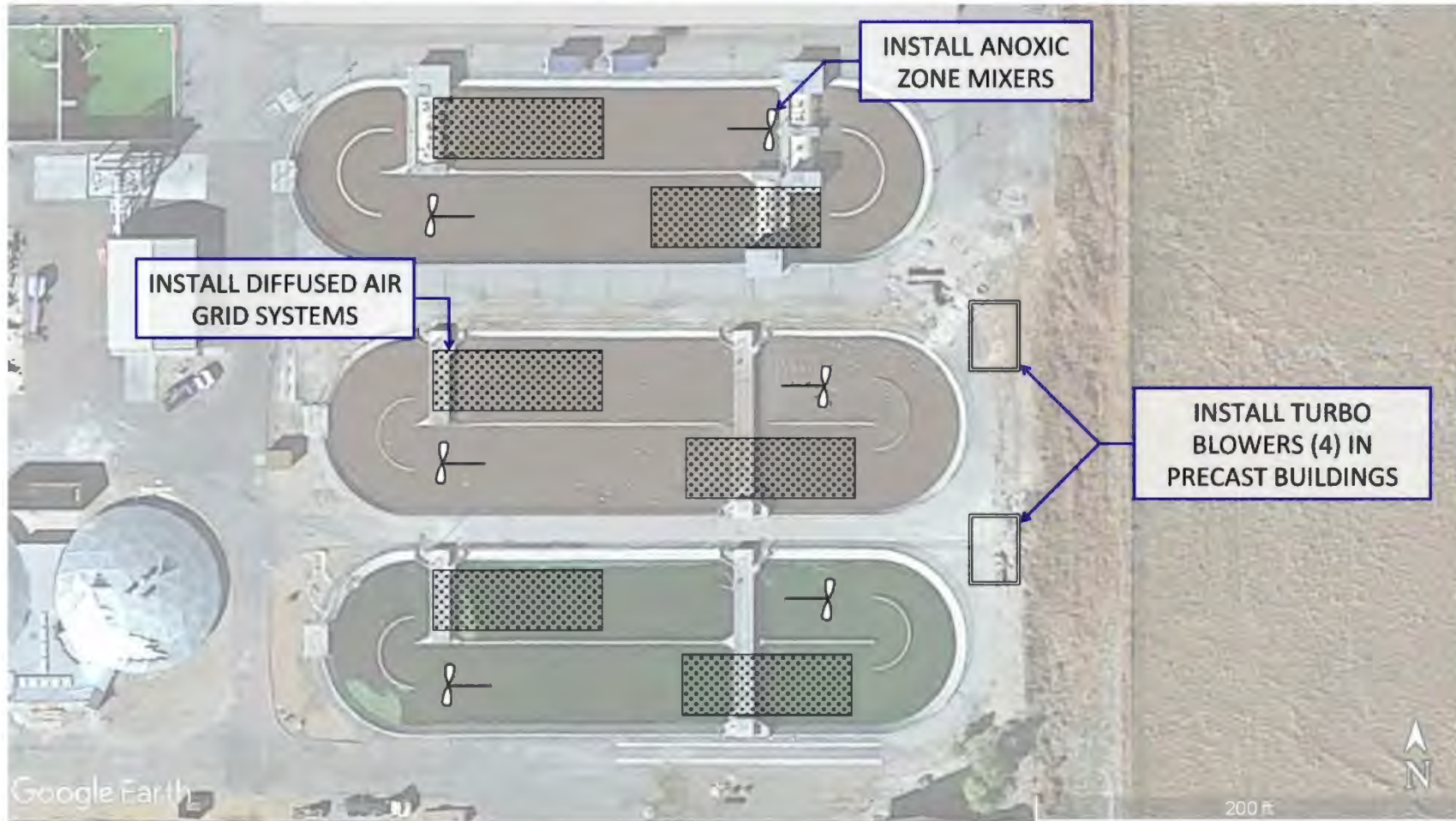


FIGURE 3-23



# Scope of Upgrades

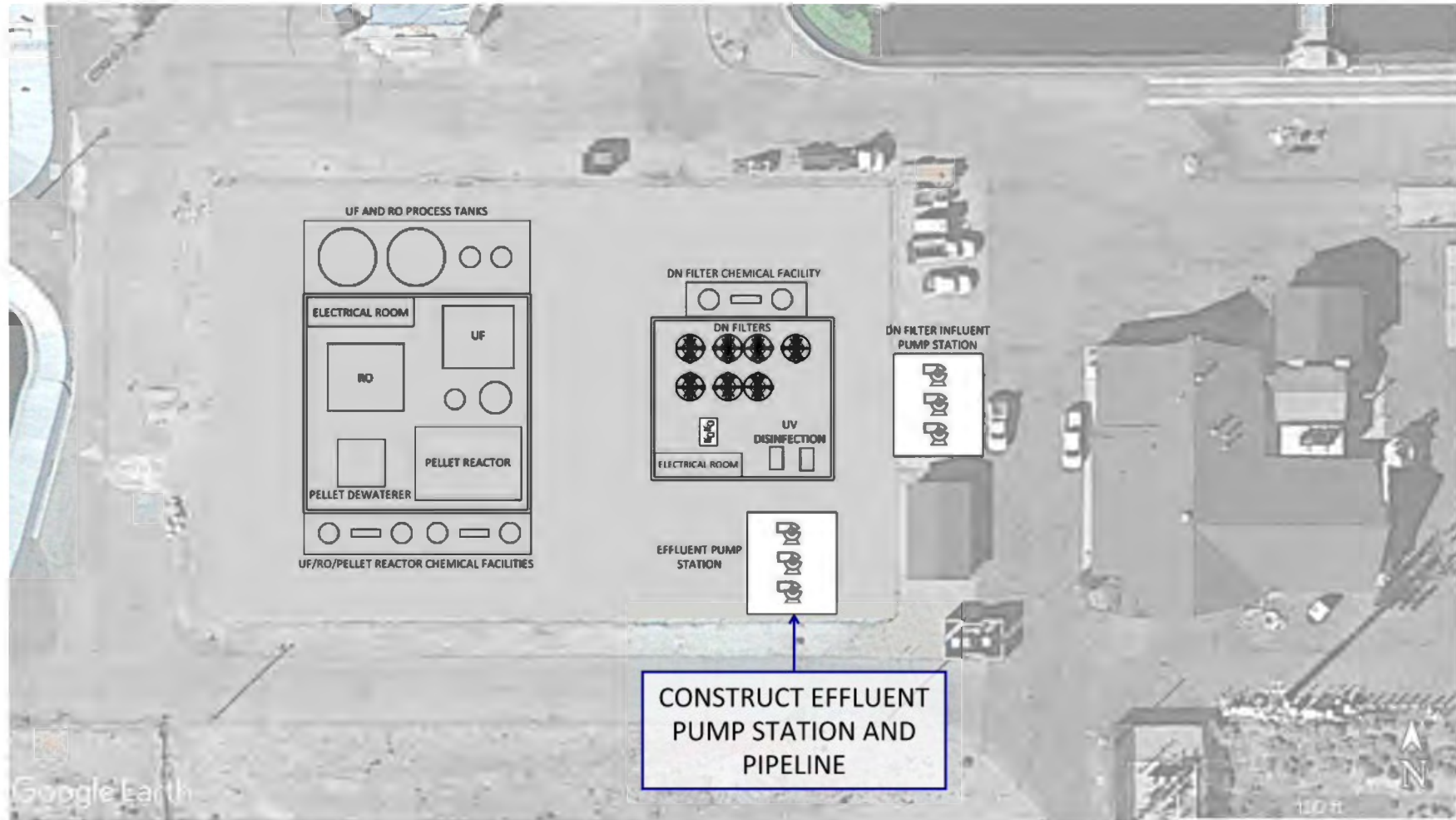


FIGURE 3-24

**Replenish Big Bear Program**

Possible Solar Locations



**FIGURE 3-37**

will be required to be installed to verify that seepage from the ponds is not contaminating underlying groundwater. A visual representation of the Solar Evaporation Ponds Project is shown on **Figure 3-26**.

### **Stanfield Marsh/Big Bear Lake Discharge Project**

As part of the Program, up to 2,200 AFY of Program Water is proposed to be discharged to the east end of Stanfield Marsh, which will then flow into Big Bear Lake. Stanfield Marsh and Big Bear Lake are connected through a set of culverts under Stanfield Cutoff. The Stanfield Marsh/Big Bear Lake Discharge Project would require installation of up to 12" 19,940 LF, with the length of pipeline being determined based on the Alignment Option BBARWA ultimately selects. Each Alignment Option has been evaluated as part of this DPEIR. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options are shown on **Figure 1-10**, and listed below for reference:

#### **Alignment Option 1 to Discharge Point 1**

- Baldwin Lake Pipeline Alignment Option: this Alignment Option traverses through Baldwin Lake from the BBARWA WWTP site to connect with the Meadow Lake Pipeline Alignment Option.
- Meadow Lane Pipeline Alignment Option: this Alignment Option connects with the Baldwin Lake Alignment Option, traverses along South Paradise Way south to West Arbor Lane, along West Arbor Lane at South Paradise Way west to Sequoia Drive, along Sequoia Drive at West Arbor Lane south to West Meadow Lake, and along West Meadow Lane west to Discharge Point 1 at Stanfield Marsh.

#### **Alignment Option 2 to Discharge Point 2**

- East Neighborhoods Pipeline Alignment Option: this Alignment Option traverses south from the BBARWA WWTP site south along Palomino Drive to Shay Road, along Shay Road west to Barranca Boulevard, along Barranca Boulevard south/southwest to East Country Club Boulevard, along East Country Club Boulevard west to Bufflehead Drive, along Bufflehead Drive north to East Barker Boulevard, along East Barker Boulevard west to Teal Drive, along Teal Drive north to Mountain View Boulevard, along Mountain View Boulevard west to Shore Drive, along Shore Drive north to Elysian Boulevard, along Elysian Boulevard west to Pintail Drive, along Pintail Drive south to East Mountain View Boulevard, along East Mountain View Boulevard west to Eider Drive, along Eider Drive south to Angeles Boulevard, along and through Angeles Boulevard west to South Paradise Way. At Angeles Boulevard and South Paradise Way, this Alignment Option connects with the West Neighborhoods Pipeline Alignment Option.
- West Neighborhoods Pipeline Alignment Option: this alignment option traverses east from its connection with the East Neighborhoods Pipeline Alignment Option at Angeles Boulevard and South Paradise, and traverses west along East Angeles Boulevard to Mount Doble Drive, along Mount Doble Drive south to East Country Club Boulevard, along East Country Club Boulevard west to Big Tree Drive, along Big Tree Drive south to Valley Boulevard, along Valley Boulevard west to Bowles Drive, along Bowles Drive southwest to West Aeroplane Boulevard, along West Aeroplane Boulevard northwest and west to Division Drive, along Division Drive north to approximately Fairway Boulevard where the pipeline traverses west to Discharge Point 2 at Stanfield Marsh.

The Program Team, in coordination with the Big Bear Watermaster, will negotiate an accounting framework to track the volume of Program Water stored in Big Bear Lake over time, which will



# Scope of Upgrades



FIGURE 3-26

account for inputs, extractions, evaporation and releases of Program Water, and will be negotiated with the existing accounting and reporting framework used by the Big Bear Watermaster. This framework is envisioned to include a provision for some Program Water to be stored in Big Bear Lake and subsequently used for recharge in Sand Canyon when conditions are favorable for recharge.

### **Sand Canyon Recharge Project**

As part of the Program, up to 380 AFY of Program Water stored in Big Bear Lake will be used for groundwater recharge at the Sand Canyon Recharge Area over a six-month dry weather period.

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake and discharging it into Sand Canyon, which serves as a flood control channel (refer to **Figure 3-32**). The recharge operation would only occur during summer months when needed to supplement groundwater supply and would be operated intermittently as needed to avoid interference with flood flows. The operation would also be limited by availability of Program Water stored in Big Bear Lake, which would be tracked by BBMWD in accordance with the negotiated accounting framework that will be developed prior to implementation. The Program Team does not have rights to native water in Big Bear Lake and will only use Program Water for recharge.

No channel modifications to the channel bottom are anticipated since it is expected that the Program Water stored in Big Bear Lake will percolate within the defined Sand Canyon Recharge Area. If the Program Water does not fully percolate within the defined recharge area, the surface application discharge rate will be reduced using a VFD on the Sand Canyon Booster Station until the water does percolate within the defined recharge area. Recharge to Sand Canyon would occur through a discharge via a new pipe outlet at the top of the Sand Canyon Recharge Area at the top of the channel bank that discharges down the side slope of the channel into the channel bottom. All of these concepts will need to be coordinated with SBCFCD to ensure that the capacity of the flood control channel remains sufficient to meet the primary purpose of providing flood protection. If these improvements resulted in a decrease in surface flow entering Big Bear Lake, the impact to surface water rights under the 1977 Judgment will be evaluated.<sup>8</sup>

When water is needed for recharge in Sand Canyon, it is assumed that the existing lake pump station owned by the Resorts could be used to transfer water through an existing pipeline into the existing storage pond located at Bear Mountain Ski Resort. Then the Program Water would be conveyed utilizing a new 471 gpm booster pump station at the existing storage pond located at the Bear Mountain Ski Resort via a new pipeline from Resort Storage Pond to Sand Canyon 8" 7,210 LF (refer to **Figures 3-30 and 3-31**). The existing lake pump station and storage pond located at Bear Mountain Ski Resort are used primarily for snowmaking in the winter and are expected to be available for the proposed recharge operation, which would only occur from April through October when the Resorts are not making snow. It is anticipated that a separate WDR permit by BBLDWP will be obtained to regulate the Sand Canyon Recharge Project.

---




<sup>8</sup> The Big Bear Dam was originally constructed to provide water storage for Bear Valley Mountain which was formed in 1903 by the citrus growers of the Redlands/Highland area to ensure water supply for irrigation needs. The historic operation of the Big Bear Lake as an irrigation reservoir resulted in drastic fluctuations in lake levels, which conflicted with the goals of BBMWD and the community of Big Bear Valley. A legal conflict over the water rights and management of the lake was ultimately settled out of court through the 1977 Judgement. Under the terms of this judgement, BBMWD purchased the lake bottom, Bear Valley Dam, and the right to utilize and manage the surface of Big Bear Lake from Bear Valley Mutual. Bear Valley Mutual retained a storage right and ownership of all water inflow into Big Bear Lake.



# Sand Canyon Groundwater Recharge

Write a description for your map.

## Legend

-  New 8-inch Pipeline to Sand Canyon
-  Bear Mt. Resort Pond
-  New Pump Station

New booster pump station at 471 gpm

Bear Mt. Resort Pond

Google Earth

400 ft

FIGURE 3-30



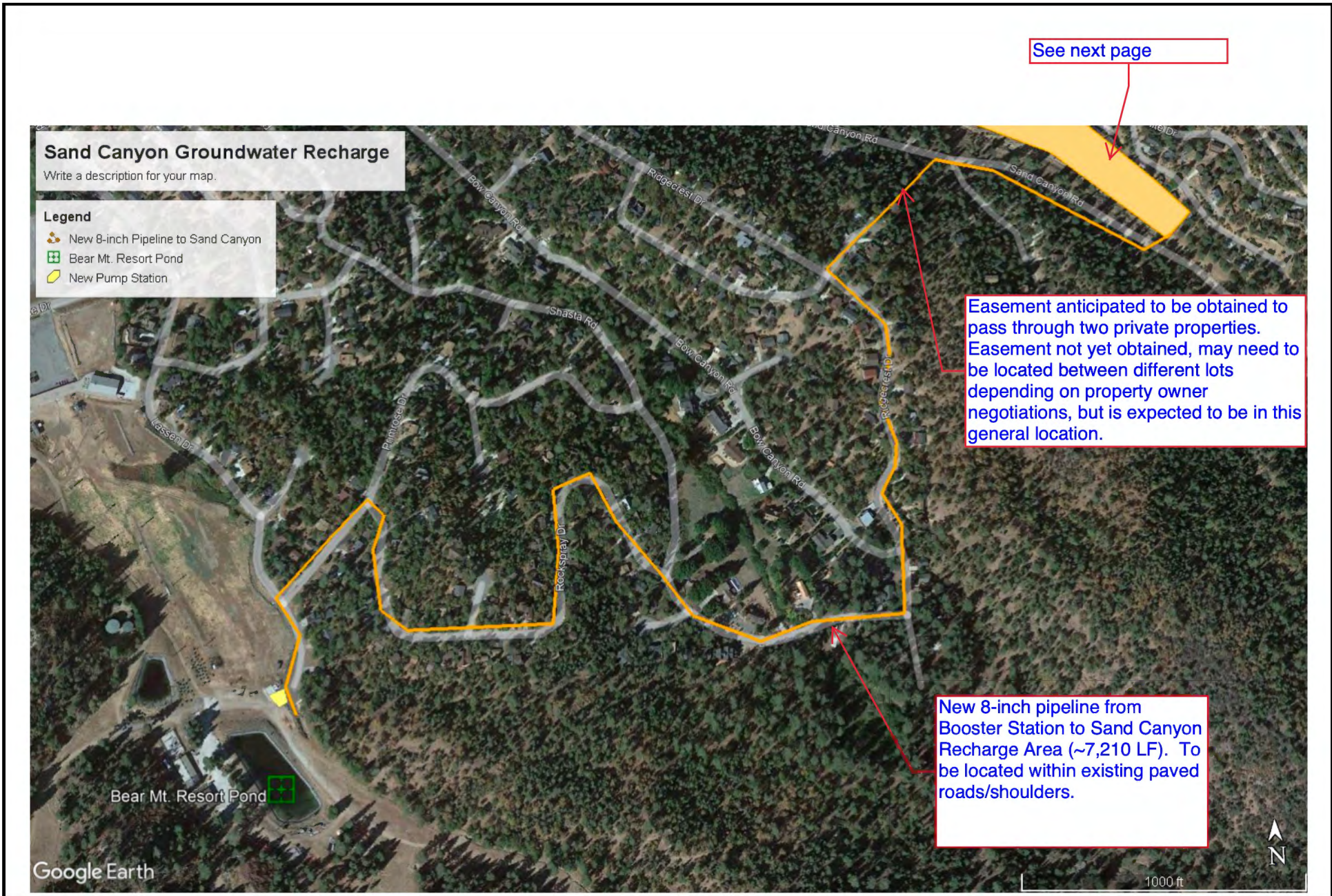


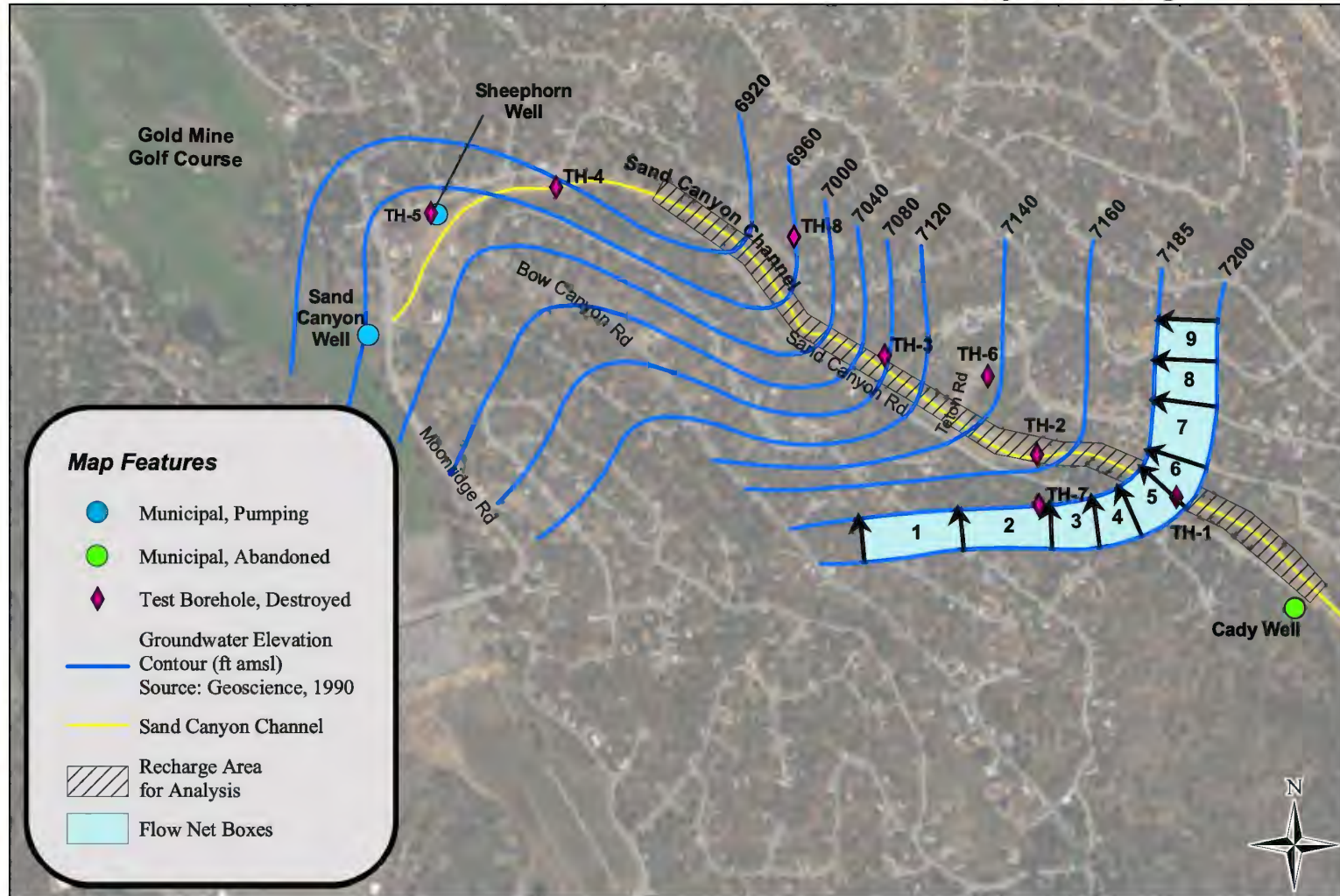
FIGURE 3-31



Recharge Area



### Sand Canyon Recharge Evaluation



29-Nov-17

**Thomas Harder & Co.**  
Groundwater Consulting

0 250 500 1,000 Feet

### Sand Canyon Underflow Analysis

NAD 83 UTM Zone 11

Figure 3

FIGURE 3-32

The Program Water will be discharged at the top of the Sand Canyon Recharge Area. The discharge will consist of a pipe outlet at the top of the channel bank that discharges down the side slope of the channel into the channel bottom. The channel slope will be protected from erosion using rip rap or similar erosion control methods.

### **Shay Pond Discharge Project**

The Shay Pond Discharge Project would replace the potable water source that is currently discharged to the Shay Pond with Program Water as the new water source to maintain the water flow through the Pond. Up to 80 AFY of Program Water may be sent to Shay Pond to support the Stickleback, and any remaining Program Water will be sent to Stanfield Marsh, a tributary of Big Bear Lake. Based on the average volumes of discharges between 2012 and 2022, BBCCSD discharges approximately 50 AFY of potable water into Shay Pond to maintain the endangered Stickleback population. While this part of the Program is included in this DPEIR for analysis purposes, the Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*), which is a Federally and state endangered species.

There is an existing 6-inch C-900 PVC pipeline that begins at the intersection of Shay Road and Palomino Drive and terminates near Shay Pond that can be used to convey the Program Water, with an extension of approximately 710 feet to reach Shay Pond. This nearby pipeline was constructed in 1986 for future use, but has never been put into service. It is possible that this pipeline may not be useable, and as such, a pipeline traversing this same alignment and sized comparably to the existing pipeline may be required, in addition to the proposed 710-foot extension to reach Shay Pond (new Shay Pond Conveyance Pipeline). The length of this pipeline would be 5,600 feet (Shay Pond Replacement Pipeline). A visual representation of the Shay Pond Discharge Project is shown on **Figure 3-34**.

### **LV Site Discharge Reduction**

Between 2012 and 2022, the average amount of effluent BBARWA sent to the LV Site is about 2,190 AFY or about 2.0 MGD. With the implementation of the Program, BBARWA plans to only send water flows in excess of the 2.2 MGD treatment capacity to the LV Site. For redundancy purposes, BBARWA plans to maintain its current discharge location in Lucerne Valley, where undisinfected secondary effluent is currently conveyed to irrigate fodder crops used for livestock feed. However, the discharge to the LV Site would be reduced as a result of implementation of the Program. The reduction in flow to Lucerne Valley would be altered from about 2,190 AFY to about 340 AFY with the implementation of the proposed Program. A visual representation of the LV Site operations is shown on **Figures 3-35 and 3-36**.

## **3.4 PROGRAM BACKGROUND AND EXISTING CONDITIONS**

### **3.4.1 Groundwater Management in Big Bear Valley**

The Bear Valley Basin (Basin Number 8-009) was initially designated by DWR as a medium priority basin. Medium priority basins that are not in critical overdraft are scheduled to submit a GSP to DWR by January 31, 2022. DWR reclassified the Bear Valley Groundwater Basin (Bear Valley Basin) as a very low priority basin, but encouraged the BVBGSA to continue with the planned preparation of the GSP. Given the fact that natural precipitation is the only source of recharge and water supply to the Big Bear Valley, the BVBGSA member agencies have already been proactive in implementing many of the groundwater monitoring and management elements required by Sustainable Groundwater Management Act (SGMA) in an effort to protect this critical





FIGURE 3-34



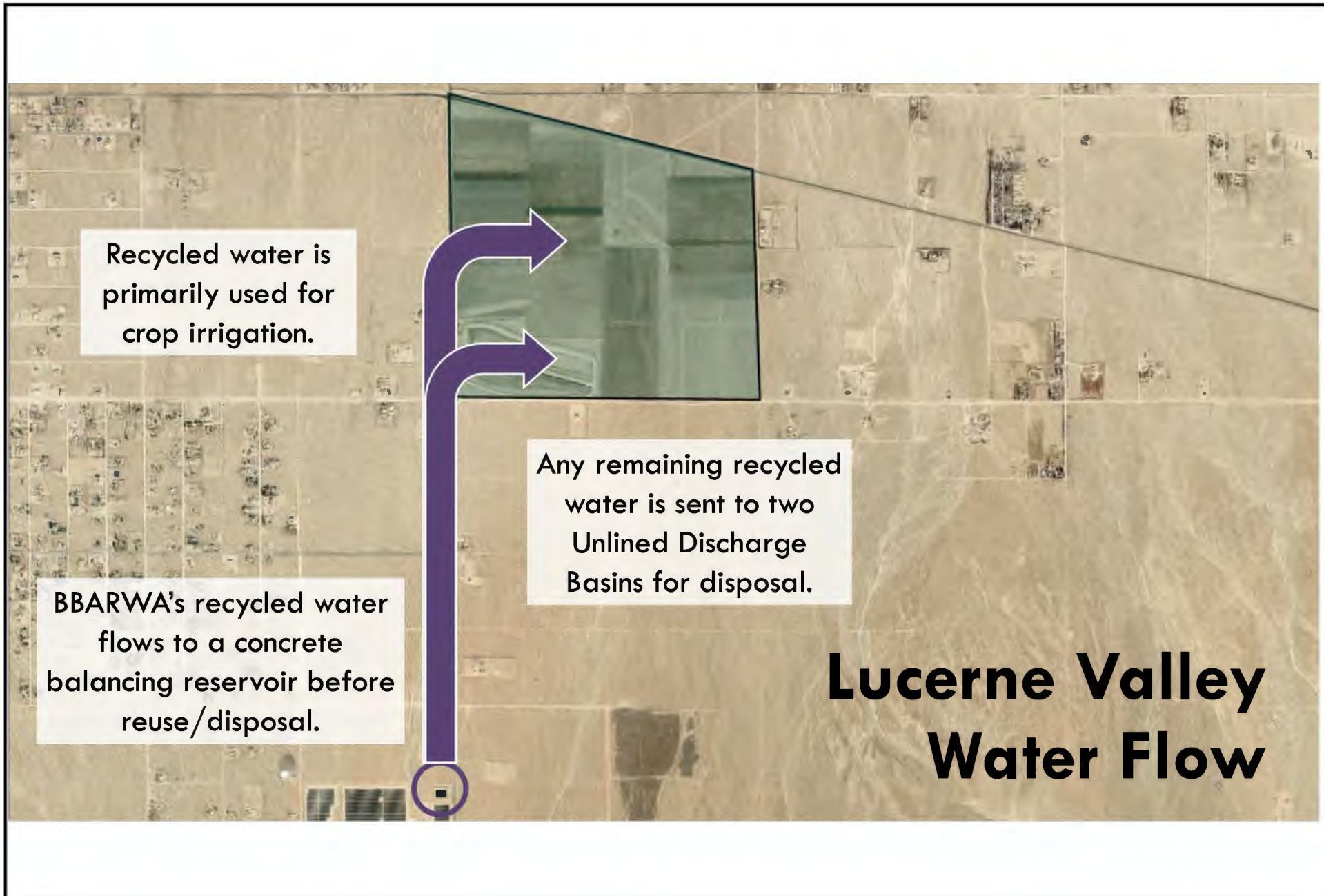


FIGURE 3-35

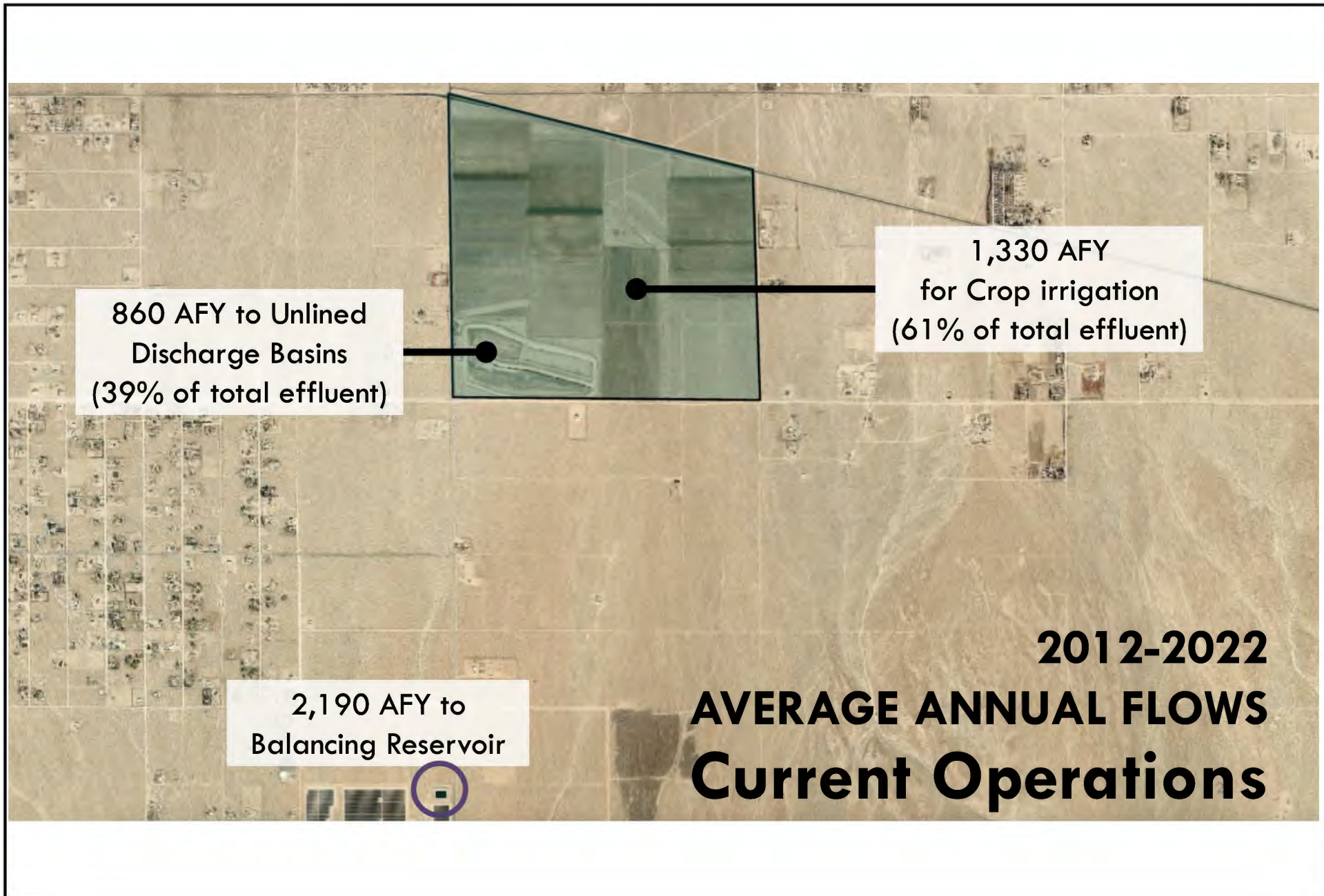


FIGURE 3-36



resource. Thus, the BVBGSA, a “local agency” comprised of BBCCSD, BBLDWP, BBARWA, and BBMWD, prepared the Bear Valley Basin GSP in January 2022. The GSP is available at <https://www.bvbgsa.org/>.

Groundwater pumping within the Bear Valley Basin, as a whole, has historically been within the Sustainable Yield resulting in relatively stable long-term groundwater levels. While there have periodically been localized groundwater level declines, pumping sustainability has been maintained through adaptive management of pumping distribution between management areas and implementation of conservation measures. To maintain pumping sustainability into the future, the BVBGSA plans to continue these effective management actions on a routine basis and implement projects as needed that support sustainable management. Additionally, groundwater level Measurable Objectives at each Representative Monitoring Site (RMS) are monitored against the average 2019 groundwater level at that site (refer to **Figure 3-20**). These management actions and monitoring programs are detailed further in the GSP.

**3.4.2 Water Demand in Big Bear Valley**

Water demands served by BBLDWP are primarily residential, which account for approximately 70 percent of BBLDWP's total demand, while commercial demands account for approximately 19 percent of BBLDWP's total demand. The remaining 11 percent is attributed to unbilled consumption and water loss. BBCCSD provides potable water to all its customers, which are comprised of about 88% residential and 12% commercial accounts. On average, BBCCSD's water uses are about 80% residential, 11% commercial, and 9% losses. The projected water demands for BBLDWP and BBCCSD area are presented in **Table 3-1**.

**Table 3-1  
 WATER DEMAND PROJECTIONS FOR BEAR VALLEY WATER AGENCIES (AFY)**

<b>Water Agency</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
BBLDWP	2,332	2,147	2,164	2,190	2,231	2,283
BBCCSD	1,067	1,185	1,206	1,227	1,249	1,271
<b>Total</b>	<b>3,399</b>	<b>3,332</b>	<b>3,370</b>	<b>3,417</b>	<b>3,480</b>	<b>3,554</b>

Source: BBLDWP 2020 UWMP; BBCCSD 2020 UWMP

**3.4.3 Big Bear Lake Water Management**

Big Bear Lake is an important resource that provides extensive recreational, economic, ecological, and aesthetic benefits for the local community as well as the larger inland Southern California region. Stanfield Marsh and Big Bear Lake are connected through a set of culverts under Stanfield Cutoff. Together, Stanfield Marsh and Big Bear Lake have a surface area of nearly 3,000 acres, a storage capacity of 73,320 AF, and an average depth of 32 ft. Stanfield Marsh and Big Bear Lake are both Waters of the State of California and Waters of the U.S., which have several designated beneficial uses. For reference, **Table 3-2** shows the designated beneficial uses of Big Bear Lake and Stanfield Marsh per the 1995 Santa Ana River Basin Water Quality Control Plan (Santa Ana Basin Plan), as amended in 2008, 2011, 2016, and 2019. In addition, the Nutrient TMDL was adopted to address concerns with phosphorus and nitrogen impacts on Big Bear Lake. **Table 3-3** presents Big Bear Lake regulatory limits set to protect Big Bear Lake benefits.





January 2022

**Bear Valley Basin  
Groundwater Sustainability Plan**



**Map Features**

- Monitoring Well
  - BBCCSD
  - BBLDWP
  - RMS Well
- ▭ Management Areas
- ▭ Bear Valley Groundwater Basin (DWR Bulletin 118, Rev. 2018)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 0.5 1 2 Miles  
NAD 83 UTM Zone 11

Thomas Harder & Co.  
Groundwater Consulting

**Bear Valley Basin  
Monitoring Network**  
Figure 2-31

FIGURE 3-20

**Table 3-2  
 BENEFICIAL USES OF BIG BEAR LAKE AND STANFIELD MARSH**

<b>Beneficial Uses</b>	<b>Big Bear Lake</b>	<b>Stanfield Marsh</b>
AGR - Agricultural Supply	✓	
COLD - Cold Freshwater Habitat	✓	✓
COMM – Commercial and Sport Fishing	✓	
GWR - Groundwater Recharge	✓	
MUN - Municipal and Domestic Supply	✓	✓
RARE - Rare, Threatened, or Endangered Species	✓	✓
REC1 - Water Contact Recreation	✓	✓
REC2 - Non-Contact Water Recreation	✓	✓
SPWN - Spawning, Reproduction, and/or Early Development	✓	
WARM - Warm Freshwater Habitat	✓	
WILD - Wildlife Habitat	✓	✓

**Table 3-3  
 LAKE REGULATORY LIMITS FOR CONSTITUENTS OF INTEREST**

<b>Constituent</b>	<b>Santa Ana Basin Plan WQO (mg/L)</b>	<b>Nutrient TMDL (mg/L)</b>
<b>Total Dissolved Solids (TDS)</b>	<b>175</b>	
Hardness	125	
Sodium	20	
Chloride	10	
<b>Total Inorganic Nitrogen (TIN) (mg/L-N)</b>	<b>0.15</b>	
Sulfate	10	
<b>Total Phosphorus (TP) (mg/L-P)</b>	<b>0.15</b>	<b>0.035</b>
Total Nitrogen (TN) (mg/L-N)		1
Chlorophyll-a (mg/L)		0.014

Note: **Bolded** constituents were identified as priority in previous regulatory meetings and are specifically evaluated in this study.  
 WQO = Water Quality Objectives

Big Bear Lake is located about 6,743 ft (2,055 m) above mean sea level (amsl) in the San Bernardino Mountains in San Bernardino County. Big Bear Lake was formed following construction of the Bear Valley Dam in 1883-1884 to serve as an irrigation supply for the citrus industry in the downstream Redlands-San Bernardino communities. Since that time, Big Bear Lake has served as a vital engine for economic growth in Big Bear Valley, and the region has developed into a year-round destination with extensive recreational and commercial activities, primary and secondary residences, vacation properties, hospitality, and other services.

As with all other natural and man-made lakes in Southern California, Big Bear Lake is subject to dramatic variability in water surface elevation; surface elevations reached as low as -48.5 ft relative to dam crest (72.33 ft maximum depth) in November 1961, corresponding to a volume of less than 1,000 AF and a lake surface area on the order of 200-300 acres during the extended drought in the late 1950's and early 1960's. BBMWD was subsequently formed in 1964 to manage and help stabilize the water level in Big Bear Lake. The region's natural hydrology includes severe

protracted droughts and is influenced by the Pacific Decadal Oscillation (PDO) and El Nino-La Nina climate systems, which makes lake level stabilization a tremendous challenge. This wide variability in Lake level, in turn, can have dramatic impacts on recreational, economic, and aesthetic values of Big Bear Lake, as well as ecological conditions and Big Bear Lake water quality.

The proposed Program would not only provide Program Water to serve existing uses, but it also envisions replenishing Big Bear Lake through Stanfield Marsh.

Big Bear Lake, as stated above, is managed by BBMWD, which has rights to the lake bottom, Bear Valley Dam, and the right to utilize and manage the surface of Big Bear Lake from Mutual. Mutual maintains a storage right and ownership of all water inflow into Big Bear Lake. Mutual has the right to request Lake releases commensurate with what may be reasonably necessary to meet the requirements of Mutual's stockholders, not exceeding 65,000 AF in any ten (10) year period.

BBMWD is able to maintain a higher water level in the lake by delivering water to Mutual from an alternate source of water. This alternate source of water (In-Lieu Water) comes mainly from the State Water Project (SWP) through a contract executed in 1996 with San Bernardino Valley Municipal Water District.

BBMWD's current Lake Release Policy was adopted in 2006 provides guidance on how Mutual demands will be met depending on Big Bear Lake level.

- When Big Bear Lake is in the top 4 feet, Mutual's demands will be met with Lake releases.
- When Big Bear Lake is between 4 and 6 feet below full, Lake releases will be made in the months of November through April and In-Lieu Water will be obtained from May to October.
- When Big Bear Lake is more than 6 feet below full, In-Lieu Water will be obtained.

### ***Snowmaking Withdrawals***

BBMWD currently has a contract with the Resorts, allowing the withdrawal of an allocated amount of water from Big Bear Lake to use for snowmaking purposes. Currently, the Resort is authorized to withdraw a maximum of 11,000 acre-feet (AF) of water from Big Bear Lake over a 10-year rolling period, not exceeding 1,300 AF in any single year. It is calculated that about half of the water withdrawn from Big Bear Lake for this purpose is returned as runoff.

### ***Fish Protection Releases***

In 1995, SWRCB issued Order No. 95-4, which requires BBMWD and Mutual to release water from Big Bear Lake for fishery protection in Bear Creek. Sufficient water must be released from Big Bear Lake to maintain specific flow standards, which vary by month and by hydrologic year type (normal, above normal or below normal precipitation).

### **3.4.4 Wastewater Characteristics and Facilities**

BBARWA owns and operates a 4.89 MGD capacity WWTP located just south of Baldwin Lake on the east side of the Big Bear Valley. Between 2012-2022, the WWTP treated on average approximately 2.0 MGD of municipal wastewater collected from BBCCSD, the City of Big Bear Lake, and San Bernardino County Service Area (CSA) 53 in Fawnskin.

The existing treatment process includes the following:

- Preliminary treatment consisting of a mechanical coarse screen and an aerated grit chamber;

- Secondary treatment consisting of extended aeration oxidation ditches and secondary clarifiers; and
- Solids handling through a dewatering belt filter press.

Treated effluent is temporarily stored on-site prior to discharge to Lucerne Valley. Dewatered solids are hauled off-site.

The influent flows to BBARWA's WWTP are comprised of three components:

- Flow from full-time residential homes;
- Flows due to tourism, commercial activities and part-time residential homes; and
- Flows from Infiltration and Inflow (I/I) due to precipitation.

These components create a seasonal variation in the wastewater flows treated at the plant. BBARWA's 2010 Sewer Master Plan (2010 SMP) estimated that the full-time residential rate is 38% of the overall customer population within the area. The tourism season is largely concentrated in the months of December through April due to the Resorts; additionally, the months of June and July also see a slight rise in tourism due to Big Bear Lake recreation activities. The average daily flow is presently approximately 2.0 MGD and the maximum month flow is 5.4 MGD.

BBARWA's WWTP is located on a 93.5-acre property. The WWTP process components occupy 11.2 acres, and the remaining 82.3 acres include storage ponds and Solar Evaporation Ponds. Influent flows are conveyed through three BBARWA operated sewer mains and lift stations to the WWTP. The WWTP currently provides preliminary and secondary treatment.

Treated secondary effluent is discharged to BBARWA's 480-acre LV Site—about 20 miles north of the Big Bear Valley—for irrigation of fodder and fiber crops that are used as feed for livestock. The LV Site referred to herein is the 480-acre portion of the larger 630-acre BBARWA owned site in Lucerne Valley that is regulated by a Colorado Regional Board WDR, which stipulates that 340 acres of the LV Site can be irrigated with recycled water from BBARWA's WWTP, with an additional 140 acres available for irrigation utilizing other water sources. Use of recycled water for crop irrigation at the LV Site began in 1980 and 100% of the WWTP effluent is currently discharged to the LV Site. Discharge to the LV Site must meet the Colorado Regional Board WDR, which has an effluent limit for TDS of 550 mg/L over a 12-month period. A diagram of the Lucerne Valley Water Flow is provided as **Figure 3-35**, which shows that BBARWA's recycled water flows to a concrete balancing reservoir before reuse/disposal, and then is transferred to the LV Site where the recycled water is primarily used for crop irrigation, with any remaining recycled water sent to two unlined discharge basins for disposal. The 2012-2022 Average Annual Flows to the LV Site are shown on **Figure 3-36**, which indicates that the average flow to Lucerne Valley over this 10-year period was 2,190 AFY, with 860 AFY (39% of the total effluent) sent to the unlined discharge basins, and 1,330 AFY (61% of the total effluent) was utilized by the farmer for crop irrigation. It is estimated that 560 AFY of the 1,330 AFY utilized for crop irrigation was absorbed by the fodder crops, while about 20 AFY of the 860 AFY of effluent sent to the unlined discharge basins evapotranspired. Thus, for the purposes of this DPEIR, it is estimated that about 1,610 AFY of the effluent sent to the LV Site contributes to the recharge of the Lucerne Valley Basin.



### **3.4.5 Shay Pond and Stickleback Fish Habitat**

The Stickleback is listed as both a Federal and State of California Endangered Species under the respective Endangered Species Acts. There has been a population of Stickleback in the Shay Creek area on the east side of Big Bear Valley, as shown in **Figure 3-21**, which includes Shay Pond, Sugarloaf Pond, Juniper Springs, Motorcycle Pond, Shay Creek, Wiebe Pond, and Baldwin Lake. By the summer of 1990, it was thought that the Stickleback remained in only Shay Pond; however, several years of above-average precipitation in the mid-1990s resulted in the establishment of a pool of water in Baldwin Lake.

There is a long history of study and group effort regarding the Stickleback in the Shay Creek area. The main stakeholders include USFWS, CDFW, the San Bernardino National Forest (SBNF), BBCCSD, BBLDWP, and BBARWA. The Shay Creek Working Group, which includes representatives from the USFWS, CDFW, SBNF, BBCCSD, BBLDWP, and BBARWA, was formed during the process of preparing the USFWS' 2002 Biological Opinion (2002 BO) for the area.

There are habitat threats that are specific to the Shay Creek area, including wetland vegetation growth and encroachment, pollution or eutrophication from contamination from horse manure, and loss of flow in the creek due to property development in the area. To mitigate wetland vegetation growth and encroachment, Shay Pond was dredged by BBCCSD in 2011, and again most recently in 2017. **Photos 3-1** and **3-2** show the pond before and after the 2011 dredging, respectively.



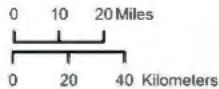
**Photo 3-1. Shay Pond Before Dredging**



**Unarmored Threespine Stickleback Site Locations and Status**

**Site Status - 2021**

- Extant
- Extirpated
- ▲ Unknown



Ventura Fish and Wildlife Office  
 2493 Portola Road, Suite B  
 Ventura, California  
 805.644.1766

The USFWS makes no warranty for use of this map and cannot be held liable for actions or decisions based on map content.

\* Introgressed (*G. a. williamsoni* x *G. a. microcephalus*) sticklebacks but *G. a. williamsoni* may still be present in some sites.  
 \*\* Present only in Shay Pond.  
 \*\*\* Additional work needed to determine if unarmored threespine sticklebacks.

**FIGURE 3-21**





Photo 3-2. Shay Pond After Dredging

Based on the average volumes of discharges between 2012 and 2020, BBCCSD discharges approximately 50 AFY of potable water into Shay Pond to meet the USFWS' 2002 BO requirement to maintain a minimum pond water level that supports suitable habitat conditions for the Stickleback. However, the proposed NPDES permit will permit up to 80 AFY of discharge. The objective of the Program is to maintain a minimum pond water level that will support suitable habitat conditions for the Stickleback. BBCCSD currently meets this requirement by discharging potable water into Shay Pond.

### 3.4.6 Lucerne Valley Site

The LV Site is the 480-acre site owned by BBARWA that is regulated by a Colorado Regional Board WDR. The LV Site is located near the intersection of Camp Rock Road and Highway 247 (Old Woman Springs Road) in Lucerne Valley, CA, as shown in **Figure 4.11-7**. This site is located approximately 17 miles north of BBARWA's WWTP.

The LV Site is surrounded by a barbed wire fence to restrict public access to the farm. Warning signs are clearly posted to inform the public that non-disinfected recycled water is used at this site.

The LV Site is regulated by a Colorado Regional Board WDR, which stipulates that 340 acres of the LV Site can be irrigated with recycled water from BBARWA's WWTP, with an additional 140 acres available for irrigation utilizing other water sources. The LV Site has been in operation as a farm since 1980 and is operated by a farmer who leases the land from BBARWA. Alfalfa and a grain mixture consisting of barley, oat, and wheat are grown onsite and sold as feed for animals, not producing milk for human consumption. Historically, up to 330 acres of the site had been farmed; however, the farmed area was reduced in 2012 to only 190 acres due to reduced water availability associated with drought conditions. The current farmed area remains at 190 acres, with no plans to increase the acreage.

### 3.5 PROJECTED USES OF RECYCLED WATER GENERATED BY THE PROGRAM

The following uses are anticipated as part of the Program and are discussed in more detail in subsequent sections.

- Continuous water supply to Stanfield Marsh, which will then flow into Big Bear Lake;
- Continuous water supply to Shay Pond for the Stickleback habitat, if and when implemented; and,
- Periodic groundwater recharge in Sand Canyon during summer months

#### 3.5.1 Stanfield Marsh and Big Bear Lake Discharge – Program Overview

As part of the Program, up to 2,200 AFY of Program Water is proposed to be discharged to the east end of Stanfield Marsh, which will then flow into Big Bear Lake. Stanfield Marsh and Big Bear Lake are connected through a set of culverts under Stanfield Cutoff. Stanfield Marsh began a transformation in 1982 when BBMWD, working with CDFW, dredged basins, laid culvert pipes to connect to Big Bear Lake, and planted the shoreline, followed by numerous other enhancements in subsequent years.

Stanfield Marsh is now a scenic 145-acre wildlife preserve that includes a gazebo, walking paths, and two boardwalks that extend out into the marsh so that visitors can observe the wildlife in, under and around the water. Stanfield Marsh is home to rare and diverse species of birds, fish, amphibians, and mammals.

As previously stated, rainfall and snowmelt are the only sources of water for Stanfield Marsh, so the water level varies from season to season and throughout longer hydrologic cycles. During wet periods, Stanfield Marsh is a thriving wildlife preserve. During extended drought conditions, the water level recedes dramatically, the boardwalks extend over dry soil, and the wildlife become scarce. In the last 15 years, Stanfield Marsh has been less than half full nearly 40 percent of the time. Due to the recent rains in 2023, Stanfield Marsh is currently wet. Full advanced treated water would provide a new, drought proof source of inflow to stabilize the water levels and sustain habitat in Stanfield Marsh even during dry periods.

Water from Stanfield Marsh will also provide new inflow into Big Bear Lake and increase Lake levels relative to no Program conditions. The proposed outlets into Big Bear Lake at Stanfield Marsh would occur at one of two points just west of the Big Bear Airport, shown on **Figure 3-2**.

The Program Team, in coordination with the Big Bear Watermaster, will negotiate an accounting framework to track the volume of Program Water stored in Big Bear Lake over time, which will account for inputs, extractions, evaporation and releases of Program Water, and will be negotiated with the existing accounting and reporting framework used by the Big Bear Watermaster. This framework is envisioned to include a provision for some Program Water to be stored in Big Bear Lake and subsequently used for recharge in Sand Canyon when conditions are favorable for recharge.

Per conversations with DDW, Big Bear Lake may be designated as a non-restricted recycled water impoundment and the subsequent use of Program Water in Big Bear Lake would be subject to recycled water regulations. Additional coordination and studies are being conducted to regulate these uses. It is anticipated that a separate WDR permit will be obtained to regulate the Sand Canyon Recharge Project. For possible non-potable recycled water uses for landscape irrigation,



dust control, snowmaking, and nonrestricted impoundment, these uses would be regulated under the Statewide Water Reclamation Requirements for Recycled Water Use (Oder WQ 2016-0068-DDW).

In 2000, BBARWA was issued an NPDES permit (Santa Ana Regional Board Order No. 00-12), which included Stanfield Marsh and a proposed new Stickleback habitat in Baldwin Lake as authorized discharge points, subject to construction of tertiary treatment and disinfection upgrades. The NPDES permit limited discharges to Stanfield Marsh to periods of lower water levels when Stanfield Marsh was not hydraulically connected to Big Bear Lake. The tertiary treatment upgrades were not completed, and the discharge point was never used so the NPDES permit was not renewed when it expired in 2005. In 2005, the Santa Ana Regional Board issued Order No. R8-2005-0044, which does not allow discharge to Stanfield Marsh. A new NPDES permit, which BBARWA is in the process of acquiring, would be required for the Program to address discharges into Stanfield Marsh/Big Bear Lake.

### **3.5.2 Shay Pond Discharge Project – Program Overview**

As part of the Program, up to 80 AFY of Program Water is proposed to be discharged to Shay Pond. The proposed Shay Pond Discharge is intended to replace potable water that is currently discharged to the pond to support the Stickleback, a State and Federal listed endangered species as stated under **Subsection 3.4.5**. The utilization of the Program Water for discharge to Shay Pond is currently being considered at a conceptual level by the Program Team since the implementation of this Program components is on hold due to the regulatory costs and h hurdles that would be necessary to modify the water source supporting the Stickleback.

There is a long history of study and group effort regarding the Stickleback in the Shay Creek area. While the objective is to maintain a minimum pond water level that will support suitable habitat conditions for the Stickleback, and BBCCSD currently meets this requirement by discharging potable water into Shay Pond, the 2002 BO also states that, should a suitable alternative supply of water be found to be appropriate for the stickleback in the future, BBCCSD may use an ‘in-lieu’ water supply, which could include the use of tertiary-treated water. The Shay Pond Discharge Project would provide an in-lieu water supply (i.e., purified water, which exceeds tertiary treated water) for Shay Pond to meet the requirements of the 2002 BO, which would enable BBCCSD to recover this potable supply to serve their customers.

### **3.5.3 Sand Canyon Recharge Project – Program Overview**

As part of the Program, up to 380 AFY of Program Water stored in Big Bear Lake will be used for groundwater recharge at the Sand Canyon Recharge Area over a six-month dry weather period. Groundwater recharge at Sand Canyon was evaluated by Thomas Harder & Co. to assess the feasibility of recharging the groundwater aquifer at Sand Canyon using surface water from Big Bear Lake and estimate the annual recharge capacity. This study can be found in the “Sand Canyon Recharge Evaluation” prepared by Thomas Harder & Co. dated November 29, 2017 (**Appendix 4, Volume 2 of this DPEIR**). Thomas Harder & Co. found that the recharge potential at Sand Canyon is approximately 380 AFY over a six -month period, based on a recharge area of approximately 4.2 acres and a recharge rate of 2.1 ft/day.

The Sand Canyon Recharge concept involves extracting Program Water stored in Big Bear Lake and discharging it into Sand Canyon, which serves as a flood control channel. The recharge operation would only occur during summer months when needed to supplement groundwater supply and would be operated intermittently as needed to avoid interference with flood flows. The

operation would also be limited by availability of Program Water stored in Big Bear Lake, which would be tracked by BBMWD in accordance with the negotiated accounting framework that will be developed prior to implementation. The Program Team does not have rights to native water in Big Bear Lake and will only use Program Water for recharge.

No channel modifications to the channel bottom are anticipated since it is expected that the Program Water stored in Big Bear Lake will percolate within the defined recharge area (as discussed below). If the Program Water does not fully percolate within the defined recharge area, the surface application discharge rate will be reduced using a VFD on the Sand Canyon Booster Station until the water does percolate within the defined recharge area. Recharge to Sand Canyon would occur through a discharge via a new pipe outlet at the top of the Sand Canyon Recharge Area at the top of the channel bank that discharges down the side slope of the channel into the channel bottom. All of these concepts will need to be coordinated with SBCFCD to ensure that the capacity of the flood control channel remains sufficient to meet the primary purpose of providing flood protection. If these improvements resulted in a decrease in surface flow entering Big Bear Lake, the impact to surface water rights under the 1977 Judgment will be evaluated.<sup>9</sup>

When water is needed for recharge in Sand Canyon, it is assumed that the existing lake pump station owned by the Resorts could be used to transfer water through an existing pipeline into the existing storage pond located at Bear Mountain Ski Resort. These facilities are used primarily for snowmaking in the winter and are expected to be available for the proposed recharge operation, which would only occur from April through October when the Resorts are not making snow. It is anticipated that a separate WDR permit by BBLDWP will be obtained to regulate the Sand Canyon Recharge Project.

### ***Surface Application Operations***

The Program Water will be discharged at the top of the Sand Canyon Recharge Area shown in **Exhibit 3-1**. The discharge will consist of a pipe outlet at the top of the channel bank that discharges down the side slope of the channel into the channel bottom. The channel slope will be protected from erosion using rip rap or similar erosion control methods, similar to that which is shown on **Exhibit 3-1** below.

---

<sup>9</sup> The Big Bear Dam was originally constructed to provide water storage for Bear Valley Mountain which was formed in 1903 by the citrus growers of the Redlands/Highland area to ensure water supply for irrigation needs. The historic operation of the Big Bear Lake as an irrigation reservoir resulted in drastic fluctuations in lake levels, which conflicted with the goals of BBMWD and the community of Big Bear Valley. A legal conflict over the water rights and management of the lake was ultimately settled out of court through the 1977 Judgement. Under the terms of this judgement, BBMWD purchased the lake bottom, Bear Valley Dam, and the right to utilize and manage the surface of Big Bear Lake from Bear Valley Mutual. Bear Valley Mutual retained a storage right and ownership of all water inflow into Big Bear Lake.

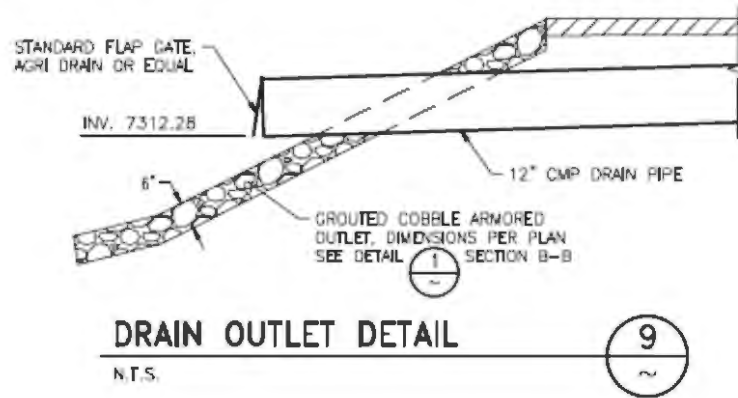


Exhibit 3-1: EXAMPLE PIPE OUTLET EROSION CONTROL

The hatched area, in **Exhibit 3-2** below, along the Sand Canyon channel is where surface water can percolate and still meet the travel time required to the nearest downstream well. The Program Water stored in Big Bear Lake would have approximately 2,900 LF to percolate into the Bear Valley Basin. The Program Water is expected to fully percolate before reaching the end of the recharge area. If the Program Water does not fully percolate within the defined recharge area, the surface application discharge rate will be reduced using a VFD on the Sand Canyon Booster Station until the water does percolate within the defined recharge area. No channel modifications to the channel bottom are anticipated.

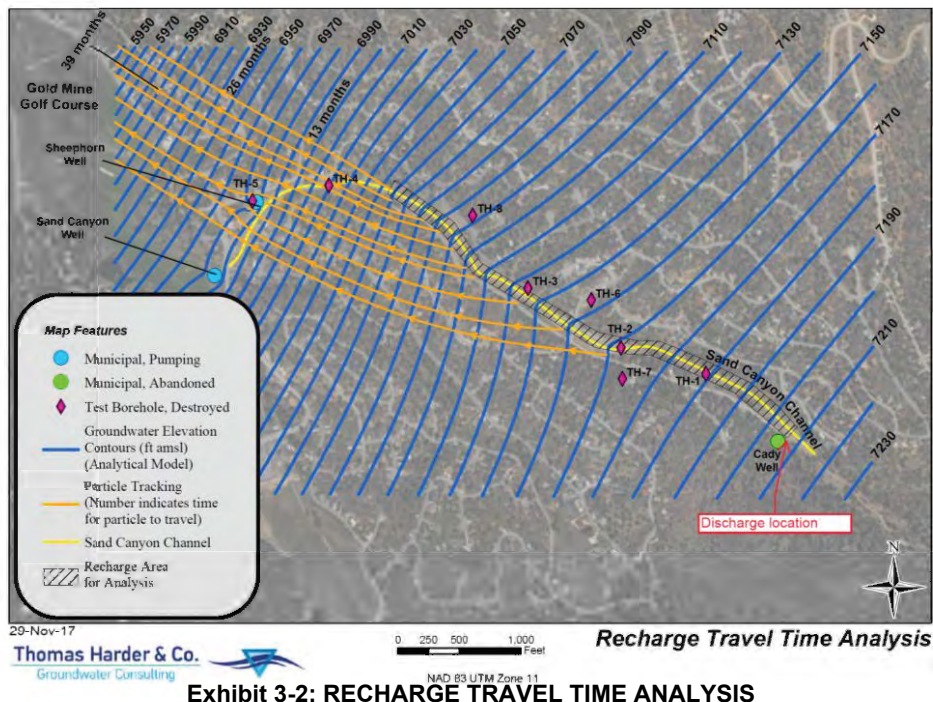


Exhibit 3-2: RECHARGE TRAVEL TIME ANALYSIS

**Operations Plan**

The objective of the Sand Canyon Recharge Project is to recharge the Bear Valley Basin. The Sand Canyon Recharge Project will utilize operation strategies to comply with the groundwater regulations and protect public health. Recharge will occur within the defined Sand Canyon

Recharge Area (refer to **Exhibit 3-2**, above). The recharge must occur when the channel is dry, and as such: recharge will not occur during periods where natural surface flows occur in the channel. Thus, it is anticipated that recharge will occur over an average six -month dry weather period (April-October), but as weather varies from year to year, the dry weather period shall dictate the timing of the recharge. Flows to the Sand Canyon Recharge Area will be reduced or stopped if Program Water does not fully percolate within the defined recharged area. Finally, BBLDWP will monitor the discharge and percolation performance as needed to comply with permit requirements for the Sand Canyon Recharge Project operation.

### ***Groundwater Extraction***

No new infrastructure is needed to extract the Sand Canyon Recharge water from the Bear Valley Basin. The Sand Canyon Recharge water will become potable groundwater and will be extracted using BBLDWP's existing potable wells located downstream of the recharge area. The wells are located at least six months of travel time from the recharge area, as required by groundwater recharge regulations.

Once pumped out by BBLDWP, the water will be distributed to BBLDWP customers through the existing water distribution system. A portion (approximately 1/3) of the water will be delivered to BBCCSD using existing interconnections between BBCCSD and BBLDWP that are intended for transferring water between the two agencies.

## **3.6 WASTEWATER TREATMENT UPGRADES**

In order to meet the objectives of the Program, the BBARWA WWTP must be upgraded to meet the correlating water quality standards and objectives for the types of uses proposed as part of this Program. As such, the following section discusses the Santa Ana and Colorado Basin Plan water quality objectives, and the treatment upgrades required to treat wastewater to the degree required to comply with local, State, and Federal water quality regulations.

### **3.6.1 Basin Plan Water Quality Objectives**

#### **Santa Ana Basin Plan Objectives**

In order to discharge Stanfield Marsh/Big Bear Lake, Shay Pond, and Sand Canyon Recharge Area, the treated effluent must meet the water quality objectives set by the Santa Ana Basin Plan because these locations are identified in this Basin Plan. The Santa Ana Basin Plan establishes beneficial uses and WQO for the ground and surface waters of the region and includes an implementation plan describing the actions by the Santa Ana Regional Board and others that are necessary to achieve and protect the water quality standards and beneficial uses. The Santa Ana Basin Plan establishes beneficial uses and WQOs for the ground and surface waters of the region and includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and protect the water quality standards. The beneficial uses of Big Bear Lake and Stanfield Marsh are shown above in **Table 3-2**.

Per the Santa Ana Basin Plan, the Big Bear Valley beneficial uses are MUN and Industrial Process Supply (PROC). The Santa Ana Basin Plan provides a general narrative regarding the WQO for each water body type and specific numeric objectives for TDS, hardness, sodium, chloride, TIN, TP, sulfate, and chemical oxygen demand (COD). The objectives for the waters impacted by Program are summarized below and in **Table 3-4**.



**Table 3-4  
 SUMMARY OF WATER QUALITY OBJECTIVES**

<b>Water Quality Objective (WQO)</b>	<b>Shay Pond</b>	<b>Stanfield Marsh</b>	<b>Big Bear Lake</b>	<b>Big Bear Valley</b>
Total Dissolved Solids (TDS), mg/L	Narrative Objectives	Narrative Objectives	175	300
Hardness, mg/L			125	225
Sodium, mg/L			20	20
Chloride, mg/L			10	10
Total Inorganic Nitrogen, mg/L			0.15	5
Sulfate, mg/L			10	20
Chemical Oxygen Demand, mg/L			--	--
Total Phosphorus, mg/L (TMDL Objective)			0.035	--
Chlorophyll-a, mg/L (TMDL Objective)			0.014	--

As shown in the table above, Big Bear Lake has the most stringent WQOs. The nutrient limits for an NPDES permit to Stanfield Marsh/Big Bear Lake are expected to align with the Santa Ana Basin Plan WQOs and the TMDL numeric targets to protect the beneficial uses of Big Bear Lake. The anticipated effluent nutrient limits of 35 µg/L-P for TP and 0.15 mg/L-N for TIN would require multiple process treatment steps and consistent treatment through seasonality. In addition, the Program Team is committed to working with the Santa Ana Regional Board and DDW to protect the municipal (MUN) beneficial use of Big Bear Lake. As a reflection of that commitment, the Program Team is planning to implement full advanced treatment, through the installation of the AWPf.

The *Water Quality Control Plan for the Santa Ana River Basin Region 8* (Santa Ana Basin Plan) provides the framework for the RWQCB’s regulatory program (Santa Ana Regional Board, 2019). Specifically, it:

1. Sets forth surface and groundwater quality standards for the Santa Ana Region.
2. Identifies beneficial uses of water and discusses objectives that shall be maintained or attained to protect those uses.
3. Provides an overview of types of water quality issues, and discusses them in the context of potential threats to beneficial uses.
4. Denotes recommended or required control measures to address the aforementioned water quality issues.
5. Prohibits certain types of discharge in particular areas of the Santa Ana Region;
6. Summarizes relevant SWRCB and RWQCB planning and policy documents, and discusses other relevant WQMPs adopted by Federal, State, and regional agencies.
7. Identifies past and present water quality monitoring programs, and discusses monitoring activities that could be implemented in future Santa Ana Basin Plan updates.

Overall, the Santa Ana Basin Plan functions as the regulatory authority for water quality standards established in local NPDES permits and other RWQCB decisions.

**Colorado Basin Plan Objectives**

The Colorado Basin Plan does not have numeric WQOs, but the Colorado Basin Plan’s narrative objective for TDS and nitrate is to maintain the water quality to existing historical conditions where

possible and to keep the chemical and physical groundwater quality close to or otherwise below the MCLs (RWQCB, 2006). In 2021, BBARWA received an updated WDR Permit (Order R7-2021-0023), which set average monthly effluent limits for TN and TDS of 10 mg/L and 500 mg/L, respectively. These limits are based on the current MCLs for these constituents. Through this permit, the Colorado Regional Board is protecting the water quality of the Lucerne Valley Basin.

### **3.6.2 Groundwater Recharge Requirements**

The Groundwater Recharge Regulations require a minimum “response retention time” or minimum groundwater travel time of two months between the point of surface application or injection, and the point of extraction. The point of discharge to the Sand Canyon Recharge Area and wells that represent the points of extraction, are shown on **Exhibit 3-2**, above. BBLDWP’s extraction wells Thomas Harder & Co.’s preliminary analysis shows that the recharge water will reach the nearest production well (Sheephorn Well) in a little more than approximately 13 months. For preliminary recharge siting purposes, a “credit” of 0.25 was applied for travel time calculations using an analytical model. Thus, the credited retention time is interpreted to be 9.75 months (39 x 0.25). This credited retention time meets/exceeds the minimum retention time of two months, indicating that the simulated recharge operation is feasible based on the data assumptions in the analysis. Refer to **Appendix 4**.

Pathogen controls include specific provisions for log reduction of microorganisms and treatment process requirements. The treatment process used to treat recharge water for a Groundwater Replenishment Reuse Project must provide treatment that achieves at least 12-log enteric virus reduction, 10-log Giardia cyst reduction, and 10-log Cryptosporidium oocyst reduction from raw sewage to usable groundwater. The treatment train shall consist of at least three separate treatment processes. For each pathogen (i.e., virus, Giardia cyst, or Cryptosporidium oocyst), a separate treatment process may be credited with no more than 6-log reduction, with at least three processes each being credited with no less than 1.0-log reduction. If the treatment process itself does not achieve the required pathogen control credits, additional credit can be gained through underground retention time prior to extraction.

### **3.6.3 BBARWA WWTP Treatment Upgrades**

BBARWA’s existing wastewater facility will be upgraded to meet WQOs identified for Big Bear Lake in the Santa Ana Basin Plan. TIN and TP must be removed through multiple in-series processes because a single process cannot reliably reduce effluent TIN and TP concentrations to the levels required for Big Bear Lake’s WQOs. To achieve these strict effluent limits, BBARWA will need to implement a series of upgrades to existing unit processes and integrate new unit processes.

As part of the Program, proposed upgrades to the BBARWA WWTP include:

- Upgrade the existing oxidation ditches to biological nutrient removal process;
- Tertiary filtration and nutrient removal via denitrification filters;
- UF and RO membrane filtration;
- Brine pellet reactor for brine minimization; and
- UV/AOP.

The new facilities would be designed for a treatment capacity of 2.2 MGD, with operational ability to divert a portion of the denitrification filter effluent directly to UV/AOP process depending on

effluent water quality targets, treatment performance and discharge permit requirements. However, it is anticipated that 100% of the water discharged will be treated with RO and UV/AOP disinfection. The anticipated completion date is 2027. A detailed summary of the treatment process upgrades is shown in **Table 3-5**.

**Table 3-5  
 SUMMARY OF TREATMENT PROCESS UPGRADES**

<b>Treatment Mode</b>	<b>Processes</b>
<b>Biological Nutrient Removal</b>	<b>Nitrification-Denitrification:</b> Retrofit existing oxidation ditches to a Modified Ludzack-Ettinger (MLE) configuration with turbo blowers and diffused aeration for nitrogen removal.
<b>Tertiary Filtration &amp; Nutrient Removal</b>	<b>Denitrification Filter:</b> Construct denitrification filters for nitrogen and phosphorus removal. Chemical provisions for supplemental carbon and chemical precipitant addition will be provided for denitrification and phosphorus removal, respectively.
<b>Membrane Filtration</b>	<b>Ultrafiltration and Reverse Osmosis:</b> Construct skid-mounted pressurized UF membranes and RO membrane facilities capable of high product recovery, high TDS removal, and removal of residual nutrients. Chemical provisions for antiscalant, pH adjustment, and remineralization chemicals will be provided. Brine from the RO system will be conveyed to the pellet reactor for brine minimization.
<b>Disinfection</b>	<b>UV Disinfection:</b> Construct closed vessel UV disinfection unit process for disinfection of denitrification filter effluent or RO permeate water. UV transmittance will be high for disinfection of the high-quality RO permeate and the UV dose will be higher than standard UV disinfection to provide strong oxidation capacity for the UV/AOP process. <b>AOP:</b> Construct a chemical injection and mixing system to dose a strong oxidant downstream of the UV process to destroy trace contaminants. The oxidant would be sodium hypochlorite or hydrogen peroxide, with final oxidant selection depending on final preliminary design decisions.
<b>Brine Minimization</b>	<b>Pellet Reactor:</b> Construct a skid-mounted pellet reactor system which provides brine minimization through additional RO membrane filtration and precipitation of partially soluble salts through a fluidized bed reactor.
<b>Brine Management</b>	The RO brine management option included in the preliminary design for Replenish Big Bear is a brine minimization pellet reactor to reduce the volume of brine produced by the RO process. The reduced brine stream from the pellet reactor will be conveyed to Solar Evaporation Ponds located on BBARWA WWTP property. It is assumed that an RO recovery of 90% at 2.2 MGD influent flow would result in 0.22 MGD of RO brine to be minimized through the pellet reactor and approximately 0.022 MGD of liquid brine to be conveyed to the evaporation pond based on a pellet reactor recovery of 90%. A total evaporation pond area of 23 acres is needed for the brine stream. However, if a higher yield cannot be achieved up to a total evaporation pond area of 57 acres would be required. Site specific treatment performance of the pellet reactor will be evaluated during the piloting phase. Adjustments to total system recoveries and the brine management process could be made based on site-specific piloting results.

For comparison purposes, a schematic of the existing treatment processes is shown in **Exhibit 3-3**, and the proposed upgraded treatment process schematic is shown in **Exhibit 3-4**.

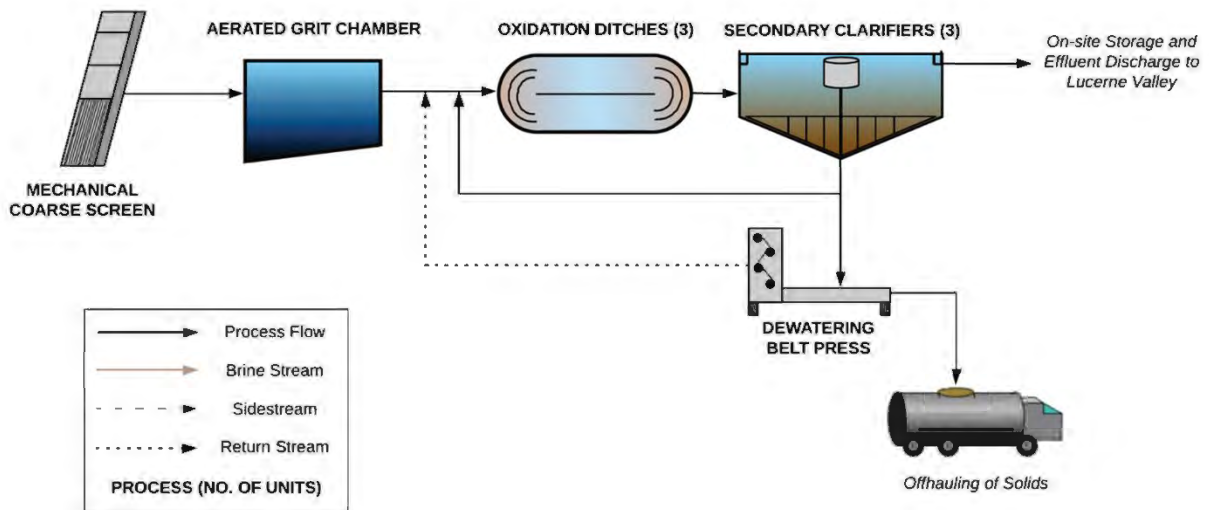


Exhibit 3-3: EXISTING TREATMENT PROCESS SCHEMATIC

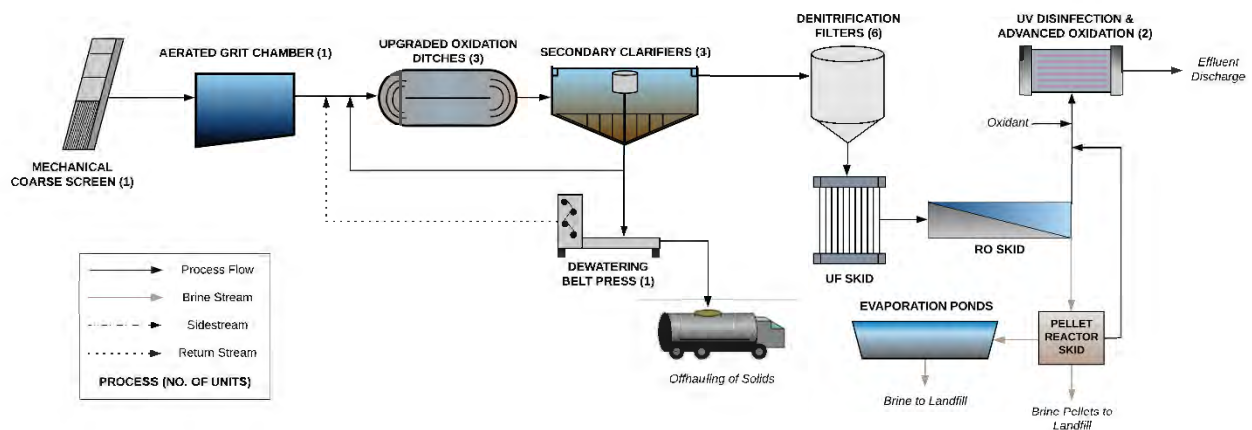


Exhibit 3-4: FUTURE UPGRADED TREATMENT PROCESS SCHEMATIC

The proposed upgrades (i.e., new advanced treatment train) would be designed for a treatment capacity of 2.2 MGD. By 2040, accounting for expected growth, it is estimated that the WWTP could produce 2,200 AFY of full advanced treated effluent, assuming a 99% total recovery rate could be achieved (90% RO recovery and 90% recovery of brine through brine minimization). The WWTP currently produces about 2.0 MGD of undisinfected secondary effluent on an average annual basis.

BBARWA also plans to maintain the existing LV Site (**Figure 3-35**). All WWTP process water in excess of the new treatment train's 2.2 MGD capacity will continue to be treated to undisinfected secondary levels and conveyed to the existing LV Site, consistent with the current permitted discharge requirements of the existing BBARWA WWTP. At present, the discharge is planned to continue to be utilized by the farmer who leases the LV Site from BBARWA. In this instance, of the 190-acre portion of the parcel that is farmed at present within the 480-acre LV Site, only about 40 acres would be utilized to grow winter crops between the months of approximately December



through May, due to the reduction in flow to Lucerne Valley from about 2,190 AFY to about 340 AFY with the implementation of the proposed Program.<sup>10</sup>

If the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) to handle the 340 AFY of secondarily treated effluent or could make the treated effluent available to another party for an alternative use. Under any of the above scenarios, a portion or all of the LV Site would become fallow as a result of the reduction or cessation of farming operations, and would continue to be maintained by BBARWA. At present, BBARWA and the farmer who leases the LV Site are responsible for maintaining the site. Under the proposed Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the LV Site. Enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and eco-conscious weed killing applications;
- Planting cover crops, such as sorghum to prevent dust migration; and/or,
- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

The proposed treatment upgrades would include the following:

- Modify and upgrade the existing oxidation ditch extended aeration process to a MLE process for increased biological nitrification-denitrification (NDN). Denitrification occurs in anoxic conditions which will be incorporated into the existing infrastructure with modifications to the tankage to provide volume without aeration. If needed, chemical precipitation of soluble phosphorus can be performed through addition of a metal salt within the activated sludge tankage, upstream of clarification.
- Nutrient-laden liquid sidestreams, which are produced during solids handling processes, may require management or treatment due to the potential negative impacts of returning high nutrient loads to other unit processes. Sidestream treatment would require additional on-site tankage and mechanical aeration. The need for side stream treatment will be determined during subsequent phases of the Program when piloting and plant-wide process modeling is performed; however, because digestion of solids will not be performed at the upgraded WWTP, sidestream treatment is not likely to be required.
- Retrofit or operational modifications to secondary clarifiers for settling of phosphorus precipitates such as adding a chemical injection and mixing location and modifications to the baffling within the clarifier. Removal of phosphorus through chemical precipitation would increase solids production and require additional operational time of the WWTP's existing sludge dewatering equipment to process the increased solids load. It is anticipated chemical precipitation of phosphorus will not be required, which will be verified during subsequent phases of the Program when piloting and plant-wide process modeling is performed.
- Addition of a tertiary filtration and nutrient removal process using biologically active denitrification filter with sand or synthetic media. Chemical precipitation of phosphorus

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<sup>10</sup> It is important to note that BBARWA's wastewater flow to the LV Site is not considered an adjudication water right or claim to the LV Site, but only considered to be an accounting for that supply (**Appendix 23**). Since BBARWA's wastewater is not included in the LV Site's annual yield calculation or claim to that supply, BBARWA is not bound by the LV Site's adjudication and its wastewater can be diverted to be reused in Big Bear Valley at BBARWA's discretion. (**Appendix 24**).

with a metal salt (e.g., polyaluminum chloride or aluminum potassium sulfate) will be incorporated to provide phosphorus removal within the filter. The denitrification process will likely require an external carbon source (e.g., glycerol) to facilitate the reduction of nitrate.

- Low pressure UF, to reduce solids upstream of the RO process.
- RO to reduce TDS concentration and nutrient concentrations. The assumed operational recovery for the RO system is 90% of the design flow. Emerging RO technologies that are configured for brine recirculation, multiple pass, or in-series operation to achieve high recoveries (such as closed-circuit reverse osmosis) have been demonstrated to achieve high recovery rates with reduced energy consumption at comparable capital costs to conventional RO. Such technologies would need to be piloted with BBARWA's specific water quality characteristics to verify expected performance for this application. The low-pressure UF and RO unit processes are expected to provide the physical filtration for reduction of the 0.5 to 2 mg/L of TIN and TP coming from upstream processes. RO is the only unit process capable of removing TDS, making it a critical unit process for compliance with WQOs. It is assumed that 100% of the design flow will need to receive RO treatment to meet the WQOs. RO offers the advantage of removing TDS, organics, inorganics and nutrients to a sufficient level for meeting nutrient WQOs.

Projected treatment performance downstream of each unit process is shown in **Table 3-6**. Potential water quality performance for TIN, TP and TDS constituents are estimated for each unit process; however, the performance of each of these unit processes is highly site specific based on the water quality composition being treated. A pilot test of each unit process is required to refine performance estimates and establish design criteria.

**Table 3-6**  
**PROJECTED TREATMENT PERFORMANCE FOR THE PROPOSED TREATMENT PROCESS**

Constituent	Primary Treatment	Biological Nutrient Removal	Denitrification Filter	UF/RO	UV/AOP	Water Quality Objectives
TIN (mg/L-N)	30	4	0.8	0.1	0.1	0.15
TP (mg/L-P)	8	2	0.3	0.03	0.03	0.035
TDS (mg/L)	450	450	450	50	50	175

The scope of the upgrades are shown in **Figures 3-22 through 3-28**. **Figure 3-22** shows the location of the BBARWA WWTP overlaid on the FEMA Flood Hazard Areas. **Figure 3-23** shows the location within the existing BBARWA WWTP at which the anoxic zone mixers, diffused air grid systems, and four turbo blowers in precast buildings are proposed to be located. **Figure 3-24** shows the location within the existing BBARWA WWTP at which the effluent pump station and pipeline will be installed, while **Figure 3-25** shows this same area in more detail, showing a diagram of the facilities and processes located in this building. **Figure 3-26** shows the location within the existing BBARWA WWTP site at which up to 57 acres of Solar Evaporation Ponds would be installed. **Figure 3-27** shows the site availability at the BBARWA WWTP site, and indicates existing equipment and facilities to remain, to be removed, or with a tentative status. **Figure 3-28** is a continuation of the previous figure showing site availability and areas to be preserved within the BBARWA WWTP.

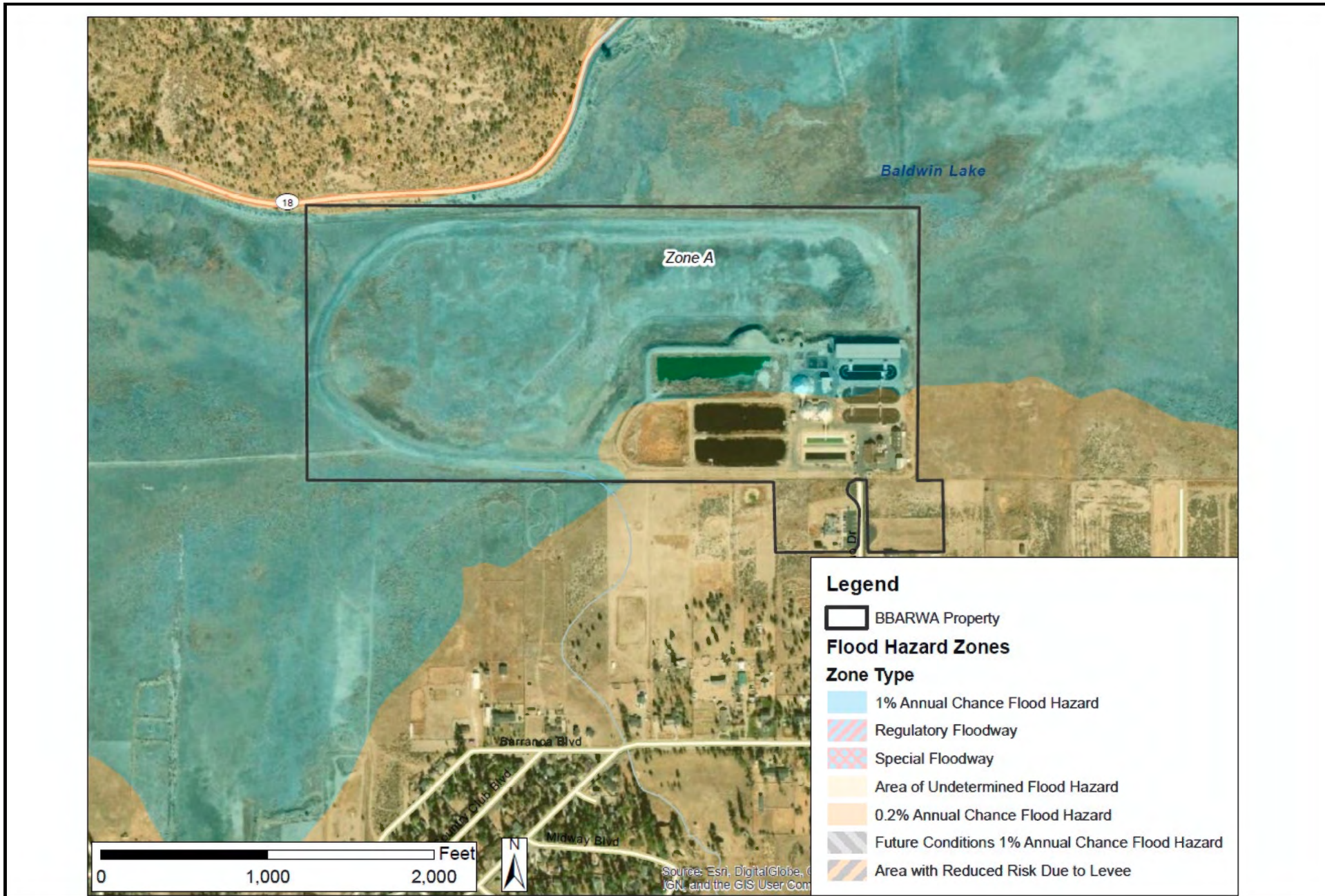


FIGURE 3-22



REPLENISH  
- Big Bear -

# Scope of Upgrades

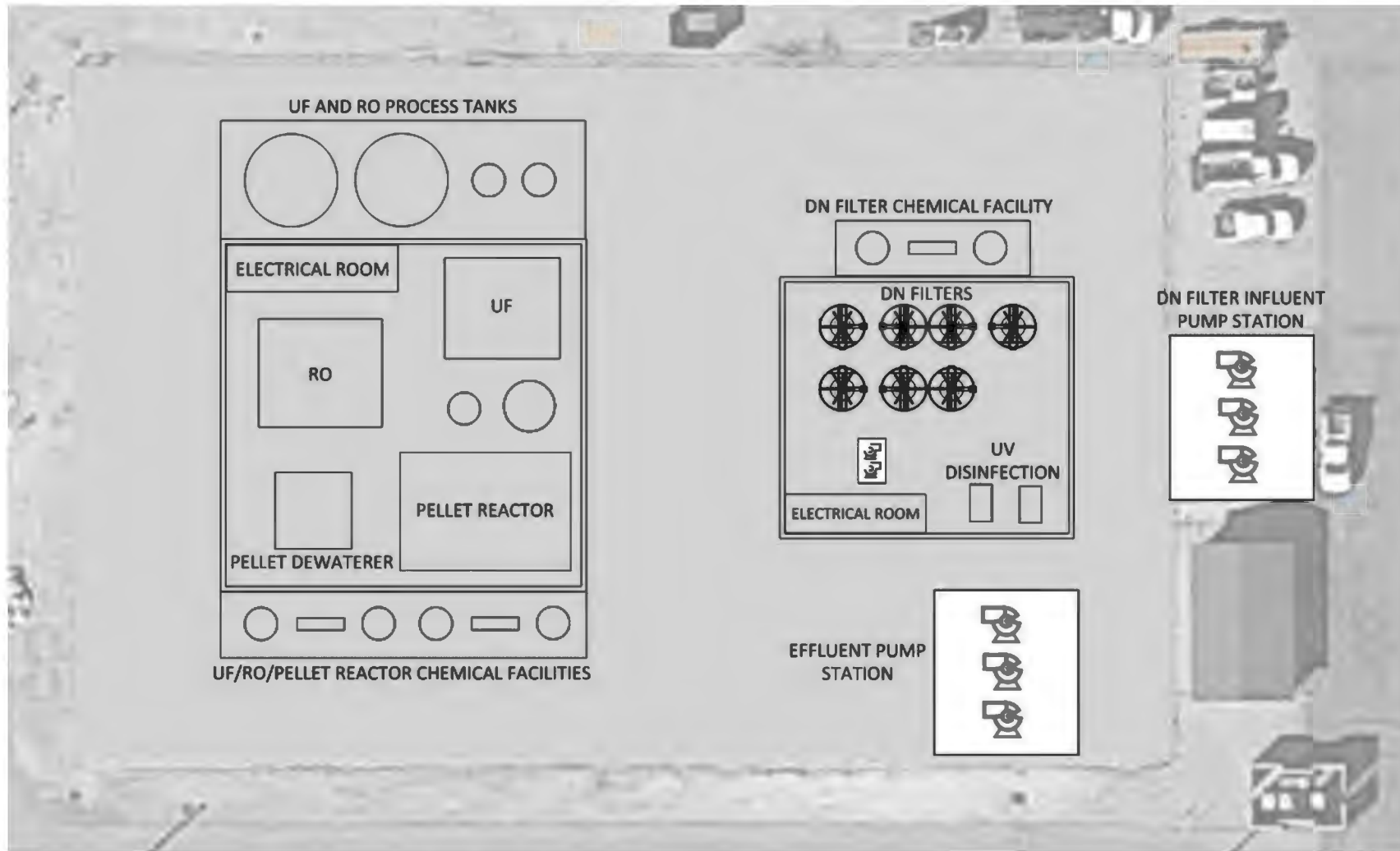


FIGURE 3-25





FIGURE 3-27



FIGURE 3-28



**Anticipated Water Quality and Annual Flow**

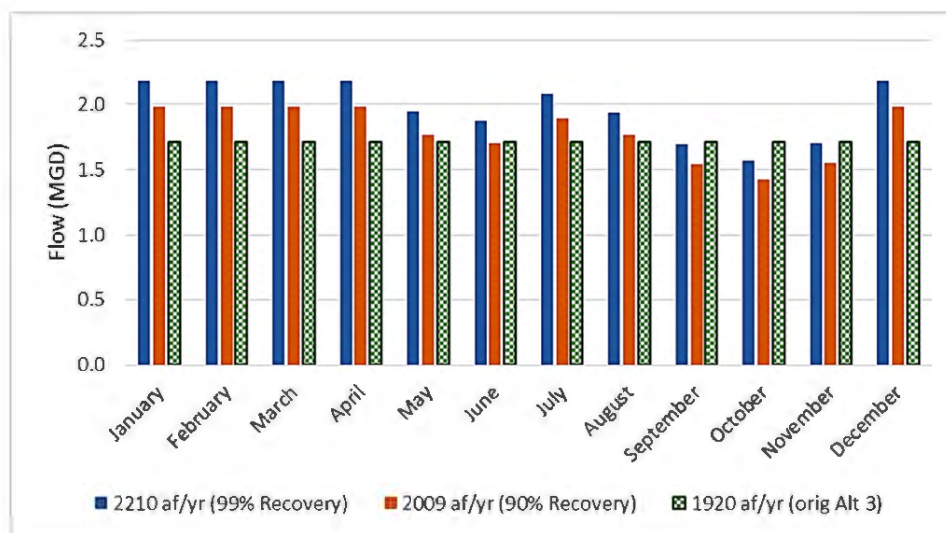
An analysis of Big Bear Lake was completed in 2021 and 2022 to evaluate the water quality impacts of key constituents on Stanfield Marsh and Big Bear Lake. The analysis assumed that the discharge would be 100% treated and disinfected with RO and UV, which is referred to herein as “Option 3”. Since the completion of this analysis, BBARWA agreed to add AOP to the treatment to protect the MUN use of Big Bear Lake. Therefore, the water quality is expected to improve for some constituents. **Table 3-7** presents Big Bear Lake Discharge flow projections that were considered in the Lake Analysis model (**Appendix 2**) and in the 2022 update to the Lake Analysis provided as an Appendix to the Lake Analysis Model.

**Table 3-7  
 INITIAL AND UPDATED LAKE DISCHARGE FLOW RATE PROJECTIONS**

Modeled Scenario	Program Inflow (AFY)	Daily Program Inflow (MGD)
<b>Baseline (No Program)</b>	0	0
<b>Option 3 (a)</b>	1,920	1.71
<b>High Flow (99% recovery) (b)</b>	2,200	1.57-2.18
<b>Mid Flow (90% recovery) (b)</b>	2,009	1.42-1.98

Notes: **a)** Option 3 (therein referred to as “Alternative 3”) was assessed in the 2021 Lake Analysis and assumed that of the total Replenish Big Bear effluent contribution considered in the Lake Analysis (i.e., 2,000 AFY), 80 AFY would be delivered to Shay Pond. Therefore, only 1,920 AFY would be discharged to Big Bear Lake at a constant flow. **B)** In the 2022 Lake Analysis update it was assumed that no discharge to Shay Pond would occur and all Program Water would be discharged to Big Bear Lake under two different total recovery rates scenarios and monthly fluctuations.

The Lake Discharge is expected to vary seasonally, as shown in **Exhibit 3-5**. Inflows to the WWTP are lower in the summer months due to reduced inflow and fewer visitors relative to the winter season.



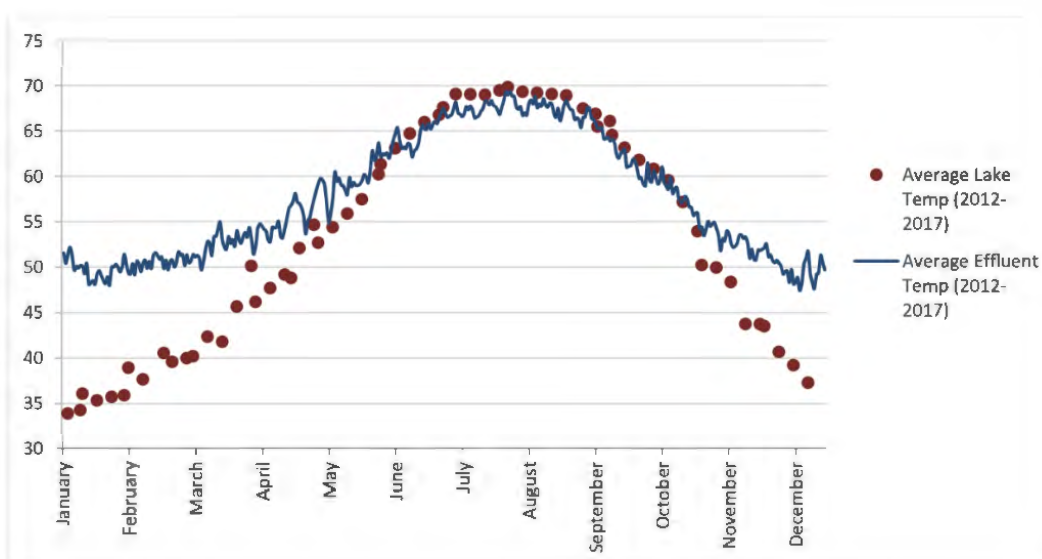
**Exhibit 3-5: PROJECTED 2040 MONTHLY BBARWA DISCHARGES TO THE LAKE UNDER THREE INFLOW SCENARIOS**

Since the Program proposed Big Bear Lake Discharge has not been assigned a waste load allocation (WLA) for TP in the nutrient TMDL, a TP Offset Program is proposed to attain a net zero TP contribution to be consistent with the Nutrient TMDL assumptions. BBARWA does not

have a WLA, as this discharge was not considered during the development of the Nutrient TMDL, which was completed in 2005. The TP loads added to Big Bear Lake by the Big Bear Lake Discharge will be offset through triennial alum applications to attain net zero TP loadings for the upcoming three years. In the event of extreme runoff (defined here as exceeding about 25,000 AFY<sup>11</sup>), which has the potential to bury the reactive alum cap on the sediments and reduce its effectiveness, an alum treatment will be conducted that following spring-summer and the triennial treatment schedule will be reset.

***Effluent Temperature***

Lake water temperatures and WWTP effluent temperatures vary seasonally. While they are relatively similar in the summer months, the WWTP effluent temperature is considerably higher than Big Bear Lake’s temperature in the winter. It is expected that the discharge permit for this alternative would include limits for effluent temperature, and/or the allowable temperature change in Big Bear Lake caused by the discharge to avoid adverse thermal impacts to aquatic habitat.

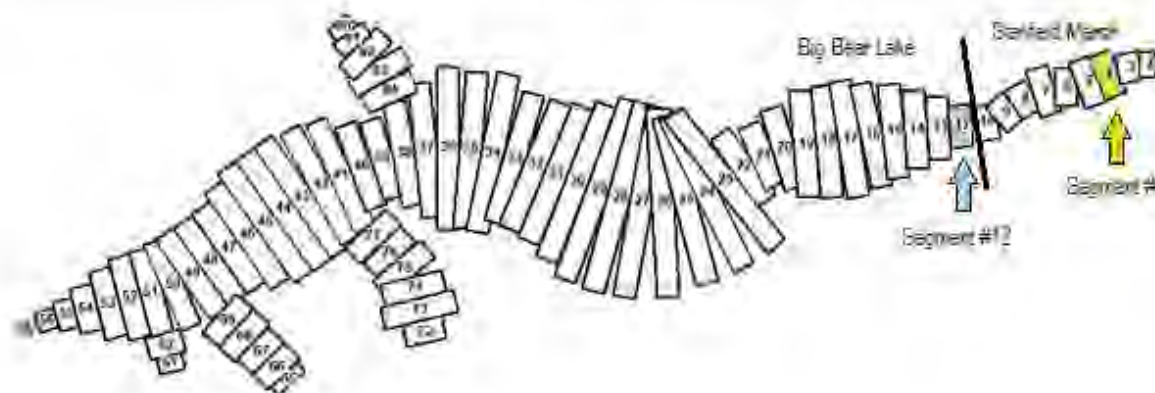


**Exhibit 3-6: COMPARISON OF AVERAGE LAKE AND BBARWA EFFLUENT TEMPERATURES (2012-2017)**

A supplemental simulation was conducted in 2022, which assessed the influence of the temperature of inflowing water from Replenish Big Bear on predicted near-surface (1 m) temperatures in Stanfield Marsh (Segment #4) and the eastern edge of Big Bear Lake (Segment #12) (**Exhibit 3-7**). Segment 4 is approximately 450 m from the inflow, corresponding to about 25% of the total length of Stanfield Marsh (about 1750 m).

<sup>11</sup> Approximately the 80th percentile annual inflow based on WaterMaster data for 1977-2018.





**Exhibit 3-7: LAKE MODEL SEGMENTATION HIGHLIGHTING SEGMENT #4 IN STANFIELD MARSH AND SEGMENT #12 AT THE EASTERN EDGE OF BIG BEAR LAKE**

Predicted mean temperatures for the two sites under the two different inflow temperature scenarios are summarized in **Table 3-8**.

**Table 3-8  
 PREDICTED AVERAGE NEAR-SURFACE (1 M) TEMPERATURES IN STANFIELD MARSH (SEGMENT 4) AND BIG BEAR LAKE (SEGMENT 12)**

Location	Original	+ Heat
Stanfield Marsh (Segment 4)	11.71 ± 6.99	12.51 ± 6.54
Big Bear Lake (Segment 12)	11.99 ± 7.05	12.00 ± 7.07

Notes: See **Exhibit 3-6** for segment locations.

While the above analysis is not intended to serve as a detailed evaluation of fine-scale temperature effects on Stanfield Marsh resulting from discharge of full advanced treated Program Water, results highlight some important general findings. First of all, warm Program Water discharged to the easternmost section of Stanfield Marsh quickly loses heat through exchange with the atmosphere and is diluted with existing water; higher lake levels afford greater opportunity for heat loss and dilution such that temperature effects are more likely at low lake levels. As a result, addition of warm Program Water to Stanfield Marsh does not, based on this modeling, meaningfully alter the heat budget for Big Bear Lake and is not predicted to alter lake temperature or duration or intensity of thermal stratification.

**3.6.4 Brine Disposal – Solar Evaporation Ponds**

Implementation of RO treatment requires management of brine concentrate. The most common brine concentrate disposal options include deep well injection (where permitted), surface water discharge (including the ocean), discharge to a wastewater treatment plant (such as via the Inland Empire Brine Line), land disposal, and solar evaporation or Zero Liquid Discharge with disposal of solids to a landfill.

The Program Team is considering the use of solar evaporation pond(s), while all other methods of brine disposal have been ruled infeasible. Solar evaporation ponds rely on solar energy to evaporate water from the brine concentrate stream, leaving behind precipitated salts, which

ultimately are disposed of in a landfill. Solar evaporation ponds for brine concentrate disposal are most appropriate for smaller volume flows and for regions having a relatively warm, dry climate with high evaporation rates, level terrain, and low land costs. Solar evaporation ponds are relatively easy to construct, are low maintenance and have no mechanical equipment except for pumps to convey brine to the ponds. However, pond size requirements can be quite high depending on the brine flow and evaporation rates and the regulatory requirement for impervious liners of clay or synthetic membranes substantially increases the cost of construction. A monitoring well or wells will be required to be installed to verify that seepage from the ponds is not contaminating underlying groundwater.

The preliminary RO brine management option for Replenish Big Bear is a brine minimization pellet reactor to reduce the volume of brine waste from the RO process. The reduced brine stream from the pellet reactor will be conveyed to Solar Evaporation Ponds located on BBARWA WWTP property. Using an RO recovery of 90% at 2.2 MGD influent flow would result in 0.22 MGD of RO brine to be minimized through the pellet reactor, and approximately 0.022 MGD of brine to be conveyed to the evaporation pond based on a pellet reactor recovery of 90%. A total evaporation pond area of 23 acres is needed for the brine stream. However, if the higher yield cannot be achieved up to a total evaporation pond area of 57 acres would be required. Site specific treatment performance of the pellet will be evaluated during the piloting phase. Adjustments to total system recoveries and the brine management process could be made based on site-specific piloting results.

### **3.6.5 Treated Water Storage and Distribution**

#### ***Big Bear Lake Discharge***

The treated water is planned to be discharged continuously to Shay Pond and Stanfield Marsh; therefore, treated water storage at the WWTP is not required. A single effluent pump station is assumed to pump wastewater effluent treated water to meet discharge requirements for both Shay Pond and Stanfield Marsh; the variation in elevation of the two discharge points is approximately 15 feet. The pump station capacity will match the capacity of the AWP, which is 2.2 MGD, or approximately 1,520 gpm. A new effluent pump station may be required, but if the existing effluent auxiliary pumps could be used as the primary secondary effluent pump station, the existing secondary effluent pump station may be able to be repurposed to avoid the need for a new effluent pump station.

A new 12-inch pipe will need to be installed from the WWTP to the proposed discharge points in Stanfield Marsh, as shown in **Figure 3-2**, which depicts the proposed alignment alternatives for Big Bear Lake Discharge.

#### ***Sand Canyon Recharge Area***

When water is needed for recharge in Sand Canyon, it is assumed that the Resort's existing snowmaking facilities will be used to transfer water into the existing storage pond located at Bear Mountain Ski Resort and a new pump station would be constructed near the pond to convey water through a new pipeline to discharge into Sand Canyon, as shown in **Figure 3-29 and 3-32**. The pump station and pipeline are sized to convey 380 AF of recharge water over a six -month period, which equates to approximately 471 gpm (refer to **Figure 3-30**). If a joint use arrangement for the Resort's snowmaking facilities cannot be negotiated, constructing new pumping and conveyance facilities to reach Sand Canyon would be required; however, this approach would substantially increase the Program's costs. The Program Water will be discharged at the top of the Sand Canyon Recharge Area shown in **Exhibit 3-1**. The discharge will consist of a pipe outlet at the top of the channel bank that discharges down the side slope of the channel into the channel

bottom. The channel slope will be protected from erosion using rip rap or similar erosion control methods, similar to that which is shown on **Exhibit 3-1**. The Sand Canyon Recharge Evaluation showing the underflow analysis prepared by Thomas Harder & Co. is provided as **Figure 3-31** (refer to **Appendix 4**).

### ***Shay Pond Discharge Project***

As part of the Program, up to 80 AFY of Program Water is proposed for discharge to Shay Pond. The proposed Shay Pond Discharge Project is intended to replace potable water that is currently discharged to the pond to support the Stickleback, which, as previously stated, is a Federal and State listed endangered species. There is an existing 6-inch C-900 polyvinyl chloride (PVC) pipeline that begins at the intersection of Shay Road and Palomino Drive and terminates near Shay Pond that can be used to convey the Program Water, with an extension of approximately 710 feet to reach Shay Pond. This nearby pipeline was constructed in 1986 for future use, but has never been put into service. It is possible that this pipeline may not be useable, and as such, a pipeline traversing this same alignment and sized comparably to the existing pipeline may be required, in addition to the proposed 710-foot extension to reach Shay Pond. The length of this pipeline would be 5,600 feet.

Shay Pond has a surface area of approximately 10 acres and is located about 1.2 miles southeast of the BBARWA WWTP, shown on **Figure 3-33**. According to the Bear Valley Basin GSP, *“Shay Pond is a natural surface water body at the southern base of an unnamed ridge that separates it from Baldwin Lake. The nature of this pond is unknown, but it may be fed, in part, from spring flow, surface runoff, and periodically, groundwater intersecting the land surface. Although the pond may have historically been fed from surface water runoff in the ephemeral, upstream segment of Shay Creek, urban development has altered the course of this stream, and it no longer flows into the pond. Surface water exits Shay Pond via the downstream segment of Shay Creek, which flows northwards toward Baldwin Lake and intermittently provides water to Baldwin Lake.”* *“Surface water sources to Baldwin Lake are primarily in the form of ephemeral streams with relatively low flow volumes. The only stream where surface water flow periodically has been measured is Shay Creek at its outlet from Shay Pond.”* *“Surface water runoff does not reach Baldwin Lake during most years but percolates into the groundwater system. However, during prolonged precipitation, surface water does flow into Baldwin Lake. All surface water that enters Baldwin Lake is lost to evaporation. The high clay content of the playa sediments prevents vertical migration, and the topographical configuration of the lake prevents outflow from Baldwin Lake.”* **Figure 3-21** shows how Baldwin Lake, an ephemeral lake, is connected to Shay Pond via Shay Creek. This figure also shows the population of Stickleback in the vicinity of Shay Pond.

The population of Stickleback is unique in that it occurs at a high elevation, about 6,700 ft amsl, while all other Stickleback populations inhabit streams below 3,000 ft. As previously stated, the 2002 BO requirements state that BBCCSD will provide water to Shay Pond to maintain a minimum 20 gpm outflow from Shay Pond. The objective is to maintain a minimum pond water level that will support suitable habitat conditions for the Stickleback. BBCCSD currently meets this requirement by discharging potable water into Shay Pond, but the 2002 BO also states that, should a suitable alternative supply of water be found to be appropriate for the Stickleback in the future, BBCCSD may use an ‘in-lieu’ water supply, which could include the use of tertiary-treated water. The potable water discharged to Shay Pond represents approximately 5% of BBCCSD’s customer water demand and could be reserved for potable use instead of discharging to Shay Pond.

# Shay Pond Discharge

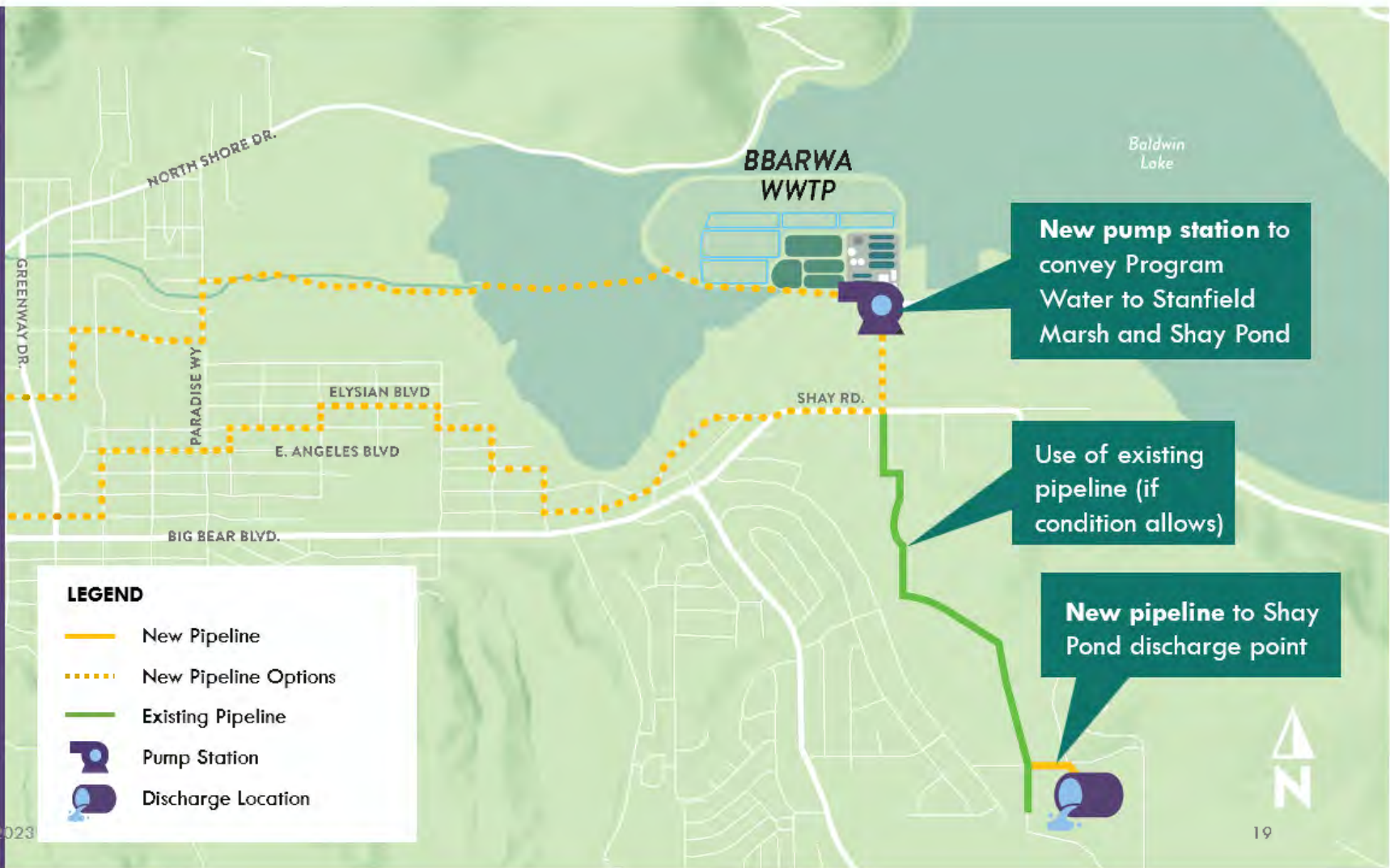


FIGURE 3-33



The discharge rate needed to maintain the required outflow, accounting for evaporation and infiltration, has varied from year to year. However, based on the average volume of discharges measured between 2012 and 2020, BBCCSD discharges approximately 50 AFY of potable water to Shay Pond on average. At times, the required discharge has been up to 80 AFY; this maximum volume is used as the basis for the project design and analysis to be conservative. **Figure 3-19** shows an aerial view of Shay Pond and the proposed discharge location.

### ***Applicable Water Quality Standards***

Per the Santa Ana Basin Plan, the protection of beneficial uses designated for Shay Creek and Baldwin Lake is primarily provided by narrative water quality objectives. Refer to the “Big Bear Area Regional Wastewater Agency Replenish Big Bear Antidegradation Analysis for Proposed Discharges to Stanfield Marsh/Big Bear Lake and Shay Pond” provided as **Appendix 3** to review beneficial uses of Shay Pond receiving waters—Shay Creek and Baldwin Lake—on Table 12 therein, and also to review a comparison of most stringent water quality objective or criterion to current BBCCSD potable water supply quality and projected effluent quality of proposed discharge on Table 13 therein.

To summarize the outcome of the comparison of WQOs provided in **Appendix 3**, the projected effluent quality of the proposed discharge to Shay Pond is better than the current potable water supply for chloride, hardness, sodium, sulfate, TDS, TN, aluminum, and specific conductance. The projected effluent quality of the proposed discharge is expected to be of similar quality as existing potable water supplies for ammonia, fluoride, methylene blue-activated substances (MBAS), cadmium, copper, and lead. Boron may be the only constituent that could be above the existing potable water supply quality. However, the average boron concentration in the Program Water proposed for discharge to the pond is well below the 0.75 mg/L Santa Ana Basin Plan objective for boron for the protection of sensitive agricultural crops, which is not a use of Shay Pond water. Additional coordination with the CDFW will be conducted to ensure the Stickleback are protected.

## **3.7 SUMMARY OF ALL FACILITIES**

### **3.7.1 Replenish Big Bear Program Components Overview**

The following represents a summary of the facilities required to support the Program:

#### **BBARWA WWTP Upgrades Project**

- The existing BBARWA WWTP will be upgraded to produce Program Water to serve the objectives outlined in this Program Description. These upgrades would treat wastewater to full advanced treatment at a capacity of 2.2 MGD, or approximately 2,200 AFY. The AWPf upgrades that would occur at the BBARWA WWTP are as follows:
  - Oxidation Ditches
  - Denitrification Filter
  - UF and RO
  - UV/AOP
  - Pellet Reactor: 0.22 MGD
- Installation of about 1,350 LF of brine pipeline anticipated to be sized between 8” to 10” from the pellet reactor to the Solar Evaporation Ponds.
- Installation of a 20 gpm brine pump station within the existing BBARWA WWTP site.
- Installation of an anticipated 1,500 to 1,600 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.



FIGURE 3-19

- Installation of an additional 2 MW of solar panels to be installed at BBARWA's administration and WWTP site, and within the BBCCSD site to the south of BBARWA's Administration Building. The solar panels will be installed east of the old sludge building at the WWTP as a solar field, and atop the OAC and Administration Building roofs, and within the site to the south of BBARWA's Administration Building. Refer to **Figure 3-37**.

#### **Solar Evaporation Ponds Project**

- Development between 23 and 57 acres of Solar Evaporation Ponds, depending on the total system recovery rate achieved, at BBARWA's WWTP site to accommodate 22,000 gpd to 55,000 gpd of brine concentrate.
- Installation of one or more monitoring wells at the evaporation pond on the WWTP Site to monitor groundwater quality, as required by the future discharge permit.

#### **Stanfield Marsh/Big Bear Lake Discharge Project**

- Installation of a pipeline utilizing one of three alignments shown on **Figure 3-2** from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12" in diameter.

#### **Shay Pond Discharge Project**

- Installation of about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF (**Figure 3-34**).

#### **Sand Canyon Recharge Project**

- Installation of a new pipeline that will discharge into Sand Canyon that will be 8" in diameter, and 7,210 feet in length.
- Installation of a new 471 gpm pump station at the Resort Storage Pond to convey water to Sand Canyon.
- Installation of two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon, similar to that which is shown on **Exhibit 3-1**.

The Program would, as stated under **Subsection 3.3**, Program Purpose and Objectives, partner with Big Bear Valley agencies to recover a sustainable water resource that is currently being transported out of the Big Bear Valley to Lucerne Valley, close the water loop, and keep the water in the Big Bear Valley for beneficial reuse. This section of the Program Description is intended to outline operational and construction scenarios for the specific types of facilities and/or improvements that could result from the implementation of the Program.

The implementation of the facilities proposed as part of the Program consists of construction and operation of the various facilities summarized below. These potential facilities are separated into five Program Categories:

- 1) Program Category 1: Conveyance Pipelines
- 2) Program Category 2: Ancillary Facilities including Pump Stations and Monitoring Wells
- 3) Program Category 3: Solar Evaporation Ponds
- 4) Program Category 4: BBARWA WWTP Upgrades
- 5) Other Physical Changes to the Environment

Below are general descriptions of the facilities and operations proposed as part of the Program. Each Program Category has been formed utilizing the greatest number, intensity, lengths, and capacities for each type of facility proposed under the Program. For example, the pipeline lengths and sizes considered under Program Category 1 represent the option(s) that would require the greatest pipeline length to achieve that "Component" of the Program.

### **Program Category 1: Conveyance Pipelines**

The Program would ultimately install a total of about 6.59 miles or 34,810 LF of various types of pipelines. Potential alignments include the following:

- **Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment:** Pipeline to Big Bear Lake: up to 12" 19,940 LF
  - Alignment Options include:
    - **Alignment Option 1 to Discharge Point 1**
      - Baldwin Lake Pipeline Alignment Option
      - Meadow Lane Pipeline Alignment Option
    - **Alignment Option 2 to Discharge Point 2**
      - East Neighborhoods Pipeline Alignment Option
      - West Neighborhoods Pipeline Alignment Option
- **Shay Pond Conveyance Alignments:**
  - New Shay Pond Conveyance Pipeline: a new 4" 710 LF pipeline would be constructed between the existing BBARWA to Shay Pond pipeline alignment to Shay Pond.
  - Shay Pond Replacement Pipeline: a possible additional 6" 5,600 LF of pipeline to replace the stretch of pipeline between BBARWA's WWTP site to Shay Pond, which will only be required to implement the Shay Pond Discharge Project if the existing pipeline cannot be utilized.
- **Sand Canyon Recharge Conveyance Pipeline:**
  - Pipeline from the Resort Storage Pond to Sand Canyon: 8" 7,210 LF of pipeline
- **BBARWA WWTP Upgrades Project:**
  - Brine Pipeline (within BBARWA WWTP property): 8" 1,350 LF of pipeline

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

The Program would ultimately install monitoring wells in order to facilitate project operation as follows:

- Up to four (4) monitoring wells
  - **Sand Canyon Recharge Project:**
    - Two monitoring wells downstream of the Sand Canyon Recharge Area.
  - **Evaporation Ponds Project:**
    - Two monitoring wells near the Solar Evaporation Ponds at the BBARWA WWTP site.

The Program would also install three pump stations in order to facilitate project operation as follows:

- **BBARWA WWTP Upgrades Project:**
  - Effluent Pump Station @ WWTP 1,520 gpm
  - Brine Pump Station @ WWTP: 20 gpm
- **Sand Canyon Recharge Project:**
  - Pump Station @ Resort Storage Pond 471 gpm

The Program would install a pipe outlet at the top of the channel bank at Sand Canyon that discharges down the side slope of the channel into the channel bottom as part of the Sand Canyon



Recharge Project. The channel slope will be protected from erosion using rip rap or other erosion control methods, similar to that which is shown on **Exhibit 3-1**.

**Program Category 3: Solar Evaporation Ponds Project**

The Program would construct between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine.

**Program Category 4: BBARWA WWTP Upgrades Project**

This Program Category includes upgrades to the BBARWA WWTP, to include 2.2 MGD of full advanced treatment, producing up to 2,200 AFY of Program Water. The AWP includes the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

**Other Physical Changes to the Environment**

While the proposed Program would result in the installation of several facilities, it would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would have the potential to enhance the visual setting of the Big Bear Valley by way of increased water in Big Bear Lake and Stanfield Marsh. This would result from Big Bear Lake being fuller, thereby minimizing the dry habitat that occurs around Big Bear Lake's rim when Big Bear Lake levels are low. Additionally, in Stanfield Marsh, greater provision of water in this area has a potential to support wetland/marsh habitat in a larger area than is supported on average.

The Program would also result in a change at Shay Pond in that, Program Water would be used in place of the existing water source—groundwater—in support of the Stickleback fish. This change is not anticipated to result in a physical change to the environment at or surrounding Shay Pond beyond that the source of water utilized at Shay Pond will be altered.

The Program will result in a flow reduction to LV Site from about 2,190 AFY to about 340 AFY on average. The flows BBARWA will send to the LV Site will vary based on the hydrologic conditions. For example, in a dry year, no water would be sent to the LV Site, and in a wet year, like in 2011, up to 1,050 AFY could be sent to the LV Site. The reduction in discharge would limit the ability to continue the use of the site from an existing use of 190 acres of the 480-acre site, to a utilization of 40 acres of the LV Site for farming purposes. The LV Site would continue to be owned by BBARWA, and BBARWA would ensure that the site is maintained. As discussed under **Subsection 3.6.2**, above, enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and eco-conscious weed killing applications;
- Planting cover crops, such as sorghum to prevent dust migration; and/or,
- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

### **3.7.2 Program Category 1: Conveyance Pipelines**

#### **Operational Scenario: Pipelines**

**Pipelines:** Once a pipeline is installed, operations do not require any visits unless unforeseen circumstances arise that would require maintenance or repair of the pipelines. In the event of routine maintenance one vehicle trip per maintenance event would be required.

#### **Construction Scenario: Pipelines**

An estimated 6.59 miles or 34,810 LF of pipeline may be installed in support of the Program. The maximum pipe length that would be installed in a single year would be 29,210 LF. Installation of 29,210 LF of pipeline could occur over a period of one year to coincide with the opening year (2027) of the 2.2 MGD upgraded BBARWA WWTP.

Preliminary analysis has identified that the piping will range from 4-inch to 12-inch diameter. It is assumed that an underground utility installation team can install an average of 200-400 LF of pipeline per day. A team consists of the following:

- 200-400 ft of pipeline installed per day
- 1 Excavator
- 1 Backhoe
- Compaction equipment
- 2 pickup trucks with supplies and hand tools
- 1 Paver
- 1 Roller
- 1 Water truck
- Traffic Control Signage and Devices
- 10 Dump/delivery trucks (up to 80 miles round trip distance)
- Employees (10 members per team, 80-mile round-trip commute)

The emissions calculations are based upon the above assumptions for each pipeline installation team. Typically, up to 400 ft of pipeline trench could be excavated, the pipe installed, backfilled, and compacted each day during pipeline installation in undeveloped areas whereas only 200 ft per day can be installed in developed roadways. In either case equipment would be operated for roughly the same portion of the day and daily equipment emissions would be the same, except, that undeveloped areas would not require pavement removal and reinstallation.

It is assumed that up to of 1,000 LF per day would be installed utilizing multiple teams (up to four teams working on any given day). It is assumed that the proposed pipeline installation will occur for a maximum of 260 days in one calendar year.

Ground disturbance emissions assume roughly half an acre of land would be actively excavated on a given day. It is anticipated that installation of pipeline in developed locations will require the use of a backhoe, compactor, roller/vibrator, pavement cutter, grinder, haul truck, and two dump trucks operating six hours per day; a water truck and excavator operating four hours per day and a paving machine and compactor operating two hours per day. Installation of pipeline in undeveloped locations would require the same equipment without the paving equipment (cutter, grinder, paving machine). Pipeline trenches will have a depth of approximately 4.5' to 6'. Trench widths could be as small as 1.5' for 4" piping and could be as wide as 4.5' for 12" piping.

The pipelines that would be installed in support of Replenish Big Bear are anticipated to use push-on joints (e.g., gasketed bell-and-spigot) that do not require welding. However, the Contractor may occasionally use a portable generator and welder for equipment repairs or incidental uses.

### **3.7.3 Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

#### **Operational Scenario: Ancillary Facilities including Monitoring Wells**

**Monitoring Wells:** The Program anticipates the installation of up to four new monitoring wells; two for Sand Canyon and two for the Solar Evaporation Ponds. The four monitoring wells will be visited by a field technician on a monthly to quarterly frequency. There is negligible energy consumption in obtaining groundwater levels from a monitoring well.

**Pump Stations:** Pump stations that are incorporated into the Program will be operated to convey the water or brine generated by the proposed BBARWA WWTP Upgrades, the capacity and amounts of water pumped varies. A total of three pump stations will be installed.

It is assumed that the brine pump station would be 20 gpm capacity with 5 HP pumps and the effluent pump station would be 1,500 to 1,600 gpm with 25 HP pumps.

#### **Operational Scenario: Sand Canyon Discharge**

**Pipeline outlet and erosion control:** Once the pipe outlet and erosion control are installed, operations do not require any visits unless unforeseen circumstances arise that would require maintenance or repair of the pipe outlet and erosion control. In the event of routine maintenance one vehicle trip per maintenance event would be required.

#### **Construction Scenario: Well Development**

Four new monitoring wells will be drilled and constructed approximately one year prior to the initiation of the Program in 2027.

The depth of a new wells is anticipated to range between 250 and 750 feet bgs, or as directed by the hydrogeologist. The average area of disturbance required to drill and construct each new well is anticipated to be half an acre or less. Drilling of up to four new wells during a given year, with flexibility to construct the four wells over a period of two or more years, will require the delivery and set up of the drilling rig at each site. It is anticipated these wells may be drilled concurrently, or at different times and the drilling equipment will be transported to and from the sites on separate occasions. For the purposes of this evaluation, it is forecast that delivery of the drilling equipment four times in a year will result in four 80 mile round-trips for the drill rigs.

It is anticipated that about five persons will be on a given well site at any one time to support drilling and well construction: three drillers, the hydrogeologist inspector, and a foreman. During the course of well drilling and construction at any given site, trips to and from the well site will include: one roundtrip for the drilling rig; between two and three roundtrips for cement trucks; about give trips to deliver pipe; and about four round trips per day for employees.

For analysis purposes it is assumed that each well would be drilled using the direct rotary or fluid reverse circulation rotary drilling methods. The average area of disturbance to drill and construct each well is estimated to be one-half an acre or less. Access to the drilling site for the drilling rig and support vehicles would be from adjacent roadways. Typically, site improvements to allow well drilling requires only minimal earth movement and/or grading.

The drilling and development of each well will require drilling to—in most cases—between 250 and 750 feet bgs. The proposed schedule for constructing each well would be as follows: drilling, construction, and testing, where required, of each well would require approximately six weeks to complete (about 45 days, of which 15 to 20 days would include 24-hour, 7-day a week drill activity). For planning purposes, a construction and testing schedule duration of 60 days per well is assumed to account for unforeseen circumstances (e.g., extreme weather, equipment breakdowns, etc.) that could affect the drilling and testing schedule. The well casings are expected to be flush-threaded PVC wells and it will be assumed that well development and installation will require a two-week use of a diesel generator.

The borehole for the well would be drilled using at least two separate drilling passes. The first pass, or pilot borehole, would be drilled to an estimated maximum depth below the ground surface, which would correspond to the top of the consolidated bedrock in the area, or a depth selected by the project hydrologist/hydrogeologist. Upon completion of the geophysical logs, the pilot borehole would be enlarged (reamed) to a diameter of 24 inches to approximately the same depth to accommodate the well casing, screen and filter pack.

Once each well is constructed it would immediately be developed through a process of swabbing and airlifting. During this process, drilling fluids and suspended sediment would be removed from the well. After the drilling fluids are removed along with most of the suspended sediment, the well would be further developed through pumping.

Each monitoring well will be completed at the surface with either a flush mounted, traffic rated manhole cover that is bolted in place or a 12-inch diameter steel monument that extends approximately three feet above the ground. The monument will be fitted with a locking lid and surrounded by four traffic bollards. The final footprint of the completed monitoring well will be approximately 10' by 10'.

#### **Construction Scenario: Pump Stations**

The total number of pump stations to be constructed in support of the Program is anticipated to be three.

It is forecasted that, at each site, no more than 0.5 acre will be actively graded on a given day for site preparation of each pump station. Construction of each pump station will require the delivery and installation of equipment and materials. It is anticipated that grading activities will occur over a five-day period and this phase of construction will result in six truck trips on the worst-case day with an average round trip of 80 miles delivering construction materials and equipment (concrete, steel, pipe, etc.). Installation of the pump station will require the use of a crane, forklift, backhoe and front loader operating four hours per day. Calculations assume five workers will each commute 80 miles round-trip to the work site.

Each pump station is assumed to be housed within a CMU building, and will require a transformer to be installed to provide electric power to the pumps. The proposed pump station building may include a pump room and electric control room. Construction of the pump stations would involve site preparation and grading, construction of structural foundations, installation of piping and electrical equipment, pump and motor installation, and final sitework.

Two of the pump stations proposed are located at the BBARWA WWTP site and one is located offsite at Sand Canyon. The onsite pump stations will have the same backup power that supplies the BBARWA WWTP process equipment, and the Sand Canyon pump station will have a portable backup generator.



**Construction Scenario: Sand Canyon Discharge**

**Pipeline outlet and erosion control:** The construction associated with the pipe outlet would be consistent with the pipeline construction scenario described under **Subsection 3.7.1**, above.

Erosion control would, both during construction, and once completed, encompass an area of less than 15' x 15'. Construction of the erosion control will require the delivery and installation of equipment and materials. It is anticipated that construction will occur over maximum of one week period and this phase of construction will result in five truck trips on the worst-case day with an average round trip of 80 miles delivering construction materials and equipment (concrete, rip-rap, pipe, etc.). Installation of the erosion control will require the use a forklift, backhoe and front loader operating four hours per day. Calculations assume five workers will each commute 80 miles round-trip to the work site.

**3.7.4 Program Category 3: Solar Evaporation Ponds Project**

**Operational Scenario: Solar Evaporation Ponds**

Operations at this evaporation pond consists of storage and evaporation of the brine stream from the pellet reactor process. The energy required to pump brine from the pellet reactor process to the onsite Solar Evaporation Ponds is presently unknown, but it is expected to be low since the pump station is only sized for 20 gpm and it is conveying brine to a lower elevation than the pellet reactor process. The evaporation pond will be segmented into different basins so they can rotate in cycles of filling with brine, evaporating the water from the brine, and performing maintenance to remove the brine from basins that have completed the evaporation stage. Basin maintenance is expected to occur approximately two-three times a year, consisting of removal of the brine, maintenance of liners and grading, removal of vegetation, and vector management.

**Construction Scenario: Solar Evaporation Ponds**

The Program would install between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP Site shown on **Figure 3-26**, depending on total system recovery.

With respect to new evaporation pond, it is forecast that for site preparation, no more than eight acres will be actively graded on a given day. Each new pond is anticipated to be 8 to 10 feet deep with berms built up from the existing grade to create pond areas. Given the area required to install the new Solar Evaporation Ponds, it is anticipated that the time required for the construction is about 370 days (May 2025 to October 2026).

The pellet reactor process will “reject” a brine stream with high dissolved solids content (i.e., brine). Single basin dimensions would range from about 400 to 800 feet long and 400 to 800 feet wide, or about 3.75 to 7.5 acres to provide 6 to 10 ponds to accommodate the brine discharged from the treatment process. The berms would be built up so that the top of the berms are level with the existing grade of the WWTP. This would provide protection from flooding in that area without requiring excavation much below the existing grade in that area.

As stated above, the Solar Evaporation Ponds would be constructed using large construction equipment; earthen berms would be installed; and the basins would be lined with an impermeable liner to prevent percolation of the brine into the underlying soil. Periodically, the residual solids (primarily consisting of salts left after evaporation) would be collected and disposed of at an appropriately licensed disposal facility.

It is anticipated that grading activities will occur over a 90 to 120-day period and will require two bulldozers, two front end loaders, two water trucks, several scrapers, two excavators and four

dump/haul trucks operating six to eight hours per day. Calculations assume 10 workers will each commute 80 miles round-trip to the evaporation pond construction site at the BBARWA WWTP.

Construction of the new Solar Evaporation Ponds will require the delivery and installation of equipment and materials. It is not known whether each site will require import or export of soil, as the new Solar Evaporation Ponds will require some excavation of the existing area to provide fill dirt for the earthen berms to create the pond areas. Given the size of the proposed six to ten ponds (400 feet to 800 feet wide x 400 feet to 800 feet long x 10 feet in depth), it is anticipated that a cut amount from one to two-feet of the existing grade will provide enough fill dirt to create the earthen berms of the ponds. However, it is anticipated that no more than a total of 175,000 CY of materials would be hauled off site by 15 to 30 CY trucks, as an estimated one half of the cut material will be used as fill material to enhance flood control from installation of the proposed basins. No more than 100 round trips per day at an 80-mile round-trip distance would be required to accomplish the effort to remove excess materials off-site. This would occur over the three-year planning horizon for construction for the Program with some periods without hauling activities, and other periods that would reach 100 round trips per day. An estimated total of 8,000 round trips total (trucks and employees) would be required to haul excess materials to a soil receiving facility.

In addition to the above construction equipment, heavy duty trucks will be employed for on-site deliveries. Smaller trucks and automobiles will be utilized for on-site supervision and employee commuting. The diesel delivery trucks are assumed to require 100 on-road miles per day for a total of 30 days.

### **3.7.5 Program Category 4: BBARWA WWTP Upgrades Project**

#### **Operational Scenario: BBARWA WWTP Upgrades**

Please refer to **Exhibit 3-3**, which depicts the proposed modifications to the BBARWA WWTP to enable the installation of the proposed advanced water treatment facility.

The Operational Scenario for the upgrades to the BBARWA WWTP include 2.2 MGD of advanced treatment, producing up to 2,200 AFY of advanced treated water. The updates include:

- Oxidation Ditches
- Denitrification Filter
- UF and RO
- UV Disinfection
- Pellet Reactor: 0.22 MGD

The advanced treatment plant will operate 100% of the time at 70%-100% capacity. The existing facility uses about 3,250 MW-hours/year, and the advanced treatment plant will use an additional 3,800 MW-hours/year. The additional energy demands will be accommodated by the addition of a new 2 MW of solar panels (generating 3.67 MW of electricity per day) that would be installed at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

#### **Construction Scenario: BBARWA WWTP Upgrades**

The construction activities to install upgrades at the BBARWA WWTP consists of the following range of activities: demolition of existing concrete basins, grading activities to prepare site for new construction, construction of concrete foundations and supports, installation of piping, equipment, and instrumentation, connection to existing electrical equipment and onsite utility water system

construction of building foundations and building structures, and installation of treatment equipment.

Civil and site work for the proposed BBARWA WWTP Upgrades would include demolition, grading, drainage, and site improvements. The area around new structures and processes would be backfilled to match existing finished surfaces. All disturbed areas would be paved, covered with crushed stone, or landscaped with ground cover. Areas that require routine vehicle access would be bituminous concrete roadways, consisting of a 12-inch gravel base course, a 2.5-inch bituminous concrete binder course and a 1.5-inch bituminous concrete top course. Areas that require routine pedestrian access would have concrete sidewalks. The sidewalk would consist of four inches of reinforced concrete on an eight-inch gravel base course. Painted steel bollards (approximately four inches in diameter and 42 inches high) would be provided as needed to protect equipment or structures that are near roadways.

Standard construction equipment will be used, ranging from dozers, graders and cranes, to backhoes. It is anticipated that the maximum number of construction personnel on the WWTP project site on any given day will be 50 persons. A maximum number of truck deliveries, probably during pouring of concrete for facilities, are forecasted at 25 per day. Construction of the WWTP Upgrades is expected to require about 24 months (a total of 515 days of construction).

### **3.7.6 Other Physical Changes to the Environment**

#### **Operational Scenario: Other Physical Changes to the Environment**

As previously stated, Program Water is planned to be discharged continuously into Stanfield Marsh. This will occur through a new 12-inch pipe, which will need to be installed from the BBARWA WWTP to the proposed discharge points in Stanfield Marsh, as shown in **Figure 3-2**, which depicts the proposed alignment alternatives for the Big Bear Lake Discharge. The discharge to Stanfield Marsh and subsequent to Big Bear Lake is anticipated to result in an increase of water within Big Bear Lake by up to four and half feet during extremely dry periods. The discharge to Stanfield Marsh also has the potential to support wetland/marsh habitat in a somewhat greater area than is supported under current conditions.

Additionally, the Program would also result in a change at Shay Pond in that, Program Water would be used in place of the existing water source—groundwater—in support of the Stickleback fish. This change is not anticipated to result in a physical change to the environment at or surrounding Shay Pond beyond that the source of water utilized at Shay Pond will be altered.

The Program would also result in about 2,200 AFY less discharge to the LV Site. Thus, the operations at the LV Site would be altered as part of the proposed Program. The total discharge to Lucerne Valley would total about 340 AFY on average the flows, but the flows to the LV Site will vary based on the hydrologic conditions. For example, in a dry year, no water would be sent to the LV Site, and in a wet year, like in 2011, up to 1,050 AFY could be sent to the LV Site. The reduction in discharge would limit the ability to continue the use of the site from an existing use of 190 acres of the 480-acre site, to a utilization of 40 acres of the LV Site for farming purposes. The LV Site would continue to be owned by BBARWA, and BBARWA would ensure that the site maintained.

#### **Construction Scenario: Other Physical Changes to the Environment**

No additional construction beyond that which has already been discussed in this Subsection (3.7) is anticipated to occur that would facilitate the other physical changes to the environment described herein.

### 3.8 ENTITLEMENTS, APPROVALS AND OTHER AGENCY PARTICIPATION

There are a wide range of other agencies that may have an interest in or may be involved in the review and approval of the facilities outlined above. The following list is not intended to be exhaustive, but it provides a sense of the agencies that may participate in the review or approval of this program and specific projects. The potential participating agencies are arranged based on the individual topics contained in the standard CEQA Initial Study Environmental Checklist Form. **Table 2.6-1**, repeated from **Chapter 2**, outlines the other agency approvals that may be necessary to implement the proposed Program.

**Table 2.6-1  
 OTHER AGENCY APPROVALS**

Agency	Approvals Necessary
<b>STATE &amp; LOCAL AGENCIES:</b> SWRCB	NOI to the SWRCB for a NPDES general construction stormwater discharge permit. This permit is granted by submittal of an NOI to the SWRCB, but is enforced through a SWPPP that identifies construction BMPs for the site. In Big Bear Valley, the Santa Ana Regional Board enforces the BMP requirements contained in the NPDES permit by ensuring construction activities adequately implement a SWPPP. Implementation of the SWPPP is carried out by the construction contractor under contract to BBARWA, BBMWD, BBLDWP, or BBCCSD, with the Regional Board providing enforcement oversight.
Jurisdictional Waters	The Program includes the potential discharge of fill into or alterations of "waters of the United States," "waters of the State," and stream beds of the State of California. Regulatory permits to allow fill and/or alteration activities due to Program activities such as pipeline installation are likely be required.
USACOE)	<ul style="list-style-type: none"> <li>• A Section 404 permit for the discharge of fill material into "waters of the United States" may be required from the USACOE</li> </ul>
Santa Ana Regional Board	<ul style="list-style-type: none"> <li>• A Section 401 Water Quality Certification may be required from the Regional Board</li> </ul>
CDFW	<ul style="list-style-type: none"> <li>• 1600 Streambed Alteration Agreement may be required from the CDFW</li> </ul>
USFWS CDFW	These agencies may need to be consulted regarding threatened and endangered species documented to occur within an area of potential impact for future individual projects. This could include consultations under the Fish and Wildlife Coordination Act.
San Bernardino County City of Big Bear Lake	Tree removal permits may be required from local jurisdictions; and, San Bernardino County and local jurisdictions must ensure that stormwater discharges from each of the facility sites meet the current MS4.
SCAQMD	Air quality permits may be required from the SCAQMD.
Caltrans San Bernardino County City of Big Bear Lake SBCFCD BVES Southwest Gas	Encroachment permits may be required.



Agency	Approvals Necessary
CAL FIRE	CAL FIRE regulates the removal of clusters of trees pursuant to CAL FIRE timberland conversation regulations. The facilities proposed under this Program are anticipated to either require obtaining an exemption or must submit a TCP pursuant to California Public Resources Code 4621(a) and a THP pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.
Colorado Regional Board	The Colorado Regional Board will issue a modified WDR to BBARWA, as will the Santa Ana Regional Board will issue a WDR and WRR for use of recycled water.
Santa Ana Regional Board	The Santa Ana Regional Board will issue a WDR and WRR for use of recycled water.
California Department of Public Health	The California Department of Public Health must review and approve the future use of recycled water
SBCFCD City of Big Bear Lake FEMA	If any flood hazard areas are affected by the proposed Program, SBCFCD, the City of Big Bear Lake, and FEMA may perform reviews for this Program.
<b>FEDERAL AGENCIES:</b> BOR EPA	The proposed Program has been awarded a grant for the Program from the BOR. The proposed Program may seek grants or loan from other Federal agencies, such as the EPA.

No other reviewing or permitting agencies have been identified.

### 3.9 CEQA RESPONSIBLE AGENCIES

#### Partner Agencies

BCCSD  
 BBLDWP  
 BMWWD  
 Bear Valley Groundwater Sustainability Agency

#### Other Potential Responsible Agencies

San Bernardino County  
 City of Big Bear Lake  
 Santa Ana Regional Board  
 Colorado Regional Board  
 CDFW  
 USFWS  
 SCAQMD  
 USACE  
 DDW  
 SBCFCD  
 Big Bear Airport

#### Federal Agencies

BOR  
 EPA

### **3.10 USES OF THIS ENVIRONMENTAL IMPACT REPORT**

Before any of the proposed facilities can be implemented, BBARWA must approve the proposed projects and the remaining entities that make up the Program Team and CEQA Responsible Agencies will utilize the DPEIR as CEQA Responsible Agencies. This document has also been prepared in order to meet NEPA standards to enable the BOR and EPA to process this Program under a separate NEPA documentation process.

San Bernardino County, City of Big Bear Lake and/or Caltrans may issue encroachment or development permits for the proposed upgrades and additions to BBARWA's WWTP, proposed recycled water conveyance lines, brine storage basins, monitoring wells, and pump stations. These approvals can rely upon this DPEIR as the basis for compliance with the CEQA. San Bernardino County and the City of Big Bear Lake would also utilize the DPEIR as CEQA Responsible Agencies.

Other agencies listed under **Section 3.9** may use this document as CEQA Responsible Agencies to grant other approvals or entitlements.

## **CHAPTER 4 – ENVIRONMENTAL IMPACT EVALUATION**

### **4.1 BACKGROUND**

BBARWA provides wastewater treatment to the entire Big Bear Valley (79,000 acres). BBARWA, together with the following agencies—BBCCSD, BBLDWP, and BBMWD henceforth referred to jointly as the Program Team—are proposing to implement the Replenish Big Bear Program (Program). The Program Team has prepared a DPEIR to evaluate the potential significant environmental impacts that may result from implementing the Program.

The Program Team has developed a Program to recover a water resource that is currently being transported out of Big Bear Valley to Lucerne Valley, close the water loop, and keep the water in Big Bear Valley for beneficial reuse. The Program has been proposed with the goal of producing Program Water within Big Bear Valley for beneficial use. By doing so, this will provide a supplemental and drought proof source of water for current and future Big Bear Valley residents and businesses. The Program incorporates and leverages prior recycled water planning efforts in the region and represents opportunities in the context of current and prospective future regulations.

Currently, wastewater generated within the Big Bear Valley undergoes preliminary and secondary treatment. Treated undisinfected secondary effluent is discharged to BBARWA's 480-acre site in Lucerne Valley (LV Site)—about 20 miles north of the Big Bear Valley and outside the Santa Ana Watershed—for irrigation of fodder and fiber crops that are used as feed for livestock. The LV Site referred to herein is the 480-acre portion of the larger 630-acre BBARWA owned site in Lucerne Valley that is regulated by a Colorado River Basin Regional Water Quality Control Board (Colorado Regional Board) Waste Discharge Permit (WDR). The WDR stipulates that 340 acres of the LV Site can be irrigated with recycled water from BBARWA's Wastewater Treatment Plant (WWTP), with an additional 140 acres available for irrigation utilizing other water sources. Retaining recycled water in the watershed for beneficial use would significantly increase the sustainability of local water supplies. The Program Team has partnered to develop a Program that will retain this water resource in Big Bear Valley for beneficial reuse.

While this DPEIR has been prepared at the programmatic level, due to the fact that Replenish Big Bear is, in and of itself, a Program with many components, project-level detail is provided for nearly every component of this Program. This is because sufficient detail is known for most of the Program facilities to analyze each facility at the project level. The only projects that have not been analyzed at the project level are as follows: the Sand Canyon Monitoring Wells have been analyzed at a more general level because the project sites for the monitoring wells have not yet been selected, though the general locations for the monitoring wells are known to be downstream of the Sand Canyon Recharge Area; and, the change in water source at Shay Pond has been analyzed at a more general level because of the regulatory costs and hurdle that would be necessary to modify the water source supporting the Stickleback. Impacts will be quantitatively addressed in project-specific second tier environmental evaluations once specific aspects of the Program are proposed for implementation and designed. Sufficient detail is known for the remaining projects proposed under this Program to forecast impacts at the project level.

Replenish Big Bear includes permitting, design, and construction of an AWPf at the existing BBARWA WWTP, about 6.59 miles of pipeline for product water and reverse osmosis (RO), brine minimization, three pump stations, a groundwater recharge facility, and up to four monitoring wells. The Program is currently estimated to produce approximately 1,950 acre-feet per year (AFY) of high-quality Program Water, and may produce up to 2,200 AFY by 2040 through

utilization of a high-recovery brine minimization technology. Piloting is currently being conducted to confirm the feasibility of the higher yield estimates. For the purposes of this document, 2,200 AFY is used to be conservative in evaluating environmental impacts.

Furthermore, beyond the Program Objectives, the Program includes the following uses and benefits:

- Sustain Stanfield Marsh Habitat and Increase Educational Opportunities: By providing a consistent water source to Stanfield Marsh through the discharge of Program Water to Stanfield Marsh, the habitat therein would be sustained and educational opportunities for the community and visitors would be created;
- Enhance Big Bear Lake Benefits: The Program would discharge Program Water to Stanfield Marsh, allowing the Program Water to flow through Stanfield Marsh and provide new inflow to Big Bear Lake. The Program will increase inflows and Lake level, thereby enhancing recreational opportunities and aquatic habitat in both Big Bear Lake and Stanfield Marsh, and would support water quality improvements;
- Expand Local Water Supplies: When there is space in the groundwater basin to increase water levels and there is available Program Water stored in Big Bear Lake, Program Water could be pumped to Sand Canyon to recharge the groundwater basin to strengthen the sustainability of the groundwater basin. The Program Team, in coordination with the Big Bear Watermaster, will negotiate an accounting framework to track the volume of Program Water stored in Big Bear Lake over time, which will account for inputs, extractions, evaporation and releases of Program Water, and will be negotiated with the existing accounting and reporting framework used by the Big Bear Watermaster. This framework is envisioned to include a provision for some Program Water to be stored in Big Bear Lake and subsequently used for recharge in Sand Canyon when conditions are favorable for recharge;
- Sustain Unarmored Threespine Stickleback Fish with Program Water: To sustain the habitat for the Federally listed Unarmored Threespine Stickleback (Stickleback) fish with a new sustainable water source, Program Water will be discharged to Shay Pond in place of potable groundwater. While this part of the Program is included in this DPEIR for analysis purposes, this Program component is not anticipated to be completed in the near term. Therefore, a full analysis was not completed;<sup>12</sup>

The Program includes upgrades and additions to BBARWA's WWTP to produce Program Water, that meets the stringent discharge requirements for Big Bear Lake, particularly for nutrients (specifically TP and TIN) and TDS. To achieve the anticipated effluent limits, BBARWA will need to implement a series of upgrades to the existing unit processes and integrate new unit processes:

- Upgrade the existing oxidation ditches to improve biological nutrient removal process;
- Tertiary filtration and nutrient removal via denitrification filters;
- UF and RO membrane filtration;
- UV/AOP; and
- Brine pellet reactor for brine minimization.

The Program envisions that the Shay Pond Discharge will replace potable water currently discharged to the water body to maintain the water flow through the pond, which is shown in **Figure 3-19**. Up to 80 AFY of Program Water will be sent to Shay Pond, and any remaining Program Water will be

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<sup>12</sup> The utilization of the Program Water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*), which is a Federally and state endangered species.



sent to Shay Pond, and any remaining Program Water will be sent to Stanfield Marsh, a tributary of Big Bear Lake. Additionally, when needed, Program Water stored in Big Bear Lake will be pumped to Sand Canyon to recharge the Bear Valley Basin to strengthen the sustainability of the groundwater basin. The facilities envisioned to facilitate the Sand Canyon Recharge Area include a pump station and pipeline that are planned to be sized to convey 380 AF of recharge water over a six-month period.

For redundancy purposes, BBARWA is also seeking to maintain its current discharge location in Lucerne Valley, where undisinfected secondary effluent is currently conveyed to irrigate fodder crops used for livestock feed. All WWTP process water in excess of the upgraded BBARWA WWTP's 2.2 MGD capacity will continue to be treated to undisinfected secondary levels and conveyed to the existing Lucerne Valley site, consistent with the current permitted discharge requirements of the existing BBARWA WWTP.

As the agency that will facilitate the implementation of the WWTP upgrades, BBARWA will serve as the Lead Agency for purposes of complying with CEQA and later NEPA. The Program has been awarded Federal grants, so compliance with NEPA is needed. Therefore, this document has been prepared to meet NEPA standards to enable the BOR and other Federal agencies to process this Program under a separate NEPA documentation process. Thus, BBARWA has prepared the Replenish Big Bear Program DPEIR as the Lead Agency, in cooperation with the Program Team, as responsible agencies. Other agencies that may be Responsible Agencies or Trustee Agencies are listed under **Subsection 3.9 of the Program Description**.

BBARWA has prepared the Replenish Big Bear Program DPEIR that evaluates the potential environmental impacts that would result from constructing and implementing the proposed Program.

This chapter of the DPEIR provides the detailed information used to forecast the type and significance of potential environmental impacts that implementation of the Program and related actions could cause if the Program is implemented as described in Chapter 3, the Program Description.

In the following subchapters, as discussed in the **Introduction, Chapter 2** of this document, each of the 20 topics identified in Appendix G of the State CEQA Guidelines will be analyzed as follows: aesthetics, agriculture and forestry resources, air quality, biological resources, cultural resources, energy, geology/soils, greenhouse gas emissions/climate change, hazards and hazardous materials, hydrology/water quality, land use/planning, mineral resources, noise, population/housing, public services, recreation, transportation, tribal cultural resources, utilities/service systems, and wildfire. The environmental impact analysis section for each environmental topic is arranged in the following manner:

- a. An introduction that summarizes the specific issues of concern for each subchapter, as identified in the NOP scoping process;
- b. A summary of the current or existing environmental setting for each physical resource or human infrastructure system is presented as the baseline from which impacts will be forecast;
- c. Based on stated assumptions and identified criteria or thresholds of significance, the potential direct and indirect impacts of the proposed Program are forecast and the significance of impacts is assessed without applying any mitigation; recommended measures that can be implemented to substantially lessen potential environmental impacts are identified, and their effectiveness in reducing impacts to non-significant levels is described; and, potential cumulative environmental impacts are assessed under each environmental topic, where applicable; and,

- d. Significant and unavoidable environmental impacts and any significant impacts that may be caused by implementing **MMs** are addressed.

To provide the reviewer with a criterion or set of criteria with which to evaluate the significance of potential environmental impacts, this document provides issue specific criteria, i.e., thresholds of significance, for each topic considered in this DPEIR. These criteria are either standard thresholds, established by law or policy (such as ambient air quality standards or thresholds of significance established by the SCAQMD) or project-specific evaluation thresholds used specifically for this Program. After comparing the forecasted physical changes in the environment that may be caused by implementing the proposed Program with the issue specific significance threshold criterion or criteria, a conclusion is reached on whether the proposed Program has the potential to cause a significant environmental impact for the issue being evaluated.

Where appropriate and feasible, measures to reduce potential significant environmental impacts are identified and described in this section of the DPEIR. Over the past several years, mitigation has evolved in scope and complexity. As environmental issues are addressed in a progressive and adaptive manner, previous measures developed to mitigate project specific impacts are eventually integrated into local, regional, State and Federal statutes, rules and regulations, such as the Uniform Building Code or Water Quality Management Plans. **MMs** that are incorporated into statutes or rules and regulations become mandatory requirements (not discretionary) and they no longer need to be identified as discretionary **MMs** applicable to the Program, although they are often referenced to demonstrate that identified environmental impacts can and will be mitigated.

The text in the following subchapters summarizes all of the various measures anticipated to be incorporated into the Program to reduce potential significant environmental effects, either to the extent feasible or to a level of less than significant. After determining the degree of mitigation that can be achieved by the proposed measures and after identifying any potential adverse impacts that the **MMs** may cause, a conclusion is provided regarding the remaining level of impact, such as less than significant and/or unavoidable significant adverse impact for each environmental topic, if any.

To the extent feasible, this document utilizes conservative (worst case) assumptions in making impact forecasts based on the assumption that, if impacts cannot be absolutely quantified, the impact forecasts should over-predict consequences rather than under-predict them. The many technical studies that were prepared for this document are incorporated into this chapter by summarizing the technical information to ensure technical accuracy. The Program NOP was distributed to the public and through the State Clearinghouse on November 30, 2022. The publication of the NOP established the date for all baseline information contained in this document. The various technical studies prepared in support of this DPEIR were all compiled and completed concurrent with or after the baseline date of November 30, 2022 and all analysis in the DPEIR was compiled subsequent to this date.

These technical studies themselves are compiled in a separate volume of the DPEIR (Volume 2), which will be distributed in electronic form and made available to all parties upon request. The information used and analyses performed to make impact forecasts are provided in depth in this document to allow reviewers to follow a chain of logic for each impact conclusion and to allow the reader to reach independent conclusions regarding the significance of the potential impacts described in the following subchapters.

## 4.2 AESTHETICS

### 4.2.1 Introduction

This section assesses potential aesthetic impacts from implementation of the Replenish Big Bear Program (Program).

The analysis herein, while prepared under a Programmatic Draft Environmental Impact Report (DEIR), has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Aesthetics
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to aesthetics resources were received in response to the NOP, and none were received at the Scoping Meeting held on behalf of the Program.

### 4.2.2 Environmental Setting: Aesthetics

Big Bear Valley is located in the San Bernardino Mountains of San Bernardino County, California. The area includes approximately 135 square miles within a 12-mile-long valley surrounded by mountain ridges and rugged slopes. Land surface elevations range from about 6,000 to 9,900 ft amsl and the area is entirely surrounded by the San Bernardino National Forest. The proposed Program is located within the Big Bear Valley Groundwater Management Zone (GMZ or Basin). Big Bear Lake and Baldwin Lake (dry lakebed) are located in the middle of this Basin. The overall Program Area consists of Big Bear Valley floor and adjacent lower elevation slopes. The BBARWA sewer service area and Big Bear Valley potable water service areas are shown on **Figure 3-1** to illustrate the regional context of the proposed Program. Additionally, **Figure 3-29** illustrates an aerial view outlining an overview of the Program. The Program will span just east of Big Bear Lake to the WWTP at Baldwin Lake and then south to Shay Pond, and southeast of Big Bear Lake to the southeast to the Resort Storage Pond and Sand Canyon Recharge Area.

While no physical components of the Program are located in Lucerne Valley, an unincorporated community in San Bernardino County Mojave Desert, the Program would reduce the flow of wastewater discharge to Lucerne Valley by up to 2,200 AFY. Thus, impacts resulting from that reduced flow must be analyzed in this DPEIR. As such, the environmental setting of the area receiving flow from BBARWA—the LV Site—is detailed herein.

As described in Chapter 3, Program Description of this DPEIR, the LV Site referred to herein is the 480-acre portion of the larger 630-acre BBARWA owned site in Lucerne Valley that is located near the intersection of Camp Rock Road and Highway 247 (Old Woman Springs Road) in Lucerne Valley, CA, as shown in **Figure 4.2-1**. The site is presently flat, with the only nearby scenic resources being the San Bernardino Mountains to the south. The LV Site has been in

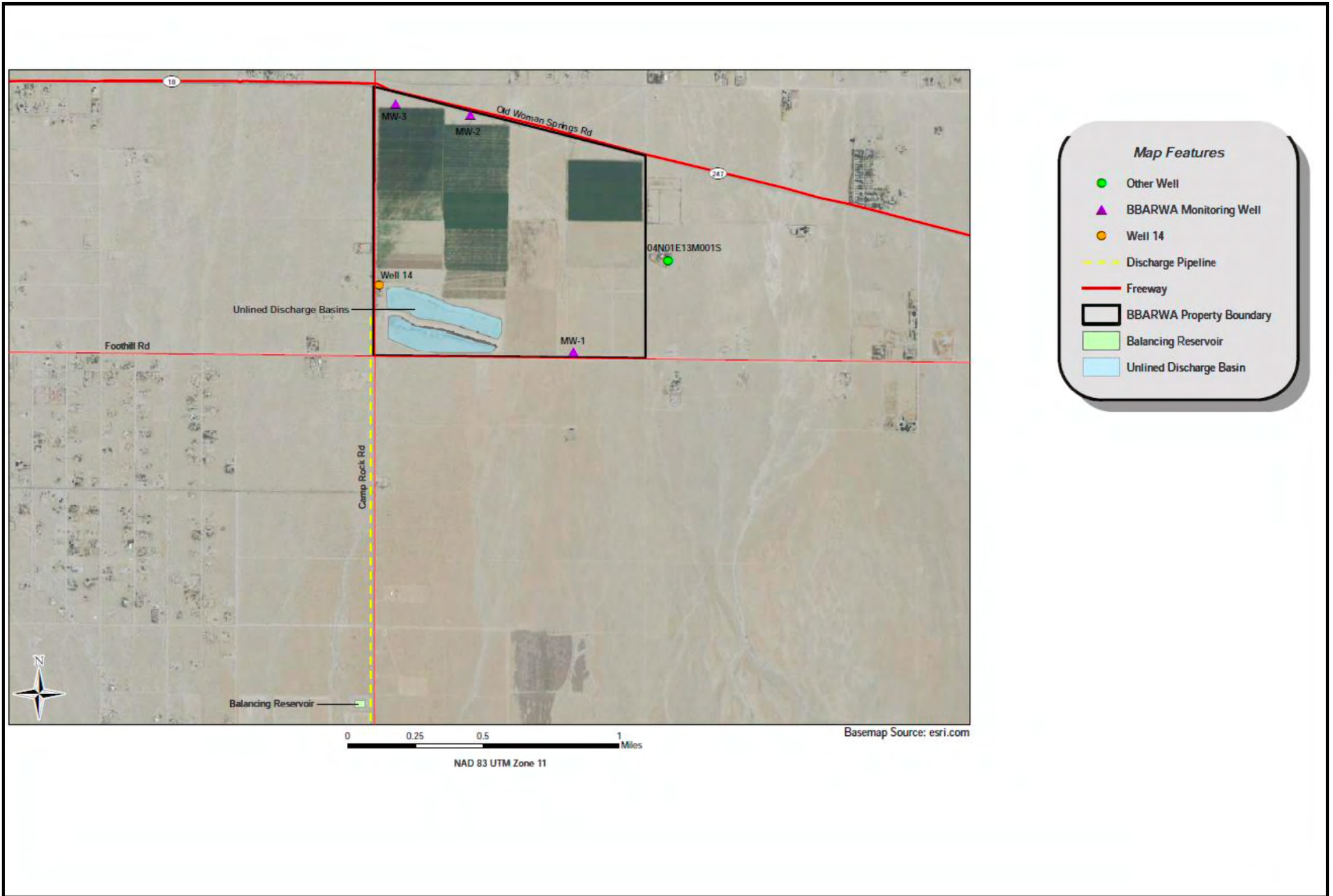


FIGURE 4.2-1



operation as a farm since 1980 and is operated by a local farmer who leases the land from BBARWA. Alfalfa and a grain mixture consisting of barley, oat and wheat crops are grown onsite and sold as feed for animals not producing milk for human consumption. Historically, up to 330 acres of the site has been farmed; however, the farmed area was reduced in 2012 to only 190 acres due to reduced water availability associated with drought conditions. The current farmed area, in recent years, has remained at 190 acres with no plans to increase the acreage in the future. In 2022, the LV Site was not farmed, but the farmer intends to continue the farming operation in 2023 for the foreseeable future.

#### **4.2.2.1 Scenic Resources**

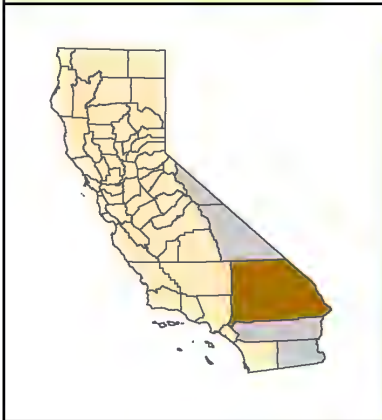
Big Bear Valley is surrounded by mountain and lake views created by unique, complex, and dramatic geological forces affecting Big Bear Valley. Visual resources of significance in Big Bear Valley include the surrounding mountain ridges, Big Bear Lake, Stanfield Marsh, and other natural water courses, including Caribou, Metcalf, North, Rathbun, Shay, Sand, and Mill Creeks. Major plant communities in Big Bear Valley include chaparral, various scrubs (e.g., sage, riparian, desert), deciduous woodlands, conifer forests, and wetlands. Generally, the visual character of Big Bear Valley includes forested landscape, prominent ridgelines, and steep canyons interspersed with small communities, valleys, and lakes. This setting contributes significantly to Big Bear Valley's economic health and continued growth.

Big Bear Valley is surrounded by SBNF, which is home to the deciduous woodland and conifer forest vegetation communities that are important to the character and visual setting of Big Bear Valley. Baldwin Lake is all that naturally remains of a once enormous lake that covered Big Bear Valley during the Ice Age. Clay deposits that were left behind in the Big Bear and Holcomb Valleys are too hot and dry in the summer months for pine and other large tree seedlings to grow. These clay soil areas covered with alpine plants are called the "Pebble Plains" due to the layer of orange and white quartzite pebbles at the surface of the clay.<sup>13</sup> The San Bernardino Mountains that surround Big Bear Valley are home to the only Pebble Plain communities in the world, and as such, the Pebble Plains are considered an important visual and biological resource within Big Bear Valley. The 156-acre Baldwin Lake Ecological Reserve, located in the northern portion of the Baldwin Lake area as shown on **Figure 4.2-2**, includes a unique pebble plain plant community as well as vernal wet meadow habitat. The site is also significant for its wintering population of bald eagles and is protected by CDFW. An example of the Pebble plain shooting star (pebble plain short morph) (*Dodecatheon hendersonii*) is shown in **Photo 4.2-1**, below.

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<sup>13</sup> A Guide to the Rare and Unusual Wildflowers of the Big Bear Valley Preserve, Tim Krantz

**California Department of Fish and Wildlife  
Inland Deserts Region  
BALDWIN LAKE ECOLOGICAL RESERVE  
San Bernardino County**



	Ecological Reserve		State Highway		
	National Forest		Local Road		

Disclaimer: Boundaries are approximate. Maps are intended for general purposes only. November 2014 - WLB

**FIGURE 4.2-2**



Photo 4.2-1: Pebble plain shooting star (pebble plain short morph) (*Dodecatheon hendersonii*).<sup>14</sup>

The LV Site is presently flat, with the only nearby scenic resources being the San Bernardino Mountains to the south and the Newberry, Rodman, and Fry Mountains that bound the Lucerne Valley to the north and east. Refer to **Photo 4.2-5**, below.

### **State Scenic Highways**

California's Scenic Highway Program designates scenic highways with the intention of protecting these corridors from change that would diminish the aesthetic value of adjacent lands. A highway is designated as an eligible scenic highway when Caltrans determines that the roadway corridor qualifies for official status. The status of an officially designated scenic highway changes when the local governing body applies to Caltrans for scenic highway approval, adopts a Corridor Protection Program, and receives notification that the highway has been officially designated. Scenic highways must have an approved Corridor Protection Program and remain in compliance to maintain scenic highway status. According to the Caltrans State Scenic Highway Map (**Figure 4.2-3**) and the San Bernardino Countywide Plan, State Route (SR) 38 (also known as the Rim of the World Scenic Byway) is designated as both a State and County Scenic Highway south of State Lane.<sup>15</sup> Big Bear Boulevard is considered Eligible State Scenic Highway, while SR-330 and SR-18 are considered designated County Scenic Routes and Eligible State Scenic Highways. No other State or County Scenic Highways exist in the Program vicinity.

### **4.2.3 Regulatory Setting**

State and local laws, regulations, plans, or guidelines that are applicable to the proposed Program are summarized below.

#### **4.2.3.1 State**

### **State Scenic Highway Program**

Caltrans defines a scenic highway as any freeway, highway, road, or other public ROW, that traverses an area of exceptional scenic quality. As previously stated, according to the Caltrans State Scenic Highway Map, these SRs, include the following designated State Scenic Highways in Big Bear Valley: SR-18.

<sup>14</sup> Photo by Bill LaHaye. [https://www.fs.usda.gov/wildflowers/regions/Pacific\\_Southwest/BaldwinLake/index.shtml](https://www.fs.usda.gov/wildflowers/regions/Pacific_Southwest/BaldwinLake/index.shtml)

<sup>15</sup> California Department of Transportation. 2023. California State Scenic Highway System Map. <https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aaca> (accessed 1/25/23)



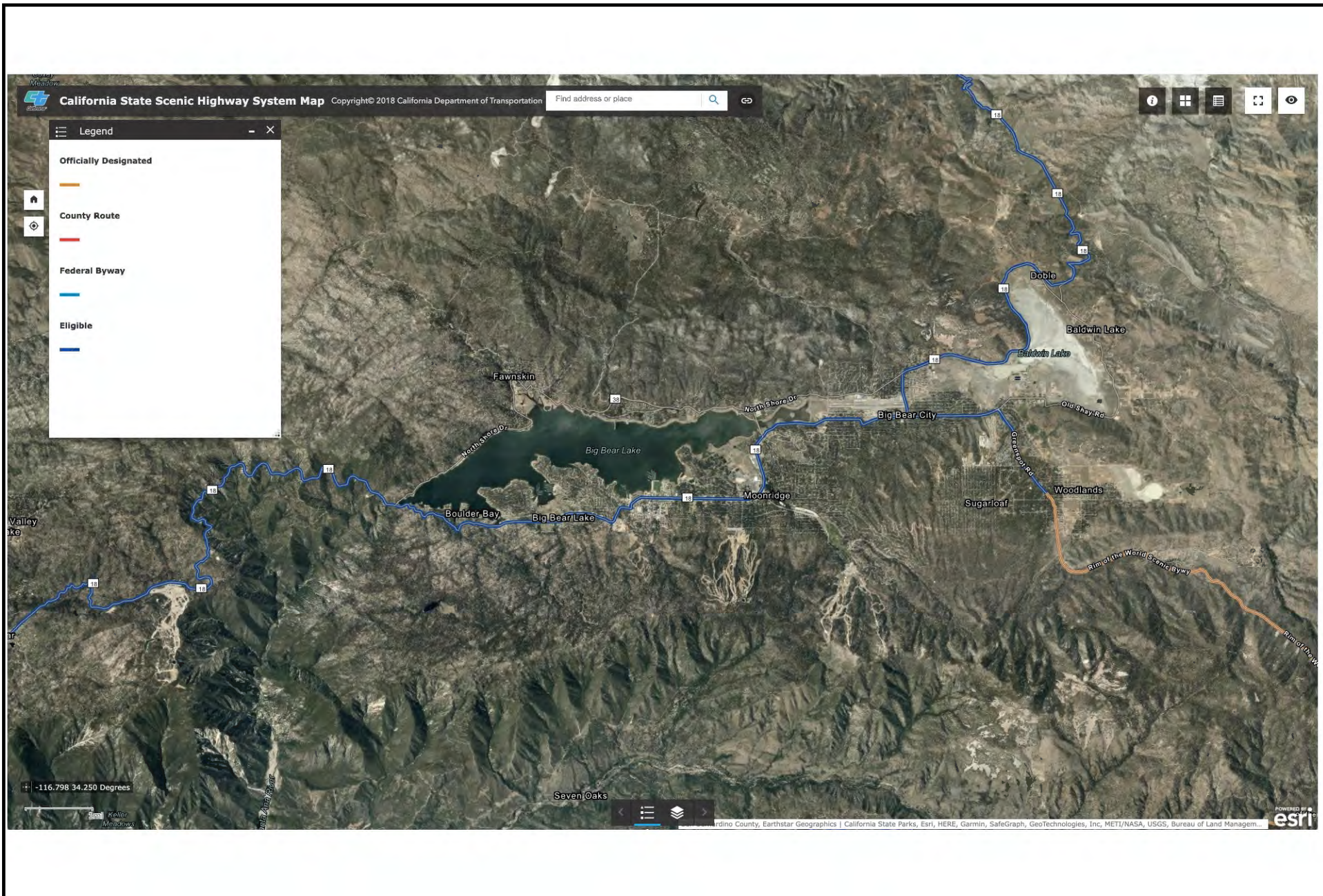


FIGURE 4.2-3



#### **4.2.3.2 Local**

Big Bear Valley encompasses the jurisdiction of unincorporated areas of San Bernardino County, including the following unincorporated communities in the vicinity of the Program: Big Bear City, Moonridge, and Fawnskin, and the City of Big Bear Lake. The City of Big Bear Lake and San Bernardino County have their own General Plan and municipal code that identify goals and policies regarding preservation of scenic resources.

#### **San Bernardino Countywide Plan**

The San Bernardino Countywide Plan has the following Land Use and Natural Resources Element goals and policies that relate to aesthetics, including:

**Goal LU-4** Preservation and enhancement of unique community identities and their relationship with the natural environment

**Policy LU-4.1** Context-sensitive design in the Mountain/Desert regions  
We require new development to employ site and building design techniques and use building materials that reflect the natural mountain or desert environment and preserve scenic resources.

**Goal NR-4** Scenic resources that highlight the natural environment and reinforce the identity of local communities and the county.

**Policy NR-4.1** Preservation of scenic resources  
We consider the location and scale of development to preserve regionally significant scenic vistas and natural features, including prominent hillsides, ridgelines, dominant landforms, and reservoirs.

**NR-4.2** Coordination with agencies  
We coordinate with adjacent federal, state, local, and tribal agencies to protect scenic resources that extend beyond the County's land use authority and are important to countywide residents, businesses, and tourists.

**NR-4.3** Off-site signage  
We prohibit new off-site signage and encourage the removal of existing off-site signage along or within view of County Scenic Routes and State Scenic Highways.

**Goal NR-5** An interconnected landscape of open spaces and habitat areas that promotes biodiversity and healthy ecosystems, both for their intrinsic value and for the value placed on them by residents and visitors.

**Policy NR-5.3** Multiple-resource benefits  
We prioritize conservation actions that demonstrate multiple resource preservation benefits, such as biology, climate change adaptation and resiliency, hydrology, cultural, scenic, and community character.

#### **San Bernardino County Development Code**

##### ***§ 88.01.050 Native Tree or Plant Removal Permits.***

(a) When Tree or Plant Removal Permit Required. A Tree or Plant Removal Permit shall be required for the removal of a regulated tree or plant as identified in this Chapter.

(1) Removals in Conjunction with Land Use Application or Development Permit - Director Approval.  
The Director may approve the removal of regulated trees or plants when requested in conjunction with a land use application, a Building Permit, and all other development permits

- (e.g., Grading Permits, Mobile Home Setdown Permits, etc.). An approved land use application and/or development permit shall be considered to include a Tree or Plant Removal Permit, if the land use application or development permit specifically reviews and approves the removals. The review of a land use application or development permit shall consider and require compliance with this Chapter.
- (2) Removals Not in Conjunction with Land Use Application or Development Permit - Director Approval. The Director may approve a Tree or Plant Removal Permit for the removal of regulated trees or plants requested not in conjunction with a land use application or development permit.
- (f) Findings for Tree or Plant Removal Permits. The applicable review authority may authorize the removal of a regulated tree or plant only if the following findings are made:
- (1) Findings for Removals in the Valley Region, Mountain Region, and Desert Region. The removal of the regulated tree or plant is justified for one of the following reasons:
- (A) The location of the regulated tree or plant and/or its dripline interferes with an allowed structure, sewage disposal area, paved area, or other approved improvement or ground disturbing activity and there is no other alternative feasible location for the improvement.
- (B) The location of the regulated tree or plant and/or its dripline interferes with the planned improvement of a street or development of an approved access to the subject or adjoining private property and there is no other alternative feasible location for the improvement.
- (C) The location of the regulated tree or plant is hazardous to pedestrian or vehicular travel or safety.
- (D) The regulated tree or plant or its presence interferes with or is causing extensive damage to utility services or facilities, roadways, sidewalks, curbs, gutters, pavement, sewer line(s), drainage or flood control improvements, foundations, existing structures, or municipal improvements.
- (E) The condition or location of the regulated tree or plant is adjacent to and in such close proximity to an existing or proposed structure that the regulated tree or plant has or will sustain significant damage.
- (2) Additional Findings for Removals in the Mountain Region. In the Mountain Region only, the applicable review authority shall also make all of the following findings:
- (A) Where improvements are proposed, the design of the improvements ensures that at least the following minimum percentage of the subject parcel will be maintained or established in a natural undeveloped vegetated or revegetated condition sufficient to ensure vegetative coverage for a forest environment, as determined by the applicable Review Authority.
- (I) Twenty percent of commercial, industrial, and administrative/ professional uses.
- (II) Thirty-five percent of multi-family residential uses.
- (B) At least one half of natural areas for all uses, except single-family residential uses, will be located in the front setback area or located so that significant portions are visible from the public right-of-way on which the improvements are to be located.
- (C) A perch tree within a federally identified American Bald Eagle habitat will not be removed unless an adequate substitution is provided.
- (D) A Registered Professional Forester has certified in writing that the condition or location of a regulated tree is contributing to overstocked tree stand conditions and that its removal will improve the overall health, safety, and vigor of the stand of trees containing the subject tree.
- (3) In the Desert Region only, the applicable Review Authority shall also make the following findings:
- (A) Joshua trees that are proposed to be removed will be transplanted or stockpiled for future transplanting wherever possible.
- (B) In the instance of stockpiling, the permittee has complied with Department policy to ensure that Joshua trees are transplanted appropriately. Transplanting shall comply with the provisions of the Desert Native Plants Act (Food and Agricultural Code §§ 80001 et seq.), as required by § 88.01.060(d) (Compliance with Desert Native Plants Act).

- (C) No other reasonable alternative exists for the development of the land when the removal of specimen size Joshua Trees is requested. Specimen size trees are defined as meeting one or more of the following criteria:
  - (I) A circumference measurement equal to or greater than 50 inches measured at four and one-half feet above natural grade level.
  - (II) Total tree height of 15 feet or greater.
  - (III) Trees possessing a bark-like trunk.
  - (IV) A cluster of ten or more individual trees, of any size, growing in close proximity to each other.
- (g) Plot Plan Requirements. Before the issuance of a Tree or Plant Removal Permit, a plot plan shall be approved by the applicable Review Authority for each site indicating exactly which trees or plants are authorized to be removed. The required information shall be added to any other required plot plan.
- (h) Construction Standards. During construction and before final inspection under a development permit, the following construction standards shall apply, unless otherwise approved in writing by an arborist, registered professional forester, or a Desert Native Plant Expert:
  - (1) Enclosures. The trunks of regulated trees and regulated plants shall not be enclosed within rooflines or decking.
  - (2) Attachments. Utilities, construction signs, or other hardware shall not be attached so as to penetrate or abrade any live regulated tree or plant.
  - (3) Grade Alterations. No grade alterations shall bury any portion of a regulated tree or plant or significantly undercut the root system within the dripline.

**§ 88.01.070 Mountain Forest and Valley Tree Conservation.**

This Section provides regulations to promote conservation and wise use of forest resources in the Mountain Region and native tree resources in the Valley Region. The provisions are intended to augment and coordinate with the Z'berg-Nejedly Forest Practice Act of 1973 (Public Resources Code §§ 4526 et seq.) and the efforts of the State Department of Forestry and Fire Protection to implement and enforce the Act.

- (a) Applicability.
  - (1) Private Harvesting. The provisions of this Section apply to the private harvesting of all trees growing on private land and on public land in the unincorporated Mountain Region and Valley Region.
  - (2) Commercial Harvesting. The commercial harvesting of trees shall be prohibited, except as allowed by and authorized by the State Department of Forestry and Fire Protection in compliance with the Z'berg-Nejedly Forest Practice Act of 1973 (Public Resources Code §§ 4526 et seq.).
- (b) Regulated Trees. The following trees shall only be removed with an approved Tree or Plant Removal Permit issued in compliance with § 88.01.050 (Tree or Plant Removal Permits):
  - (1) Native Trees. A living, native tree with a six inch or greater stem diameter or 19 inches in circumference measured four and one-half feet above natural grade level.
  - (2) Palm Trees. Three or more palm trees in linear plantings, which are 50 feet or greater in length within established windrows or parkway plantings, shall be considered to be heritage trees and shall be subject to the provisions of this Chapter regarding native trees.
- (c) Tree Protection from Insects and Disease. For regulations on the treatment and disposition of felled trees, see § 88.01.090 (Tree Protection from Insects and Disease).

**City of Big Bear Lake General Plan**

The City of Big Bear Lake General Plan Open Space and Recreation and Land Use Elements have the following goal and policies that relate to aesthetics, including:

- |             |            |  |
|-------------|------------|--|
| <b>Goal</b> | <b>L 1</b> | Create a vision for development of the City which provides for orderly, functional patterns of land uses, sensitive to the natural environment and meeting the long-term social and economic needs of the community. |
|-------------|------------|--|

- Policy** L 1.8 Preserve the scenic mountain backdrop of Big Bear Lake through adoption of guidelines for hillside development, including the following:
- a. Development in hillside areas should minimize grading, conform to natural topography, preserve ridgelines and exhibit sensitivity to natural landforms.
  - b. Development should be restricted on natural slopes of fifty percent and greater.
  - c. Visually prominent ridges and hillsides should be retained in a natural condition; where hillside grading occurs, the final graded contours should match and blend with natural contours and slopes should be finished in a manner to resemble natural topography.
- Goal** OPR3 Preservation of open space areas within the City that are necessary to protect critical habitat areas, protect scenic views, provide passive recreational opportunities and/or enhance the aesthetic character of the community.
- Policy** OPR 3.4 Consider the acquisition of property as open space if the property would meet the City's land use and environmental goals, and if such action would meet one or more of the following criteria:
- a. The property is located within a scenic viewshed or corridor, and its preservation as open space would provide an aesthetic value to the community and/or the surrounding neighborhood;
  - b. The property is the site of sensitive or protected habitat or species, and its preservation as open space would preserve important biological resources;
  - c. The property provides access and/or views to Big Bear Lake, and its preservation as open space would enhance public use and/or appreciation of the Lake;
  - d. The property provides an important corridor linking habitat or resource areas, such as a drainage course, a wildlife corridor, a regional trail system, or other similar feature.

### **City of Big Bear Lake Municipal Code**

#### ***17.10.045 - Tree conservation requirements during construction.***

- A. The following tree protection guidelines shall be incorporated as construction notes into all building plans for major projects including but not limited to the following: site, grading, street improvement, curb, gutter and sidewalk, water quality, drainage, public and private utilities, and any plan that proposes construction that may have an impact on trees to be protected.
- B. All construction plans impacting a tree identified to be retained in the TMP must be approved by a State of California licensed landscape architect, California Registered Forester or arborist certified by the Western Chapter of the International Society of Arboriculture (ISA).
- C. A pre-construction meeting shall be conducted by the building and safety division prior to commencement of any construction on a site with any existing trees of twelve (12) inches DBH or greater, and the provisions of this section shall be reviewed with the contractor. The contractor shall be required to verify in writing that he/she was notified of the tree conservation requirements prior to commencing construction. If the applicant wishes to deviate from city requirements based on the recommendations of a California Registered Professional Forester or an arborist certified by the Western Chapter of the International Society of Arboriculture, then the applicant may include the California Registered Professional Forester or an arborist certified by the Western Chapter of the International Society of Arboriculture at the meeting. The project landscape architect or arborist shall also attend the pre-construction meeting conducted by the building and safety division and is required to visit the site prior to any trenching or grading activities to verify compliance with the TPM.
- D. Erosion and sedimentation control barriers shall be installed or maintained in a manner which does not result in soil build-up within the critical root zone (CRZ) as defined by Section 17.10.020(E) of the Development Code.
- E. All trees shown to be retained in the TMP shall be protected during construction with chain link fencing, snow fence or fencing of equal, protective value.



- F. Tree protection fences shall be installed prior to the pre-construction meeting and the commencement of any site preparation work (clearing, grubbing, or grading) and shall be maintained throughout all phases of the construction project.
- G. Fences shall completely surround the tree or clusters of trees and be located at the limits of the drip line as defined by Section 17.10.020(K) of the Development Code. In no case shall less than sixty percent (60%) of the CRZ be left unprotected.
- H. Fences shall be maintained throughout the construction project in order to protect the following:
  - 1. Soil compaction in the drip line areas resulting from vehicular traffic or storage of equipment or material.
  - 2. Disturbances within the drip line areas due to grade changes or trenching not reviewed and authorized by the City of Big Bear Lake.
  - 3. Wounds to exposed roots, trunk, or limbs by mechanical equipment.
  - 4. Other activities detrimental to trees such as chemical storage, concrete truck cleaning, and fires.
- I. Exceptions to installing tree fences at the tree drip line may be permitted in the following cases if a four-inch layer of organic mulch is placed within the drip line of the tree and the plan is approved by a California Registered Professional Forester or an arborist certified by the Western Chapter of the International Society of Arboriculture:
  - 1. Where trees are close to proposed buildings.
  - 2. Where there are severe space constraints such as building size or other special requirements.
  - 3. Where any of the above exceptions result in areas of unprotected root zones those areas should be covered with four inches of organic mulch to minimize soil compaction.
- M. If possible, all grading within drip line areas shall be done by hand or with small equipment to minimize root damage prior to grading.
- N. Any roots exposed by construction activity shall be pruned flush with the soil and backfilled with good quality topsoil within one day. If exposed root areas cannot be backfilled within one day, an organic material which reduces soil temperature and minimizes water loss due to evaporation shall be placed to cover the roots until backfill can occur.
- O. Prior to excavation or grade cutting within the CRZ or drip line areas, a clean cut shall be made with a rock saw or similar equipment in a location and to a depth approved by the project landscaper or arborist to minimize damage to remaining roots.
- P. Trees most heavily impacted by construction activities shall be watered deeply once a week with a minimum of five gallons per inch of tree diameter applied at the drip line during periods of hot, dry weather including but not limited to the months of June through October.
- Q. When installing concrete within the CRZ or drip line area, a plastic vapor barrier shall be placed underneath the concrete to prohibit the leaching of lime.
- R. Any trenching required for the installation of landscape irrigation, on and offsite utilities, drainage lines, underground vaults and structures shall whenever possible be located outside the CRZ. In no case shall more than sixty percent (60%) of the CRZ be disturbed.
- S. No landscape topsoil dressing greater than four inches shall be permitted within the CRZ. No topsoil is permitted on root flares of any tree.
- T. Pruning to provide clearance for structures, vehicular traffic, and construction equipment shall take place before construction begins. All pruning must be done according to the standards as outlined in literature provided by the International Society of Arboriculture (ISA Pruning Techniques).
- U. The city has the authority to modify the tree protection plan before or during construction.
- V. Trees approved for removal shall be removed in a manner which does not impact trees to be preserved.
- W. Deviations from the above requirements and negligent damage to trees may be subject to a stop work order and/or subject to revised landscape plan approval as proscribed by Section 17.10.030(D) and (E) of the Development Code.
- X. If any of the trees required to be retained or planted as part of the approved landscaping plan should die within a period of forty-eight (48) months after completion of the activities associated with land disturbance, the owner of the property shall replace the trees within six months at a ratio of one-to-one with an approved tree having a diameter of three to four inches measured at a point one foot above natural grade.
- Y. For multi-family, commercial, and industrial projects only: The city may require surety in the form of a bond or other method as approved by the city planner and city attorney, to ensure that trees to be

preserved and/or planted on the site are protected during construction, and remain viable and healthy for twenty-four (24) months after issuance of a final certificate of occupancy.

**17.10.050 - Development requirements for minor projects.**

- A. Plan Submittal Requirements. For minor projects involving building, grading, paving and/or demolition permits which do not require planning commission approval, and which have the potential to impact or cause removal of existing trees twelve (12) inches or greater DBH, the grading and/or construction plans shall show the following information:
1. The location, base elevation, DBH, species, condition, and critical root zone of all existing trees, which will be affected by the limits of construction. For purposes of this section, the limits of construction shall include any equipment or materials storage areas and/or temporary drive aisles, utility trenching, and other associated activities. All trees affected by proposed construction, both on the subject site and adjacent properties, shall be shown on the plan.
  2. Indication of which trees are proposed for removal and which trees are proposed to remain.
  3. Locations of proposed structures, paving, utilities, and areas to be protected, in relation to trees.
  4. Any proposed grade changes within the drip line of trees to remain, and how trees will be protected from changes in grade through use of permanent tree protection devices.
- B. Plan Review Standards. In approving grading and construction plans proposing to remove or impact existing trees twelve (12) DBH or greater, the reviewing authority shall ensure that the following conservation measures are shown on the plans:
1. Site shall be designed so as to avoid removal of existing healthy trees, where feasible. Where some tree removal is necessary to accommodate the proposed development, consideration should be given to conserving significant stands of trees, healthy trees, trees of varying species and ages, and trees which due to their size, shape, location and/or appearance are considered to be significant.
  2. Tree locations should be reviewed in relation to planned roads, driveways, pavement, structures, overhead utility lines and underground utility trenches, to ensure that trees will not be damaged by construction or development. If the root system of any existing tree will be significantly damaged during construction, or if the tree at maturity will conflict with structures, the site should be redesigned or the tree should be removed. At least sixty percent (60%) of the critical root zone should remain undisturbed from construction for any tree proposed to remain on site.
  3. With the recommendation of a California Registered Professional Forester or an arborist certified by the Western Chapter of the International Society of Arboriculture, new and existing trees may be enclosed within rooflines or decking, to avoid future structural damage or injury to the tree. Any recommendations of a California Registered Professional Forester or an arborist certified by the Western Chapter of the International Society of Arboriculture regarding the size, type, or location to ensure viability of such trees shall be included into the project approval.
  4. The base of a tree should not be paved over or encased in planters or other enclosures, which would change the grade at the base of the tree.
  5. Grading or landscaping techniques that involve backfilling soil around trees is not allowed. The original grade should be maintained within the drip line of existing trees.
  6. The design of structures, improvements and site grades should conform to the natural topography of the site to the extent feasible, to ensure survival of remaining trees.
  7. When possible, no paving should be allowed within a distance from the base of the tree of four feet or the diameter of the tree (DBH), whichever is greater. Within the drip line, if a hard surface is required, use of porous materials such as bricks, pavers or other pervious materials should be used.
  8. Every effort should be made to install utility trenches outside the critical root zones. Trenches are to be backfilled as soon as possible.
  9. Where deemed appropriate by the reviewing authority, a condition of approval requiring tree replacement may be applied to the permit in order to achieve the objectives of this chapter.
- C. Tree Conservation During Construction. In order to ensure tree conservation during construction or grading for ministerial projects, the provisions of Section 17.10.45, tree conservation during construction, of this chapter shall be noted on the grading and construction plans.

- D. Approval by Reviewing Authority. Plans submitted pursuant to this section may be approved by the reviewing authority upon finding that:
1. The plans contain all information required by this section; and
  2. The plans comply with the conservation requirements of this section.

**17.10.060 - Tree removal permit.**

- A. Except as specified in Paragraphs (E) and (F) of this section, in cases where there is no approval of a discretionary project or a ministerial project, but where removal of one or more trees twelve (12) inches or greater DBH is proposed, the property owner or authorized representative shall be required to obtain a tree removal permit from the City of Big Bear Lake. Approval of discretionary or ministerial projects, which include review of tree conservation plans, shall constitute the tree removal approval and no separate tree removal permit shall be required in these cases.
- B. In cases where removal of one or more healthy trees twelve (12) inches or greater in diameter is proposed for reasons other than those listed in Paragraphs (E) or (F) of this section, the applicant for a tree removal permit shall provide the following information to the city planning division:
1. The address and assessor's parcel number of the property;
  2. Proof of property ownership, or the permission of the property owner to remove the tree(s);
  3. The number, general location, DBH, species and general condition of each tree proposed for removal;
  4. Photographs of each tree proposed for removal;
  5. A written explanation stating the reason for the proposed tree removal;
  6. The required fee as established by city council.
- C. The request for a tree removal permit shall be evaluated by the city planner or his/her designee, and shall be approved if all of the following findings can be made:
1. The tree removal is reasonable and beneficial because such removal conforms to policies of the general plan and this chapter, and promotes public health, safety and welfare;
  2. The tree removal will not substantially diminish the overall forest canopy within the vicinity or significantly change the character of the site from that of a mountain environment, such that the purpose and intent of this chapter as set forth in Section 17.10.010 can be met on the site if the permit is granted;
  3. The tree removal will not affect an eagle perch tree; and
  4. An approved tree having a diameter of three to four inches measured at a point one foot above natural grade will be planted on the site for each tree removed, where deemed appropriate by the reviewing authority.
- D. Conditions of approval may be applied to a tree removal permit to ensure that the tree is removed and treated in accordance with recommended practices.
- E. When it has been determined by the Big Bear Lake Fire Protection District or the California Department of Forestry that a tree should be removed because it is in decline, is infested or diseased, has died, is structurally unsound, or poses a threat to buildings, life, safety, and/or property, the fire protection district shall provide written notification to the planning division, which shall serve as a tree removal permit for the property owner, and no fee will be assessed for a tree removal permit in these cases.
- F. When it has been determined by a California Registered Professional Forester or an arborist certified by the Western Chapter of the International Society of Arboriculture or California Department of Forestry that a tree should be removed because it is in decline, is infested or diseased, has died, is structurally unsound, or poses a threat to buildings, life, safety, and/or property, the property owner shall provide documentation of such determination to the City, which shall serve as a tree removal permit and no fee shall be assessed for a tree removal permit in these cases.

**4.2.4 Thresholds of Significance**

According to Appendix G, Section I of the State CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

- a) Have a substantial adverse effect on a scenic vista;
- b) Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

- c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings; in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality; or
- d) Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

#### **4.2.5 Potential Impacts**

This section evaluates the potential aesthetic impacts of the proposed Program.

##### **a) Would the project have a substantial adverse effect on a scenic vista?**

##### **Program Category 1: Conveyance Pipelines**

Construction: The construction of the proposed facilities would require temporary ground-disturbance within the project sites. The presence of construction equipment and related construction materials would be visible from public vantage points such as open space areas public ROWs such as roadways and sidewalks. Construction of the proposed facilities could be visible from areas with sensitive viewers; however, construction impacts related to aesthetics would be temporary and short-term in nature (a maximum of 370 days of construction for Conveyance Facilities). As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban and suburban areas, and therefore do not typically constitute a significant aesthetic or scenic vista impact. Thus, construction activities associated with implementation of the proposed Program would result in a less than significant impact to scenic vistas in the area.

Operation: The proposed pipelines would be underground and would not be visible once constructed. Thus, regardless of the location within the Big Bear Valley, the conveyance pipelines would not impact any of the visual resources of significance in Big Bear Valley, which include the surrounding mountain ridges, Big Bear Lake, Stanfield Marsh, and other natural water courses, including Caribou, Metcalf, North, Rathbun, Shay, Sand, and Mill Creeks. No impact to scenic vistas would occur as a result of this Program Component.

##### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The proposed Program would include construction of pump stations at BBARWA's WWTP site and downstream of the Sand Canyon Recharge Area, monitoring wells near the Solar Evaporation Ponds at BBARWA's WWTP site, and a pipe outlet and erosion control at the Sand Canyon Recharge Area pipe outlet and erosion control. The construction of the proposed facilities would require temporary ground-disturbance within the project sites. The presence of construction equipment and related construction materials would be visible from public vantage points such as open space areas public ROWs such as roadways and sidewalks. Construction of the proposed facilities could be visible from areas with sensitive viewers; however, construction impacts related to aesthetics would be temporary and short-term in nature (15 months). As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban and suburban areas, and therefore do not typically constitute a significant aesthetic or scenic vista impact. Thus, construction activities associated with implementation of the proposed Program would result in a less than significant impact to scenic vistas in the area.



**Operation:** Once constructed, the proposed monitoring wells would each occupy a footprint anticipated to approximately less than one half acre. It is possible that the monitoring wells would be enclosed in a small structure, which is designed to minimize noise from the pumps, should pumps be required to operate the wells. It is anticipated that the proposed monitoring wells would have small footprints (i.e. with a final footprint of about 10 ft by 10 ft in width) and be low profile (about eight ft in height). The monitoring wells downstream of the Sand Canyon Recharge Area would be installed in an urban/suburban environment surrounded by structures that would be residential or commercial in nature, or would be installed at existing water facility sites. As such, the addition of a low-profile enclosed structure within this area would be anticipated to conform to the surrounding environment. **MMs AES-1** and **AES-2** are necessary to minimize impacts to scenic vistas from the development of the monitoring wells downstream of Sand Canyon, due to the fact that the site-specific locations for these facilities are presently unknown. **MM AES-1** would ensure that the monitoring wells and landscaping therein would comply with local design standards and are integrated with local surroundings. The implementation of **MM AES-2** will ensure that impacts to scenic vistas from the implementation of the monitoring wells by the Program will be avoided or assessed further in future CEQA documentation. Thus, impacts would be reduced to a less than significant level.

It is also anticipated that the pump stations would have small footprints and be low profile, as a pump station would occupy less space and be no taller than a one-story residential home. The pump station at the Resort Storage Pond would be consistent with the existing facilities at the Resort Storage Pond site, and as the area has been developed, an additional facility consistent with the surroundings would not impact the mountain ridge vistas visible in the area surrounding this site. Thus, scenic vista impacts from the pump station at the Resort Storage Pond would be less than significant. Furthermore, the pump stations and monitoring wells that would be installed at the BBARWA WWTP would be visually consistent with that which exists within the WWTP at present (refer to **Figures 3-27 and 3-28**, which depict aerial views of the treatment plant facility). Thus, the pump stations and monitoring wells at the BBARWA WWTP would not have a potential to impact a scenic vista—which in the vicinity of the BBARWA WWTP site include mountain ridges and parts of Baldwin Lake that have not been developed. Impacts would be less than significant.

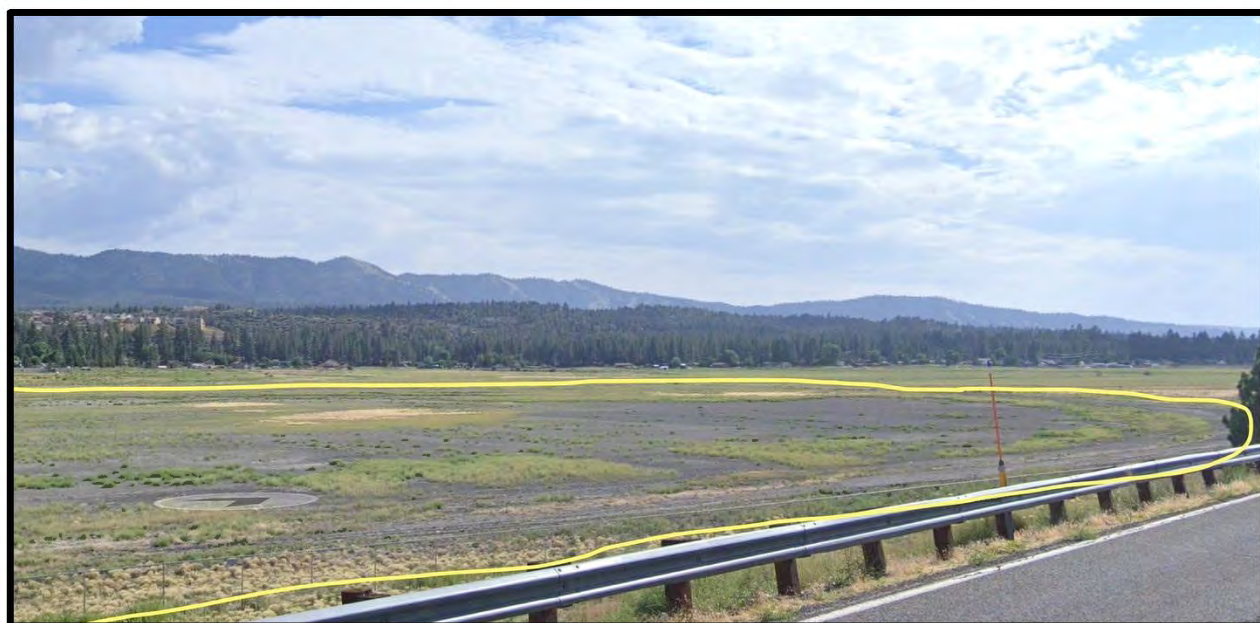
The Sand Canyon Recharge Area will include the installation of a pipe outlet at the top of the channel bank that discharges down the side slope of the channel into the channel bottom (shown on **Exhibit 3-1**). This feature will be installed within Sand Canyon (shown on **Exhibit 3-2**), which is a channel at a lower elevation than the residences located on either side of the channel. The channel itself contains some riparian vegetation and is surrounded by forestry. It does not serve as a scenic vista, nor are there any scenic vistas that are visible from this location that would be impacted by the pipe outlet and erosion control, particularly given that it is located below grade, would be designed to blend in with the natural environment and is surrounded by residential uses on either side. Therefore, implementation of the pipe outlet and erosion control at the Sand Canyon Recharge Area would not permanently alter a scenic vista, and impacts would therefore be less than significant.

### **Program Category 3: Solar Evaporation Ponds**

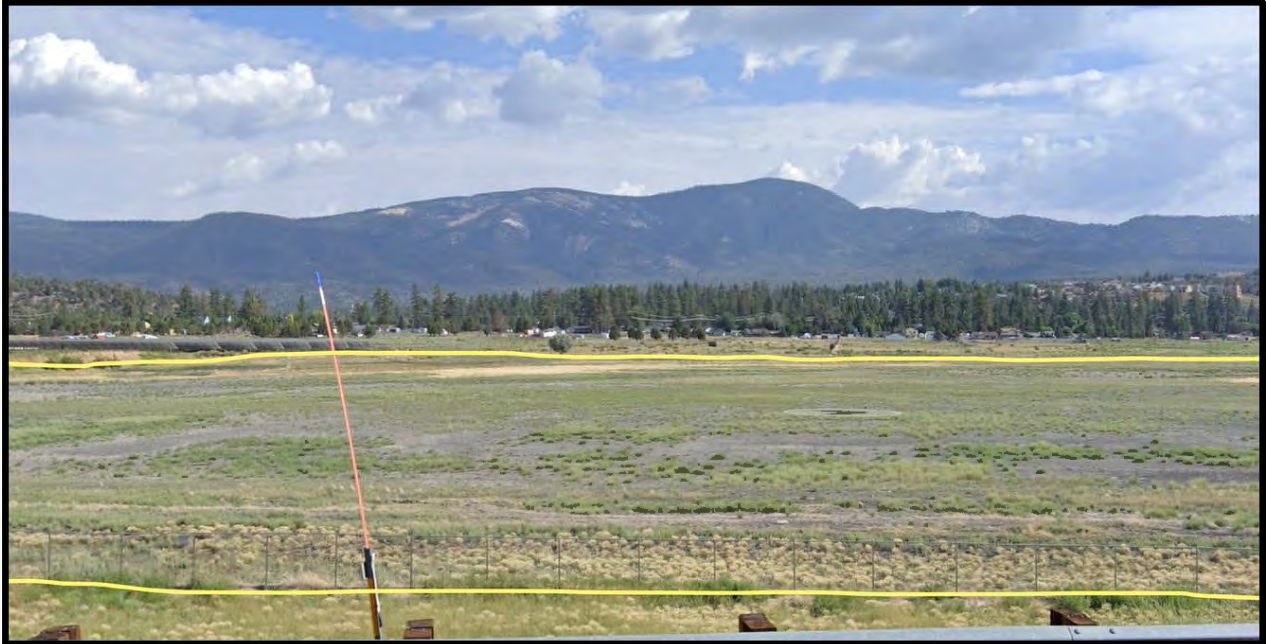
**Construction:** The proposed Program would include construction of the Solar Evaporation Ponds. The construction of the proposed facilities would require temporary ground-disturbance within the project sites. The presence of construction equipment and related construction materials would be visible from public vantage points such as open space areas public ROWs such as roadways and sidewalks. Construction of the proposed facilities could be visible from areas with sensitive viewers; however, construction impacts related to aesthetics would be temporary and short-term in nature. As construction would only occur for a short duration, it would not result in a permanent

change to the environment beyond that which is discussed below as a result of operation of the proposed facilities (a maximum of 370 days of construction for Solar Evaporation Ponds). Furthermore, construction activities are routine within urban areas, and therefore do not typically constitute a significant aesthetic or scenic vista impact. Thus, construction activities associated with implementation of the proposed Program would result in a less than significant impact to scenic vistas in the area.

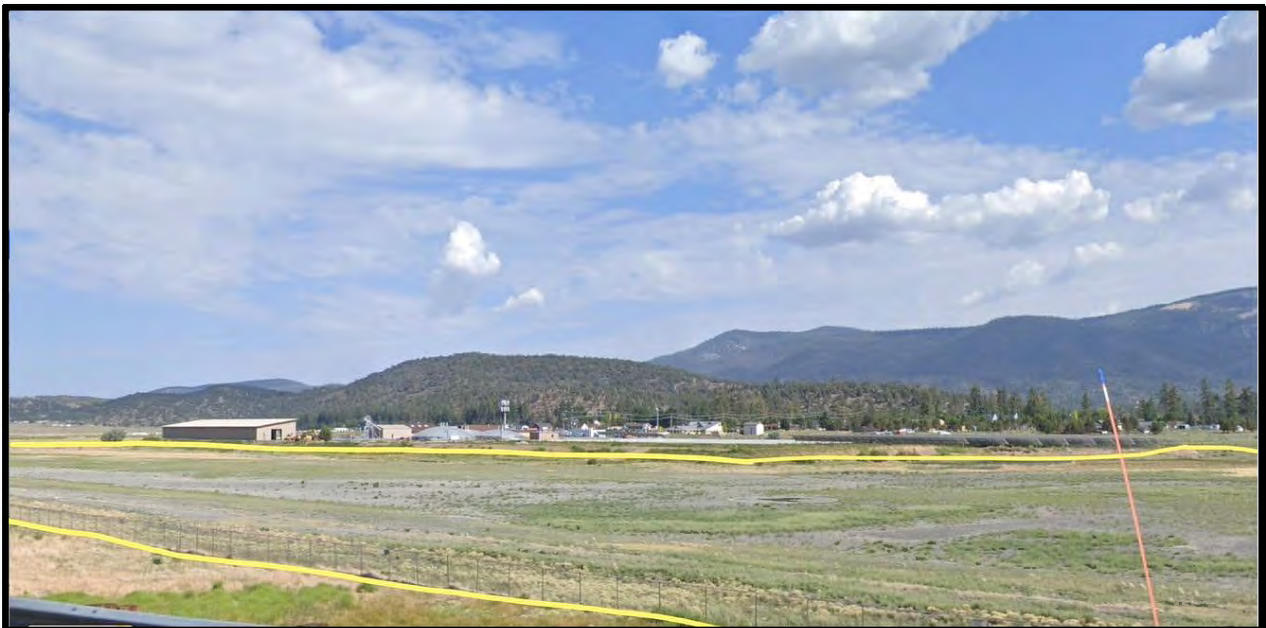
Operation: The Solar Evaporation Ponds that would be installed would also occur within the fence line of BBARWA's treatment plant within the undeveloped area to the north and east of today's active WWTP (refer to **Figure 3-26**). This area has been disturbed previously, but presently contains dirt and sparse vegetation as shown on **Photos 4.2-2 through 4.2-4**. The installation of Solar Evaporation Ponds within this area would alter the existing visual setting, but at present, the area is vacant and does not contain any scenic vistas internally within the site. Thus, the proposed Program would not result in a significant impact to scenic vistas that are internal to the BBARWA WWTP site from installation of the proposed Solar Evaporation Ponds, as none exist internally within the site. Note that an internal scenic vista would be a vista that occurs within a given project site. Furthermore, the Solar Evaporation Ponds, which may be netted to prevent birds from utilizing the ponds, would be installed at ground level and thereby would have no potential to obstruct any scenic vistas that could be viewed in the background when viewing the proposed Solar Evaporation Ponds in the foreground. Ultimately, the installation of the Solar Evaporation Ponds within the BBARWA WWTP would be consistent with that which exists at present within the site and scenic vistas would not be significantly altered as a result of the visual change that would result from installation of the proposed Solar Evaporation Ponds. Furthermore, the Solar Evaporation Ponds would be maintained as described in Chapter 3, Program Description of this DPEIR. Maintenance is expected to occur approximately 2-3 times a year, consisting of removal of the brine, maintenance of liners and grading, removal of vegetation, and vector management. Thus, as the Solar Evaporation Ponds would be located below grade, and as the change in visual setting would not be significant, this Program Component would have no potential to significantly alter a scenic vista. Impacts would be less than significant.



**Photo 4.2-2: BBARWA Evaporation Pond Area**  
(source: Google Maps)



**Photo 4.2-3: BBARWA Evaporation Pond Area**  
(source: Google Maps)



**Photo 4.2-4: BBARWA Evaporation Pond Area**  
(source: Google Maps)

**Program Category 4: BBARWA WWTP Upgrades**

Construction: The proposed Program would include construction of upgrades to BBARWA's existing WWTP to an AWP and a solar array. The construction of the proposed facilities would require temporary ground-disturbance within the project sites. The presence of construction equipment and related construction materials would be visible from public vantage points such as open space areas public ROWs such as roadways and sidewalks. Construction of the proposed



facilities could be visible from areas with sensitive viewers; however, construction impacts related to aesthetics would be temporary and short-term in nature (a maximum of 515 days of construction for BBARWA WWTP Upgrades). As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban areas, and therefore do not typically constitute a significant aesthetic or scenic vista impact. Thus, construction activities associated with implementation of the proposed Program would result in a less than significant impact to scenic vistas in the area.

Operation: The upgrades to BBARWA's existing WWTP to an AWPf would occur entirely within BBARWA's existing WWTP footprint, and would therefore also be visually consistent with the visual setting that exists at the WWTP at present. Thus, the upgrades to BBARWA's existing WWTP to an AWPf would not have a potential to impact a scenic vista—which in the vicinity of the BBARWA WWTP site include mountain ridges and parts of Baldwin Lake that have not been developed. Impacts would be less than significant.

### **Other Physical Changes to the Environment**

While the proposed Program would result in the installation of several facilities, it would also result in other physical changes to the environment, including releasing advanced treated water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would have a potential to enhance the visual setting and thereby enhance scenic vistas of Big Bear Lake and Stanfield Marsh. This would result from Big Bear Lake being higher than without the proposed Program, thereby minimizing the dry habitat that occurs around Big Bear Lake's rim when Big Bear Lake levels are low. **Exhibits 4.2-1 and 4.2-2**, show an aerial view of the potential impacts on the Big Bear Lake area as a result of the Program. Additionally, in Stanfield Marsh, greater provision of water in this area has a potential to support wetland/marsh habitat in a larger area than is supported on average at the present time. Impacts would be less than significant.

A second possible other physical change to the environment includes possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback fish at Shay Pond. Scenic vistas in the area include water courses such as Caribou Creek and Shay Creek, in addition to mountain ridges. The change in water source from potable water to Program Water would not result in any noticeable change at Shay Pond, as no greater volume of water would be sent to Shay Pond in support of the Stickleback. Therefore, no impacts to scenic vistas would occur as a result of this possible modification in water source at Shay Pond.





Exhibit 4.2-1: Lake Area at Record Low in 2018

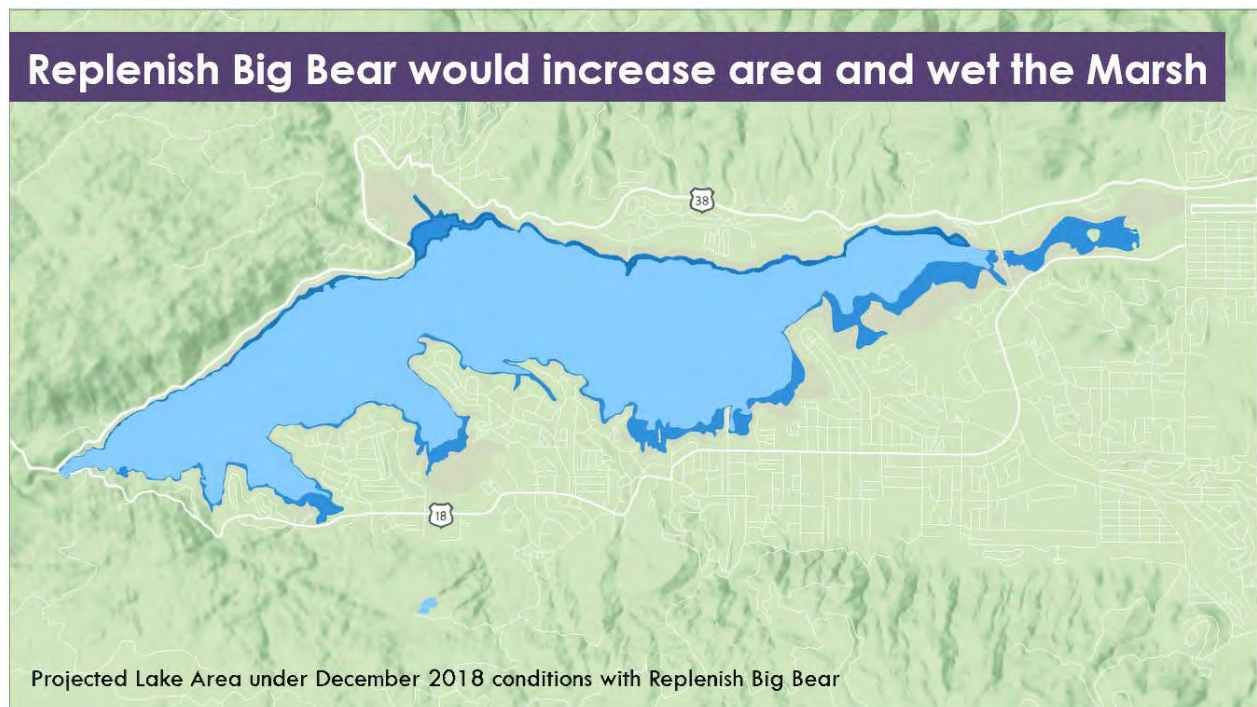


Exhibit 4.2-2: Lake Area with Program Implementation Under Dry Conditions

The Program would also result in up to 2,200 AFY less discharge to the LV Site. Internally, the site does not contain any scenic vistas. The site is used for farming and for discharge (through the existing discharge basins shown on **Figure 4.2-1**), the reduction in discharge to this site is not

anticipated to substantially degrade the visual setting within the LV Site. Under the proposed Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the LV Site. Enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and eco-conscious weed killing applications;
- Planting cover crops, such as sorghum to prevent dust migration; and/or,
- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

BBARWA would continue to own the site and ensure it is maintained, and as there are no scenic vistas internal to the LV Site, impacts to internal scenic vistas as a result of the reduced discharge to the LV Site would be less than significant.

The LV Site is a flat 480-acre site removed by about four miles from the foothills of the San Bernardino Mountains to the south and about 10 miles from the Granite, Fry, and Newberry, Rodman and Ord Mountains, which are located to the north and east. The LV Site would not include any new structures, nor would farming operations be altered in a manner that would obstruct views to the surrounding mountains beyond that which occurs as a result of existing operations. Thus, the reduction in discharge to the LV Site as a result of Program implementation would have no potential to obstruct any scenic vistas that could be viewed in the background when viewing the LV Site in the foreground. Ultimately, scenic vistas would not be significantly altered as a result of the visual change that would result from the reduction in discharge to the LV Site from Program implementation. **Photos 4.2-5 and 4.2-6** depict the vistas to the north and to the south of the LV Site for reference to the existing visual setting. Impacts to surrounding scenic vistas as a result of the reduced discharge to the LV Site would be less than significant.



Photo 4.2-5: LV Site (left) & San Bernardino Mountains (south) along Camp Rock Road  
(source: Google Maps)





Photo 4.2-6: LV Site (right) & Granite, Fry, Newberry, Rodman & Ord Mountains (north) along Camp Rock Road (source: Google Maps)

Based on the preceding analysis, it is unlikely that implementation of the Program would result in significant adverse impacts to any scenic vistas. The footprints of the Program Components would be typically unobtrusive, as described above. However, in order to further ensure that impacts to scenic vistas would not be significant, mitigation shall be implemented. **MM AES-1** would ensure that Program facilities and landscaping comply with local design standards and are integrated with local surroundings. The implementation of **MM AES-2** will ensure that impacts to scenic resources from the implementation of future Program facilities and other physical changes to the environment facilitated by the Program will be avoided or assessed further in future CEQA documentation. **MMs AES-1** and **AES-2** are provided below to minimize impacts to scenic vistas from the development of aboveground Program projects to a less than significant level.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**AES-1:** *Proposed facilities shall be designed in accordance with local design standards and integrated with local surroundings. Landscaping shall be installed in conformance with local landscaping design guidelines as appropriate to screen views of new facilities and to integrate facilities with surrounding areas.*

**AES-2:** *Future Replenish Big Bear Program facilities at unknown locations shall either (1) be located outside of scenic viewsheds identified in the General Plan or Municipal Code corresponding to a proposed location for a future facility; (2) be unobtrusive to scenic vistas due to height or blending the facility into the natural environment confirmed by a visual simulation that demonstrates this; or (3) where (1) or (2) are not possible, undergo subsequent CEQA documentation to assess potential aesthetic impacts a future Replenish Big Bear Program facility may have upon contain scenic resources.*

*Level of Significance After Mitigation: Less Than Significant*

**MM AES-1** would ensure that Program facilities and landscaping comply with local design standards and are integrated with local surroundings. The implementation of **MM AES-2** will ensure that impacts to scenic resources from the implementation of future Program facilities and other physical changes to the environment facilitated by the Program will be avoided or assessed further in future CEQA documentation. Thus, impacts would be reduced to a less than significant level.

**b) Would the project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

There are roadways classified as State scenic highways, in addition to roadways classified as eligible under the State scenic highway program within Big Bear Valley as discussed in **Subsection 4.2.2.1**, Scenic Resources, above; however, there are no officially designated scenic highways within the footprint of the Program. SR-38 is designated as both a State and County Scenic Highway south of State Lane (shown on **Figure 4.2-1**). Big Bear Boulevard is considered Eligible State Scenic Highway, while SR-330 and SR-18 are considered designated County Scenic Routes and Eligible State Scenic Highways. No other State or County Scenic Highways exist in the Program vicinity. Scenic resources are discussed under **Subsection 4.2.2.1**. The most significant visual resources are Big Bear Lake itself, in addition to the mountains and forested areas (part of the SBNF) on ridges surrounding Big Bear Lake and the Big Bear Valley. The activity with the highest potential to conflict with local agency design guidelines is construction-related disturbance of the landscape. Such disturbance can be reduced to an acceptable level by landscaping or revegetating disturbed areas (pipelines, evaporation basins, structural developments, pump stations, and other above ground development) either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area.

**Program Category 1: Conveyance Pipelines**

Construction: Conveyance pipeline installation would occur within existing ROW; however, the pipelines could potentially be placed within an eligible scenic highway, or a locally-defined scenic corridor identified in a local General Plan. Pipeline construction activities would progress along the alignment; however, construction would be temporary (about 15 months). Therefore, construction impacts would be less than significant.

All conveyance pipelines would be placed underground and would not be visible once construction is complete. The proposed pipeline alignments are illustrated on the Figures provided as part of Chapter 3, Program Description. The pipeline alignments will occur almost entirely within roadways, though the Sand Canyon Recharge Conveyance Pipeline would traverse through two private properties between Ridgecrest Drive and Sand Canyon Road (**Figure 3-31**). Additionally, the Baldwin Lake Pipeline Alignment Option to Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment, if selected, would traverse through undisturbed ground within Baldwin Lake (**Figure 3-2**), as would the pipeline that traverses through the undeveloped area between Shay Road and the Shay Pond Discharge Project (**Figure 3-33**). The remaining Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options would be installed within road ROW. None of the pipeline alignments or pipeline alignment options would be installed within or proximate to State or County designated scenic highways. Therefore, the construction of conveyance facilities would have no potential to impact scenic resources within a State scenic highway corridor.



The Sand Canyon Recharge Conveyance Pipeline has a potential to require the removal of several trees because the alignment will traverse through the two private properties as shown on **Figure 3-31**. Thus, the proposed Program will impact scenic resources including trees as part of the proposed Program. The installation of this section of pipeline that would impact trees would occur within the City of Big Bear Lake. The City's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces stipulates development requirements for projects that would remove existing trees of 12" in diameter at breast height. Though the general location for the Sand Canyon Recharge Conveyance Pipeline has been established, the precise location for this short pipeline alignment is presently unknown. Thus, it is unknown precisely how many trees and what size trees will be removed as part of the installation of this Program Component. Thus, the proposed Program will be required to comply with the City of Big Bear Lake Municipal Code for this and any other Program Component that will impact trees of 12" in diameter at breast height; mitigation is provided below to ensure compliance with this requirement.

While none of the pipeline alignments or pipeline alignment options would be installed within or proximate to State or County designated scenic highways, the Program is anticipated to result in the removal of trees, the precise alignments for pipelines and other facilities have not been fine tuned. Thus, in the event that the proposed Program would result in tree removal outside of the City of Big Bear Lake, in areas under the San Bernardino County jurisdiction, the Program must comply with the San Bernardino County Development Code<sup>16</sup> Plant Protection and Management (88.01) in order to avoid a potentially significant impact from tree removal. The San Bernardino Development Code requires a Tree Removal Permit in conjunction with the land use application or development permit. Where such applications or approvals are required, a Tree Removal Permit pursuant to the County's Development Code would be required. The Development Code stipulates the following for the Mountain Region that would be applicable to the activities proposed under the proposed Program: 88.01.050(f)(1[a]), *The location of the regulated tree or plant and/or its dripline interferes with an allowed structure, sewage disposal area, paved area, or other approved improvement or ground disturbing activity and there is no other alternative feasible location for the improvement.* As such, in order to ensure compliance with San Bernardino County's Development Code, mitigation (**MM AES-3**) shall be required to minimize impacts to trees. **MM AES-3** would ensure that, in the event that trees must be removed, the tree removal is carried out in compliance with the applicable local jurisdiction's municipal code or development code, which would minimize impacts to trees to a level of less than significant.

In addition to the required compliance with San Bernardino County and City of Big Bear Lake regulations pertaining to tree removal, tree removal is also regulated by CAL FIRE. CAL FIRE designates sites containing trees/timberland resources as being "timberland use." CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)]. Also, when projects are converting timberland to another use, the operations are considered commercial timber operations even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581]. However, CAL FIRE offers a number of exemptions that could apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. These exemptions are the "Public Agency, Public and Private Utility Right of Way Exemption"<sup>17</sup>

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<sup>16</sup> San Bernardino County, 2023. Development Code. [https://lus.sbcounty.gov/planning-home/development-code/\(09/21/23\)](https://lus.sbcounty.gov/planning-home/development-code/(09/21/23))

<sup>17</sup> State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(b)(c): [https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form\\_rev112020.pdf](https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form_rev112020.pdf) (accessed 09/21/23)

and the “Less Than 3 Acre Conversion Exemption.”<sup>18</sup> Without compliance with the above regulations, the proposed Program could result in a potentially significant impact from tree removal. Thus, in order to avoid a potentially significant impact, the proposed Program must comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation (**MM AGF-1**) described below. If an exemption is not available, the project will be required to comply with the above State regulations, and therefore prepare a full THP to obtain a TCP.

Based on the discussions above, the removal of trees as a result of Program implementation would have a less than significant impact to result in damage to scenic resources through compliance with CAL FIRE, San Bernardino County, and City of Big Bear Lake regulations, as enforced through **MMs AES-3** and **AGF-1**, below.

Operation: None of the pipeline alignments or pipeline alignment options would be installed within or proximate to State or County designated scenic highways. Therefore, the operation of conveyance facilities would have no potential to impact scenic resources within a State scenic highway corridor. Furthermore, as the pipelines would be located belowground, once installed, the above ground scenic resources would not be impacted by pipeline operation. As described above, the Program pipeline alignments would generally traverse through existing road ROW, through an easement through the two private properties, and possibly through undeveloped portions of Baldwin Lake and the undeveloped area between Shay Road and the Shay Pond Discharge Project (**Figure 3-33**). The undeveloped areas that would be impacted by the construction and operation of the Program pipeline alignments, based on a survey of these areas, do not contain any other scenic resources, such as rock outcroppings or historic buildings. Furthermore, the installation of pipeline within roadways would not impact adjacent structures. Thus, no potential to impact such resources as a result of this Program Component exists during either operation or construction. Therefore, as stated above, with the implementation of mitigation identified below, impacts to scenic resources would be less than significant.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: It is anticipated that the majority of the proposed ancillary facilities and monitoring wells would individually have small footprints. For instance, the proposed pump stations would occur either within the existing BBARWA WWTP or within the Resort Storage Pond site shown on **Figure 3-30**. As water facilities of similar size and scope exist within the properties at which the pump stations would be installed, there are no trees, rock outcroppings, or historic structures that exist that would be impacted by construction of the proposed ancillary facilities, the proposed Program would have no potential to impact trees, historic structures, or rock outcroppings at these sites. Furthermore, as discussed under Program Category 1, the proposed Program would not install any facilities within or adjacent to a designated State or County Scenic Highway. Therefore, construction of the facilities proposed under Program Category 2 or under any other Program Category, would not impact scenic resources within a State or County Scenic Highway or viewshed thereof. Impacts are less than significant.

Given that the locations of 2 of the monitoring wells needed for the Sand Canyon are presently unknown, it is possible that the development of the monitoring wells may impact other scenic resources such as historic buildings, rock outcroppings, or trees, and therefore a significant and

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<sup>18</sup> State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(a): <https://www.fire.ca.gov/media/30xkpwXu/caltrees-less-than-3-acre-conversion-exemption-form.pdf> (accessed 09/21/23)

unavoidable scenic resources impact may occur. As such, mitigation (**MM AES-4**) is provided to ensure that: (1) should the removal of trees be required for a specific project, the implementing agency shall comply with the local jurisdiction's tree ordinance, (2) where clusters of trees subject to CAL FIRE regulations are required to be removed for a specific project, the implementing agency shall comply with and submit an application for the applicable exemption to remove clusters of trees, which shall be enforced through mitigation described below, and (3) the specific location selected for ancillary facilities shall avoid rock outcroppings and other scenic resources or shall require a subsequent CEQA determination. With the implementation of mitigation identified below, impacts to scenic resources would be less than significant.

Operation: Water facilities of similar size and scope exist within the properties at which the pump stations would be installed, there are no trees, rock outcroppings, or historic structures that exist that would be impacted by operation of the proposed ancillary facilities, the proposed Program would have no potential to impact trees, historic structures, or rock outcroppings at these sites. Furthermore, as discussed under Program Category 1, the proposed Program would not install any facilities within or adjacent to a designated State or County Scenic Highway. Therefore, none of the facilities proposed under Program Category 2 or under any other Program Category, would impact scenic resources within a State or County Scenic Highway or viewshed thereof. Operation of the ancillary facilities would have no potential to impact scenic resources beyond that which was described under the construction scenario above, and therefore operational impacts to scenic resources would be less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: The proposed Solar Evaporation Ponds would be installed within the existing BBARWA WWTP site, in an undeveloped area. As discussed under issue (a), above, this area has been disturbed previously, but presently contains dirt and sparse vegetation as shown on **Photos 4.2-2 through 4.2-4**. Given that this Program Component would occur within an area that would be confined to the existing boundaries of the BBARWA WWTP property boundaries, no scenic resources are anticipated to be impacted therein, as none occur within the site that would be impacted by the implementation of this Program Component. As shown in **Photos 4.2-2 through 4.2-4**, the installation of Solar Evaporation Ponds within this area would alter the existing visual setting temporarily during construction, and once installed and operational as seen from the County Designated Scenic Highway (SR-18) to the north of the area proposed for the Solar Evaporation Ponds installation, but given that the area is vacant and does not contain any scenic resources internally within the site, construction of the proposed Solar Evaporation Ponds would not significantly alter the scenic viewshed from SR-18. Furthermore, as previously stated, the Solar Evaporation Ponds would be maintained as described in the Program Description, which would ensure that the viewshed from SR-18, a County Designated Scenic Route, is not degraded as a result of the proposed Program. Impacts would, therefore, be less than significant.

Operation: This Program Component would occur within an area that would be confined to the existing boundaries of the BBARWA WWTP property boundaries, and as such, there are no scenic resources that are anticipated to be impacted therein, as none occur within the site that would be impacted by the implementation of this Program Component. As shown in **Photos 4.2-2 through 4.2-4**, the Solar Evaporation Ponds would alter the existing visual setting once installed and operational as seen from the County Designated Scenic Highway (SR-18) to the north of the area proposed for the Solar Evaporation Ponds, but given that the area is vacant and does not contain any scenic resources internally within the site, construction of the proposed Solar Evaporation Ponds would not significantly alter the scenic viewshed from SR-18. Furthermore, as previously stated, the Solar Evaporation Ponds would be maintained as described in the Program Description, which would ensure that the viewshed from SR-18, a County Designated Scenic

Route, is not degraded as a result of the operation of the Solar Evaporation Ponds. Operational impacts would, therefore, be less than significant.

**Program Category 4: BBARWA WWTP Upgrades**

Construction: The proposed BBARWA WWTP Upgrades would be installed within the existing BBARWA WWTP site, within already disturbed areas containing the existing BBARWA WWTP facilities. Given that this Program Component would occur within an area that would be confined to the existing boundaries of the BBARWA WWTP property boundaries, no scenic resources are anticipated to be impacted therein, as none occur within the site that would be impacted by the implementation of this Program Component. The installation of BBARWA WWTP Upgrades within this area would conform to the existing visual setting that could potentially be seen as seen from the County Designated Scenic Highway (SR-18) to the north of the area proposed for the BBARWA WWTP Upgrades installation, because this area is presently developed with WWTP facilities that are of a similar scope, size, and height to that which presently occurs within the site, and the BBARWA WWTP site does not contain any scenic resources internally within the site, installation of the proposed BBARWA WWTP Upgrades would not significantly alter the scenic viewshed from SR-18. As water facilities of similar size and scope exist within the BBARWA WWTP site, there are no trees, rock outcroppings, or historic structures that exist that would be impacted by construction of the proposed BBARWA WWTP Upgrades, the proposed Program would have no potential to impact trees, historic structures, or rock outcroppings at these sites. Therefore, construction of the facilities proposed under Program Category 4 or under any other Program Category, would not impact scenic resources within a State or County Scenic Highway or viewshed thereof. Impacts are less than significant.

Operation: The proposed upgrades to the BBARWA WWTP would occur within an existing developed facility that contains no scenic resources as a result of the development that occurs within the site. Development at this site is not anticipated to result in impacts to any scenic resources as no significant scenic resources are contained therein. Water facilities of similar size and scope exist within the BBARWA WWTP Site, as there are no trees, rock outcroppings, or historic structures that exist that would be impacted by operation of the proposed ancillary facilities, the proposed Program would have no potential to impact trees, historic structures, or rock outcroppings at these sites. Furthermore, the installation of BBARWA WWTP Upgrades within this area would conform to the existing visual setting that could potentially be seen as seen from the County Designated Scenic Highway (SR-18) to the north of the area proposed for the BBARWA WWTP Upgrades installation, because this area is presently developed with WWTP facilities that are of a similar scope, size, and height to that which presently occurs within the site, and the BBARWA WWTP site does not contain any scenic resources internally within the site, installation of the proposed BBARWA WWTP Upgrades would not significantly alter the scenic viewshed from SR-18. Operation of the BBARWA WWTP Upgrades would have no potential to impact scenic resources beyond that which was described under the construction scenario above, and therefore impacts to scenic resources from implementation of upgrades and improvements to existing facilities would be less than significant.

**Other Physical Changes to the Environment**

As previously stated, the proposed Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would have a potential to enhance the visual setting of the lake, and thereby would not result in damage to scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway would not be anticipated to occur as a result of Program implementation. Thus, no impacts are anticipated.



A second possible other physical change to the environment includes possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback fish at Shay Pond. The change in water source would not result in any noticeable change at Shay Pond, as no greater volume of water would be sent to Shay Pond in support of the Stickleback, and thereby would not result in damage to scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway would not be anticipated to occur as a result of Program implementation. Thus, no impacts are anticipated.

The Program would also result in up to 2,200 AFY less discharge to the LV Site. The LV Site is not located within a County or State Scenic Highway, does not contain any rock outcroppings, does not contain any historic buildings, and does not contain any trees that would be altered as a result of the proposed Program. Thus, the reduction in discharge to the LV Site as a result of the proposed Program would not damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway would not be anticipated to occur as a result of Program implementation. No impacts beyond those previously discussed under this issue as a result of other physical changes to the environment are anticipated to occur.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant.*

*Mitigation Measures:*

- AES-3:** *Should the removal of trees be required for a specific Program Component, the implementing agency shall comply with the applicable local jurisdiction's municipal code or development code pertaining to the removal of trees. For Program Components within the City of Big Bear Lake, the implementing agency shall comply with the City's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces, where applicable. For Program Components within San Bernardino County, the implementing agency shall comply with the San Bernardino County Development Code Plant Protection and Management (88.01), where applicable.*
- AES-4:** *Future proposed facilities defined within the Replenish Big Bear Program at unknown locations shall either (1) be located within sites that avoid rock outcroppings and other scenic resources as defined in State CEQA Guidelines Appendix G, or (2) undergo subsequent CEQA documentation to assess potential impacts from locating a future facility in an area that may contain scenic resources.*
- AGF-1:** *Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a "Public Agency, Public and Private Utility Right of Way Exemption" (1104.1(b)(c)) or a "Less Than 3 Acre Conversion Exemption" (1104.1(a)). Should an exemption for the removal of trees subject to CAL FIRE timberland conversation regulations be unavailable due to the limitations set forth by CAL FIRE of one exemption per agency per five years, the implementing agency shall prepare and submit a Timberland Conversion Permit (TCP) pursuant to California Public Resources Code 4621(a) and a Timber Harvesting Plan (THP) pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.*

*Level of Significance After Mitigation: Less Than Significant.*

The implementation of **MM AES-3** and **AGF-1** would ensure that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a level of less than significant. Furthermore, **MM AES-4** would ensure that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof.

- c) **Would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning or other regulations governing scenic quality.**

Based on a review of the California Office of Planning and Research's (OPR) Site Check,<sup>19</sup> the majority of the Program Area is considered urbanized under California Public Resources Code 21071 and California Public Resources Code 21094.5 or as an urbanized area or urban cluster under the Census (**Figure 4.2-4**). However, the BBARWA WWTP area, a small portion of the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment, and the entirety of the Shay Pond Discharge Project are located in rural areas. As such, following analysis addresses the Program Components based on their location in relation to urbanized or non-urbanized area boundaries delineated on **Figure 4.2-4**.

**Program Category 1: Conveyance Pipelines**

**Construction:** Construction activities associated with conveyance pipelines (new Shay Pond Conveyance Pipeline, Shay Pond Replacement Pipeline, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, Sand Canyon Recharge Conveyance Pipeline) would result in short-term impacts (about 15 months of construction) to visual resources. Construction activities would require the use of construction equipment and storage of materials along the conveyance pipeline alignments. Excavated areas, stockpiled soils and other materials generated during construction would present negative visual elements to the existing landscape. However, these effects would be nominal because the pipelines would be located within existing road ROW, compacted dirt throughways, as described under issue b, above, in locations with sufficient area to temporarily store construction equipment and materials, and the effects would be temporary for only the nominal duration of construction, and therefore not substantially affect the existing visual character of the surrounding area. Furthermore, there are no regulations governing scenic quality within the San Bernardino County Development Code or City of Big Bear Lake Zoning Code that would apply to the development of the proposed conveyance facilities, particularly in light of California Government Code Section 53091, which renders infrastructure projects such as that which is proposed under the Program land use and zoning independent. Construction impacts would be less than significant.

**Operation:** Conveyance pipelines (new Shay Pond Conveyance Pipeline, Shay Pond Replacement Pipeline, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, Sand Canyon Recharge Conveyance Pipeline) would be placed underground and would not be visible once construction is complete. As these facilities will all be located below ground, and the roadways and undisturbed ground surfaces within which the proposed pipeline alignments will be installed will be returned to their original or better condition once installed below ground, the proposed Program will have no potential to conflict with applicable zoning or other regulations governing scenic quality, or otherwise substantially degrade the existing visual character or quality of public views of the site and its surroundings. Impacts would be less than significant.

<sup>19</sup>California Office of Planning and Research, 2023. Site Check. <https://sitecheck.opr.ca.gov/> (accessed 09/21/23)

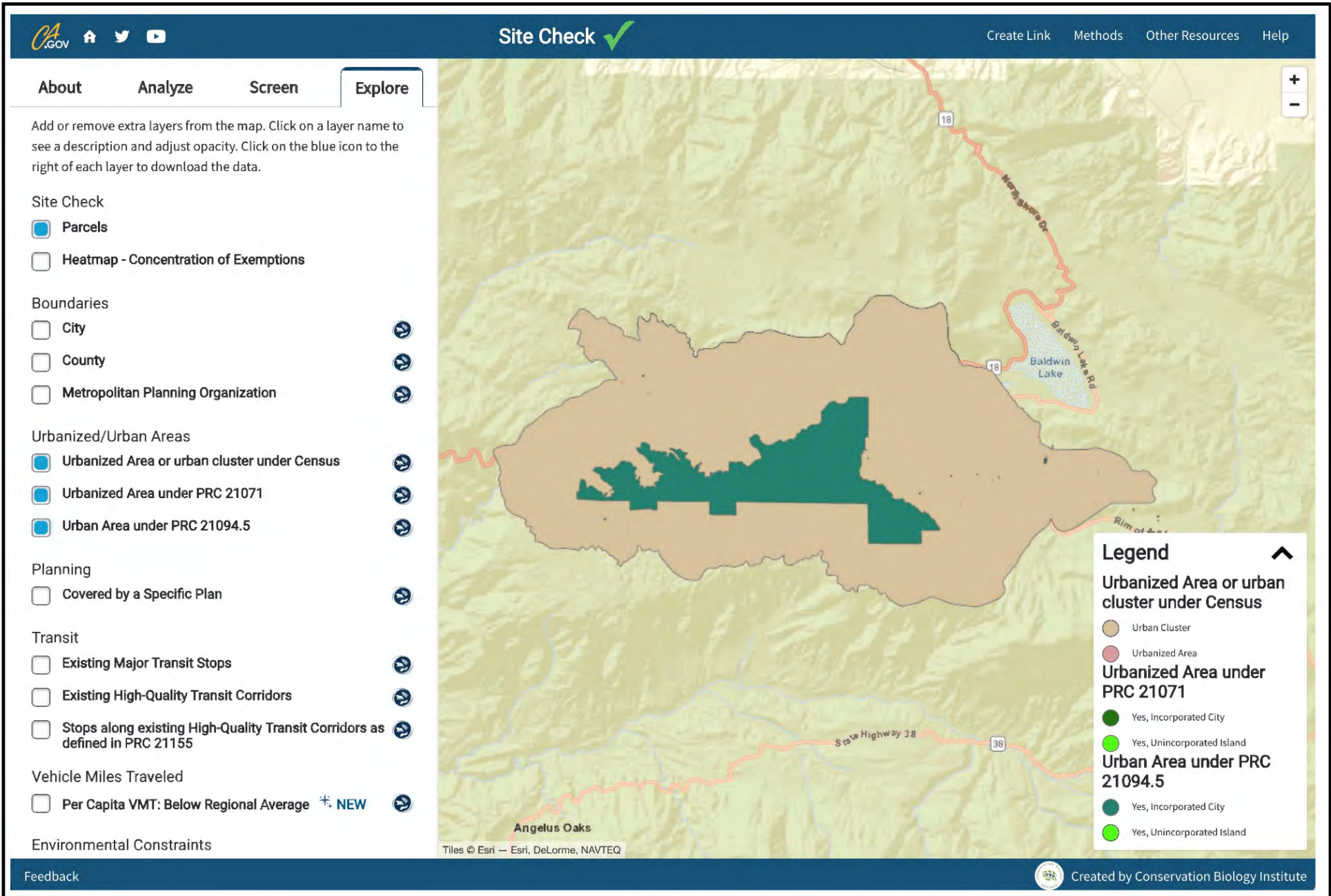


FIGURE 4.2-4

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

**Construction:** Similar to that which is described under Program Category 1, above, construction activities associated with ancillary facilities would result in short-term (15 months) impacts to visual resources. Construction activities would require the use of construction equipment and storage of materials at the ancillary facility project sites. Excavated areas, stockpiled soils and other materials generated during construction would present negative visual elements to the existing landscape. However, these effects would be nominal because the ancillary facilities would be installed in developed areas with sufficient area to temporarily store construction equipment and materials, and the effects would be temporary for only the nominal duration of construction, and therefore not substantially affect the existing visual character of the surrounding area. Furthermore, there are no regulations governing scenic quality within the San Bernardino County Development Code or City of Big Bear Lake Zoning Code that would apply to the development of the proposed ancillary facilities, particularly in light of California Government Code Section 53091, which renders infrastructure projects such as that which is proposed under the Program land use and zoning independent. Impacts would be less than significant.

**Operation:** Once constructed, the proposed monitoring wells would occupy a footprint anticipated to be less than 20 feet by 20 feet, within a site that is less than one half acre; therefore, it is anticipated that the proposed monitoring wells would individually have small footprints and be low profile. While the precise location for two of the future monitoring wells is presently unknown, the monitoring wells will be generally downstream of the Sand Canyon Recharge Area. As stated above, there are no regulations governing scenic quality within the San Bernardino County Development Code or City of Big Bear Lake Zoning Code that would apply to the development of the proposed ancillary facilities, particularly in light of California Government Code Section 53091. As compliance with the zoning is not required for water facilities, in order to ensure that the Sand Canyon Monitoring Wells conform with design requirements established in the local jurisdiction planning documents, mitigation (**MM AES-5**) is necessary to avoid a potentially significant impact under this issue. The implementation of **MM AES-5** requires future facilities to conform with design requirements established by local jurisdictions, thereby preventing a conflict with the regulations governing scenic quality. Impacts would be less than significant with mitigation.

The remaining two wells would be installed within the BBARWA WWTP property boundary near the Solar Evaporation Ponds, and two pump stations would be installed within the BBARWA WWTP facility as well, which is considered a rural area. Given that these wells and pump stations would be installed within a facility containing similar water infrastructure development, and the monitoring wells and pump stations that would be installed within the BBARWA WWTP are anticipated to conform to the existing visual setting and thereby would have a less than significant potential to substantially degrade the existing visual character or quality of public views of the site and its surroundings. Thus, impacts would be less than significant.

It is anticipated that the pump stations would, similar to the monitoring wells, individually have small footprints. The pump station at the Resort Storage Pond would be located within the City of Big Bear Lake, which is considered an urbanized area. As compliance with the zoning is not required for water facilities, in order to ensure that the Sand Canyon Booster Station conforms with design requirements established in the local jurisdiction planning documents, mitigation (**MM AES-5**) is necessary to avoid a potentially significant impact under this issue because it requires future facilities to conform with design requirements established by local jurisdictions, thereby preventing a conflict with the regulations governing scenic quality. Thus, impacts would be less than significant with mitigation.



### **Program Category 3: Solar Evaporation Ponds**

**Construction:** Similar to that which is described under Program Category 1 and 2, above, construction activities associated with evaporation would result in short-term (about 15 months) impacts to the area within which the Solar Evaporation Ponds would be installed: the BBARWA WWTP site. Construction activities would require the use of construction equipment and storage of materials at the BBARWA WWTP site. Excavated areas, stockpiled soils and other materials generated during construction would present new visual elements to the existing landscape, but the Solar Evaporation Ponds would be installed within an already disturbed environment containing no quality public views internally or externally (refer to issue a, above). Thus, these effects would be nominal because the Solar Evaporation Ponds would be installed in locations with sufficient area to temporarily store construction equipment and materials, and the effects would be temporary for only the nominal duration of construction, and therefore not substantially affect the existing visual character of the surrounding area. Impacts would be less than significant.

**Operation:** The proposed Solar Evaporation Ponds would be installed within the BBARWA WWTP property boundary, which is considered to be a non-urbanized area. As discussed under issue (a), above, this area has been disturbed previously, but presently contains exposed soil/dirt and sparse vegetation as shown on **Photos 4.2-2 through 4.2-4**. Given that this Program Component would occur within an area that would be confined to the existing boundaries of the BBARWA WWTP property boundaries, the Solar Evaporation Ponds are anticipated to conform to the existing visual setting and thereby would have a less than significant potential to substantially degrade the existing visual character or quality of public views of the site and its surroundings. Impacts would be less than significant.

### **Program Category 4: BBARWA WWTP Upgrades**

**Construction:** The upgrades proposed at the BBARWA WWTP would occur within existing areas of development or areas that have been previously compacted or disturbed within the BBARWA WWTP site as shown on **Figure 3-23 through 3-25**. The solar panels, shown on **Figure 3-37** would be installed throughout the BBARWA WWTP site and the adjacent (to the south) BBCCSD site. Note that the BBARWA WWTP already contains solar panels both within and adjacent to its WWTP site. Furthermore, many of the BBARWA WWTP Upgrades would be installed within enclosed spaces that would shield the proposed treatment facilities from public view.

Construction within the BBARWA WWTP would be temporary (24 months) in nature, and therefore any changes in public views of the already disturbed site would be temporary, with the overall character of the BBARWA WWTP site upon the conclusion of construction remaining comparable to that which exists at the site at present. Impacts would be less than significant.

**Operation:** Thus, as the proposed upgrades to the BBARWA WWTP would occur within an existing developed facility, development therein would be consistent with the existing visual setting. Further development within this existing treatment facility would have no potential to substantially degrade the existing visual character or quality of public views of the site and its surroundings because the visual character of the site at present is that of a wastewater treatment facility containing infrastructure necessary to operate the wastewater treatment facility and under the proposed Program, the overall setting of the site would remain a wastewater treatment facility containing similar and consistent wastewater infrastructure. Impacts would be less than significant.

### **Other Physical Changes to the Environment**

As previously stated, the proposed Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would occur within a defined urban area per **Figure 4.2-4**, and given that the release of water into Big Bear Lake by way of Stanfield Marsh in and of itself does not include any physical components beyond those discussed under Program Categories 1-4, above, no potential to conflict with applicable zoning or other regulations governing scenic quality exists. Thus, no impacts are anticipated.

A second possible other physical change to the environment includes possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback fish at Shay Pond. The change in water source would not result in any noticeable change at Shay Pond, as no greater volume of water would be sent to Shay Pond in support of the Stickleback, and thereby would not result substantially degrade the existing visual character or quality of public views of the site and its surroundings. Thus, no impacts are anticipated.

The Program would also result in up to 2,200 AFY less discharge to the LV Site. The LV Site is located in a non-urbanized area. Due to the use of the site for farming and for discharge (through the existing discharge basins shown on **Figure 4.2-1**), the reduction in discharge to this site is not anticipated to degrade the visual character of the site. In fact, as stated under issue (a), above, the use of the site for farming would be reduced from about 190 acres of farmland to a utilization of about 40 acres. If the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) to handle the 340 AFY of secondarily treated effluent or could make the treated effluent available to another party for an alternative use. Under the proposed Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the LV Site. Enhanced site maintenance options are presently being explored by BBARWA, as described under issue (a), above. Regardless, given that the LV Site would not undergo substantial change under the proposed Program because BBARWA would continue to own the site and ensure it is maintained, the proposed Program would have a less than significant potential to degrade the existing visual character or quality of public views of the LV Site and its surroundings.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant.*

*Mitigation Measures:*

**AES-5:** *When Replenish Big Bear Program above ground facilities are constructed in the future, the local agency design guidelines for the project site shall be followed to the extent that they do not conflict with the engineering and budget constraints established for the facility and except where such compliance is not required by California law.*

*Level of Significance After Mitigation: Less Than Significant*

The implementation of **MM AES-5** would ensure that future facilities will conform with design requirements established by local jurisdictions.

**d) Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?**

**Program Category 1: Conveyance Pipelines**

Construction: Construction of the proposed conveyance facilities (new Shay Pond Conveyance Pipeline, Shay Pond Replacement Pipeline, Lake Discharge Pipeline Alignment Options, Sand Canyon Recharge Conveyance Pipeline) is not anticipated to require nighttime lighting. However, if nighttime construction is required for any of the conveyance pipeline alignments, nighttime lighting at construction sites would contribute to ambient light and could adversely affect views in the area at night, which could result in a significant light and/or glare impact. Thus, mitigation (**MM AES-6**) is required to ensure that no lighting intrudes into sensitive areas and to ensure directing light and shielding is used to minimize off-site illumination. Impacts would be less than significant with mitigation.

Operation: The proposed conveyance systems would not require operational nighttime lighting because they would be installed belowground. As a result, there would be no new sources of lighting as a result of conveyance facilities. No impacts related to light and glare from facilities proposed under this Program Category would occur.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Construction of the proposed ancillary facilities is not anticipated to require nighttime lighting. However, if nighttime construction is required, nighttime lighting at construction sites would contribute to ambient light and could adversely affect views in the area at night. Thus, mitigation (**MM AES-6**) is required to ensure that no lighting intrudes into sensitive areas and to ensure directing light and shielding is used to minimize off-site illumination. Impacts would be less than significant with mitigation.

Operation: Once constructed, the proposed monitoring wells would occupy a footprint anticipated to be less than 20 feet by 20 feet, within a site that would be less than one half acre in size; therefore, it is anticipated that the majority of the proposed wells would individually have small footprints and be low profile. Though the precise location for future monitoring wells downstream of Sand Canyon is presently unknown, the facilities under this Program Category will be required to comply with the local jurisdiction zoning codes and any other regulations governing scenic quality. However, **MM AES-6** would ensure compliance with the applicable zoning code lighting and glare standards. **MM AES-7** is required to ensure a facility lighting plan for each individual facility that applies to both construction and operation is prepared that verifies that the lighting doesn't exceed 1.0 lumen at the nearest sensitive received, thereby preventing a significant light and glare impact. Impacts would be less than significant with mitigation.

The proposed monitoring wells and pump stations located within the BBARWA WWTP would occur within an existing developed facility already containing similar water infrastructure development that contains lighting. Implementation of the proposed improvements could result in new exterior nighttime lighting for operational and security purposes within the existing treatment facilities, and therefore result in a significant light and/or glare impact. The increase in lighting within existing treatment facilities could result in spill over lighting onto adjacent uses. Therefore, mitigation (**MMs AES-6** and **AES-7**) that would prevent significant spill over lighting onto adjacent uses is required. The applicable zoning codes govern acceptable lighting requirements, and thus, **MM AES-6** would ensure compliance with the applicable zoning code lighting and glare standards. **MM AES-7** is required to ensure a facility lighting plan for each individual facility that applies to both construction and operation is prepared that verifies that the lighting doesn't exceed

1.0 lumen at the nearest sensitive received, thereby preventing a significant light and glare impact. Impacts would be less than significant with mitigation.

The pump station at the Resort Storage Pond site may include nighttime security lighting mounted to the buildings and/or structures. These new sources of lighting could result in significant light intrusion impacts onto adjacent land uses. The proposed ancillary facilities would not include aboveground structures that would include uninterrupted expanses of glass or other highly-reflective construction material. Therefore, **MM AES-6** would ensure compliance with the applicable zoning code lighting and glare standards. **MM AES-7** is required to ensure a facility lighting plan for each individual facility that applies to both construction and operation is prepared that verifies that the lighting doesn't exceed 1.0 lumen at the nearest sensitive received, thereby preventing a significant light and glare impact. Impacts would be less than significant with mitigation.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Construction of the proposed Solar Evaporation Ponds is not anticipated to require nighttime lighting. If nighttime construction is required there are no nearby sensitive receptors at the BBARWA WWTP site that would be impacted by glare or nighttime lighting (the nearest sensitive receptor to the evaporation ponds is greater than 1,000 feet from the project footprint). However, due to its remote location, nighttime lighting at the Solar Evaporation Ponds could result in ambient lighting that may impact the overall nighttime lighting setting in the Baldwin Lake area, which could result in a potentially significant light and/or glare impact. Thus, mitigation (**MM AES-6**) is required to ensure that no lighting intrudes into sensitive areas and to ensure directing light and shielding is used to minimize off-site illumination. Impacts would be less than significant with mitigation. Impacts would be less than significant with mitigation.

Operation: The proposed Solar Evaporation Ponds are not anticipated to require nighttime or security lighting; however, should the installation of any additional lighting be necessary, because these facilities will be located on relatively flat terrain, potential lighting impacts would be less than significant. The potential for glare from proposed the Solar Evaporation Ponds affecting specific residences and/or viewsheds for short periods of time is low and would not introduce substantial new sources of glare, and is therefore, less than significant.

### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Similar to construction of the proposed Solar Evaporation Ponds, construction of the proposed BBARWA WWTP Upgrades is not anticipated to require nighttime lighting. If nighttime construction is required there are no nearby sensitive receptors at the BBARWA WWTP site that would be impacted by glare or nighttime lighting. However, due to its remote location, nighttime lighting at the BBARWA WWTP site could result in ambient lighting that may impact the overall nighttime lighting setting in the Baldwin Lake area, and therefore result in a potentially significant light and/or glare impact. Thus, mitigation (**MM AES-6**) is required to ensure that no lighting intrudes into sensitive areas and to ensure directing light and shielding is used to minimize off-site illumination. Impacts would be less than significant with mitigation.

Operation: The proposed upgrades to the BBARWA WWTP would occur within an existing developed facility already containing water treatment facilities that contain lighting, in addition to solar panels that could cause glare. This facility is also located within a non-urbanized area, but is surrounded by rural development to the south and Baldwin Lake to the north, east, and west of the property boundaries. Thus, no development would be contemplated in future surrounding the BBARWA WWTP property boundary to the east, north, or west. The solar panels would be located adjacent to existing solar panels at BBARWA, which have not resulted in glare impacts to nearby



sensitive receptors or to aircraft fly-overs. The addition of new solar panels is not anticipated to result in glare impacts to aircraft fly-overs or nearby sensitive receptors, particularly given the lack of nearby sensitive receptors, and that the BBARWA WWTP Site is located outside of the Big Bear Airport land use compatibility zone. Further, solar panels typically result in less glare than standard home window glass,<sup>20</sup> and are designed to absorb light, rather than reflect it. Thus, glare impacts from the installation of the solar panels are anticipated to be less than significant.

Regardless, implementation of the proposed improvements could result in new exterior nighttime lighting for operational and security purposes within the existing treatment facilities. The increase in lighting within existing treatment facilities could result in spill over lighting onto adjacent uses. Furthermore, glare from the proposed solar panels could adversely affect daytime views of the area, and result in a potentially significant light and/or glare impact. Therefore, mitigation (**MMs AES-6** and **AES-7**) that would minimize glare and lighting impacts at the nearest sensitive receptors would be required to minimize impacts to a level of less than significant.

### **Other Physical Changes to the Environment**

As previously stated, the proposed Program would also result in other physical changes to the environment, including releasing advanced treated water into Big Bear Lake by way of Stanfield Marsh, possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback fish at Shay Pond and reduced discharge to the LV Site. The discharge to Shay Pond and Big Bear Lake would not result in any new sources of lighting, and the provision of additional water in Stanfield Marsh and Big Bear Lake would not be such that new sources of glare or reflection would occur beyond that which can occur at present. The reduction in discharge to the LV Site would not result in any lighting changes or cause any potential for glare that does not already exist under the current operations. These physical changes would not result in any change in lighting at Big Bear Lake, Stanfield Marsh, or at the LV Site. Furthermore, there would be no potential for increased glare as a result of these physical changes. Therefore, no potential to create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area exists. Thus, no impacts would occur.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**AES-6:** *Future Replenish Big Bear Program projects shall implement at least the following measures, unless they conflict with the local jurisdiction's light requirements, in which case the local jurisdiction's requirements shall be enforced:*

- *Use of low-pressure sodium lights where security needs require such lighting to minimize impacts of glare.*
- *The height of lighting fixtures shall be lowered to the lowest level consistent with the purpose of the lighting to reduce unwanted illumination.*
- *Directing light and shielding shall be used to minimize off-site illumination during both construction or operation of any Program facility.*
- *No light shall be allowed to intrude into sensitive light receptor areas during both construction or operation of any Program facility.*

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<sup>20</sup> <https://www.nrel.gov/state-local-tribal/blog/posts/research-and-analysis-demonstrate-the-lack-of-impacts-of-glare-from-photovoltaic-modules.html>

- ***Non-reflective materials and/or coatings shall be used on the exterior of all facilities if constructed in a publicly visible location (such as from a roadway or public facility).***

**AES-7:** ***A Facility lighting plans that shall apply to construction and operation shall be prepared for each Replenish Big Bear Program component and shall demonstrate that glare from construction, operation and safety night lights that may create light and glare affecting adjacent occupied property are sufficiently shielded to prevent light and glare from spilling into occupied structures. This plan shall specifically verify that the lighting doesn't exceed 1.0 lumen at the nearest residence to any lighting site within the project footprint. This plan shall be implemented by the implementing agency to minimize light or glare intrusion onto adjacent properties.***

*Level of Significance After Mitigation: Less Than Significant*

The implementation of **MM AES-6** and **AES-7** would ensure that light and glare impacts from future structures associated with the Program are minimized to a level of less than significant.

#### **4.2.6 Cumulative Impacts**

Construction of the new facilities could alter existing views and contribute to significant cumulative aesthetic impacts in combination with other projects in the Program Area. The implementation of **MMs AES-1** through **AES-7**, in addition to **MM AGF-1** would ensure that the proposed facilities' contribution to cumulative aesthetic impacts would be reduced to less than cumulatively considerable by: ensuring that facilities and landscaping comply with local design standards and are integrated with local surroundings; ensuring that impacts to scenic resources from the implementation of future Program facilities will be avoided or assessed further in future CEQA documentation; ensuring that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a level of less than significant; ensuring that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof ensuring compliance with the applicable zoning code; ensuring that future facilities will conform with design requirements established by local jurisdictions; and, ensuring that light and glare impacts from future structures associated with the Program are minimized. Thus, the proposed Program would not cause cumulatively considerable contributions to cumulative aesthetics impact.

#### **4.2.7 Significant and Unavoidable Impacts**

As determined in the preceding evaluation, with the implementation of mitigation, all of the proposed Program's potentially significant aesthetic impacts would be reduced to a level of less than significant and have no potential to result in significant and unavoidable aesthetics impacts in the Big Bear Valley.

## 4.3 AGRICULTURE AND FORESTRY RESOURCES

### 4.3.1 Introduction

This subchapter evaluates the environmental impacts to agriculture and forestry resources from implementation of the Replenish Big Bear Program (Program). The following topics address whether the proposed Program would convert farmland that is considered Prime, Unique, or of Statewide Importance; conflict with agricultural use or a California Land Conservation Act of 1965, also known as the Williamson Act, contract; result in rezone or loss of forestry or timberlands; or otherwise convert farmland and timberlands to non-agricultural use or non-forest land, respectively. The purpose of the agriculture and forestry resources component of this DPEIR is to identify and provide analysis and assessment of the potential for agriculture uses and timberlands to exist within the in the Big Bear Valley and Lucerne Valley or the sensitivity for such resources to be encountered at a future specific project site so that they can be incorporated into the planning process for future infrastructure and entitlement compliance considerations.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Agriculture and Forestry Resources
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

### 4.3.2 Environmental Setting: Agriculture and Forestry Resources

#### 4.3.2.1 Regional Agriculture

According to the San Bernardino County's *2020 and 2021 San Bernardino County Crop Reports*,<sup>21,22</sup> San Bernardino County saw harvest of approximately 1,385,216 acres of non-irrigated and irrigated Important Farmlands in 2020, but has continued to see a decline in farmlands adjacent to existing urban areas over the years. Specifically, San Bernardino County experienced significant urban growth since 2010, ranking tenth in the State for urban growth. Approximately 18,643.4 acres have either been converted from agricultural to nonagricultural uses or have been out of use in San Bernardino County between 2010 and 2020. Further, approximately 10,471 acres have been converted from agricultural to nonagricultural uses in San Bernardino County between 2020 and 2021.

According to the *2021 Annual Crop Report for San Bernardino County*, the gross value of agricultural production in San Bernardino County for 2021 totaled approximately \$350 million, which equates to a decrease of about 16.7 percent over 2020 production, primarily due to a

<sup>21</sup> 2021 Annual Crop Report for San Bernardino County. <https://awm.sbcounty.gov/wp-content/uploads/sites/84/2022/10/N4454-AWM-CROP-REPORT-2021-Web.pdf> (accessed 03/20/23)

<sup>22</sup> 2020 Annual Crop Report for San Bernardino County <https://awm.sbcounty.gov/wp-content/uploads/sites/84/2022/04/AWM-CROP-REPORT-2020-080521.pdf> (accessed 03/20/23)

decrease in the price for navel oranges, a decrease in vegetable crops due to increased urban development in the west end, and a decrease in animal products due to the closure of 13 egg farms and eight dairies. Despite continued conversion of agricultural land in the county to business and residential development, agriculture is still an integral component of the economy in San Bernardino County.

However, a review of the occurrence of commercial agricultural activity in the San Bernardino Mountains provided in the 2020 San Bernardino Countywide Plan Environmental Impact Report (San Bernardino Countywide Plan EIR) indicates that only 166 acres of important farmland are zoned in the Mountain Region of San Bernardino County, and that all of this acreage occurs in the Oak Glen area. Review of the Countywide Plan EIR indicates that no prime or important farmland occurs within unincorporated territory in the Big Bear Valley. Similarly, a review of the City of Big Bear Lake General Plan Land Use Element concluded that no land is designated for agricultural use within the City of Big Bear Lake. The only land uses that allow “horticulture” and “agriculture” uses in the Big Bear General Plan are Rural Residential uses and the Open Space land use designations (City of Big Bear Lake General Plan Land Use Element, 1999). Regardless, based on a field review of the project locations there are no commercial agricultural or horticultural land uses found within these areas.

In 1980, BBARWA initiated discharge of undisinfected secondary treated wastewater effluent to Lucerne Valley. This was achieved by a pipeline extending from the BBARWA WWTP to a BBARWA's LV Site. The LV Site referred to herein is the 480-acre portion of the larger 630-acre BBARWA owned site in Lucerne Valley that is regulated by a Colorado Regional Board WDR, which stipulates that 340 acres of the LV Site can be irrigated with recycled water from BBARWA's WWTP, with an additional 140 acres available for irrigation utilizing other water sources. The BBARWA Treated Water Discharge Pipe alignment is shown on **Figure 4.3-1**. An enlarged aerial photo of the property owned by BBARWA is provided as **Figure 4.2-1**. A portion of the site is now farmed under a contract to the agency and also includes unlined discharge basins where the treated effluent is allowed to percolate into the Lucerne Valley Basin when it is not used for irrigating the project site.

According to the U. S. Department of Agriculture (USDA) Web Soil Survey,<sup>23</sup> the BBARWA LV Site consists of two soil mapped units, Cajon sand, 0 to 2 percent slopes (Unit 112) and Kimberlina loamy fine sand, cool, 0 to 23 percent slopes (Unit 137). As shown on **Figure 4.3-2**, approximately 82% of the 480 acres is Cajon and about 18% is Kimberlina. The aerial photograph used for the soil map were compiled from 1976 through 1978, which is prior to the initiation of agricultural operations at the BBARWA property, which began in 1980.

The NRCS Soil Classifications<sup>24</sup> are as follows:

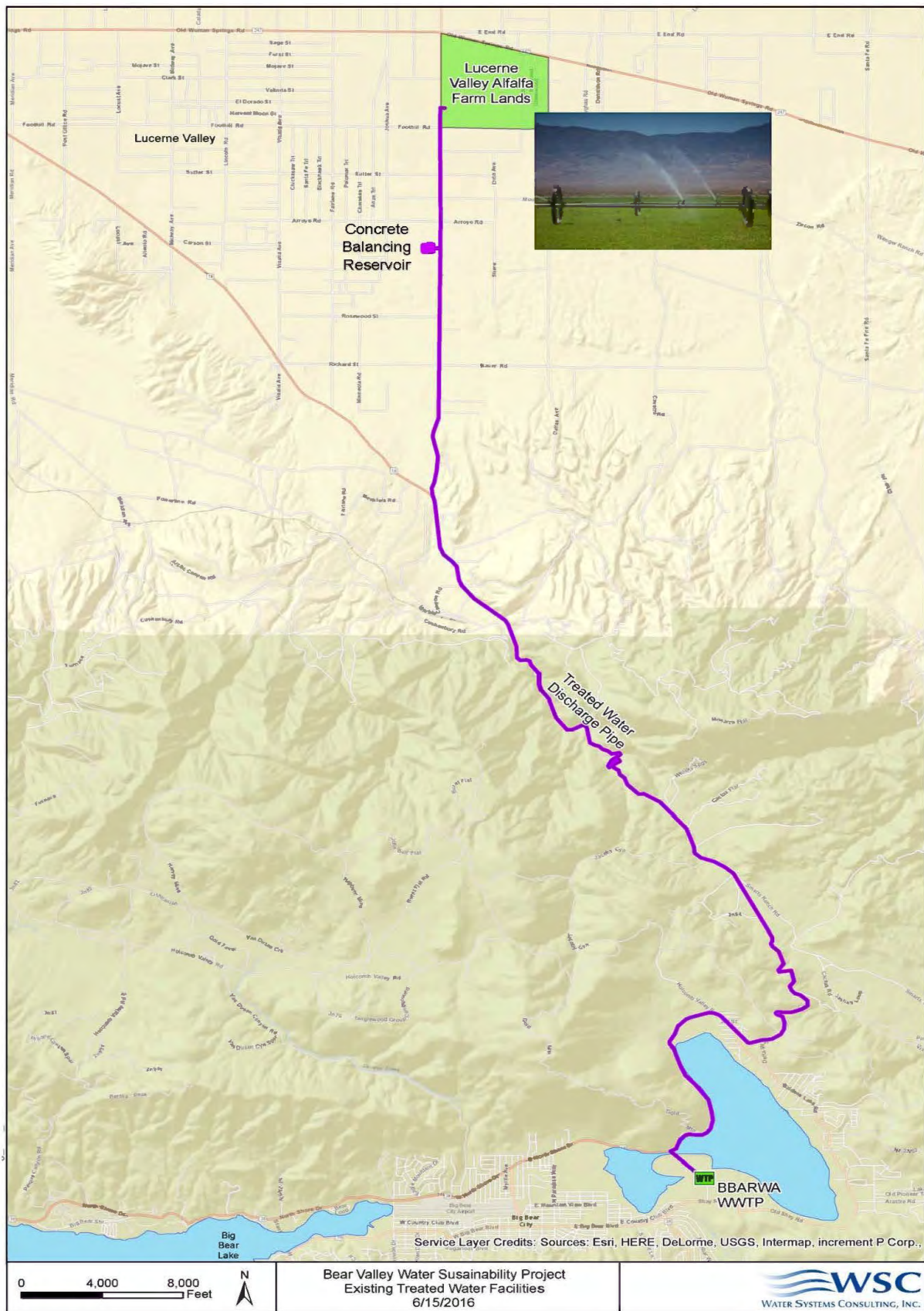
- **Class I (1)** soils have slight limitations that restrict their use.
- **Class II (2)** soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
- **Class III (3)** soils have severe limitations that reduce the choice of plants or require special conservation practices, or both.
- **Class IV (4)** soils have very severe limitations that restrict the choice of plants or require very careful management, or both.

<sup>23</sup> USDA, 2023. Web Soil Survey. <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx> (accessed 08/24/23)

<sup>24</sup>USDA, 2023. U.S. Land Use and Soil Classification.

<https://www.ars.usda.gov/ARSUserFiles/np215/Food%20security%20talk%20inputs%20Lunch%203-15-11.pdf> (accessed 08/24/23)



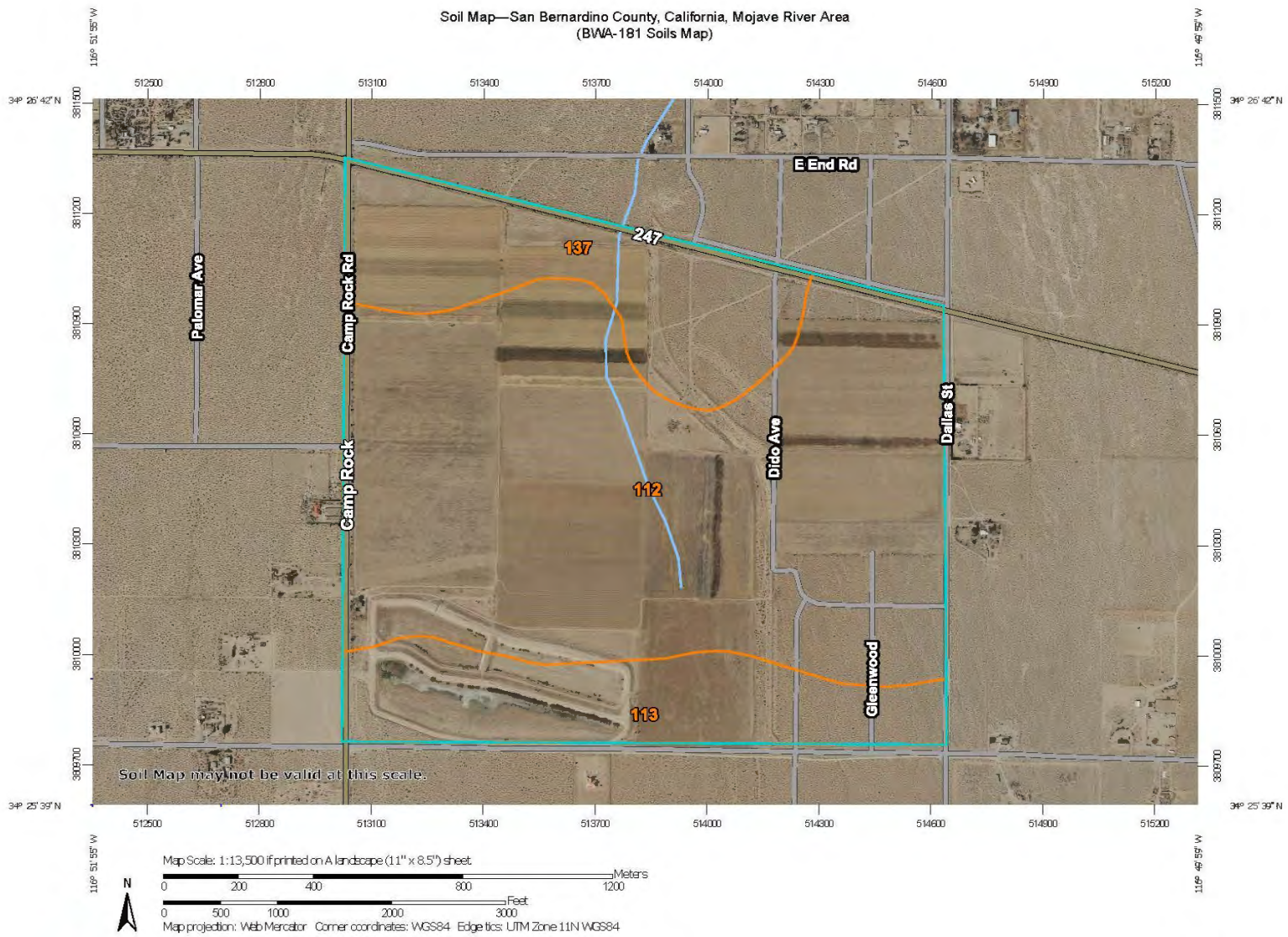


SOURCE: WSC, Bear Valley Water Sustainability Report Final Draft Lake Alternative Evaluation, 12/19/18

FIGURE 4.3-1



Soil Map—San Bernardino County, California, Mojave River Area  
(BVA-181 Soils Map)



USDA  
Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

3/20/2023  
Page 1 of 3

FIGURE 4.3-2

Soil Map—San Bernardino County, California, Mojave River Area  
(BWA-181 Soils Map)

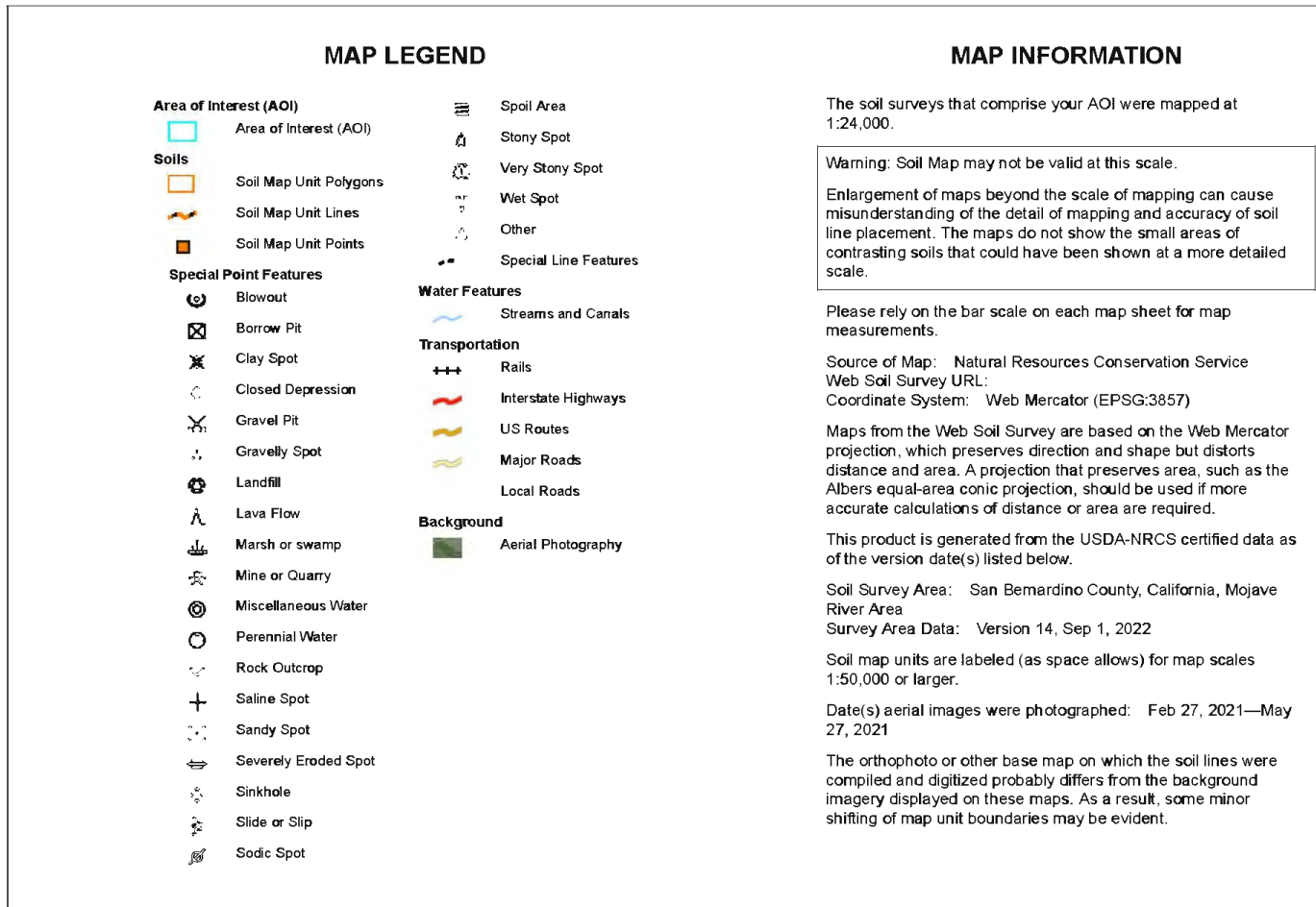


FIGURE 4.3-2

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
112	CAJON SAND, 0 TO 2 PERCENT SLOPES	368.5	66.2%
113	CAJON SAND, 2 TO 9 PERCENT SLOPES	89.7	16.1%
137	KIMBERLINA LOAMY FINE SAND, COOL, 0 TO 2 PERCENT SLOPES	98.3	17.7%
<b>Totals for Area of Interest</b>		<b>556.6</b>	<b>100.0%</b>

**FIGURE 4.3-2**



- **Class V (5)** soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
- **Class VI (6)** soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
- **Class VII (7)** soils have very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife.
- **Class VIII (8)** soils and miscellaneous areas have limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for esthetic purposes.

NRCS Soil Classifications Subclasses and Definitions are as follows:

- **Subclass e** is made up of soils for which the susceptibility to erosion is the dominant problem or hazard affecting their use. Erosion susceptibility and past erosion damage are the major soil factors that affect soils in this subclass.
- **Subclass w** is made up of soils for which excess water is the dominant hazard or limitation affecting their use. Poor soil drainage, wetness, a high-water table, and overflow are the factors that affect soils in this subclass.
- **Subclass s** is made up of soils that have soil limitations within the rooting zone, such as shallowness of the rooting zone, stones, low moisture-holding capacity, low fertility that is difficult to correct, and salinity or sodium content.
- **Subclass c** is made up of soils for which the climate (the temperature or lack of moisture) is the major hazard or limitation affecting their use.

Utilizing the definitions above, the Cajon sands are designated capability unit IIIe-1 when irrigated and capability VIIe when not irrigated. Kimberlina loamy fine sands are designated capability unit IIe-1 when irrigated and capability VIIe when not irrigated. Thus, when irrigated Kimberlina soil would be considered a prime agricultural soil and the Cajon soil would be considered a non-prime agricultural soil. However, without irrigation both soils would be considered non-prime agricultural soils (VIIe).

Based on the current/recent condition of BBARWA's LV Site and irrigated field crop production, the San Bernardino Countywide Plan (**Figure 4.3-3**) and the California Important Farmland Finder (**Figure 4.3-4**) identify the site as being Prime Farmland and Farmland of Statewide importance. These designations indicate that under present circumstances (water available for irrigation and active farming), the LV Site is considered to be important farmland.

#### **4.3.2.2 Forestry**

The SBNF both surrounds and intermixes with developed communities in the Big Bear Valley. California Public Resources Code paragraph 12220(g) defines "Forest Land" as "land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." Under this definition almost all of the woodland areas within Big Bear Valley, both incorporated and unincorporated, may qualify as "forest land."

#### **4.3.3 Regulatory Setting**

State and local laws, regulations, plans, and guidelines that are applicable to the proposed Program are summarized below.

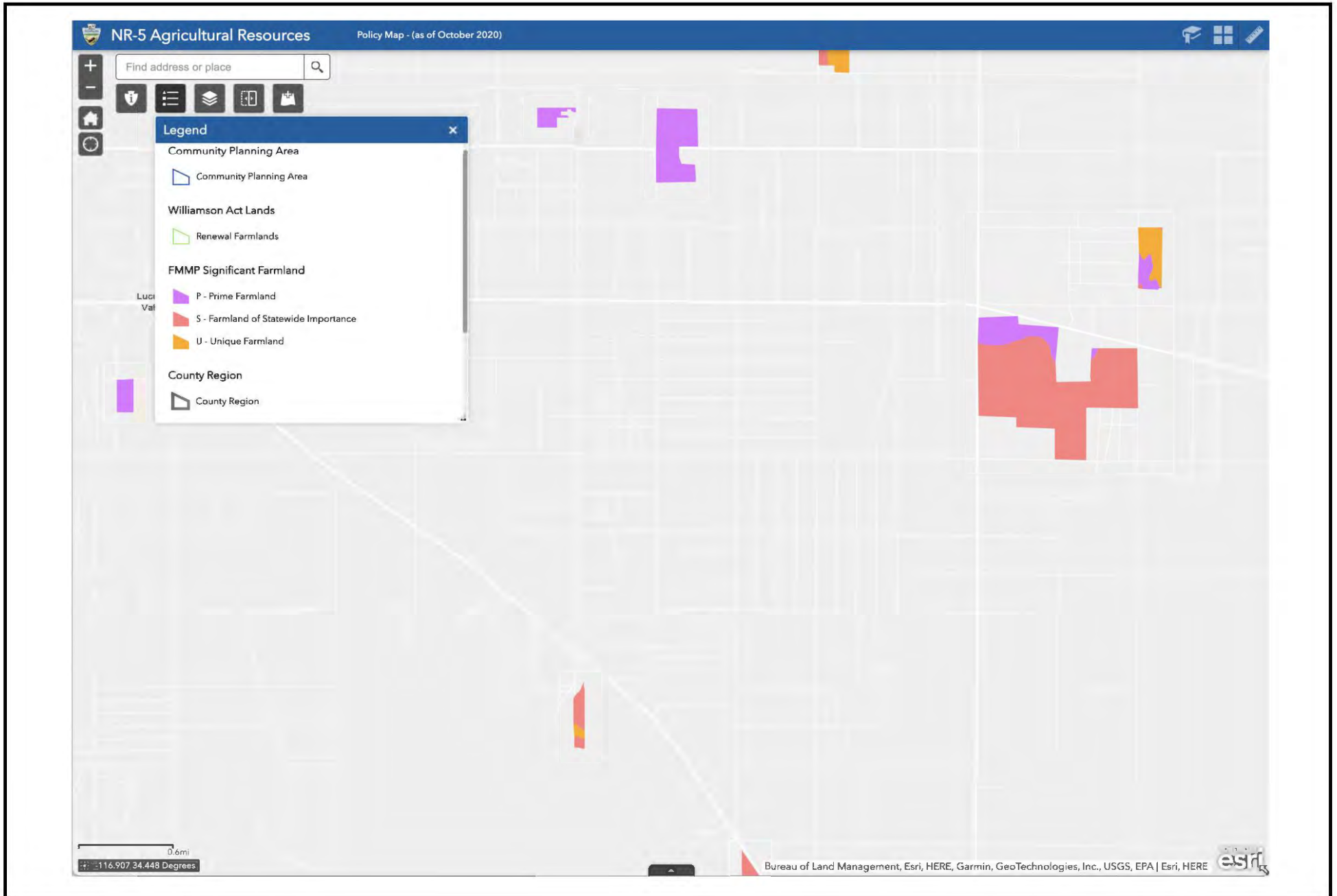


FIGURE 4.3-3

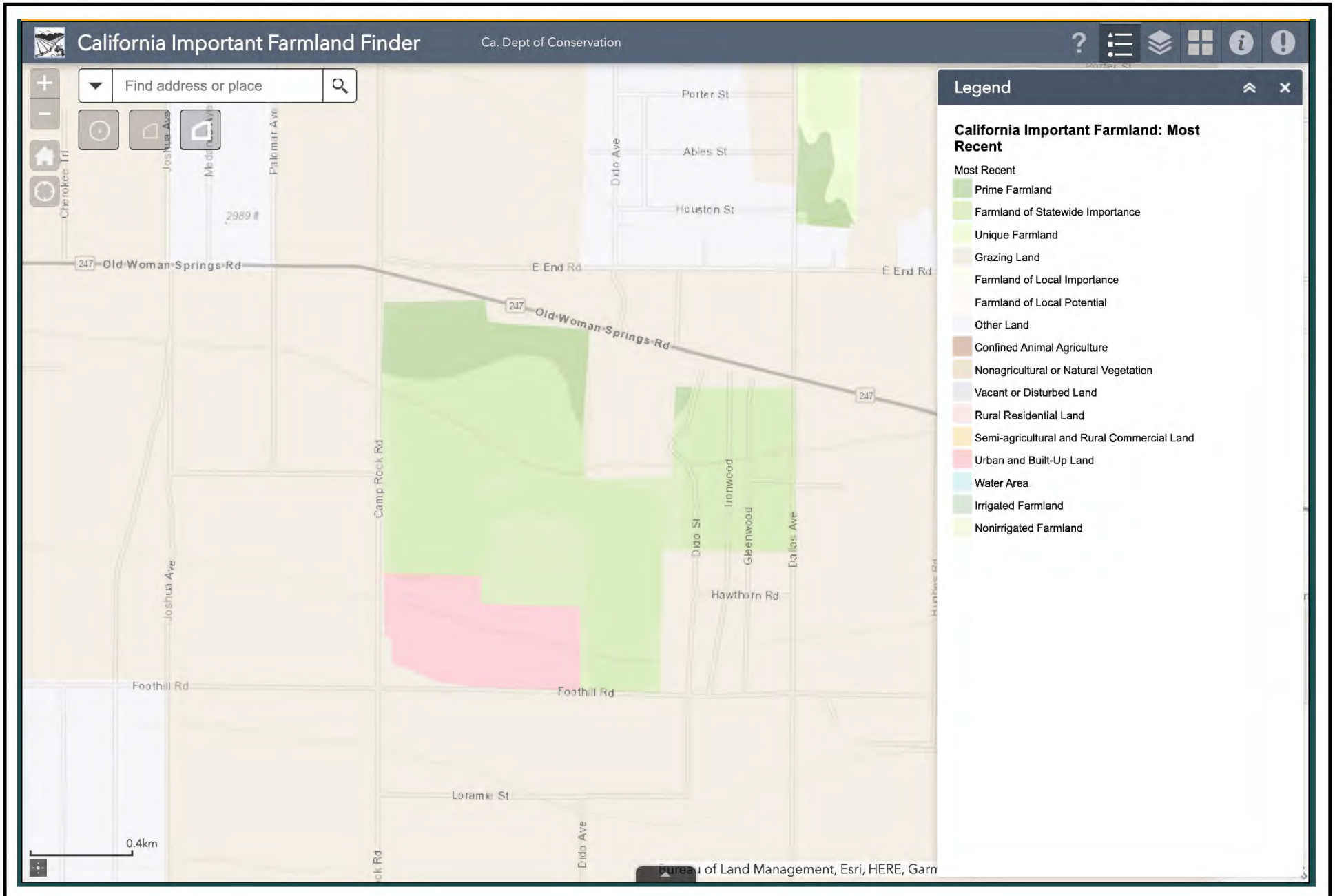


FIGURE 4.3-4

#### **4.3.3.1 State**

##### **California Farmland Mapping and Monitoring Program**

The California Department of Conservation (DOC), under the Division of Land Resource Protection, has established the Farmland Mapping and Monitoring Program (FMMP). The FMMP monitors the conversion of the State's farmland to and from agricultural use. The map series identifies eight classifications and uses a minimum mapping unit size of 10 acres. The FMMP also produces a biannual report on the amount of land converted from agricultural to non-agricultural use. The FMMP maintains an inventory of State agricultural land and updates its "Important Farmland Series Maps" every two years. Important farmlands are divided into the following five categories based on their suitability for agriculture:

- **Prime Farmland.** Prime Farmland is land with the best combination of physical and chemical characteristics able to sustain long-term production of agricultural crops. This land has produced irrigated crops at some times within the four years prior to the mapping date.
- **Farmland of Statewide Importance.** Farmland of Statewide Importance is land that meets the criteria for Prime Farmland but with minor shortcomings such as greater slopes or lesser soil moisture capacity.
- **Unique Farmland.** Unique Farmland has even lesser quality soils and produces the State's leading agricultural crops. This land is usually irrigated, but also includes non-irrigated orchards and vineyards.
- **Farmland of Local Importance.** Farmland of Local Importance is land that is important to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.
- **Grazing Land.** Grazing Land is land on which the existing vegetation is suited to the grazing of livestock.

##### **Williamson Act**

The Williamson Act, is designed to preserve agricultural and open space lands by discouraging their premature and unnecessary conversion to urban uses. Williamson Act contracts, also known as agricultural preserves, create an arrangement whereby private landowner's contract with counties and cities to voluntarily restrict their land to agricultural and compatible open-space uses. The Big Bear Valley has no Williamson Act contracts in place. However, the Lucerne Valley does have Williamson Act contracts in place.

##### **California Public Resources Code Section 12220(g)**

The California Public Resources Code defines "forest land" under section 12220(g) as land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Projects are subject to this code if there are any potentially significant changes to existing areas zoned as forest land.

##### **California Public Resources Code Section 4526**

The California Public Resources Code defines "timberland" as land, other than land owned by the Federal government and land designated as experimental forest land, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined after consultation with the appropriate State district. Projects may have significant impacts to timberland if the project conflicts with existing zoning.



**California Government Code Section 51104(g)**

The California Government Code defines “timberland production zone” under Section 51104(g) as an area which has been zoned pursuant to Sections 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h) of the Government Code 51104. Projects may significantly impact timberland resources if a project conflicts with existing areas zoned for timberland production.

**California Land Evaluation and Site Assessment Model**

The Land Evaluation and Site Assessment (LESA) is a point-based approach for rating the relative importance of agricultural land based upon specific measurable features.

The California LESAs Model was developed to provide lead agencies with an optional methodology to ensure that potentially significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process (California Public Resources Code Section 21095), including in CEQA reviews.

The California LESAs Model evaluates measures of soil resource quality, a given project’s size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, the factors are rated, weighted, and combined, resulting in a single numeric score. The project score becomes the basis for making a determination of a project’s potential significance.

**4.3.3.2 Local**

The Big Bear Valley area encompasses multiple jurisdictions including unincorporated areas of San Bernardino County, one incorporated City, -City of Big Bear Lake, USDA, and the SBNF. Unincorporated areas in the Big Bear Valley include Fawnskin, Big Bear City, Sugarloaf, Baldwin Lake, Lake Williams, and Erwin Lake.

**San Bernardino Countywide Plan**

The San Bernardino Countywide Plan identifies areas of prime and non-prime agricultural soils and operations to establish areas where agriculture and compatible uses may coexist with development, identified as Agriculture Zoning Districts.

The Natural Resources Element of the San Bernardino Countywide Plan includes the following goal and policies regarding agriculture that may be applicable to Program activities within the unincorporated areas of Big Bear Valley.

The Countywide Plan Natural Resources Element sets forth the following goal and policies pertaining to agriculture:

<b>Goal</b>	<b>NR-7</b>	Agriculture and Soils. The ability of property owners, farmers, and ranchers to conduct sustainable and economically viable agricultural operations.
<b>Policy</b>	<b>NR-7.1</b>	Protection of agricultural land. We protect economically viable and productive agricultural lands from the adverse effects of urban encroachment, particularly increased erosion and sedimentation, trespass, and non-agricultural land development.

- NR-7.2 Preservation of Important Farmlands. We require project applicants seeking to develop 20 or more acres of farmland (classified as prime, of statewide importance, or unique farmland) to non-agricultural uses to prepare an agricultural resource evaluation prior to project approval. The evaluation shall use generally accepted methodologies to identify the potentially significant impact of the loss of agricultural land as well as the economic viability and sustainability of future agricultural use of the property, including long-term sustainability and economic viability of water resources. If the conversion is deemed significant, the County shall require mitigation at a 1:1 ratio of converted to preserved acreage through conservation easements, payment of its valuation equivalent if a fee mitigation program is established, or inclusion in a regional agricultural preservation program.
- NR-7.3 Conservation and preservation incentives. We support programs and policies that provide tax and economic incentives to conserve existing productive agricultural lands or preserve farmland classified as prime, of statewide importance, unique, or of local importance. We support land owners in establishing new and maintaining existing California Land Conservation (Williamson Act) contracts.

Thus, where agricultural soils occur or activities exist, San Bernardino County has policies to support them.

No policies were found in the San Bernardino County Countywide Plan regarding forestry or timberland resources.

#### **Big Bear Lake General Plan**

No policies were found in the City of Big Bear Lake General Plan regarding agricultural resources or forestry or timberland resources.

#### **4.3.4 Thresholds of Significance**

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

- a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
- b) Conflict with existing zoning for agricultural use or a Williamson Act contract.
- c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in California Public Resources Code section 12220(g)), timberland (as defined by California Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).
- d) Result in the loss of forest land or conversion of forest land to non-forest use.
- e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

#### **4.3.5 Potential Impacts**

- a) **Would the project convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

#### **Combined Program Categories**

**Construction and Operation:** The Program Area contains no known agricultural resources or resource values, including prime or important farmland resources in the Big Bear Valley. A field

review of the proposed Program locations (shown on **Figures 3-2 through 3-17, 3-19, 3-22, 3-26, 3-29, 3-30, 3-31, 3-33, and 3-34**) substantiates that the project specific facilities will not adversely impact any agricultural resources. Thus, no impact to any agricultural resources will occur in Big Bear Valley from implementation of the Program. No mitigation is required.

### **Other Physical Changes**

The situation in Lucerne Valley is different because there are substantial agricultural resources—Prime Farmland, Unique Farmland, and Farmland of Statewide Importance. As described under the existing conditions, the San Bernardino Countywide Plan (**Figure 4.3-3**) and the California Important Farmland Finder (**Figure 4.3-4**) identify the LV Site as being Prime Farmland and Farmland of Statewide Importance. These designations indicate that under present circumstances (water available for irrigation and active farming), the LV Site is considered to be important farmland. BBARWA currently discharges approximately up to 2,200 AFY of undisinfected secondarily treated wastewater to the 480-acre property it owns in Lucerne Valley as shown on **Figure 4.2-1**. The proposed Program will substantially reduce the volume of treated effluent discharged at BBARWA's LV Site. Once fully operational, in dry a dry year, BBARWA could send no water to the LV Site, and in a wet year like 2011, it could send up to 1,050 AFY, which could be used to irrigate grain or other alternative use/disposal. BBARWA anticipates discharging an average of about 340 AFY of undisinfected secondarily treated effluent during winter months from December through May. Discussions with the contract farmer indicate that during the winter months, it may be possible to grow grain(s) on approximately 40 acres of the LV Site. If the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) to handle the 340 AFY of undisinfected secondarily treated effluent or could make the treated effluent available to another party for an alternative use.

At present, a 190-acre portion of the LV Site is farmed at present within the 480-acre LV Site. Under the Program, and scenario described above, 40 acres of land would continue to be farmed, removing about 150 acres of utilized designated Prime Farmland or Farmland of Statewide Importance (refer to **Figures 4.3-2, 4.3-3 and 4.3-4**) from production. If the LV site cannot continue to be farmed due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, or, if BBARWA ultimately pursues alternative uses for the treated effluent, an estimated total of 190-acres of Farmland, about 40% of the site, would be removed from production. Further, since the purpose of farming at the site to date has been to reuse the water until recycling in Big Bear Valley would be feasible, BBARWA does not anticipate continuing any crop production at the site using groundwater because of the limited water rights available in the Lucerne Valley Basin. The Lucerne Valley Basin was adjudicated as a result of the MBA Judgment in 1996. Thus, the probable loss of 190 acres or more of existing agricultural production due to the Program is considered a significant impact to Prime Farmland and Farmland of Statewide Importance.

Under the proposed Program, no feasible mitigation is available to account for this loss of Prime Farmland and Farmland of Statewide Importance. The removal of the source of water to support agricultural production at the BBARWA site is an unavoidable consequence of the proposed Program. As stated above, BBARWA's removal of the undisinfected secondary treated effluent would effectively remove the available water supply enabling the LV Site to remain Prime Farmland and Farmland of Statewide Importance, as an irrigated water source is needed to retain this designated based on the soils underlying the site. BBARWA does not hold any water rights

in the MBA, or more specifically in the Lucerne Valley Basin, and therefore, the use of groundwater to continue agricultural production within this site is infeasible. The water availability in Lucerne Valley is discussed further in detail under **Subchapter 4.11**, Hydrology and Water Quality. Ultimately, with implementation of the Program, the 190 acres of Prime Farmland and Farmland of Statewide Importance under agricultural production at the LV Site will be allowed to lie fallow in the future. The potential for this fallow land to function as a source of fugitive dust in the future is addressed in the Air Quality section, **Subchapter 4.4**.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: No feasible **MMs** exist to avoid this significant impact.*

*Level of Significance After Mitigation: Significant and Unavoidable*

**b) Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?**

**Combined Program Categories**

**Construction & Operation:** Neither the City of Big Bear Lake nor San Bernardino County have designated agricultural land designation or zoning within the Big Bear Valley. Therefore, no potential conflicts will occur with existing zone classifications or Williamson Act contracts from implementation of the Program. No impacts are anticipated under this issue.

**Other Physical Changes**

The LV Site is also not zoned for agriculture. Limited agricultural or horticultural land uses could be developed under the Rural Residential and Open Space land use designations, but no such uses occur within the footprint of the facilities proposed for implementation under the proposed Program. Therefore, the Big Bear Valley contains no land under Williamson Act contract. Further, no changes in land use designations are required to support the proposed recycled water facilities shown on referenced maps under issue a) above. As shown on **Figure 4.3-3**, the LV Site is not considered a Williamson Act, thus the change in farmland production at the site will have no potential to conflict with a Williamson Act contract. Therefore, no potential conflicts will occur with existing zone classifications or Williamson Act contracts from implementation of the Program. No impacts are anticipated under this issue.

*Level of Significance Before Mitigation: No Impact*

*Mitigation Measures: None required*

**c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in California Public Resources Code section 12220(g)), timberland (as defined by California Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?**

**Combined Program Categories**

A review of the land use designations within the Program Area of impact (reference maps identified in issue (a), above) indicates that there are no areas designated or classified as forest land or timberland in accordance with the referenced California Public Resources Code sections. At this time, it appears that none of the facilities will be located on land managed by SBNF, no Federal land managed for forest or timber land production will be affected by the proposed Program. Therefore, the proposed Program has no potential to conflict with existing zoning or to cause rezoning of forest or timber land. No impacts are anticipated under this issue.



*Level of Significance Before Mitigation: No Impact*

*Mitigation Measures: None required*

**d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?**

**Program Category 1: Conveyance Pipelines**

As described in the **Subchapter 4.2**, Aesthetics, under issue (b), the majority of the proposed Program's area of impact does not contain woodland areas that could be described as forest land. According to the San Bernardino Countywide Plan EIR an estimated 37,473 acres of forest and woodland are under San Bernardino County jurisdiction and a total of 270,704 acres of forest/woodland occur within San Bernardino County. There is only one area of the proposed Program, Sand Canyon (refer to **Figures 3-12 through 3-15**), where trees may be removed. The Sand Canyon Recharge Conveyance Pipeline has a potential to require the removal of several trees because the alignment will traverse through the two private properties as shown on **Figure 3-31**. Though the general location for the Sand Canyon Recharge Conveyance Pipeline has been established, the precise location for this short pipeline alignment is presently unknown. Thus, it is unknown precisely how many trees and what size trees will be removed as part of the installation of this Program Component. Thus, the proposed Program will be required to comply with CAL FIRE, which designates sites containing trees/timberland resources as being "timberland use," to avoid a potentially significant loss of forest land.

CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)]. Also, when projects are converting timberland to another use, the operations are considered commercial timber operations even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581]. CAL FIRE offers a number of exemptions that would apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. However, in a phone conversation with CAL FIRE staff member on March 1, 2023, staff indicated that an agency or entity can only apply for one exemption in a 5-year period. Thus, it is anticipated that, should BBARWA or any other partner agency itself need to apply for more than one exemption for this project, a full THP and TCP would be required to be prepared for each individual Program facility requiring removal of trees/timberland following the first exemption application. Preparation of a full THP would ensure full compliance with CAL FIRE regulations, and would ensure that the TCP would be awarded, in the event that an exemption cannot be obtained. These exemptions are the "Public Agency, Public and Private Utility Right of Way Exemption"<sup>25</sup> and the "Less Than 3 Acre Conversion Exemption."<sup>26</sup> If the proposed Program does not comply with CAL FIRE regulations, a potentially significant impact to forest land and timberland could occur. Thus, proposed Program will be required to comply with **MM AGF-1** by submitting an application for one of the above exemptions or preparing a THP and TCP to remove clusters of trees subject to CAL FIRE regulations, which would avoid a potentially significant impact on forest land. With implementation of **MM AGF-1** potential impacts to forest land or timberland can be reduced to a less than significant impact level.

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<sup>25</sup> State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(b)(c):  
[https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form\\_rev112020.pdf](https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form_rev112020.pdf)

<sup>26</sup> State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(a):  
<https://www.fire.ca.gov/media/30xkpwux/caltrees-less-than-3-acre-conversion-exemption-form.pdf>

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

As described in the **Subchapter 4.2**, Aesthetics, under issue (b), the majority of the proposed Program's area of impact does not contain woodland areas that could be described as forest land. According to the San Bernardino Countywide Plan EIR an estimated 37,473 acres of forest and woodland are under San Bernardino County jurisdiction and a total of 270,704 acres of forest/woodland occur within San Bernardino County. None of these areas occurs within the known Ancillary Facility sites. Additionally, while the locations of the two Sand Canyon Monitoring Wells are presently unknown, BBARWA and the Program Team will avoid impacting trees/timberland through either site design or site selection as part of the development process for the monitoring wells may also impact trees/timberland. Thus, the proposed Program will be required to comply with CAL FIRE, which designates sites containing trees/timberland resources as being "timberland use," to avoid a potentially significant loss of forest land. As no trees would be forestry would be impacted by this Program Category, no impacts are anticipated.

**Program Category 3: Solar Evaporation Ponds**

As described in the **Subchapter 4.2**, Aesthetics, under issue (b), the majority of the proposed Program's area of impact does not contain woodland areas that could be described as forest land. According to the San Bernardino Countywide Plan EIR an estimated 37,473 acres of forest and woodland are under San Bernardino County jurisdiction and a total of 270,704 acres of forest/woodland occur within San Bernardino County. None of these areas occurs within the BBARWA WWTP, and therefore, as no trees would be forestry would be impacted by this Program Category, no impacts are anticipated.

**Program Category 4: BBARWA WWTP Upgrades**

As described in the **Subchapter 4.2**, Aesthetics, under issue (b), the majority of the proposed Program's area of impact does not contain woodland areas that could be described as forest land. According to the San Bernardino Countywide Plan EIR an estimated 37,473 acres of forest and woodland are under San Bernardino County jurisdiction and a total of 270,704 acres of forest/woodland occur within San Bernardino County. None of these areas occurs within the BBARWA WWTP, and therefore, as no trees would be forestry would be impacted by this Program Category, no impacts are anticipated.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**AGF-1:** *Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a "Public Agency, Public and Private Utility Right of Way Exemption" (1104.1(b)(c)) or a "Less Than 3 Acre Conversion Exemption" (1104.1(a)). Should an exemption for the removal of trees subject to CAL FIRE timberland conversation regulations be unavailable due to the limitations set forth by CAL FIRE of one exemption per agency per five years, the implementing agency shall prepare and submit a Timberland Conversion Permit (TCP) pursuant to California Public Resources Code 4621(a) and a Timber Harvesting Plan (THP) pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.*

*Level of Significance After Mitigation: Less Than Significant*

- e) **Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion to forest land to non-forest use?**

**Program Category 1: Conveyance Pipelines**

Construction: Based on the lack of farmland in the Big Bear Valley, there is no potential for the construction of the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

There is a limited area (currently not defined, but estimated to be less than one acre) within the Sand Canyon Recharge Area that may experience the loss of existing trees (forest land) causing a conversion to non-forest use (i.e., pipeline alignment, monitoring well). If the proposed Program does not comply with CAL FIRE regulations, a potentially significant impact related to conversion of forest land to non-forest use could occur as a result of construction. Thus, the proposed Program will be required to comply with **MM AGF-1** by submitting an application for one of the above exemptions or preparing a THP and TCP to remove clusters of trees subject to CAL FIRE regulations, which would avoid a potentially significant impact related to conversion of forest land to non-forest use. The implementing agency will confer with CAL FIRE to implement **MM AGF-1**, which would avoid a significant impact related to conversion of forest land to non-forest use. With implementation of this measure the impact to forest land from construction will result in a less than significant impact to forest land. The loss of a less than one acre of forest land in the Sand Canyon Recharge Area will be less than significant through the implementation of **MM AGF-1**.

Operation: Based on the lack of farmland in the Big Bear Valley, there is no potential for the operation of the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

The proposed Program would not result in conversion of forest land to non-forest use as part of operations. As the operation of the conveyance pipelines would not include any that of a timberland operation, and no forest land would be altered as a result of operations, there is no potential for the operation of the proposed Program to cause conversion of forest land to non-forest use in this area that would be modified as a result of implementation of this Program Category. No impacts are anticipated.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Based on the lack of farmland in the Big Bear Valley, there is no potential for the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

As no trees would be forestry would be impacted by construction of this Program Category, no impacts are anticipated.

Operation: Based on the lack of farmland in the Big Bear Valley, there is no potential for the operation of the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

The proposed Program would not result in conversion of forest land to non-forest use as part of operations. As the operation of this Program Category would not include any that of a timberland operation, and no forest land would be altered as a result of operations, there is no potential for the operation of the proposed Program to cause conversion of forest land to non-forest use in this

area that would be modified as a result of implementation of this Program Category. No impacts are anticipated.

**Program Category 3: Solar Evaporation Ponds**

Construction: Based on the lack of farmland in the Big Bear Valley, there is no potential for the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

As no trees would be forestry would be impacted by construction of this Program Category, no impacts are anticipated.

Operation: Based on the lack of farmland in the Big Bear Valley, there is no potential for the operation of the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

The proposed Program would not result in conversion of forest land to non-forest use as part of operations. As the operation of this Program Category would not include any that of a timberland operation, and no forest land would be altered as a result of operations, there is no potential for the operation of the proposed Program to cause conversion of forest land to non-forest use in this area that would be modified as a result of implementation of this Program Category. No impacts are anticipated.

**Program Category 4: BBARWA WWTP Upgrades**

Construction: Based on the lack of farmland in the Big Bear Valley, there is no potential for the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

As no trees would be forestry would be impacted by construction of this Program Category, no impacts are anticipated.

Operation: Based on the lack of farmland in the Big Bear Valley, there is no potential for the operation of the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

The proposed Program would not result in conversion of forest land to non-forest use as part of operations. As the operation of this Program Category would not include any that of a timberland operation, and no forest land would be altered as a result of operations, there is no potential for the operation of the proposed Program to cause conversion of forest land to non-forest use in this area that would be modified as a result of implementation of this Program Category. No impacts are anticipated.

**Other Physical Changes**

As noted under issue (a), above, the reduction of treated effluent discharges at the LV Site will result in the removal from production of an estimated total of 190-acres of Prime Farmland and Farmland of Statewide Importance, equal to about 40% of the LV Site. Where the farmer maintains farming operations utilizing the treated effluent discharge from the LV Site, the proposed Program would result in the removal from production of an estimated total of 150-acres of Prime Farmland and Farmland of Statewide Importance. This impact is considered significant and unavoidable.

*Level of Significance Before Mitigation: Potentially Significant*



*Mitigation Measures: No feasible **MMs** exist to avoid a significant impact from the conversion of agricultural lands. **MM AGF-1** is required to reduce the significant impact to forest land.*

**AGF-1:** *Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a “Public Agency, Public and Private Utility Right of Way Exemption” (1104.1(b)(c)) or a “Less Than 3 Acre Conversion Exemption” (1104.1(a)). Should an exemption for the removal of trees subject to CAL FIRE timberland conversation regulations be unavailable due to the limitations set forth by CAL FIRE of one exemption per agency per five years, the implementing agency shall prepare and submit a Timberland Conversion Permit (TCP) pursuant to California Public Resources Code 4621(a) and a Timber Harvesting Plan (THP) pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.*

*Level of Significance After Mitigation: Significant and Unavoidable*

#### **4.3.6 Cumulative Impacts**

The proposed Program will not cause any adverse impacts to agricultural land in Big Bear Valley and very minimal impact to forest land (a few acres at most). Based on the minimal impacts to these resources from implementing the proposed Program, the cumulative impacts of the proposed Program are determined to not result in a considerable contribution to cumulative impacts to agricultural and forestry resources within the Big Bear Valley following implementation of the single **MM**.

However, the conversion of up to 190 acres of designated agricultural land at BBARWA’s LV Site is a necessary in order to implement the Program, and thereby utilize the majority of the wastewater generated in Big Bear Valley locally as Program Water, rather than exporting the whole of the secondary effluent generated by the BBARWA WWTP process to Lucerne Valley. Thus, the conversion of up to 190 acres of designated agricultural land at BBARWA’s LV Site is considered sufficient to contribute to Statewide cumulative loss of agricultural land. Therefore, the proposed Program has potential to result in a cumulatively considerable adverse contribution to any cumulative agricultural resource impacts. Thus, cumulative adverse impacts to agricultural resources are significant and unavoidable. However, with implementation of mitigation impacts to forestry resources are considered less than cumulatively considerable, and therefore are less than significant.

#### **4.3.7 Unavoidable Adverse Impacts**

As determined in the preceding evaluation, with the implementation of mitigation, the proposed Program would not result in significant and unavoidable forestry resources impacts. The proposed Program will cause project specific and cumulative unavoidable significant impacts to agricultural resources.

## **4.4 AIR QUALITY**

### **4.4.1 Introduction**

This section assesses potential impacts to air quality from implementation of the Replenish Big Bear Program (Program). The Replenish Big Bear Program Air Quality Impact Analysis (AQIA) dated August 2023 was prepared by Urban Crossroads, Inc. (Urban Crossroads) to evaluate the potential impacts to air quality associated with construction and operation of the facilities proposed as part of the Program. A copy of the AQIA is provided as **Appendix 11 of Volume 2** to this DPEIR.

The AQIA quantifies air quality emissions generated by construction and operation of the Program and addresses whether the Program conflicts with implementation of the SCAQMD AQMP and Lead Agency planning regulations. The analysis of Program-generated air emissions determines whether the Program would result in a cumulatively considerable net increase of any criteria pollutant for which the South Coast Air Basin (SCAB) is in non-attainment under an applicable NAAQS and CAAQS. Additionally, the Program has been evaluated to determine whether the Program would expose sensitive receptors to substantial pollutant concentrations and the impacts of odors. The significance of these potential impacts is described in the following sections. Much of the information provided in the following sections is abstracted directly from the AQIA with minor edits.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Air Quality
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to air quality were received at the Scoping Meeting held on behalf of the Program. Three comment letters specific to this topic were received in response to the NOP. NOP Comment Letters can be found in **Subchapter 8.2**, responses to comments can be found **Subchapter 8.3**.

### **4.4.2 Environmental Setting: Air Quality**

Note that all references provided herein can be found in the AQIA prepared by Urban Crossroads provided as **Appendix 11, Volume 2** to this DPEIR.

#### **4.4.2.1 South Coast Air Basin**

The Big Bear Valley is located in the SCAB, which is under the jurisdiction of the SCAQMD. The SCAB is a 6,745-square-mile region bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The SCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Geronio Pass area in Riverside County.

#### **4.4.2.2 Regional Climate and Wind Patterns**

The regional climate has a substantial influence on air quality in the SCAB. In addition, the temperature, wind, humidity, precipitation, and amount of sunshine influence the air quality.

The annual average temperatures throughout the SCAB vary from the low to middle 60s degrees Fahrenheit (°F). Due to a decreased marine influence, the eastern portion of the SCAB shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the SCAB, with average minimum temperatures of 47°F in downtown Los Angeles and 36°F in San Bernardino. All portions of the SCAB have recorded maximum temperatures above 100°F.

Although the climate of the SCAB can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of SCAB climate. Humidity restricts visibility in the SCAB, and the conversion of sulfur dioxide (SO<sub>2</sub>) to sulfates (SO<sub>4</sub>) is heightened in air with high relative humidity. The marine layer provides an environment for that conversion process, especially during the spring and summer months. The annual average relative humidity within the SCAB is 71% along the coast and 59% inland. Since the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90% of the SCAB's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the SCAB with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the SCAB. The remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions. On the shortest day of the year there are approximately 10 hours of possible sunshine, and on the longest day of the year there are approximately 14½ hours of possible sunshine.

The importance of wind to air pollution is considerable. The direction and speed of the wind determines the horizontal dispersion and transport of the air pollutants. During the late autumn to early spring rainy season, the SCAB is subjected to wind flows associated with the traveling storm fronts moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, locally termed "Santa Anas" each year. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, typified by a daytime onshore sea breeze and a nighttime offshore drainage wind. Summer wind flows are created by the pressure differences between the relatively cold ocean and the unevenly heated and cooled land surfaces that modify the general northwesterly wind circulation over southern California. Nighttime drainage begins with the radiational cooling of the mountain slopes. Heavy, cool air descends the slopes and flows through the mountain passes and canyons as it follows the lowering terrain toward the ocean. Another characteristic wind regime in the SCAB is the "Catalina Eddy," a low level cyclonic (counterclockwise) flow centered over Santa Catalina Island which results in an offshore flow to the southwest. On most spring and summer days, some indication of an eddy is apparent in coastal sections.

In the SCAB, there are two distinct temperature inversion structures that control vertical mixing of air pollution. During the summer, warm high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing which effectively acts as an impervious lid to pollutants over the entire SCAB. The mixing height for the inversion structure is normally situated 1,000 to 1,500 feet amsl.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter, when nights are longer and onshore flow is weakest. They are typically only a few hundred feet amsl. These inversions effectively trap pollutants, such as nitrogen oxides (NO<sub>x</sub>) and carbon monoxide (CO) from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primary pollutants along the coastline.

**4.4.2.3 Criteria Pollutants**

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and health effects are identified below:

**Table 4.4-1  
 CRITERIA POLLUTANTS**

<b>Criteria Pollutant</b>	<b>Description</b>	<b>Sources</b>	<b>Health Effects</b>
Carbon monoxide (CO)	CO is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone (O <sub>3</sub> ), motor vehicles operating at slow speeds are the primary source of CO in the SCAB. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen (O <sub>2</sub> ) supply to the heart. Inhaled CO has no direct toxic effect on the lungs but exerts its effect on tissues by interfering with O <sub>2</sub> transport and competing with O <sub>2</sub> to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for O <sub>2</sub> supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (O <sub>2</sub> deficiency) as seen at high altitudes.
Sulfur Dioxide (SO <sub>2</sub> )	SO <sub>2</sub> is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO <sub>2</sub> oxidizes in the atmosphere, it forms SO <sub>4</sub> . Collectively, these pollutants are referred to as sulfur oxides (SO <sub>x</sub> ).	Coal or oil burning power plants and industries, refineries, diesel engines.	A few minutes of exposure to low levels of SO <sub>2</sub> can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO <sub>2</sub> . In contrast, healthy individuals do not exhibit similar acute



Criteria Pollutant	Description	Sources	Health Effects
			<p>responses even after exposure to higher concentrations of SO<sub>2</sub>. Animal studies suggest that despite SO<sub>2</sub> being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO<sub>2</sub> levels. In these studies, efforts to separate the effects of SO<sub>2</sub> from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically, or one pollutant alone is the predominant factor.</p>
<p>Nitrogen oxides (NO<sub>x</sub>)</p>	<p>NO<sub>x</sub> consist of nitric oxide (NO), nitrogen dioxide (NO<sub>2</sub>) and nitrous oxide (N<sub>2</sub>O) and are formed when nitrogen (N<sub>2</sub>) combines with O<sub>2</sub>. Their lifespan in the atmosphere ranges from one to seven days for NO and N<sub>2</sub>O, to 170 years for nitrous oxide. NO<sub>x</sub> is typically created during combustion processes and are major contributors to smog formation and acid deposition. NO<sub>2</sub> is a criteria air pollutant and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO<sub>2</sub> is the most abundant in the atmosphere. As ambient concentrations of NO<sub>2</sub> are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO<sub>2</sub> than those indicated by regional monitoring station.</p>	<p>Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.</p>	<p>Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO<sub>2</sub> at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO<sub>2</sub> in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.</p> <p>In animals, exposure to levels of NO<sub>2</sub> considerably higher than ambient concentrations result in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of O<sub>3</sub> exposure increases when animals are exposed to a combination of O<sub>3</sub> and NO<sub>2</sub>.</p>

Criteria Pollutant	Description	Sources	Health Effects
Ozone (O <sub>3</sub> )	O <sub>3</sub> is a highly reactive and unstable gas that is formed when volatile organic compounds (VOCs) and NO <sub>x</sub> , both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. O <sub>3</sub> concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.	Formed when reactive organic gases (ROG) and NO <sub>x</sub> react in the presence of sunlight. ROG sources include any source that burns fuels, (e.g., gasoline, natural gas, wood, oil) solvents, petroleum processing and storage and pesticides.	Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for O <sub>3</sub> effects. Short-term exposure (lasting for a few hours) to O <sub>3</sub> at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated O <sub>3</sub> levels are associated with increased school absences. In recent years, a correlation between elevated ambient O <sub>3</sub> levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple outdoor sports and live in communities with high O <sub>3</sub> levels. O <sub>3</sub> exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes O <sub>3</sub> may be more toxic than exposure to O <sub>3</sub> alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.
Particulate Matter (PM)	PM <sub>10</sub> : A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. Particulate matter pollution is a major cause of reduce visibility (haze) which is caused by the scattering of light and consequently the significant reduction air clarity. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health	Sources of PM <sub>10</sub> include road dust, windblown dust and construction. Also formed from other pollutants (acid rain, NO <sub>x</sub> , SO <sub>x</sub> , organics). Incomplete combustion of any fuel. PM <sub>2.5</sub> comes from fuel combustion in motor vehicles, equipment and	A consistent correlation between elevated ambient fine particulate matter (PM <sub>10</sub> and PM <sub>2.5</sub> ) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the U.S. and various areas around the world. In recent years, some studies have reported an

Criteria Pollutant	Description	Sources	Health Effects
	<p>effects. Additionally, it should be noted that PM<sub>10</sub> is considered a criteria air pollutant.</p> <p>PM<sub>2.5</sub>: A similar air pollutant to PM<sub>10</sub> consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include SO<sub>4</sub> formed from SO<sub>2</sub> release from power plants and industrial facilities and nitrates that are formed from NO<sub>x</sub> release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. PM<sub>2.5</sub> is a criteria air pollutant.</p>	<p>industrial sources, residential and agricultural burning. Also formed from reaction of other pollutants (acid rain, NO<sub>x</sub>, SO<sub>x</sub>, organics).</p>	<p>association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in lifespan, and an increased mortality from lung cancer. Daily fluctuations in PM<sub>2.5</sub> concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long term exposure to particulate matter. The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM<sub>10</sub> and PM<sub>2.5</sub>.</p>
<p>Volatile organic compounds (VOC)</p>	<p>VOCs are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form O<sub>3</sub> to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include CO, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O<sub>3</sub>, which is a criteria pollutant. The terms VOC and ROG (see below) interchangeably.</p>	<p>Organic chemicals are widely used as ingredients in household products. Paints, varnishes and wax all contain organic solvents, as do many cleaning, disinfecting, cosmetic, degreasing and hobby products. Fuels are made up of organic chemicals. All of these products can release organic compounds while you are using them, and, to some degree, when they are stored.</p>	<p>Breathing VOCs can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage the central nervous system as well as other organs. Some VOCs can cause cancer. Not all VOCs have all these health effects, though many have several.</p>
<p>Reactive Organic Compounds (ROG)</p>	<p>Similar to VOC, ROGs are also precursors in forming O<sub>3</sub> and consist of compounds containing methane (CH<sub>4</sub>), ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and NO<sub>x</sub> react in the presence of sunlight. ROGs are a criteria pollutant since they are a</p>	<p>Sources similar to VOCs.</p>	<p>Health effects similar to VOCs.</p>

Criteria Pollutant	Description	Sources	Health Effects
	precursor to O <sub>3</sub> , which is a criteria pollutant. The terms ROG and VOC (see previous) interchangeably.		
Lead (Pb)	Pb is a heavy metal that is highly persistent in the environment and is considered a criteria pollutant. In the past, the primary source of Pb in the air was emissions from vehicles burning leaded gasoline. The major sources of Pb emissions are ore and metals processing, particularly Pb smelters, and piston-engine aircraft operating on leaded aviation gasoline. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers. It should be noted that the Program does not include operational activities such as metal processing or Pb acid battery manufacturing. As such, the Program is not anticipated to generate a quantifiable amount of Pb emissions.	Metal smelters, resource recovery, leaded gasoline, deterioration of Pb paint.	Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure. Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.
Odor	Odor means the perception experienced by a person when one or more chemical substances in the air come into contact with the human olfactory nerves.	Odors can come from many sources including animals, human activities, industry, natures, and vehicles.	Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

#### **4.4.2.4 Existing Air Quality**

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. NAAQS and CAAQS currently in effect are shown in **Table 4.4-2**.

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the State and Federal standards. At the time of this AQIA, the most recent State and Federal standards are presented in **Table 4.4-2**. The air quality in a region is considered to be in attainment if the measured ambient air pollutant levels for O<sub>3</sub>, CO (except 8-hour Lake Tahoe), SO<sub>2</sub> (1 and 24 hour), NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> are not to be exceeded. All others are not to be equaled or exceeded. It should be noted that the three-year period is presented for informational purposes and is not the basis for how attainment status is determined. Attainment status for a pollutant means that the SCAB meets the standards set by the EPA or the California Environmental Protection Agency (CalEPA). Conversely, nonattainment means that an area has monitored air quality that does not meet the NAAQS or CAAQS. A State Implementation Plan (SIP) is required by the Federal Clean Air Act (CAA) for area that are designated non-attainment under the NAAQS. A SIP outlines the measures that a state what it will take to improve air quality in the area designated nonattainment. Once a nonattainment area meets the standards and additional redesignation requirements, the EPA designates the area as a maintenance area.



**Table 4.4-2  
 AMBIENT AIR QUALITY STANDARDS**

Pollutant	Average Time	California Standards <sup>1</sup>		National Standards <sup>2</sup>		
		Concentration <sup>3</sup>	Method <sup>4</sup>	Primary <sup>3,5</sup>	Secondary <sup>3,6</sup>	Method <sup>7</sup>
<b>Ozone (O<sub>3</sub>)<sup>8</sup></b>	1 Hour	0.09 ppm (180 µg/m <sup>3</sup> )	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m <sup>3</sup> )		0.070 ppm (137 µg/m <sup>3</sup> )		
<b>Respirable Particulate Matter (PM<sub>10</sub>)<sup>9</sup></b>	24 Hour	50 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	150 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>		–		
<b>Fine Particulate Matter (PM<sub>2.5</sub>)<sup>9</sup></b>	24 Hour	–	–	35 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	12.0 µg/m <sup>3</sup>	15.0 µg/m <sup>3</sup>	
<b>Carbon Monoxide (CO)</b>	1 Hour	20 ppm (23 mg/m <sup>3</sup> )	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m <sup>3</sup> )	–	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9 ppm (10 mg/m <sup>3</sup> )		9 ppm (10 mg/m <sup>3</sup> )	–	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m <sup>3</sup> )		–	–	
<b>Nitrogen Dioxide (NO<sub>2</sub>)<sup>10</sup></b>	1 Hour	0.18 ppm (339 µg/m <sup>3</sup> )	Gas Phase Chemiluminescence	100 ppb (188 µg/m <sup>3</sup> )	–	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m <sup>3</sup> )		0.053 ppm (100 µg/m <sup>3</sup> )	Same as Primary Standard	
<b>Sulfur Dioxide (SO<sub>2</sub>)<sup>11</sup></b>	1 Hour	0.25 ppm (655 µg/m <sup>3</sup> )	Ultraviolet Fluorescence	75 ppb (196 µg/m <sup>3</sup> )	–	Ultraviolet Fluorescence; Spectrophotometry (Paraosaniline Method)
	3 Hour	–		–	0.5 ppm (1300 µg/m <sup>3</sup> )	
	24 Hour	0.04 ppm (105 µg/m <sup>3</sup> )		0.14 ppm (for certain areas) <sup>11</sup>	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas) <sup>11</sup>	–	
<b>Lead <sup>8,12,13</sup></b>	30-Day Average	1.5 µg/m <sup>3</sup>	Atomic Absorption	–	–	–
	Calendar Quarter	–		1.5 µg/m <sup>3</sup> (for certain areas) <sup>12</sup>	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Avg	–		0.15 µg/m <sup>3</sup>		
<b>Visibility Reducing Particles<sup>14</sup></b>	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	<b>No Federal Standards</b>		
<b>Sulfates</b>	24 Hour	25 µg/m <sup>3</sup>	Ion Chromatography			
<b>Hydrogen Sulfide</b>	1 Hour	0.03 ppm (42 µg/m <sup>3</sup> )	Ultraviolet Fluorescence			
<b>Vinyl Chloride<sup>12</sup></b>	24 Hour	0.01 ppm (26 µg/m <sup>3</sup> )	Gas Chromatography			

Source: CARB 5/4/16

Footnotes:

- California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter – PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equal or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
- National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24-hour standard is attained when the

- expected number of days per calendar year, with a 24-hour average concentration above  $150 \mu\text{g}/\text{m}^3$ , is equal to or less than one. For  $\text{PM}_{2.5}$ , the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the EPA for further clarification and current Federal policies.
- 3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
  - 4 Any equivalent procedure which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.
  - 5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
  - 6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
  - 7 Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.
  - 8 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
  - 9 On December 14, 2012, the national  $\text{PM}_{2.5}$  primary standard was lowered from  $15 \mu\text{g}/\text{m}^3$  to  $12.0 \mu\text{g}/\text{m}^3$ . The existing national 24-hour  $\text{PM}_{2.5}$  standards (primary and secondary) were retained at  $35 \mu\text{g}/\text{m}^3$ , as was the annual secondary standard of  $15 \mu\text{g}/\text{m}^3$ . The existing 24-hour  $\text{PM}_{10}$  standards (primary and secondary) of  $150 \mu\text{g}/\text{m}^3$  also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
  - 10 To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
  - 11 On June 2, 2010, a new 1-hour  $\text{SO}_2$  standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971  $\text{SO}_2$  national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
  - 12 The CARB has identified lead and vinyl chloride as 'toxic air contaminants' (TAC) with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
  - 13 The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard ( $1.5 \mu\text{g}/\text{m}^3$  as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
  - 14 In 1989, the CARB converted both the general statewide 10-mile visibility standard and Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

#### 4.4.2.5 Regional Air Quality

Air pollution contributes to a wide variety of adverse health effects. The EPA has established NAAQS for six of the most common air pollutants: CO, Pb,  $\text{O}_3$ , particulate matter ( $\text{PM}_{10}$  and  $\text{PM}_{2.5}$ ),  $\text{NO}_2$ , and  $\text{SO}_2$  which are known as criteria pollutants. The SCAQMD monitors levels of various criteria pollutants at 37 permanent monitoring stations and 5 single-pollutant source Pb air monitoring sites throughout the air district. CARB adopted updates to the area designations for State ambient air quality standards at a public meeting on January 26, 2023. See **Table 4.4-3** for attainment designations for the SCAB. Appendix 2.1 of the AQIA provides geographic representation of the State and Federal attainment status for applicable criteria pollutants within the SCAB.

**Table 4.4-3  
 ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SCAB**

Criteria Pollutant	State Designation	Federal Designation
O <sub>3</sub> – 1-hour standard	Nonattainment	--
O <sub>3</sub> – 8-hour standard	Nonattainment	Nonattainment
PM <sub>10</sub>	Nonattainment	Attainment
PM <sub>2.5</sub>	Nonattainment	Nonattainment
CO	Attainment	Unclassifiable/Attainment
NO <sub>2</sub>	Attainment	Unclassifiable/Attainment
SO <sub>2</sub>	Attainment	Unclassifiable/Attainment
Pb <sup>27</sup>	Attainment	Unclassifiable/Attainment

Note: See Appendix 11, Volume 2 to this DPEIR for a detailed map of State/National Area Designations within the SCAB  
 "--" = The national 1-hour O<sub>3</sub> standard was revoked effective June 15, 2005

#### 4.4.2.6 Baseline Local Air Quality

To inform the air quality management district’s (AQMDs) residents about air quality conditions, the AQMD issues an air quality forecast each day and reports current air quality conditions for each numbered Monitoring Area and General Forecast Area depicted on the SCAQMD Map of Monitoring Areas (**Figure 4.4-1**).<sup>28</sup> As shown on **Figure 4.4-1**, the Program is located within Source Receptor Area 38. Within Source Receptor Area 38, the SCAQMD East San Bernardino Mountains monitoring station, located 0.28 mile north of the Program Area, is the nearest long-term air quality monitoring station for PM<sub>2.5</sub>. As the East San Bernardino Mountains monitoring station does not provide data for O<sub>3</sub>, CO, NO<sub>2</sub>, or PM<sub>10</sub>, the next nearest monitoring stations will be utilized. Data for O<sub>3</sub> and PM<sub>10</sub> was obtained from the Central San Bernardino Mountains monitoring station, located in Source Receptor Area 37, approximately 22.31 miles west of the Program Area. The nearest station for CO and NO<sub>2</sub> data was obtained from the Central San Bernardino Valley 2 monitoring station which is located approximately 24.18 miles southwest of the Program Area in Source Receptor Area 34. It should be noted that the Central San Bernardino Mountains and Central San Bernardino Valley 2 monitoring stations were utilized in lieu of the East San Bernardino Mountains monitoring station only in instances where data was not available.

The most recent three years of data available is shown on **Table 4.4-4** and is considered to be representative of the local air quality at the Program Area. Please note, data for SO<sub>2</sub> has been omitted as attainment is regularly met in the SCAB and few monitoring stations measure SO<sub>2</sub> concentrations.

<sup>27</sup> The Federal nonattainment designation for lead is only applicable towards the Los Angeles County portion of the SCAB.

<sup>28</sup> SCAQMD, 2023. SCAQMD Map of Monitoring Areas <http://www.aqmd.gov/docs/default-source/default-document-library/map-of-monitoring-areas.pdf> (accessed 11/16/23)



# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

21865 Copley Drive, Diamond Bar, CA 91765-4182  
Information: 1-800-CUT-SMOG (1-800-288-7664)  
Internet: <http://www.aqmd.gov>

### Air Quality Reporting

Since 1977, the South Coast Air Quality Management District has served as the local government agency responsible for measuring, reporting and taking steps to improve air quality.

To inform the AQMD's 15 million residents about air quality conditions, the AQMD issues an air quality forecast each day and reports current air quality conditions for each

numbered Monitoring Area and General Forecast Area depicted here.

This air quality information is transmitted to the public through newspapers, television, radio and pager services, through faxes to schools, through recorded messages on the AQMD's toll-free Smog Update telephone line, 1-800-CUT-SMOG, and on the AQMD's Internet Website <http://www.aqmd.gov>.

Newspapers, television and radio stations typically will report air

quality information using the General Forecast Areas, shown in color below, which are larger groupings of the more specific Air Monitoring Areas.

The 1-800-CUT-SMOG (1-800-288-7664) line also provides smog forecast and current smog level information by ZIP code.

The AQMD's Internet Website provides both forecasts as well as smog levels for that day and the previous day. Forecasts for the next day normally are posted by noon.

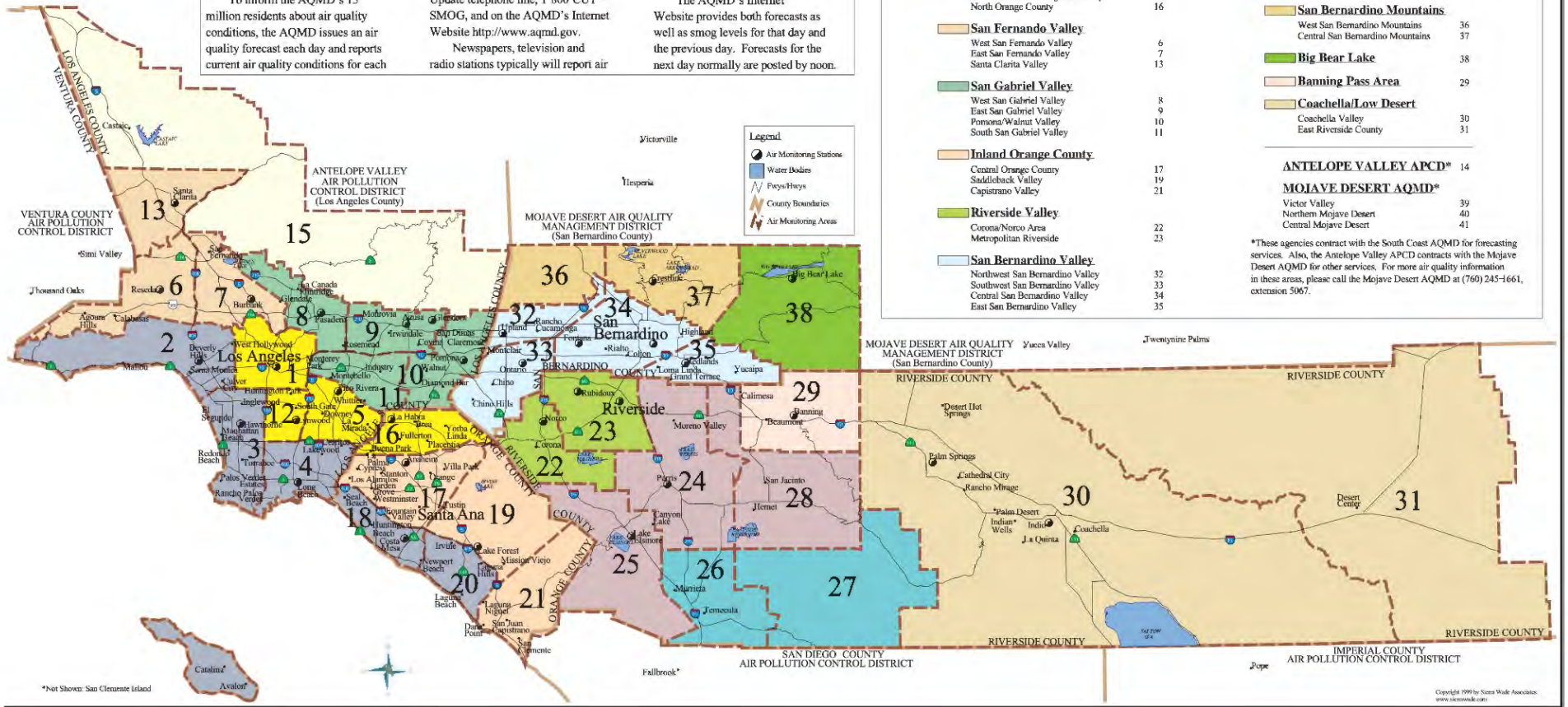


FIGURE 4.4-1

**Table 4.4-4  
 PROGRAM AREA AIR QUALITY MONITORING SUMMARY – 2019-2021  
 (DAYS STANDARDS WERE EXCEEDED AND MAXIMUM OBSERVED LEVELS)**

Pollutant/Standard	Standard	2019	2020	2021
<b>Ozone</b>				
Maximum Federal 1-Hour Concentration (ppm)		0.137	0.173	0.145
Maximum Federal 8-Hour Concentration (ppm)		0.117	0.136	0.119
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	73	104	74
Number of Days Exceeding Federal/State 8-Hour Standard	> 0.070 ppm	109	141	118
<b>Carbon Monoxide</b>				
> 35 ppm	1.3	1.9	2.0	> 35 ppm
> 20 ppm	1.1	1.4	1.6	> 20 ppm
<b>Nitrogen Dioxide</b>				
Maximum Federal 1-Hour Concentration	> 0.100 ppm	0.059	0.054	0.056
Annual Federal Standard Design Value		0.014	0.015	0.015
<b>Respirable Particulates (PM-10)</b>				
Maximum Federal 24-Hour Concentration ( $\mu\text{g}/\text{m}^3$ )	> 150 $\mu\text{g}/\text{m}^3$	44	57	44
Annual Federal Arithmetic Mean ( $\mu\text{g}/\text{m}^3$ )		21.2	23.4	23.2
Number of Days Exceeding Federal 24-Hour Standard	> 150 $\mu\text{g}/\text{m}^3$	0	0	0
Number of Days Exceeding State 24-Hour Standard	> 50 $\mu\text{g}/\text{m}^3$	0	1	0
<b>Fine Particulates (PM-2.5) <sup>1</sup></b>				
Maximum Federal 24-Hour Concentration ( $\mu\text{g}/\text{m}^3$ )	> 35 $\mu\text{g}/\text{m}^3$	31.0	24.3	24.5
Annual Federal Arithmetic Mean ( $\mu\text{g}/\text{m}^3$ )	> 12 $\mu\text{g}/\text{m}^3$	5.94	7.62	7.04
Number of Days Exceeding Federal 24-Hour Standard	> 35 $\mu\text{g}/\text{m}^3$	0	0	0

ppm = Parts Per Million

Source: Data for O<sub>3</sub>, CO, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> was obtained from SCAQMD Air Quality Data Tables.

### 4.4.3 Regulatory Setting

#### 4.4.3.1 Federal Regulations

The EPA is responsible for setting and enforcing the NAAQS for O<sub>3</sub>, CO, NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and Pb. The EPA has jurisdiction over emissions sources that are under the authority of the Federal government including aircraft, locomotives, and emissions sources outside State waters (Outer Continental Shelf). The EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The CAA was first enacted in 1955 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the Federal air quality standards, the NAAQS, and specifies future dates for achieving compliance. The CAA also mandates that states submit and implement SIPs for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and



incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Program Area include in Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O<sub>3</sub>, CO, NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and Pb. The NAAQS were amended in July 1997 to include an additional standard for O<sub>3</sub> and to adopt a NAAQS for PM<sub>2.5</sub>. **Table 4.4-4** (previously presented) provides the NAAQS within the SCAB.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and NO<sub>x</sub>. NO<sub>x</sub> is a collective term that includes all forms of NO<sub>x</sub> which are emitted as byproducts of the combustion process.

#### **4.4.3.2 California Regulations**

##### **California Air Resources Board**

CARB, which became part of the CalEPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the CAA, and for regulating emissions from consumer products and motor vehicles. AB 2595 mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the State ambient air quality standards by the earliest practical date. The CARB established the CAAQS for all pollutants for which the Federal government has NAAQS and, in addition, establishes standards for SO<sub>4</sub>, visibility, hydrogen sulfide (H<sub>2</sub>S), and vinyl chloride (C<sub>2</sub>H<sub>3</sub>Cl). However, at this time, H<sub>2</sub>S and C<sub>2</sub>H<sub>3</sub>Cl are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS.

Local AQMDs, such as the SCAQMD, regulate air emissions from stationary sources such as commercial and industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare AQMPs that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g., motor vehicle use generated by residential and commercial development).
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions.
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled.
- Significant use of low emissions vehicles by fleet operators.
- Sufficient control strategies to achieve a 5% or more annual reduction in emissions or 15% or more in a period of three years for ROG, NO<sub>x</sub>, CO and PM<sub>10</sub>. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than 5% per year under certain circumstances.

##### **Title 24 Energy Efficiency Standards and California Green Building Standards (CalGreen)**

California Code of Regulations Title 24 Part 6: The California Energy Code was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. California Code of Regulations, Title 24, Part 11: California Green Building Standards Code (CALGreen Code) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on August 1, 2009, and is administered by the California Building Standards Commission.

The CALGreen Code is updated on a regular basis, with the most recent approved update consisting of the 2022 CalGreen Code that became effective on January 1, 2023. The California Energy Code anticipates that the 2022 energy code will provide \$1.5 billion in consumer benefits and reduce GHG emissions by 10 million metric tons. The Program would be required to comply with the applicable standards in place at the time plan check submittals are made. These require, among other items:

### ***Nonresidential Mandatory Measures***

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- Designated parking for clean air vehicles. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- Electric Vehicle (EV) charging stations. New construction shall facilitate the future installation of EV supply equipment. The compliance requires empty raceways for future conduit and documentation that the electrical system has adequate capacity for the future load. The number of spaces to be provided for is contained in Table 5.106.5.3.3 (5.106.5.3). Additionally, Table 5.106.5.4.1 specifies requirements for the installation of raceway conduit and panel power requirements for medium- and heavy-duty EV supply equipment for warehouses, grocery stores, and retail stores.
- Outdoor light pollution reduction. Outdoor lighting systems shall be designed to meet the backlight, uplight and glare ratings per Table 5.106.8 (5.106.8).
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reuse or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
  - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1).

- Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
- Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gpm and 80 pounds per square inch (psi) (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gpm at 80 psi (5.303.3.3.2).
- Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gpm at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gpm of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gpm (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- Outdoor potable water uses in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent (5.304.1).
- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 square feet (sf) or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gallons per day (gpd) (5.303.1.1 and 5.303.1.2).
- Outdoor water uses in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).
- Commissioning. For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

#### **4.4.3.3 Regional and Local Regulations**

##### **2022 Air Quality Management Plan**

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of AQMPs to meet the State and Federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

Under State law, the SCAQMD is required to prepare a plan for air quality improvement for pollutants for which the district is in non-compliance. Each iteration of the SCAQMD's AQMP is an update of the previous plan and has a 20-year horizon. The latest AQMP, the 2022 AQMP, was adopted by the SCAQMD Governing Board on December 2, 2022. The 2022 AQMP was developed to address the requirements for meeting the 2015 8-hour O<sub>3</sub> standard. The 2022 AQMP builds upon measures already in place from previous AQMPs. It also includes a variety of additional strategies such as regulation, accelerated deployment of available cleaner technologies (e.g., zero emissions technologies, when cost-effective and feasible, and low NO<sub>x</sub> technologies in other applications), BMPs, co-benefits from existing programs (e.g., climate and energy efficiency), incentives, and other CAA measures to achieve the 2015 8-hour ozone standard. The 2022 AQMP incorporates the latest

scientific and technological information and planning assumptions, including the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and updated emission inventory methodologies for various source categories. The 2022 AQMP requires CARB's adoption before submittal for the EPA's final approval, which is expected to occur sometime in 2023.

### **South Coast Air Quality Management District Rules and Regulations**

To implement the AQMP, the SCAQMD develops and implements rules and regulations for emissions that may be generated by various uses and activities. The rules and regulations detail pollution-reduction measures that must be implemented during construction and operation of projects. Rules and regulations relevant to the Program include the following:

- Rule 203 (Permit to Operate): This rule requires that a permit to operate be obtained before operation or use any equipment that may cause the issuance of air contaminants. It would apply to portable generators used during construction.
- Rule 401 (Visible Emissions): This rule prohibits the discharge of visible air pollutant emissions from various sources as determined by shade and opacity criteria based on the Ringelmann Chart.
- Rule 402 (Nuisance): This rule prohibits the discharge of quantities of air contaminants or other material that causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property.
- Rule 403 (Fugitive Dust Control): This rule includes various requirements to prevent, reduce, and mitigate the amount of particulate matter entrained in the ambient air from man-made fugitive dust sources.
- Rule 1113 (Architectural Coatings): This rule establishes VOC content limits for a variety of architectural coatings, including 50 grams per liter for flat and non-flat coatings.

### ***Background on Localized Significance Threshold Development***

The analysis makes use of methodology included in the LST Methodology. The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of NAAQS/CAAQS. Collectively, these are referred to as LSTs. The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4<sup>29</sup>. LSTs represent the maximum emissions from a Program that would not cause or contribute to an exceedance of the most stringent applicable Federal or State ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the LST Methodology.

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<sup>29</sup> The purpose of SCAQMD's Environmental Justice program is to ensure that everyone has the right to equal protection from air pollution and fair access to the decision-making process that works to improve the quality of air within their communities. Further, the SCAQMD defines Environmental Justice as "...equitable environmental policymaking and enforcement to protect the health of all residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution."

**General Plans**

Although local actions have important implications for air quality, regulation of air quality occurs primarily at the Federal, State, and regional levels. Local General Plans typically include several policies related to air quality that are directed at participating in regional collaboration with the applicable air district, achieving attainment of NAAQS and CAAQS, implementing the use of the applicable air district’s thresholds of significance for CEQA analysis, and ensuring project-level compliance with applicable air district rules.

**4.4.4 Thresholds of Significance**

The Program has been evaluated to determine if it will violate any air quality standards, contribute to an existing or projected air quality violation, or determine if it will result in a cumulatively considerable net increase of a criteria pollutant for which the SCAB is non-attainment under an applicable NAAQS and CAAQS. Additionally, the Program has been evaluated to determine consistency with the applicable AQMP, exposure of sensitive receptors to substantial pollutant concentrations, and the impacts of odors. The significance of these potential impacts is described in the following section.

The criteria used to determine the significance of potential Program-related air quality impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would:

- a) Conflict with or obstruct implementation of the applicable air quality plan.
- b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.
- c) Expose sensitive receptors to substantial pollutant concentrations.
- d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The SCAQMD has also developed regional significance thresholds for other regulated pollutants, as summarized at **Table 4.4-5**. The SCAQMD’s CEQA Air Quality Significance Thresholds (March 2023) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

**Table 4.4-5  
 MAXIMUM DAILY REGIONAL EMISSIONS THRESHOLDS**

<b>Pollutant</b>	<b>Construction Regional Thresholds</b>	<b>Operational Regional Thresholds</b>
NO <sub>x</sub>	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM <sub>10</sub>	150 lbs/day	150 lbs/day
PM <sub>2.5</sub>	55 lbs/day	55 lbs/day
SO <sub>x</sub>	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Pb	3 lbs/day	3 lbs/day

lbs/day = Pounds Per Day



#### **4.4.4.1 CalEEMod**

Programs, such as that which is proposed by the Program, affect air quality through construction-source and operational-source emissions.

In May 2023 the California Air Pollution Control Officers Association (CAPCOA) in conjunction with other California air districts, including SCAQMD, released the latest version of California Emissions Estimator Model (CalEEMod) version 2022.1.1.12. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO<sub>x</sub>, SO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from **MMs**. Accordingly, the latest version of CalEEMod has been used for this Program to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity are provided in Appendices 3.1 through 3.5 of the AQIA.

#### **4.4.5 Potential Impacts**

##### **a) Would the project conflict with or obstruct implementation of the applicable air quality plan?**

The Program Area is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as State and Federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet State and Federal ambient air quality standards.

Currently, these State and Federal air quality standards are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of AQMPs to meet the State and Federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

In December 2022, the SCAQMD released the Final 2022 AQMP.<sup>30</sup> The 2022 AQMP continues to evaluate current integrated strategies and control measures to meet the CAAQS, as well as explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the Federal, State, and local levels. Similar to the 2016 AQMP, the 2022 AQMP incorporates scientific and technological information and planning assumptions, including the 2020-2045 RTP/SCS, a planning document that supports the integration of land use and transportation to help the region meet the CAA requirements. The Program's consistency with the AQMP will be determined using the 2022 AQMP as discussed below.

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993). These indicators are discussed below:

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<sup>30</sup> SCAQMD, 2022. SCAQMD 2022 AQMP. <http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16> (accessed 09/01/23)

**Consistency Criterion No. 1**

***The Program would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.***

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if regional or localized significance thresholds were exceeded.

***Construction Impacts – Consistency Criterion 1***

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if localized or regional significance thresholds were exceeded. The Program would not exceed the applicable localized significance thresholds (LSTs) or regional significance thresholds for construction activity after implementation of applicable **MMs**. A review of the consistency for each of the Program Components is provided below. Note that for air quality modeling purposes, as a conservative measure, and in order to identify the maximum daily emissions, the AQIA assumes that the Program would construct the following features simultaneously:

- Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project
  - 2 pump stations: 20 gpm and 1,520 gpm
  - 1,350 LF of brine pipeline
  - Total building area: 40,000 SF total on site
  - Installation of 2 MW of solar on existing BBARWA property
- Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project
  - 19,940 LF of pipeline (this is the maximum amount of pipeline that would be installed for any of the pipeline options, and as such, for modeling purposes, the maximum pipeline length that could be installed is utilized)
- Replenish Big Bear Component 3: Shay Pond Discharge Project
  - 6,310 LF of pipeline on unpaved area
- Replenish Big Bear Component 4: Solar Evaporation Pond
  - 57 acres of evaporation ponds
  - 2 monitoring wells
- Replenish Big Bear Component 5: Sand Canyon Recharge Project
  - 1 pump station
  - 2 monitoring wells
  - 7,210 LF of conveyance pipeline
  - Erosion control/rip rap at pipeline discharge

**Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPf to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes

- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

### **Construction Scenario**

#### ***Demolition***

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**, 3,000 tons of concrete would be demolished. Additionally, up to 1,350 CY of asphalt export would be needed.

#### ***Grading Activities***

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**, it was estimated that up to 8,000 CY of soil would be exported during construction of the new building.

#### ***Construction Worker Trips***

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

**Construction Duration**

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.4-6  
 CONSTRUCTION DURATION: COMPONENT 1**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 1: WWTP Upgrades	Jan 2025	Jan 2027	515

**Construction Equipment**

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-7**.

**Table 4.4-7  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 1**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project</b>			
Dozers	Rubber Tired Dozers	1	8
Graders	Graders	1	8
Cranes	Cranes	1	8
Backhoes	Tractors/Loaders/Backhoes	1	8
Drill Rig	Bore/Drill Rig	1	8
Cement Trucks	Off-Highway Trucks	1	8
Forklifts	Forklifts	1	4
Backhoes	Tractors/Loaders/Backhoes	1	4
Front Loaders	Crawler Tractors	1	4
Dump/Delivery Trucks	Off-Highway Trucks	2	8

**Construction Emissions Summary**

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-8 and 4.4-9**.

**Table 4.4-8  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION: COMPONENT 1**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 1	3.82	27.47	44.30	0.08	7.30	2.95
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 1	4.63	30.88	56.16	0.16	13.44	3.82
<b>Maximum Daily Emissions</b>	<b>4.63</b>	<b>30.88</b>	<b>56.16</b>	<b>0.16</b>	<b>13.44</b>	<b>3.82</b>

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Impacts without Mitigation**

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 miles per hour (mph) per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

**Table 4.4-9  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITH MITIGATION: COMPONENT 1**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 1	2.06	11.73	52.47	0.08	6.65	2.36
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 1	2.61	25.00	68.39	0.16	13.44	3.38
<b>Maximum Daily Emissions</b>	<b>2.61</b>	<b>25.00</b>	<b>68.39</b>	<b>0.16</b>	<b>13.44</b>	<b>3.38</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>



***Impacts with Mitigation***

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-9**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NO<sub>x</sub> emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-10**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

***Localized Significance Thresholds for Construction***

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program’s potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that “It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters.” Consistent with the SCAQMD’s LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. “health protective” standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD’s screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10** were calculated by interpolating the threshold values for the Program’s disturbed acreage.

**Table 4.4-10  
 MAXIMUM DAILY LOCALIZED EMISSIONS THRESHOLDS**

<b>Pollutant</b>	<b>Construction Localized Thresholds</b>
All Program Components	
NO <sub>x</sub>	170 lbs/day
CO	1,174 lbs/day
PM <sub>10</sub>	7 lbs/day
PM <sub>2.5</sub>	5 lbs/day

Source: Localized Thresholds presented in this table are based on the SCAQMD Final Localized Significance Threshold Methodology, July 2008

***LST Construction Emissions Summary***

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-11 and 4.4-12.**

**Table 4.4-11  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITHOUT MITIGATION: COMPONENT 1**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 1				
<b>Maximum Daily Emissions</b>	<b>24.02</b>	<b>23.88</b>	<b>3.24</b>	<b>1.88</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts Without Mitigation

**Table 4.4-11** identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 1. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs during Program Component 1, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

**Table 4.4-12  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITH MITIGATION: COMPONENT 1**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 1				
<b>Maximum Daily Emissions</b>	<b>8.28</b>	<b>32.04</b>	<b>3.24</b>	<b>1.29</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts with Mitigation

**Table 4.4-12** identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 1 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 1 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12” in diameter.

**Construction Scenario**

***Demolition***

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**, it was estimated that up to 5,875 CY of asphalt/concrete export would be needed.

**Grading Activities**

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**, it was estimated that up to 19,940 CY of soil would be exported.

**Construction Worker Trips**

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

**Construction Duration**

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.4-13  
 CONSTRUCTION DURATION: COMPONENT 2**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 2: Lake Pipeline	May 2025	Oct 2026	370

**Construction Equipment**

Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-14**.

**Table 4.4-14  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 2**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project</b>			
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Paver	Paver	1	8
Roller	Roller	1	8

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Pavement Cutter	Concrete/Industrial Saws	1	6
Grinder	Concrete/Industrial Saws	1	6
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4
Paving Machine	Pavers	1	2

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-14** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-14** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Construction Emissions Summary**

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-15** and **4.4-16**.

**Table 4.4-15  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION: COMPONENT 2**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 2	1.41	28.15	27.16	0.15	9.00	2.52
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 2	1.53	22.04	25.79	0.11	6.09	1.89
<b>Maximum Daily Emissions</b>	<b>1.53</b>	<b>28.15</b>	<b>27.16</b>	<b>0.15</b>	<b>9.00</b>	<b>2.52</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts without Mitigation***

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

**Table 4.4-16  
 OVERALL CONSTRUCTION EMISSIONS S SUMMARY – WITH MITIGATION: COMPONENT 2**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 2	1.09	26.07	30.75	0.15	8.93	2.46
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 2	1.05	19.20	31.16	0.11	5.99	1.80
<b>Maximum Daily Emissions</b>	<b>1.09</b>	<b>26.07</b>	<b>31.16</b>	<b>0.15</b>	<b>8.93</b>	<b>2.46</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts with Mitigation***

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-16**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NO<sub>x</sub> emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.



***Localized Significance Thresholds for Construction***

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program’s potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that “It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters.” Consistent with the SCAQMD’s LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. “health protective” standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD’s screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10**, above were calculated by interpolating the threshold values for the Program’s disturbed acreage.

***LST Construction Emissions Summary***

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-17**.

**Table 4.4-17  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITHOUT MITIGATION: COMPONENT 2**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 2				
<b>Maximum Daily Emissions</b>	<b>4.92</b>	<b>6.11</b>	<b>1.68</b>	<b>0.30</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts Without Mitigation

**Table 4.4-17** identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 2. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 2, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

**Table 4.4-18  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITH MITIGATION: COMPONENT 2**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 2				
<b>Maximum Daily Emissions</b>	<b>2.84</b>	<b>9.69</b>	<b>1.88</b>	<b>0.33</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts with Mitigation

**Table 4.4-18** identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 2 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 2 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Component 3: Shay Pond Discharge Project

The Program would ultimately install about 710 LF of 4” pipeline to reach Shay Pond from either an existing pipeline or a new 6” pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

**Construction Scenario**

***Grading Activities***

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 3: Shay Pond Discharge Project**, it was estimated that up to 7,020 CY of soil would be exported.

***Construction Worker Trips***

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

***Construction Duration***

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.4-19  
 CONSTRUCTION DURATION: COMPONENT 3**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 3: Shay Pond	May 2025	Oct 2026	370

**Construction Equipment**

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-20**.

**Table 4.4-20  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 3**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 3: Shay Pond Discharge Project</b>			
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Roller	Roller	1	8
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-20** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-20** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Construction Emissions Summary**

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-21 and 4.4-22**.

**Table 4.4-21  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION: COMPONENT 3**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 3	0.92	10.79	10.24	0.06	1.95	0.73
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 3	1.33	13.76	14.21	0.07	2.05	0.82
<b>Maximum Daily Emissions</b>	<b>1.33</b>	<b>13.76</b>	<b>14.21</b>	<b>0.07</b>	<b>2.05</b>	<b>0.82</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Impacts without Mitigation**

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

**Table 4.4-22  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITH MITIGATION: COMPONENT 3**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 3	0.60	8.71	13.84	0.06	1.88	0.66
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 3	0.86	10.92	19.58	0.07	1.96	0.73
<b>Maximum Daily Emissions</b>	<b>0.86</b>	<b>10.92</b>	<b>19.58</b>	<b>0.07</b>	<b>1.96</b>	<b>0.73</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts with Mitigation***

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-22**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NO<sub>x</sub> emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

***Localized Significance Thresholds for Construction***

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program’s potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that “It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters.” Consistent with the SCAQMD’s LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. “health protective” standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD’s screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10**, above, were calculated by interpolating the threshold values for the Program’s disturbed acreage.



***LST Construction Emissions Summary***

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-23 and 4.4-24**.

**Table 4.4-23**

**LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITHOUT MITIGATION: COMPONENT 3**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 3				
<b>Maximum Daily Emissions</b>	<b>5.81</b>	<b>7.09</b>	<b>0.22</b>	<b>0.20</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts Without Mitigation

**Table 4.4-23** identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 3. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 3, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

**Table 4.4-24**

**LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITH MITIGATION: COMPONENT 3**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 3				
<b>Maximum Daily Emissions</b>	<b>3.73</b>	<b>10.68</b>	<b>0.14</b>	<b>0.13</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts with Mitigation

**Table 4.4-24** identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 3 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 3 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

**Construction Scenario**

***Demolition***

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 4: Shay Pond Conveyance Pipeline**, it was estimated that up to 710 CY of asphalt/concrete export would be needed.

***Construction Worker Trips***

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

***Construction Duration***

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.4-25  
 CONSTRUCTION DURATION: COMPONENT 4**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 4: Evaporation Pond	May 2025	Oct 2026	370

***Construction Equipment***

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-26**.

**Table 4.4-26  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 4**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 4: Evaporation Pond</b>			
Bulldozers	Rubber Tired Dozers	2	8
Front End Loaders	Crawler Tractors	2	8
Water Truck	Off-Highway Trucks	2	8
Scrapers	Scraper	7	8
Excavators	Excavator	2	8
Dump Trucks	Off-Highway Trucks	4	8

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-26** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-26** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Construction Emissions Summary**

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-27 and 4.4-28.**

**Table 4.4-27  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION: COMPONENT 4**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 4	25.23	77.74	92.44	0.20	7.07	2.41
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 4	25.22	77.94	91.34	0.20	7.07	2.41
<b>Maximum Daily Emissions</b>	<b>25.23</b>	<b>77.94</b>	<b>92.44</b>	<b>0.20</b>	<b>7.07</b>	<b>2.41</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Impacts without Mitigation**

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

**Table 4.4-28  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITH MITIGATION: COMPONENT 4**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 4	19.05	15.43	123.73	0.20	7.82	3.08
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 4	19.05	15.62	122.63	0.20	7.82	3.08
<b>Maximum Daily Emissions</b>	<b>19.05</b>	<b>15.62</b>	<b>123.73</b>	<b>0.20</b>	<b>7.82</b>	<b>3.08</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts with Mitigation***

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-28**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NO<sub>x</sub> emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

***Localized Significance Thresholds for Construction***

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program’s potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that “It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters.” Consistent with the SCAQMD’s LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. “health protective” standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD’s screening look-up tables are utilized in determining impacts. It should be noted that

since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10**, above, were calculated by interpolating the threshold values for the Program’s disturbed acreage.

**LST Construction Emissions Summary**

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-29** and **4.4-30**.

**Table 4.4-29**  
**LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITHOUT MITIGATION: COMPONENT 4**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 4				
<b>Maximum Daily Emissions</b>	<b>73.58</b>	<b>86.55</b>	<b>8.53</b>	<b>4.85</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>YES</b>	<b>NO</b>

Impacts Without Mitigation

**Table 4.4-29** identifies the localized impacts at the nearest receptor location in the vicinity of the Program. Without mitigation, localized construction emissions would exceed the applicable SCAQMD LSTs for emissions of PM<sub>10</sub> during Program Component 4. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA.

**Table 4.4-30**  
**LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITH MITIGATION: COMPONENT 4**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 4				
<b>Maximum Daily Emissions</b>	<b>11.26</b>	<b>117.83</b>	<b>6.04</b>	<b>2.58</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts with Mitigation

**Table 4.4-30** identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 4 site. The implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. After implementation of **MM AQ-1**, construction-source emissions would not exceed the applicable SCAQMD LSTs thresholds and would be less-than-significant. Outputs from the model runs for mitigated localized construction-source emissions are provided in Appendix 3.6 through 3.10 of the AQIA. As shown in **Table 4.4-30**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would ensure that LST significance thresholds for construction are not exceeded. Impacts would be less than significant with the implementation of mitigation.



### Replenish Big Bear Component 5: Sand Canyon Recharge Project

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

### **Construction Scenario**

#### ***Demolition***

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 5: Sand Canyon**, it was estimated that up to 1,500 CY of concrete/asphalt export would be needed.

#### ***Grading Activities***

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 5: Sand Canyon**, it was estimated that up to 7,210 CY of soil would be exported.

#### ***Construction Worker Trips***

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

#### ***Construction Duration***

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.4-31  
 CONSTRUCTION DURATION: COMPONENT 5**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 5: Sand Canyon	May 2025	Oct 2026	370

**Construction Equipment**

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-32**.

**Table 4.4-32  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 5**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 5: Sand Canyon</b>			
Drill Rig	Bore/Drill Rig	1	8
Cranes	Cranes	1	4
Forklifts	Forklifts	1	4
Backhoes	Tractors/Loaders/Backhoes	1	4
Front Loaders	Crawler Tractors	1	4
Cement Trucks	Off-Highway Trucks	1	8
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Paver	Paver	1	8
Roller	Roller	1	8
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Pavement Cutter	Concrete/Industrial Saws	1	6
Grinder	Concrete/Industrial Saws	1	6
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4
Paving Machine	Pavers	1	2
Compactor	Plate Compactor	1	2

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-32** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-32**

represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Construction Emissions Summary**

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-33 and 4.4-34.**

**Table 4.4-33  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION: COMPONENT 5**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 5	1.73	24.18	28.67	0.11	7.46	2.16
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 5	2.37	24.67	36.02	0.10	6.16	2.03
<b>Maximum Daily Emissions</b>	<b>2.37</b>	<b>24.67</b>	<b>36.02</b>	<b>0.11</b>	<b>7.46</b>	<b>2.16</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts without Mitigation***

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

**Table 4.4-34  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITH MITIGATION: COMPONENT 5**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 5	1.41	22.09	32.26	0.11	7.39	2.10
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 5	1.75	20.35	42.30	0.10	6.00	1.89
<b>Maximum Daily Emissions</b>	<b>1.75</b>	<b>22.09</b>	<b>42.30</b>	<b>0.11</b>	<b>7.39</b>	<b>2.10</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts with Mitigation***

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-34**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NO<sub>x</sub> emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

***Localized Significance Thresholds for Construction***

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program’s potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that “It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters.” Consistent with the SCAQMD’s LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. “health protective” standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD’s screening look-up tables are utilized in determining impacts. It should be noted that

since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10**, above, were calculated by interpolating the threshold values for the Program’s disturbed acreage.

**LST Construction Emissions Summary**

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-35** and **4.4-36**.

**Table 4.4-35  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITHOUT MITIGATION: COMPONENT 5**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 5				
<b>Maximum Daily Emissions</b>	<b>8.12</b>	<b>9.44</b>	<b>1.68</b>	<b>0.35</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts Without Mitigation

**Table 4.4-35** identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 5. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 5, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

**Table 4.4-36  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITH MITIGATION: COMPONENT 5**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 5				
<b>Maximum Daily Emissions</b>	<b>6.04</b>	<b>13.03</b>	<b>1.68</b>	<b>0.30</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts with Mitigation

**Table 4.4-36** identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 5 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 5 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Program (Combined Impacts)

**Construction Impacts**

Regional construction emissions for the whole of the Program are demonstrated in **Tables 4.4-37** and **4.4-38**.



**Table 4.4-37  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 1	3.82	27.47	44.30	0.08	7.30	2.95
Replenish Big Bear Component 2	1.41	28.15	27.16	0.15	9.00	2.52
Replenish Big Bear Component 3	0.92	10.79	10.24	0.06	1.95	0.73
Replenish Big Bear Component 4	25.23	77.74	92.44	0.20	7.07	2.41
Replenish Big Bear Component 5	1.73	24.18	28.67	0.11	7.46	2.16
<b>Total</b>	<b>33.11</b>	<b>168.33</b>	<b>202.81</b>	<b>0.59</b>	<b>32.78</b>	<b>10.77</b>
Winter						
Replenish Big Bear Component 1	4.63	30.88	56.16	0.16	13.44	3.82
Replenish Big Bear Component 2	1.53	22.04	25.79	0.11	6.09	1.89
Replenish Big Bear Component 3	1.33	13.76	14.21	0.07	2.05	0.82
Replenish Big Bear Component 4	25.22	77.94	91.34	0.20	7.07	2.41
Replenish Big Bear Component 5	2.37	24.67	36.02	0.10	6.16	2.03
<b>Total</b>	<b>35.08</b>	<b>169.29</b>	<b>223.52</b>	<b>0.63</b>	<b>34.81</b>	<b>10.96</b>
<b>Maximum Daily Emissions</b>	<b>35.08</b>	<b>169.29</b>	<b>223.52</b>	<b>0.63</b>	<b>34.81</b>	<b>10.96</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>YES</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Impacts without Mitigation**

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

The estimated maximum daily construction emissions without mitigation are summarized on **Table 4.4-37**. Under the assumed scenarios, emissions resulting from the Program construction would exceed criteria pollutant thresholds established by the SCAQMD for emissions of NO<sub>x</sub>.

**Table 4.4-38  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITH MITIGATION**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 1	2.06	11.73	52.47	0.08	6.65	2.36
Replenish Big Bear Component 2	1.09	26.07	30.75	0.15	8.93	2.46
Replenish Big Bear Component 3	0.60	8.71	13.84	0.06	1.88	0.66
Replenish Big Bear Component 4	19.05	15.43	123.73	0.20	7.82	3.08
Replenish Big Bear Component 5	1.41	22.09	32.26	0.11	7.39	2.10
Total	24.21	84.03	253.04	0.59	32.66	10.66
Winter						
Replenish Big Bear Component 1	2.61	25.00	68.39	0.16	13.44	3.38
Replenish Big Bear Component 2	1.05	19.20	31.16	0.11	5.99	1.80
Replenish Big Bear Component 3	0.86	10.92	19.58	0.07	1.96	0.73
Replenish Big Bear Component 4	19.05	15.62	122.63	0.20	7.82	3.08
Replenish Big Bear Component 5	1.75	20.35	42.30	0.10	6.00	1.89
Total	25.32	91.08	284.06	0.63	35.21	10.88
<b>Maximum Daily Emissions</b>	<b>25.32</b>	<b>91.08</b>	<b>284.06</b>	<b>0.63</b>	<b>35.21</b>	<b>10.88</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Impacts with Mitigation**

The estimated maximum daily construction emissions with mitigation are summarized on **Table 4.4-38**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts. The implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Therefore, the construction of the Program, and each individual project included therein, would not conflict with the AQMP according to this criterion. Impacts would be less than significant with the implementation of mitigation.

**Operational Impacts – Consistency Criterion 1**

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPf to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

#### **Operational Emissions**

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on **Table 4.4-39**, Replenish Big Bear Program Category 1 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 1 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

**Table 4.4-39  
 PEAK OPERATIONAL EMISSIONS: CATEGORY 1**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>SUMMER MAXIMUM</b>	<b>2.01</b>	<b>4.33</b>	<b>5.92</b>	<b>0.01</b>	<b>0.48</b>	<b>0.48</b>
<b>WINTER MAXIMUM</b>	<b>1.73</b>	<b>4.31</b>	<b>4.18</b>	<b>0.01</b>	<b>0.48</b>	<b>0.48</b>
<b>Total Maximum Daily Emissions</b>	<b>2.01</b>	<b>4.33</b>	<b>5.92</b>	<b>0.01</b>	<b>0.48</b>	<b>0.48</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12” in diameter.

**Operational Emissions**

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. As this Program Category would include the conveyance of Program Water to Big Bear Lake via Stanfield Marsh, it is not anticipated that significant emissions would be generated, as the operation of the booster station that would convey the Program Water to Big Bear Lake via Stanfield Marsh falls under Program Category 1 operations as the booster station would be located at BBARWA’s WWTP site. As shown on **Table 4.4-40**, Replenish Big Bear Program Category 2 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 2 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

**Table 4.4-40  
 PEAK OPERATIONAL EMISSIONS: CATEGORY 2**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>SUMMER MAXIMUM</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>WINTER MAXIMUM</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total Maximum Daily Emissions</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Replenish Big Bear Component 3: Shay Pond Discharge Project**

The Program would ultimately install about 710 LF of 4” pipeline to reach Shay Pond from either an existing pipeline or a new 6” pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

**Operational Emissions**

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. As this Program Category would include the conveyance of Program Water to Shay Pond, it is not anticipated that significant emissions would be generated, as the operation of the booster station that would convey the Program Water to Shay Pond falls under Program Category 1 operations as the booster station would be located at BBARWA’s WWTP site. As shown on **Table 4.4-41**, Replenish Big Bear Program Category 3 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 3 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

**Table 4.4-41  
 PEAK OPERATIONAL EMISSIONS: CATEGORY 3**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>SUMMER MAXIMUM</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>WINTER MAXIMUM</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total Maximum Daily Emissions</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

**Operational Emissions**

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic



maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. As this Program Category would include the operation of the brine evaporation ponds, it is not anticipated that significant emissions would be generated, as the brine is generated by the AWP operations that fall under Program Category 1. As shown on **Table 4.4-42**, Replenish Big Bear Program Category 4 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 4 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

**Table 4.4-42  
 PEAK OPERATIONAL EMISSIONS: CATEGORY 4**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>SUMMER MAXIMUM</b>	<b>0.38</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>WINTER MAXIMUM</b>	<b>0.38</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total Maximum Daily Emissions</b>	<b>0.38</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Replenish Big Bear Component 5: Sand Canyon Recharge Project

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

**Operational Emissions**

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and

consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on **Table 4.4-43**, Replenish Big Bear Program Category 5 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 5 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

**Table 4.4-43  
 PEAK OPERATIONAL EMISSIONS: CATEGORY 5**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>SUMMER MAXIMUM</b>	<b>1.99</b>	<b>10.3</b>	<b>8.73</b>	<b>0.01</b>	<b>1.01</b>	<b>1.01</b>
<b>WINTER MAXIMUM</b>	<b>1.99</b>	<b>10.3</b>	<b>8.73</b>	<b>0.01</b>	<b>1.01</b>	<b>1.01</b>
<b>Total Maximum Daily Emissions</b>	<b>1.99</b>	<b>10.3</b>	<b>8.73</b>	<b>0.01</b>	<b>1.01</b>	<b>1.01</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Replenish Big Bear Program (Combined Impacts)

**Operational Impacts**

Operational emissions for the whole of the Program are demonstrated in **Tables 4.4-44**.

**Table 4.4-44  
 SUMMARY OF PEAK OPERATIONAL EMISSIONS**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer (Smog Season)						
Area Source	1.61	0.01	1.74	0.00	0.00	0.00
Energy Source	0.01	0.20	0.17	0.00	0.02	0.02
Stationary Source	2.76	14.38	12.73	0.01	1.47	1.47
<b>Total Maximum Daily Emissions</b>	<b>4.38</b>	<b>14.60</b>	<b>14.64</b>	<b>0.01</b>	<b>1.49</b>	<b>1.49</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>
Winter						
Area Source	1.33	0.00	0.00	0.00	0.00	0.00
Energy Source	0.01	0.20	0.17	0.00	0.02	0.02
Stationary Source	2.76	14.38	12.73	0.01	1.47	1.47
<b>Total Maximum Daily Emissions</b>	<b>4.10</b>	<b>14.58</b>	<b>12.90</b>	<b>0.01</b>	<b>1.49</b>	<b>1.49</b>

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Operational Emissions***

As previously stated, Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on **Table 4.4-44**, overall Program operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, the whole of the Program operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

***Operational LST Emissions***

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. However, the Program may include the use of an emergency diesel generators, allowing pump stations to run on backup power in case of emergency. If backup generator would be installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. Upon compliance with SCAQMD permitting procedures, localized emissions from any potential diesel generator would not result in substantial pollutant concentrations capable of exceeding operational LST thresholds. Therefore, the Program would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

As evaluated, the Program's localized and regional operation-source emissions would not exceed applicable regional significance threshold and LSTs. As such, a less than significant impact is expected.

On the basis of the preceding discussion, the Program would not conflict with the AQMP according to this criterion.

**Consistency Criterion No. 2**

***The Program will not exceed the assumptions in the AQMP based on the years of Program build-out phase.***

The 2022 AQMP demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under Federal law. Growth projections from local general plans adopted by counties in the district are provided to the SCAG, which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections of BBARWA, and partner agencies BBCCSD, BBLDWP, and BBMWD, is considered to be consistent with the AQMP, and therefore, would be consistent with the Consistency Criteria No. 2.

***Construction Impacts – Consistency Criterion 2***

**Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWP to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

**Construction**

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. The BBARWA WWTP Upgrades Project would be installed within BBARWA's existing WWTP, and there is land available to construct and upgrade the facility with comparable facilities to that which exists at present. Irrespective of the site's land use designation, which would not change

as a result of the proposed Program, development of the site to its maximum potential would likely occur, with disturbance of the entire site for each Program Component occurring during construction activities. As such, when considering that no emissions thresholds will be exceeded (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), a less than significant impact would result.

### **Operation**

The proposed Program is unusual because its implementation will not directly contribute to growth within the Big Bear Valley. The proposed Program was identified in the Bear Valley Basin Groundwater Sustainability Plan (GSP) to accommodate anticipated growth in the Big Bear Valley based on projections in the area General Plans, and also projections in the Urban Water Management Plans for BBCCSD and BBMWD. If Sustainable Yield of the Bear Valley Basin declines over time, growth in the Big Bear Valley continues and water users have limited ability for further conservation, additional supply will likely be needed in the future to maintain supply reliability. The drought proof supply provided by the Program will become more critical to maintain water reliability in times of extended drought and provide insurance against climate change uncertainty. The Program will not induce growth directly since the additional number of employees is estimated to be five persons within an area currently populated with about 23,000 residents. Further, no indirect growth will be created because Program infrastructure will be used to meet the existing Big Bear Valley population demands for water.

Thus, since the Program's proposed land uses are consistent with BBARWA and partner agencies BBCCSD, BBLDWP, and BBMWD growth projections, and as the Program's construction and operational-source air pollutant emissions would not exceed the regional or LST emissions thresholds (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), this Program component is determined to be consistent with the second criterion. Thus, impacts would be less than significant.

### **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12" in diameter.

### **Construction**

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. The Stanfield Marsh/Big Bear Lake Discharge Project Options would be installed belowground, and therefore, the installation of this pipeline would not impact the function of the aboveground uses (roadways and dirt pathways). As such, when considering that no emissions thresholds will be exceeded (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), a less than significant impact would result.

### **Operation**

As discussed above, the overall Program was identified in the Bear Valley Basin GSP to accommodate anticipated growth in the Big Bear Valley based on projections in the area General Plans, and also projections in the Urban Water Management Plans for BBCCSD and BBMWD. This Program Component will not induce growth directly since the no new employees would be necessary to operate this Program Component. Further, no indirect growth will be created because Program infrastructure will be used to meet the existing Big Bear Valley population demands for water. Thus, since the Program's proposed land uses are consistent with BBARWA and partner agencies BBCCSD, BBLDWP, and BBMWD growth projections, and as this Program Component's construction and operational-source air



pollutant emissions would not exceed the regional or LST emissions thresholds (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), this Program component is determined to be consistent with the second criterion. Thus, impacts would be less than significant.

#### Replenish Big Bear Component 3: Shay Pond Discharge Project

The Program would ultimately install about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

##### **Construction**

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. The Shay Pond Discharge Project would include installation of pipeline belowground, and therefore, the installation of this pipeline would not impact the function of the aboveground uses (roadways and dirt pathways). As such, when considering that no emissions thresholds will be exceeded (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), a less than significant impact would result.

##### **Operation**

As discussed above, the overall Program was identified in the Bear Valley Basin GSP to accommodate anticipated growth in the Big Bear Valley based on projections in the area General Plans, and also projections in the Urban Water Management Plans for BBCCSD and BBMWD. This Program Component will not induce growth directly since the no new employees would be necessary to operate this Program Component. Further, no indirect growth will be created because Program infrastructure will be used to meet the existing Big Bear Valley population demands for water. Thus, since the Program's proposed land uses are consistent with BBARWA and partner agencies BBCCSD, BBLDWP, and BBMWD growth projections, and as this Program Component's construction and operational-source air pollutant emissions would not exceed the regional or LST emissions thresholds (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), this Program component is determined to be consistent with the second criterion. Thus, impacts would be less than significant.

#### Replenish Big Bear Component 4: Solar Evaporation Ponds Project

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

##### **Construction**

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. The Solar Evaporation Ponds Project would be installed within BBARWA's existing WWTP site, and there is land available to construct the Solar Evaporation Ponds therein, which would be comparable facilities to that which exists at present in support of the existing WWTP. Irrespective of the site's land use designation, which would not change as a result of the proposed Program, development of the site to its maximum potential would likely occur, with disturbance of the entire site for each Program Component occurring during construction activities. As such, when considering that no emissions thresholds will be exceeded (refer to the emissions summaries

provided under the discussion for **Consistency Criterion No. 1** above), a less than significant impact would result.

### **Operation**

As discussed above, the overall Program was identified in the Bear Valley Basin GSP to accommodate anticipated growth in the Big Bear Valley based on projections in the area General Plans, and also projections in the Urban Water Management Plans for BBCCSD and BBMWD. This Program Component will not induce growth directly since the no new employees would be necessary to operate this Program Component. Further, no indirect growth will be created because Program infrastructure will be used to meet the existing Big Bear Valley population demands for water. Thus, since the Program's proposed land uses are consistent with BBARWA and partner agencies BBCCSD, BBLDWP, and BBMWD growth projections, and as this Program Component's construction and operational-source air pollutant emissions would not exceed the regional or LST emissions thresholds (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), this Program component is determined to be consistent with the second criterion. Thus, impacts would be less than significant.

### **Replenish Big Bear Component 5: Sand Canyon Recharge Project**

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

### **Construction**

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. The Sand Canyon Recharge Project would install a booster pump station within the Resort Storage Pond Site, two monitoring wells at unknown locations downstream of the Sand Canyon Recharge Area, and would install pipeline belowground, and a pipe outlet at the Sand Canyon Recharge Area channel. Regarding the Sand Canyon Booster Station, there is land available to construct the booster pump station therein, which would be comparable facilities to that which exists at present in support of the existing water infrastructure at the Resort Storage Pond Site. Irrespective of the site's land use designation, which would not change as a result of the proposed Program, development of the site to its maximum potential would likely occur, with disturbance of the entire site for each Program Component occurring during construction activities. The Sand Canyon Recharge Conveyance Pipeline would be installed belowground, and therefore, the installation of this pipeline would not impact the function of the aboveground uses (roadways and dirt pathways). The Sand Canyon Monitoring Wells would be installed within unknown locations, but in light of California Government Code Section 53091, infrastructure projects such as that which is proposed under the Program are land use and zoning independent, and therefore, irrespective of the site's land use designation, which would not change as a result of the proposed Program, development of the site to its maximum potential would likely occur, with disturbance of the entire site for each Program Component occurring during construction activities. As such, when considering that no emissions thresholds will be exceeded (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), a less than significant impact would result.

### **Operation**

As discussed above, the overall Program was identified in the Bear Valley Basin GSP to accommodate anticipated growth in the Big Bear Valley based on projections in the area

General Plans, and also projections in the Urban Water Management Plans for BBCCSD and BBMWD. This Program Component will not induce growth directly since the no new employees would be necessary to operate this Program Component. Further, no indirect growth will be created because Program infrastructure will be used to meet the existing Big Bear Valley population demands for water. Thus, since the Program's proposed land uses are consistent with BBARWA and partner agencies BBCCSD, BBLDWP, and BBMWD growth projections, and as this Program Component's construction and operational-source air pollutant emissions would not exceed the regional or LST emissions thresholds (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), this Program component is determined to be consistent with the second criterion. Thus, impacts would be less than significant.

On the basis of the preceding discussion, the Program is determined to be consistent with the second criterion.

### **Conclusion**

The Program would not result in or cause NAAQS or CAAQS violations. The Program would be consistent with SCAQMD Consistency Criteria Nos. 1 and 2 for both construction and operation for each of the proposed Program components. Based on the preceding analysis, the Program is therefore considered to be consistent with the AQMP.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant.*

*Mitigation Measures: **MM AQ-1** (see discussion below under question [b]) is required to minimize impacts under this issue.*

**AQ-1: When using construction equipment greater than 150 horsepower (>150 hp), the Construction Contractor shall ensure that off-road diesel construction equipment complies with the EPA/CARB Tier 4 emissions standards or equivalent and shall ensure that all construction equipment is tuned and maintained in accordance with the manufacturer's specifications.**

*Level of Significance After Mitigation: Less Than Significant.*

Impacts would be less than significant with mitigation incorporated.

**b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard?**

### **CONSTRUCTION EMISSIONS**

In other sections, the facilities proposed under the Program are described as Program Categories. In order to simplify the air quality modeling by area and facility component, the various Program facilities have been consolidated into components that are general to a specific location within the Program footprint. Note that for air quality modeling purposes, as a conservative measure, and in order to identify the maximum daily emissions, the AQIA assumes that the Program would construct the following features simultaneously:

- Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project
  - 2 pump stations: 20 gpm and 1,520 gpm
  - 1,350 LF of brine pipeline
  - Total building area: 40,000 SF total on site
  - Installation of 2 MW of solar on existing BBARWA property
- Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project
  - 19,940 LF of pipeline (this is the maximum amount of pipeline that would be installed for any of the pipeline options, and as such, for modeling purposes, the maximum pipeline length that could be installed is utilized)
- Replenish Big Bear Component 3: Shay Pond Discharge Project
  - 6,310 LF of pipeline on unpaved area
- Replenish Big Bear Component 4: Solar Evaporation Pond
  - 57 acres of evaporation ponds
  - 2 monitoring wells
- Replenish Big Bear Component 5: Sand Canyon Recharge Project
  - 1 pump station
  - 2 monitoring wells
  - 7,210 LF of conveyance pipeline
  - Erosion control/rip rap at pipeline discharge

Below is an analysis of each Replenish Big Bear Program Component, as well as an impact analysis of the Program as a whole.

### **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPf to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

**Construction Scenario**

***Demolition***

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**, 3,000 tons of concrete would be demolished. Additionally, up to 1,350 CY of asphalt export would be needed.

***Grading Activities***

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**, it was estimated that up to 8,000 CY of soil would be exported during construction of the new building.

***Construction Worker Trips***

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

***Construction Duration***

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.4-6  
 CONSTRUCTION DURATION: COMPONENT 1**

<b>Construction Activity</b>	<b>Start Date</b>	<b>End Date</b>	<b>Days</b>
Replenish Big Bear Component 1: WWTP Upgrades	Jan 2025	Jan 2027	515

***Construction Equipment***

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-7**.



**Table 4.4-7  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 1**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project</b>			
Dozers	Rubber Tired Dozers	1	8
Graders	Graders	1	8
Cranes	Cranes	1	8
Backhoes	Tractors/Loaders/Backhoes	1	8
Drill Rig	Bore/Drill Rig	1	8
Cement Trucks	Off-Highway Trucks	1	8
Forklifts	Forklifts	1	4
Backhoes	Tractors/Loaders/Backhoes	1	4
Front Loaders	Crawler Tractors	1	4
Dump/Delivery Trucks	Off-Highway Trucks	2	8

**Construction Emissions Summary**

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-8 and 4.4-9.**

**Table 4.4-8  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION: COMPONENT 1**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 1	3.82	27.47	44.30	0.08	7.30	2.95
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 1	4.63	30.88	56.16	0.16	13.44	3.82
<b>Maximum Daily Emissions</b>	<b>4.63</b>	<b>30.88</b>	<b>56.16</b>	<b>0.16</b>	<b>13.44</b>	<b>3.82</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts without Mitigation***

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

**Table 4.4-9  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITH MITIGATION: COMPONENT 1**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 1	2.06	11.73	52.47	0.08	6.65	2.36
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 1	2.61	25.00	68.39	0.16	13.44	3.38
<b>Maximum Daily Emissions</b>	<b>2.61</b>	<b>25.00</b>	<b>68.39</b>	<b>0.16</b>	<b>13.44</b>	<b>3.38</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts with Mitigation***

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-9**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NO<sub>x</sub> emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

**Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12” in diameter.

**Construction Scenario**

***Demolition***

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project,** it was estimated that up to 5,875 CY of asphalt/concrete export would be needed.

***Grading Activities***

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project,** it was estimated that up to 19,940 CY of soil would be exported.

***Construction Worker Trips***

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

***Construction Duration***

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.4-13  
 CONSTRUCTION DURATION: COMPONENT 2**

<b>Construction Activity</b>	<b>Start Date</b>	<b>End Date</b>	<b>Days</b>
Replenish Big Bear Component 2: Lake Pipeline	May 2025	Oct 2026	370

***Construction Equipment***

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-14**.

**Table 4.4-14  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 2**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project</b>			
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Paver	Paver	1	8
Roller	Roller	1	8
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Pavement Cutter	Concrete/Industrial Saws	1	6
Grinder	Concrete/Industrial Saws	1	6
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4
Paving Machine	Pavers	1	2

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-14** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-14** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Construction Emissions Summary**

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-15** and **4.4-16**.

**Table 4.4-15  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION: COMPONENT 2**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 2	1.41	28.15	27.16	0.15	9.00	2.52
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 2	1.53	22.04	25.79	0.11	6.09	1.89
<b>Maximum Daily Emissions</b>	<b>1.53</b>	<b>28.15</b>	<b>27.16</b>	<b>0.15</b>	<b>9.00</b>	<b>2.52</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Impacts without Mitigation**

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

**Table 4.4-16  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITH MITIGATION: COMPONENT 2**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 2	1.09	26.07	30.75	0.15	8.93	2.46
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 2	1.05	19.20	31.16	0.11	5.99	1.80
<b>Maximum Daily Emissions</b>	<b>1.09</b>	<b>26.07</b>	<b>31.16</b>	<b>0.15</b>	<b>8.93</b>	<b>2.46</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Impacts with Mitigation**

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-16**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NO<sub>x</sub> emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must



meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

**Replenish Big Bear Component 3: Shay Pond Discharge Project**

The Program would ultimately install about 710 LF of 4” pipeline to reach Shay Pond from either an existing pipeline or a new 6” pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

**Construction Scenario**

**Grading Activities**

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 3: Shay Pond Discharge Project**, it was estimated that up to 7,020 CY of soil would be exported.

**Construction Worker Trips**

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

**Construction Duration**

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.4-19  
 CONSTRUCTION DURATION: COMPONENT 3**

<b>Construction Activity</b>	<b>Start Date</b>	<b>End Date</b>	<b>Days</b>
Replenish Big Bear Component 3: Shay Pond	May 2025	Oct 2026	370

**Construction Equipment**

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-20**.

**Table 4.4-20  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 3**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 3: Shay Pond Discharge Project</b>			
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Roller	Roller	1	8
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-20** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-20** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Construction Emissions Summary**

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-21** and **4.4-22**.

**Table 4.4-21  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION: COMPONENT 3**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 3	0.92	10.79	10.24	0.06	1.95	0.73
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 3	1.33	13.76	14.21	0.07	2.05	0.82
<b>Maximum Daily Emissions</b>	<b>1.33</b>	<b>13.76</b>	<b>14.21</b>	<b>0.07</b>	<b>2.05</b>	<b>0.82</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts without Mitigation***

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

**Table 4.4-22  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITH MITIGATION: COMPONENT 3**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 3	0.60	8.71	13.84	0.06	1.88	0.66
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 3	0.86	10.92	19.58	0.07	1.96	0.73
<b>Maximum Daily Emissions</b>	<b>0.86</b>	<b>10.92</b>	<b>19.58</b>	<b>0.07</b>	<b>1.96</b>	<b>0.73</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts with Mitigation***

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-22**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NO<sub>x</sub> emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of

**MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

**Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

**Construction Scenario**

***Demolition***

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 4: Shay Pond Conveyance Pipeline**, it was estimated that up to 710 CY of asphalt/concrete export would be needed.

***Construction Worker Trips***

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

***Construction Duration***

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.4-25  
 CONSTRUCTION DURATION: COMPONENT 4**

<b>Construction Activity</b>	<b>Start Date</b>	<b>End Date</b>	<b>Days</b>
Replenish Big Bear Component 4: Evaporation Pond	May 2025	Oct 2026	370

***Construction Equipment***

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-26**.

**Table 4.4-26  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 4**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 4: Evaporation Pond</b>			
Bulldozers	Rubber Tired Dozers	2	8
Front End Loaders	Crawler Tractors	2	8
Water Truck	Off-Highway Trucks	2	8
Scrapers	Scraper	7	8
Excavators	Excavator	2	8
Dump Trucks	Off-Highway Trucks	4	8

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-26** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-26** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Construction Emissions Summary**

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-27 and 4.4-28**.

**Table 4.4-27  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION: COMPONENT 4**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 4	25.23	77.74	92.44	0.20	7.07	2.41
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 4	25.22	77.94	91.34	0.20	7.07	2.41
<b>Maximum Daily Emissions</b>	<b>25.23</b>	<b>77.94</b>	<b>92.44</b>	<b>0.20</b>	<b>7.07</b>	<b>2.41</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts without Mitigation***

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.



- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

**Table 4.4-28  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITH MITIGATION: COMPONENT 4**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 4	19.05	15.43	123.73	0.20	7.82	3.08
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 4	19.05	15.62	122.63	0.20	7.82	3.08
<b>Maximum Daily Emissions</b>	<b>19.05</b>	<b>15.62</b>	<b>123.73</b>	<b>0.20</b>	<b>7.82</b>	<b>3.08</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts with Mitigation***

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-28**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NO<sub>x</sub> emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

**Replenish Big Bear Component 5: Sand Canyon Recharge Project**

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water

will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

### **Construction Scenario**

#### ***Demolition***

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 5: Sand Canyon**, it was estimated that up to 1,500 CY of concrete/asphalt export would be needed.

#### ***Grading Activities***

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 5: Sand Canyon**, it was estimated that up to 7,210 CY of soil would be exported.

#### ***Construction Worker Trips***

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

#### ***Construction Duration***

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.4-31  
 CONSTRUCTION DURATION: COMPONENT 5**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 5: Sand Canyon	May 2025	Oct 2026	370

**Construction Equipment**

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-32**.

**Table 4.4-32  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 5**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 5: Sand Canyon</b>			
Drill Rig	Bore/Drill Rig	1	8
Cranes	Cranes	1	4
Forklifts	Forklifts	1	4
Backhoes	Tractors/Loaders/Backhoes	1	4
Front Loaders	Crawler Tractors	1	4
Cement Trucks	Off-Highway Trucks	1	8
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Paver	Paver	1	8
Roller	Roller	1	8
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Pavement Cutter	Concrete/Industrial Saws	1	6
Grinder	Concrete/Industrial Saws	1	6
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4
Paving Machine	Pavers	1	2
Compactor	Plate Compactor	1	2

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-32** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-32** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Construction Emissions Summary**

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-33 and 4.4-34.**

**Table 4.4-33  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION: COMPONENT 5**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 5	1.73	24.18	28.67	0.11	7.46	2.16
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 5	2.37	24.67	36.02	0.10	6.16	2.03
<b>Maximum Daily Emissions</b>	<b>2.37</b>	<b>24.67</b>	<b>36.02</b>	<b>0.11</b>	<b>7.46</b>	<b>2.16</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Impacts without Mitigation**

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

**Table 4.4-34  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITH MITIGATION: COMPONENT 5**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 5	1.41	22.09	32.26	0.11	7.39	2.10
SCAQMD Regional Threshold	75	100	550	150	150	55
Winter						
Replenish Big Bear Component 5	1.75	20.35	42.30	0.10	6.00	1.89
<b>Maximum Daily Emissions</b>	<b>1.75</b>	<b>22.09</b>	<b>42.30</b>	<b>0.11</b>	<b>7.39</b>	<b>2.10</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded on an Individual Project Basis?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts with Mitigation***

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-34**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NO<sub>x</sub> emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

**Replenish Big Bear Program (Combined Impacts)**

**Construction Impacts**

Regional construction emissions for the whole of the Program are demonstrated in **Tables 4.4-37** and **4.4-38**.

**Table 4.4-37  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 1	3.82	27.47	44.30	0.08	7.30	2.95
Replenish Big Bear Component 2	1.41	28.15	27.16	0.15	9.00	2.52
Replenish Big Bear Component 3	0.92	10.79	10.24	0.06	1.95	0.73
Replenish Big Bear Component 4	25.23	77.74	92.44	0.20	7.07	2.41



Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 5	1.73	24.18	28.67	0.11	7.46	2.16
Total	33.11	168.33	202.81	0.59	32.78	10.77
Winter						
Replenish Big Bear Component 1	4.63	30.88	56.16	0.16	13.44	3.82
Replenish Big Bear Component 2	1.53	22.04	25.79	0.11	6.09	1.89
Replenish Big Bear Component 3	1.33	13.76	14.21	0.07	2.05	0.82
Replenish Big Bear Component 4	25.22	77.94	91.34	0.20	7.07	2.41
Replenish Big Bear Component 5	2.37	24.67	36.02	0.10	6.16	2.03
Total	35.08	169.29	223.52	0.63	34.81	10.96
<b>Maximum Daily Emissions</b>	<b>35.08</b>	<b>169.29</b>	<b>223.52</b>	<b>0.63</b>	<b>34.81</b>	<b>10.96</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>YES</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Impacts without Mitigation**

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

The estimated maximum daily construction emissions without mitigation are summarized on **Table 4.4-37**. Detailed unmitigated construction model outputs are presented in Appendices 3.1 through 3.5 of the AQIA. Under the assumed scenarios, emissions resulting from the Program construction would exceed criteria pollutant thresholds established by the SCAQMD for emissions of NO<sub>x</sub>.

**Table 4.4-38  
 OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITH MITIGATION**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
Replenish Big Bear Component 1	2.06	11.73	52.47	0.08	6.65	2.36
Replenish Big Bear Component 2	1.09	26.07	30.75	0.15	8.93	2.46
Replenish Big Bear Component 3	0.60	8.71	13.84	0.06	1.88	0.66
Replenish Big Bear Component 4	19.05	15.43	123.73	0.20	7.82	3.08
Replenish Big Bear Component 5	1.41	22.09	32.26	0.11	7.39	2.10
Total	24.21	84.03	253.04	0.59	32.66	10.66
Winter						
Replenish Big Bear Component 1	2.61	25.00	68.39	0.16	13.44	3.38
Replenish Big Bear Component 2	1.05	19.20	31.16	0.11	5.99	1.80
Replenish Big Bear Component 3	0.86	10.92	19.58	0.07	1.96	0.73
Replenish Big Bear Component 4	19.05	15.62	122.63	0.20	7.82	3.08
Replenish Big Bear Component 5	1.75	20.35	42.30	0.10	6.00	1.89
Total	25.32	91.08	284.06	0.63	35.21	10.88
<b>Maximum Daily Emissions</b>	<b>25.32</b>	<b>91.08</b>	<b>284.06</b>	<b>0.63</b>	<b>35.21</b>	<b>10.88</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Impacts with Mitigation***

The estimated maximum daily construction emissions with mitigation are summarized on **Table 4.4-38**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts. The implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NO<sub>x</sub> would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

**OPERATIONAL EMISSIONS**

**Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWWPF to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection

- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8” to 10” from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA’s WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA’s Administration Building.

**Operational Emissions**

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on **Table 4.4-39**, Replenish Big Bear Program Category 1 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 1 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

**Table 4.4-39  
 PEAK OPERATIONAL EMISSIONS: CATEGORY 1**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>SUMMER MAXIMUM</b>	<b>2.01</b>	<b>4.33</b>	<b>5.92</b>	<b>0.01</b>	<b>0.48</b>	<b>0.48</b>
<b>WINTER MAXIMUM</b>	<b>1.73</b>	<b>4.31</b>	<b>4.18</b>	<b>0.01</b>	<b>0.48</b>	<b>0.48</b>
<b>Total Maximum Daily Emissions</b>	<b>2.01</b>	<b>4.33</b>	<b>5.92</b>	<b>0.01</b>	<b>0.48</b>	<b>0.48</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12” in diameter.

**Operational Emissions**

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. As this Program Category would include the conveyance of Program Water to Big Bear Lake via Stanfield Marsh, it is not anticipated that significant emissions would be generated, as the operation of the booster station that would convey the Program Water to Big Bear Lake via Stanfield Marsh falls under Program Category 1 operations as the booster station would be located at BBARWA’s WWTP site. As shown on **Table 4.4-40**, Replenish Big Bear Program Category 2 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 2 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

**Table 4.4-40  
 PEAK OPERATIONAL EMISSIONS: CATEGORY 2**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>SUMMER MAXIMUM</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>WINTER MAXIMUM</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total Maximum Daily Emissions</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Replenish Big Bear Component 3: Shay Pond Discharge Project**

The Program would ultimately install about 710 LF of 4” pipeline to reach Shay Pond from either an existing pipeline or a new 6” pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

**Operational Emissions**

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy

consumption associated with the Program. As this Program Category would include the conveyance of Program Water to Shay Pond, it is not anticipated that significant emissions would be generated, as the operation of the booster station that would convey the Program Water to Shay Pond falls under Program Category 1 operations as the booster station would be located at BBARWA’s WWTP site. As shown on **Table 4.4-41**, Replenish Big Bear Program Category 3 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 3 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

**Table 4.4-41  
 PEAK OPERATIONAL EMISSIONS: CATEGORY 3**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>SUMMER MAXIMUM</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>WINTER MAXIMUM</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total Maximum Daily Emissions</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

**Operational Emissions**

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. As this Program Category would include the operation of the brine evaporation ponds, it is not anticipated that significant emissions would be generated, as the brine is generated by the AWPF operations that fall under Program Category 1. As shown on **Table 4.4-42**, Replenish Big Bear Program Category 4 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 4 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.



**Table 4.4-42  
 PEAK OPERATIONAL EMISSIONS: CATEGORY 4**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>SUMMER MAXIMUM</b>	<b>0.38</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>WINTER MAXIMUM</b>	<b>0.38</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total Maximum Daily Emissions</b>	<b>0.38</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Replenish Big Bear Component 5: Sand Canyon Recharge Project**

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

**Operational Emissions**

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on **Table 4.4-43**, Replenish Big Bear Program Category 5 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear

Program Category 5 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

**Table 4.4-43  
 PEAK OPERATIONAL EMISSIONS: CATEGORY 5**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>SUMMER MAXIMUM</b>	<b>1.99</b>	<b>10.3</b>	<b>8.73</b>	<b>0.01</b>	<b>1.01</b>	<b>1.01</b>
<b>WINTER MAXIMUM</b>	<b>1.99</b>	<b>10.3</b>	<b>8.73</b>	<b>0.01</b>	<b>1.01</b>	<b>1.01</b>
<b>Total Maximum Daily Emissions</b>	<b>1.99</b>	<b>10.3</b>	<b>8.73</b>	<b>0.01</b>	<b>1.01</b>	<b>1.01</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Replenish Big Bear Program (Combined Impacts)**

**Operational Impacts**

Operational emissions for the whole of the Program are demonstrated in **Tables 4.4-44**.

**Table 4.4-44  
 SUMMARY OF PEAK OPERATIONAL EMISSIONS**

Source	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer (Smog Season)						
Area Source	1.61	0.01	1.74	0.00	0.00	0.00
Energy Source	0.01	0.20	0.17	0.00	0.02	0.02
Stationary Source	2.76	14.38	12.73	0.01	1.47	1.47
<b>Total Maximum Daily Emissions</b>	<b>4.38</b>	<b>14.60</b>	<b>14.64</b>	<b>0.01</b>	<b>1.49</b>	<b>1.49</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>
Winter						
Area Source	1.33	0.00	0.00	0.00	0.00	0.00
Energy Source	0.01	0.20	0.17	0.00	0.02	0.02
Stationary Source	2.76	14.38	12.73	0.01	1.47	1.47
<b>Total Maximum Daily Emissions</b>	<b>4.10</b>	<b>14.58</b>	<b>12.90</b>	<b>0.01</b>	<b>1.49</b>	<b>1.49</b>
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

***Operational Emissions***

As previously stated, Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an

emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on **Table 4.4-44**, overall Program operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, the whole of the Program operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

### **LV Site Discharge**

BBARWA received a comment from the LVEDA during the NOP comment period noting that fugitive dust may become an issue at the LV Site during high wind events as a result in the modification of discharge operations resulting from the Program. A portion or all of the LV Site would become fallow as a result of the reduction or cessation of farming operations, and would continue to be maintained by BBARWA. At present, BBARWA and the farmer who leases the LV Site are responsible for maintaining the site, which includes handling migration of fugitive dust. Under the Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the Site. Enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and eco-conscious weed killing applications;
- Planting cover crops, such as sorghum to prevent dust migration; and/or,
- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

Both continued maintenance and enhanced site maintenance would ensure that dust migrating from the LV Site is minimized as all or a portion of the LV Site becomes fallow as a result of Program operations. However, given the concern raised by the LVEDA, in the event that continued maintenance and enhanced site maintenance do not fully address the potential for fugitive dust migration to occur at the site as a result of the change in discharge operations to the LV Site from implementation of the Program, a violation of Mojave Desert Air Quality Management District (MDAQMD) Rule 403.2, Fugitive Dust Control for the Mojave Desert Planning Area, could occur thereby resulting in a potentially significant air quality impact. Thus, a fugitive dust response program shall be implemented by BBARWA. **MM AQ-2** would ensure that implementation of this program occurs. This would ensure compliance with MDAQMD Rule 403.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant.*

*Mitigation Measures:*

**AQ-1:** *When using construction equipment greater than 150 horsepower (>150 hp), the Construction Contractor shall ensure that off-road diesel construction equipment complies with the EPA/CARB Tier 4 emissions standards or equivalent and shall ensure that all*

***construction equipment is tuned and maintained in accordance with the manufacturer's specifications.***

**AQ-2:** ***BBARWA shall implement a fugitive dust response plan at the LV Site. This plan shall begin with signage at the LV Site (one along Camp Rock Road and one along Old Woman Springs Road [Highway 247]) notifying the public of a phone number and email address that can be reached if fugitive dust is observed migrating from the site. This same notification and information shall retain a place on BBARWA's website.***

***In response to any notifications from the public that fugitive dust is observed migrating from the LV Site, BBARWA shall implement a plan of response to minimize fugitive dust. This plan can range from short-term in nature (i.e. utilization of chemical stabilization or water to spray on the surfaces from which dust originates at the LV Site) to long-term in nature (i.e. utilization of gravel or like natural materials to stabilize the LV Site surface over the long-term or planting native plants or cover crop to stabilize the soils). The end result of implementation of the fugitive dust response plan shall be to diminish visible dust at the LV Site.***

*Level of Significance After Mitigation: Less Than Significant.*

The implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-9**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold. Furthermore, operational emissions would be below significance thresholds as shown on **Table 4.4-10**, but in the event that continued maintenance and enhanced site maintenance do not fully address the potential for fugitive dust migration to occur at the LV Site as a result of the change in discharge operations to the LV Site from implementation of the Program, a fugitive dust response program shall be implemented by BBARWA through **MM AQ-2**, which would ensure that implementation of this program occurs and that operational fugitive dust is minimized. This would ensure compliance with MDAQMD's Rule 403. Therefore, with implementation of **MM AQ-1**, construction of Program facilities would not result in a cumulatively considerable net increase of a criteria pollutant for which the SCAB is non-attainment, and impacts would be less than significant.

**c) Would the project expose sensitive receptors to substantial pollutant concentrations?**

#### **Applicability of LSTs for the Program**

For this Program, the appropriate Source Receptor Area for the LST analysis is the SCAQMD East San Bernardino Mountains (Source Receptor Area 38). LSTs apply to CO, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size. In order to determine the appropriate methodology for determining localized impacts that could occur as a result of Program-related construction, the following process is undertaken:

- Identify the maximum daily on-site emissions that would occur during construction activity:
  - The maximum daily on-site emissions could be based on information provided by BBARWA and Program Team; or
  - The SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds and CalEEMod User's Guide Appendix A: Calculation Details for CalEEMod can be used to determine the maximum site acreage that is actively disturbed based on the construction equipment fleet and equipment hours as estimated in CalEEMod.
- If the total acreage disturbed is less than or equal to 5 acres per day, then the SCAQMD's screening look-up tables are utilized to determine if a project has the potential to result in a

significant impact. The look-up tables establish a maximum daily emissions threshold in lbs/day that can be compared to CalEEMod outputs.

- If the total acreage disturbed is greater than 5 acres per day, then LST impacts may still be conservatively evaluated using the LST look-up tables for a 5-acre disturbance area. Use of the 5-acre disturbance area thresholds can be used to show that even if the daily emissions from all construction activity were emitted within a 5-acre area, and therefore concentrated over a smaller area which would result in greater site adjacent concentrations, the impacts would still be less than significant if the applicable 5-acre thresholds are utilized.
- The LST Methodology presents mass emission rates for each Source Receptor Area, project sizes of 1, 2, and 5 acres, and nearest receptor distances of 25, 50, 100, 200, and 500 meters. For project sizes between the values given, or with receptors at distances between the given receptors, the methodology uses linear interpolation to determine the thresholds.

Each Program Category has been broken out to analyze the impacts of each individual Program Component under the Program, which is appropriate in consideration of LSTs, as any impacts would be localized based on the nearby sensitive receptors.

### **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWWPF to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

### ***Localized Significance Thresholds for Construction***

#### **Emissions Considered**

Based on SCAQMD's LST Methodology, emissions for concern during construction activities are on-site NO<sub>x</sub>, CO, PM<sub>2.5</sub>, and PM<sub>10</sub>. The LST Methodology clearly states that "off-site mobile emissions from the Program should not be included in the emissions compared to LSTs." As such, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered.



#### Maximum Daily Disturbed-Acreage

Based on information provided, it was assumed that two acres would be disturbed per day for all Program Categories. This is conservative as the construction impacts are assessed against a smaller acreage threshold which would represent a more conservative assessment.

#### Receptors

As previously stated, LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable NAAQS and CAAQS at the nearest residence or sensitive receptor. Receptor locations are off-site locations where individuals may be exposed to emissions from Program activities.

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, and individuals with pre-existing respiratory or cardiovascular illness. Structures that house these persons or places where they gather are defined as "sensitive receptors". These structures typically include uses such as residences, hotels, and hospitals where an individual can remain for 24 hours. Consistent with the LST Methodology, the nearest land use where an individual could remain for 24 hours to a given project site has been used to determine construction and operational air quality impacts for emissions of PM<sub>10</sub> and PM<sub>2.5</sub>, since PM<sub>10</sub> and PM<sub>2.5</sub> thresholds are based on a 24-hour averaging time.

LSTs apply, even for non-sensitive land uses, consistent with LST Methodology and SCAQMD guidance. Per the LST Methodology, commercial and industrial facilities are not included in the definition of sensitive receptor because employees and patrons do not typically remain onsite for a full 24 hours but are typically onsite for eight hours or less. However, LST Methodology explicitly states that "LSTs based on shorter averaging periods, such as the NO<sub>2</sub> and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours." Therefore, any adjacent land use where an individual could remain for 1 or 8-hours, that is located at a closer distance to a project site than the receptor used for PM<sub>10</sub> and PM<sub>2.5</sub> analysis, must be considered to determine construction and operational LST air impacts for emissions of NO<sub>2</sub> and CO since these pollutants have an averaging time of 1 and 8-hours.

#### Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program's potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Consistent with the SCAQMD's LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

#### Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10** were calculated by interpolating the threshold values for the Program's disturbed acreage.

**Table 4.4-10  
 MAXIMUM DAILY LOCALIZED EMISSIONS THRESHOLDS**

Pollutant	Construction Localized Thresholds
All Program Components	
NO <sub>x</sub>	170 lbs/day
CO	1,174 lbs/day
PM <sub>10</sub>	7 lbs/day
PM <sub>2.5</sub>	5 lbs/day

Source: Localized Thresholds presented in this table are based on the SCAQMD Final Localized Significance Threshold Methodology, July 2008

***LST Construction Emissions Summary***

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-11 and 4.4-12**.

**Table 4.4-11  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITHOUT MITIGATION: COMPONENT 1**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 1				
<b>Maximum Daily Emissions</b>	<b>24.02</b>	<b>23.88</b>	<b>3.24</b>	<b>1.88</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts Without Mitigation

**Table 4.4-11** identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 1. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs during Program Component 1, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

**Table 4.4-12  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITH MITIGATION: COMPONENT 1**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 1				
<b>Maximum Daily Emissions</b>	<b>8.28</b>	<b>32.04</b>	<b>3.24</b>	<b>1.29</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts with Mitigation

**Table 4.4-12** identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 1 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 1 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

***Localized Operation-Source Emissions***

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. However, this Program Component may include the use of an emergency diesel generators, allowing pump stations to run on backup power in case of emergency. If backup generator would be installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. Upon compliance with SCAQMD permitting procedures, localized emissions from any potential diesel generator would not result in substantial pollutant concentrations capable of exceeding operational LST thresholds. Therefore, this Program Component would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

**CO “Hot Spot” Analysis**

An adverse CO concentration, known as a “hot spot”, would occur if an exceedance of the State one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentration in the SCAB is now designated as attainment.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO “hot spot” analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods<sup>31</sup>. This “hot spot” analysis did not predict any exceedance of the 1-hour (20.0 ppm) or 8-hour (9.0 ppm) CO standards, as shown on **Table 4.4-45**.

**Table 4.4-45  
 CO MODEL RESULTS**

Intersection Location	CO Concentrations (ppm)		
	Morning 1-hour	Afternoon 1-hour	8-hour
Wilshire Boulevard/Veteran Avenue	4.6	3.5	3.7
Sunset Boulevard/Highland Avenue	4	4.5	3.5
La Cienega Boulevard/Century Boulevard	3.7	3.1	5.2
Long Beach Boulevard/Imperial Highway	3	3.1	8.4

Source: 2003 AQMP, Appendix V: Modeling and Attainment Demonstrations  
 Notes: Federal 1-hour standard is 35 ppm and the deferral 8-hour standard is 9.0 ppm.

Based on the SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SCAB were a result of

<sup>31</sup> The CO “hot spot” analysis conducted in 2003 is the most current study used for CO “hot spot” analysis in the SCAB.

unusual meteorological and topographical conditions and not a result of traffic volumes and congestion at a particular intersection. As evidence of this, for example, of the 8.4 ppm 8-hr CO concentration measured at the Long Beach Blvd. and Imperial Hwy. intersection (i.e., the highest CO generating intersection within the “hot spot” analysis), only 0.7 ppm was attributable to the traffic volumes and congestion at this intersection; the remaining 7.7 ppm were due to the ambient air measurements at the time the 2003 AQMP was prepared. In contrast, an adverse CO concentration, known as a “hot spot”, would occur if an exceedance of the State one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9 ppm were to occur.

The ambient 1-hr and 8-hr CO concentration within the Program study area is estimated to be 2.0 ppm and 1.6 ppm, respectively (data from East San Bernardino Mountains monitoring station for 2021). Therefore, even if the traffic volumes for the Program were ten times the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, due to the on-going improvements in ambient air quality and vehicular emissions controls, this Program Component would not be capable of resulting in a CO “hot spot” at any study area intersections.

At buildout of the Program, the highest daily traffic volumes generated at the roadways within the vicinity of the Program are expected to generate less than the highest daily traffic volumes generated at the busiest intersection in the CO “hot spot” analysis. As such, this Program Component would not likely exceed the most stringent 1-hour CO standard; and therefore, the Program would not result in potentially adverse CO concentrations or “hot spots.”

### **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12” in diameter.

#### ***Localized Significance Thresholds for Construction***

##### Emissions Considered

Based on SCAQMD’s LST Methodology, emissions for concern during construction activities are on-site NO<sub>x</sub>, CO, PM<sub>2.5</sub>, and PM<sub>10</sub>. The LST Methodology clearly states that “off-site mobile emissions from the Program should not be included in the emissions compared to LSTs.” As such, for purposes of the construction LST analysis, only emissions included in the CalEEMod “on-site” emissions outputs were considered.

##### Maximum Daily Disturbed-Acreage

Based on information provided, it was assumed that two acres would be disturbed per day for all Program Categories. This is conservative as the construction impacts are assessed against a smaller acreage threshold which would represent a more conservative assessment.

##### Receptors

As previously stated, LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable NAAQS and CAAQS at the nearest residence or sensitive receptor. Receptor locations are off-site locations where individuals may be exposed to emissions from Program activities.

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, and individuals with pre-existing respiratory or cardiovascular illness. Structures that house these persons or places where they gather are defined as “sensitive receptors”. These structures typically include uses such as residences, hotels, and hospitals where an individual can remain for 24 hours. Consistent with the LST Methodology, the nearest land use where an individual

could remain for 24 hours to a given project site has been used to determine construction and operational air quality impacts for emissions of PM<sub>10</sub> and PM<sub>2.5</sub>, since PM<sub>10</sub> and PM<sub>2.5</sub> thresholds are based on a 24-hour averaging time.

LSTs apply, even for non-sensitive land uses, consistent with LST Methodology and SCAQMD guidance. Per the LST Methodology, commercial and industrial facilities are not included in the definition of sensitive receptor because employees and patrons do not typically remain onsite for a full 24 hours but are typically onsite for eight hours or less. However, LST Methodology explicitly states that “LSTs based on shorter averaging periods, such as the NO<sub>2</sub> and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours.” Therefore, any adjacent land use where an individual could remain for 1 or 8-hours, that is located at a closer distance to a project site than the receptor used for PM<sub>10</sub> and PM<sub>2.5</sub> analysis, must be considered to determine construction and operational LST air impacts for emissions of NO<sub>2</sub> and CO since these pollutants have an averaging time of 1 and 8-hours.

#### Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program’s potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that “It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters.” Consistent with the SCAQMD’s LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. “health protective” standard of care.

#### Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD’s screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10**, above were calculated by interpolating the threshold values for the Program’s disturbed acreage.

#### ***LST Construction Emissions Summary***

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-17**.



**Table 4.4-17  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITHOUT MITIGATION: COMPONENT 2**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 2				
<b>Maximum Daily Emissions</b>	<b>4.92</b>	<b>6.11</b>	<b>1.68</b>	<b>0.30</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts Without Mitigation

**Table 4.4-17** identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 2. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 2, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

**Table 4.4-18  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITH MITIGATION: COMPONENT 2**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 2				
<b>Maximum Daily Emissions</b>	<b>2.84</b>	<b>9.69</b>	<b>1.88</b>	<b>0.33</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts with Mitigation

**Table 4.4-18** identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 2 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 2 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

**Localized Operation-Source Emissions**

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. This Program Component would not include the use of an emergency diesel generator. Therefore, this Program Component would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

**CO “Hot Spot” Analysis**

An adverse CO concentration, known as a “hot spot”, would occur if an exceedance of the State one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO “hot spot” analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods<sup>32</sup>. This “hot spot” analysis did not predict any exceedance of the 1-hour (20.0 ppm) or 8-hour (9.0 ppm) CO standards, as shown on **Table 4.4-45, above**.

The ambient 1-hr and 8-hr CO concentration within the Program study area is estimated to be 2.0 ppm and 1.6 ppm, respectively (data from East San Bernardino Mountains monitoring station for 2021). Therefore, even if the traffic volumes for the Program were ten times the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, due to the on-going improvements in ambient air quality and vehicular emissions controls, this Program Component would not be capable of resulting in a CO “hot spot” at any study area intersections.

At buildout of the Program, the highest daily traffic volumes generated at the roadways within the vicinity of the Program are expected to generate less than the highest daily traffic volumes generated at the busiest intersection in the CO “hot spot” analysis. As such, this Program Component would not likely exceed the most stringent 1-hour CO standard; and therefore, the Program would not result in potentially adverse CO concentrations or “hot spots.”

### **Replenish Big Bear Component 3: Shay Pond Discharge Project**

The Program would ultimately install about 710 LF of 4” pipeline to reach Shay Pond from either an existing pipeline or a new 6” pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

#### ***Localized Significance Thresholds for Construction***

##### Emissions Considered

Based on SCAQMD’s LST Methodology, emissions for concern during construction activities are on-site NO<sub>x</sub>, CO, PM<sub>2.5</sub>, and PM<sub>10</sub>. The LST Methodology clearly states that “off-site mobile emissions from the Program should not be included in the emissions compared to LSTs.” As such, for purposes of the construction LST analysis, only emissions included in the CalEEMod “on-site” emissions outputs were considered.

##### Maximum Daily Disturbed-Acreage

Based on information provided, it was assumed that two acres would be disturbed per day for all Program Categories. This is conservative as the construction impacts are assessed against a smaller acreage threshold which would represent a more conservative assessment.

##### Receptors

As previously stated, LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable NAAQS and CAAQS at the nearest residence or sensitive receptor. Receptor locations are off-site locations where individuals may be exposed to emissions from Program activities.

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, and individuals with pre-existing respiratory or cardiovascular illness. Structures that house these persons or places where they gather are defined as “sensitive receptors”. These structures typically include uses such as residences, hotels, and hospitals where an individual can remain for 24 hours. Consistent with the LST Methodology, the nearest land use where an individual

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<sup>32</sup> The CO “hot spot” analysis conducted in 2003 is the most current study used for CO “hot spot” analysis in the SCAB.

could remain for 24 hours to a given project site has been used to determine construction and operational air quality impacts for emissions of PM<sub>10</sub> and PM<sub>2.5</sub>, since PM<sub>10</sub> and PM<sub>2.5</sub> thresholds are based on a 24-hour averaging time.

LSTs apply, even for non-sensitive land uses, consistent with LST Methodology and SCAQMD guidance. Per the LST Methodology, commercial and industrial facilities are not included in the definition of sensitive receptor because employees and patrons do not typically remain onsite for a full 24 hours but are typically onsite for eight hours or less. However, LST Methodology explicitly states that “LSTs based on shorter averaging periods, such as the NO<sub>2</sub> and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours.” Therefore, any adjacent land use where an individual could remain for 1 or 8-hours, that is located at a closer distance to a project site than the receptor used for PM<sub>10</sub> and PM<sub>2.5</sub> analysis, must be considered to determine construction and operational LST air impacts for emissions of NO<sub>2</sub> and CO since these pollutants have an averaging time of 1 and 8-hours.

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program’s potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that “It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters.” Consistent with the SCAQMD’s LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. “health protective” standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD’s screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10**, above, were calculated by interpolating the threshold values for the Program’s disturbed acreage.

***LST Construction Emissions Summary***

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-23** and **4.4-24**.

**Table 4.4-23**

**LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITHOUT MITIGATION: COMPONENT 3**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 3				
<b>Maximum Daily Emissions</b>	<b>5.81</b>	<b>7.09</b>	<b>0.22</b>	<b>0.20</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts Without Mitigation

**Table 4.4-23** identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 3. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 3, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

**Table 4.4-24  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITH MITIGATION: COMPONENT 3**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 3				
<b>Maximum Daily Emissions</b>	<b>3.73</b>	<b>10.68</b>	<b>0.14</b>	<b>0.13</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts with Mitigation

**Table 4.4-24** identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 3 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 3 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

**Localized Operation-Source Emissions**

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. This Program Component would not include the use of an emergency diesel generator. Therefore, this Program Component would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

**CO “Hot Spot” Analysis**

An adverse CO concentration, known as a “hot spot”, would occur if an exceedance of the State one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO “hot spot” analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods<sup>33</sup>. This “hot spot” analysis did not predict any exceedance of the 1-hour (20.0 ppm) or 8-hour (9.0 ppm) CO standards, as shown on **Table 4.4-45, above**.

The ambient 1-hr and 8-hr CO concentration within the Program study area is estimated to be 2.0 ppm and 1.6 ppm, respectively (data from East San Bernardino Mountains monitoring station for 2021). Therefore, even if the traffic volumes for the Program were ten times the traffic volumes

<sup>33</sup> The CO “hot spot” analysis conducted in 2003 is the most current study used for CO “hot spot” analysis in the SCAB.

generated at the Long Beach Blvd. and Imperial Hwy. intersection, due to the on-going improvements in ambient air quality and vehicular emissions controls, this Program Component would not be capable of resulting in a CO “hot spot” at any study area intersections.

At buildout of the Program, the highest daily traffic volumes generated at the roadways within the vicinity of the Program are expected to generate less than the highest daily traffic volumes generated at the busiest intersection in the CO “hot spot” analysis. As such, this Program Component would not likely exceed the most stringent 1-hour CO standard; and therefore, the Program would not result in potentially adverse CO concentrations or “hot spots.” CO Impacts would be less than significant.

#### **Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

#### ***Localized Significance Thresholds for Construction***

##### Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program’s potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that “It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters.” Consistent with the SCAQMD’s LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. “health protective” standard of care.

##### Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD’s screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10**, above, were calculated by interpolating the threshold values for the Program’s disturbed acreage.

#### ***LST Construction Emissions Summary***

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-29** and **4.4-30**.



**Table 4.4-29  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITHOUT MITIGATION: COMPONENT 4**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 4				
<b>Maximum Daily Emissions</b>	<b>73.58</b>	<b>86.55</b>	<b>8.53</b>	<b>4.85</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>YES</b>	<b>NO</b>

Impacts Without Mitigation

**Table 4.4-29** identifies the localized impacts at the nearest receptor location in the vicinity of the Program. Without mitigation, localized construction emissions would exceed the applicable SCAQMD LSTs for emissions of PM<sub>10</sub> during Program Component 4. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA.

**Table 4.4-30  
 LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITH MITIGATION: COMPONENT 4**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 4				
<b>Maximum Daily Emissions</b>	<b>11.26</b>	<b>117.83</b>	<b>6.04</b>	<b>2.58</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts with Mitigation

**Table 4.4-30** identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 4 site. The implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. After implementation of **MM AQ-1**, construction-source emissions would not exceed the applicable SCAQMD LSTs thresholds and would be less-than-significant. Outputs from the model runs for mitigated localized construction-source emissions are provided in Appendix 3.6 through 3.10 of the AQIA. As shown in **Table 4.4-30**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would ensure that LST significance thresholds for construction are not exceeded. Thus, impacts would be less than significant with the implementation of mitigation.

**Localized Operation-Source Emissions**

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. However, this Program Component would not include the use of an emergency diesel generators, allowing pump stations to run on backup power in case of emergency. Therefore, this Program Component would not

expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

### ***CO “Hot Spot” Analysis***

An adverse CO concentration, known as a “hot spot”, would occur if an exceedance of the State one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO “hot spot” analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods<sup>34</sup>. This “hot spot” analysis did not predict any exceedance of the 1-hour (20.0 ppm) or 8-hour (9.0 ppm) CO standards, as shown on **Table 4.4-45, above**.

The ambient 1-hr and 8-hr CO concentration within the Program study area is estimated to be 2.0 ppm and 1.6 ppm, respectively (data from East San Bernardino Mountains monitoring station for 2021). Therefore, even if the traffic volumes for the Program were ten times the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, due to the on-going improvements in ambient air quality and vehicular emissions controls, this Program Component would not be capable of resulting in a CO “hot spot” at any study area intersections.

At buildout of the Program, the highest daily traffic volumes generated at the roadways within the vicinity of the Program are expected to generate less than the highest daily traffic volumes generated at the busiest intersection in the CO “hot spot” analysis. As such, this Program Component would not likely exceed the most stringent 1-hour CO standard; and therefore, the Program would not result in potentially adverse CO concentrations or “hot spots.” CO Impacts would be less than significant.

### **Replenish Big Bear Component 5: Sand Canyon Recharge Project**

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

### ***Localized Significance Thresholds for Construction***

#### **Program-related Receptors**

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program’s potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST

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<sup>34</sup> The CO “hot spot” analysis conducted in 2003 is the most current study used for CO “hot spot” analysis in the SCAB.

Methodology also explicitly states that “It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters.” Consistent with the SCAQMD’s LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. “health protective” standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD’s screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10**, above, were calculated by interpolating the threshold values for the Program’s disturbed acreage.

**LST Construction Emissions Summary**

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-35** and **4.4-36**.

**Table 4.4-35**  
**LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITHOUT MITIGATION: COMPONENT 5**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 5				
<b>Maximum Daily Emissions</b>	<b>8.12</b>	<b>9.44</b>	<b>1.68</b>	<b>0.35</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts Without Mitigation

**Table 4.4-35** identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 5. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 5, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

**Table 4.4-36**  
**LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION – WITH MITIGATION: COMPONENT 5**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Replenish Big Bear Component 5				
<b>Maximum Daily Emissions</b>	<b>6.04</b>	<b>13.03</b>	<b>1.68</b>	<b>0.30</b>
SCAQMD Localized Threshold	170	1,174	7	5
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Impacts with Mitigation

**Table 4.4-36** identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 5 site. The estimated localized impacts at the receptors nearest the Replenish

Big Bear Component 5 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

#### ***Localized Operation-Source Emissions***

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. However, this Program Component may include the use of an emergency diesel generators, allowing pump stations to run on backup power in case of emergency. If backup generator would be installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. Upon compliance with SCAQMD permitting procedures, localized emissions from any potential diesel generator would not result in substantial pollutant concentrations capable of exceeding operational LST thresholds. Therefore, this Program Component would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

#### ***CO “Hot Spot” Analysis***

An adverse CO concentration, known as a “hot spot”, would occur if an exceedance of the State one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO “hot spot” analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods<sup>35</sup>. This “hot spot” analysis did not predict any exceedance of the 1-hour (20.0 ppm) or 8-hour (9.0 ppm) CO standards, as shown on **Table 4.4-45, above**.

The ambient 1-hr and 8-hr CO concentration within the Program study area is estimated to be 2.0 ppm and 1.6 ppm, respectively (data from East San Bernardino Mountains monitoring station for 2021). Therefore, even if the traffic volumes for the Program were ten times the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, due to the on-going improvements in ambient air quality and vehicular emissions controls, this Program Component would not be capable of resulting in a CO “hot spot” at any study area intersections.

At buildout of the Program, the highest daily traffic volumes generated at the roadways within the vicinity of the Program are expected to generate less than the highest daily traffic volumes generated at the busiest intersection in the CO “hot spot” analysis. As such, this Program Component would not likely exceed the most stringent 1-hour CO standard; and therefore, the Program would not result in potentially adverse CO concentrations or “hot spots.” CO Impacts would be less than significant.

#### **Potential Impacts to Sensitive Receptors from the Whole of the Program**

The potential impact of Program-generated air pollutant emissions at sensitive receptors has been considered. Sensitive receptors can include uses such as long-term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, childcare centers,

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<sup>35</sup> The CO “hot spot” analysis conducted in 2003 is the most current study used for CO “hot spot” analysis in the SCAB.

and athletic facilities can also be considered as sensitive receptors. Results of the LST analysis indicate that, the Program would not exceed the SCAQMD LSTs during construction, but for one Program Component (Program Component 4, Solar Evaporation Ponds), which requires implementation of **MM AQ-1**, which would require the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. Therefore, through the implementation of mitigation, sensitive receptors would not be exposed to substantial pollutant concentrations during Program construction. Upon compliance with SCAQMD permitting procedures, localized emissions from any potential diesel generator would not result in substantial pollutant concentrations capable of exceeding operational LST thresholds. Further Program traffic would not create or result in a CO "hotspot." Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as the result of Program construction or operations. Impacts would be less than significant through the implementation of **MM AQ-1**.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant.*

*Mitigation Measures: Implementation of **MM AQ-1** is required to minimize impacts under this issue.*

**AQ-1:** *When using construction equipment greater than 150 horsepower (>150 hp), the Construction Contractor shall ensure that off-road diesel construction equipment complies with the EPA/CARB Tier 4 emissions standards or equivalent and shall ensure that all construction equipment is tuned and maintained in accordance with the manufacturer's specifications.*

*Level of Significance After Mitigation: Less Than Significant.*

The implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-11**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would ensure that LSTs for construction are not exceeded. Therefore, with implementation of **MM AQ-1**, construction of Program facilities would not expose sensitive receptors to substantial pollutant concentrations, and impacts for both construction and operation of the Program would be less than significant.

**d) Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

### **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

#### **Construction**

SCAQMD Rule 402 Nuisance, prohibits discharge from any source whatsoever of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. This rule covers generation of odors. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities,

petroleum refineries, and livestock operations. Under the right meteorological conditions, some odors may still be offensive several miles from the source.<sup>36</sup>

Implementation of this Program Component would have the potential to generate odorous emissions during construction activities. Construction activities are not typically sources of nuisance odors, although construction could result in minor amounts of odorous emissions associated with diesel exhaust or evaporation of VOCs from architectural coatings. These smells are largely due to the presence of sulfur and the creation of hydrocarbons during combustion. As shown in **Table 4.4-9**, above under question (b), construction would not result in significant emissions of SO<sub>x</sub>. Furthermore, construction would be temporary, and equipment would not be located in a single location throughout the duration of construction. Odorous hydrocarbons tend to dissipate quickly and would only affect receptors in the immediate vicinity, rather than a substantial number of people at any given time. Therefore, construction activities would not result in other emissions, such as odors, adversely affecting a substantial number of people, and impacts would be less than significant.

### **Operation**

Operation of this Program Component would not result in odor impacts because none of these components include odor-generating components. The BBARWA's WWTP, the proposed location of the AWPf, already treats and stores wastewater and recycled water, and BBARWA implements odor control measures to prevent odorous emissions. Source water from the existing wastewater treatment process at BBARWA would be secondary effluent suitable for reuse, and product water from the AWPf would be advance treated recycled water suitable for discharge to Big Bear Lake. Neither of these types of treated water has an associated odor. Furthermore, the AWPf system is enclosed, and therefore would not be a source of new odor at the BBARWA WWTP site. Thus, odor emissions impacts would be less than significant.

## **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

### **Construction**

SCAQMD Rule 402 Nuisance, prohibits discharge from any source whatsoever of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. This rule covers generation of odors. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. Under the right meteorological conditions, some odors may still be offensive several miles from the source.

Implementation of this Program Component would have the potential to generate odorous emissions during construction activities. Construction activities are not typically sources of nuisance odors, although construction could result in minor amounts of odorous emissions associated with diesel exhaust or evaporation of VOCs from architectural coatings. These smells are largely due to the presence of sulfur and the creation of hydrocarbons during combustion. As shown in **Table 4.4-16**, above under question (b), construction would not result in significant emissions of SO<sub>x</sub>. Furthermore, construction would be temporary, and equipment would not be located in a single location throughout the duration of construction. Odorous hydrocarbons tend to dissipate quickly and would only affect receptors in the immediate vicinity, rather than a

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<sup>36</sup> CARB. 2005. Air Quality and Land Use Handbook: A Community Health Perspective.  
<https://www.arb.ca.gov/ch/handbook.pdf> (accessed 08/28/23)



substantial number of people at any given time. Therefore, construction activities would not result in other emissions, such as odors, adversely affecting a substantial number of people, and impacts would be less than significant.

**Operation**

Operation of this Program Component would not result in odor impacts because none of these components include odor-generating components. Pipelines are located belowground, and are enclosed. Thus, no odor emissions would occur. Impacts would be less than significant.

**Replenish Big Bear Component 3: Shay Pond Discharge Project**

**Construction**

SCAQMD Rule 402 Nuisance, prohibits discharge from any source whatsoever of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. This rule covers generation of odors. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. Under the right meteorological conditions, some odors may still be offensive several miles from the source.

Implementation of this Program Component would have the potential to generate odorous emissions during construction activities. Construction activities are not typically sources of nuisance odors, although construction could result in minor amounts of odorous emissions associated with diesel exhaust or evaporation of VOCs from architectural coatings. These smells are largely due to the presence of sulfur and the creation of hydrocarbons during combustion. As shown in **Table 4.4-22**, above under question (b), construction would not result in significant emissions of SO<sub>x</sub>. Furthermore, construction would be temporary, and equipment would not be located in a single location throughout the duration of construction. Odorous hydrocarbons tend to dissipate quickly and would only affect receptors in the immediate vicinity, rather than a substantial number of people at any given time. Therefore, construction activities would not result in other emissions, such as odors, adversely affecting a substantial number of people, and impacts would be less than significant.

**Operation**

Operation of this Program Component would not result in odor impacts because none of these components include odor-generating components. Pipelines are located belowground, and are enclosed. Thus, no odor emissions would occur. Impacts would be less than significant.

**Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

**Construction**

SCAQMD Rule 402 Nuisance, prohibits discharge from any source whatsoever of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. This rule covers generation of odors. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. Under the right meteorological conditions, some odors may still be offensive several miles from the source.

Implementation of this Program Component would have the potential to generate odorous emissions during construction activities. Construction activities are not typically sources of nuisance odors, although construction could result in minor amounts of odorous emissions associated with diesel exhaust or evaporation of VOCs from architectural coatings. These smells are largely due to the presence of sulfur and the creation of hydrocarbons during combustion. As shown in **Table 4.4-28**, above under question (b), construction would not result in significant emissions of SO<sub>x</sub>. Furthermore, construction would be temporary, and equipment would not be located in a single location throughout the duration of construction. Odorous hydrocarbons tend to dissipate quickly and would only affect receptors in the immediate vicinity, rather than a substantial number of people at any given time. Therefore, construction activities would not result in other emissions, such as odors, adversely affecting a substantial number of people, and impacts would be less than significant.

### **Operation**

As discussed at the beginning of this Subchapter in response to Comment Letter #10 Michael Meyer, between 23 and 57 acres will be used to construct evaporation ponds at the BBARWA WWTP site. The general location of the ponds is shown in **Figure 3-26**. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. Typically, Solar Evaporation Ponds are lined shallow basins in which concentrate evaporates naturally as a result of solar radiation. As the brine evaporates, the minerals in the concentrate are precipitated in salt crystals, which are removed periodically and disposed off-site. The precipitated crystal will be hauled off to an appropriate disposal facility.

Based on a review of similar solar evaporations pond operations handling brine, odor does not appear to be an issue with operations of this type. BBARWA will maintain the Solar Evaporation Ponds by periodically removing the salt crystals and hauling the precipitated crystal to the local landfill. This is anticipated to prevent odors from accumulating at the Solar Evaporation Ponds and migrating to nearby sensitive receptors. Furthermore, given the location proposed for installation of the Solar Evaporation Ponds at a 0.25 mile distance from the nearest sensitive receptor (residents, hospitals, senior living, churches, schools, etc.) any odors generated by the Solar Evaporation Ponds are anticipated to dissipate at the nearest sensitive receptor. Also, the operations of the existing BBARWA WWTP involve a greater potential for odors to travel, and odor nuisance has not been a significant issue in the community as a result of BBARWA operations. Thus, there has been no indication that odor traveling to sensitive receptors will result from operation of the brine ponds. However, in order to ensure that potential odor from the brine evaporation operations, and avoid potentially significant odor emissions, mitigation (**MM AQ-3**) has been identified that would require odor observation for the first year of the Program, with an odor response component in the event that odors are observed by nearby sensitive receptors. Thus, impacts would be less than significant with the implementation of mitigation.

## **Replenish Big Bear Component 5: Sand Canyon Recharge Project**

### **Construction**

SCAQMD Rule 402 Nuisance, prohibits discharge from any source whatsoever of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. This rule covers generation of odors. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities,

petroleum refineries, and livestock operations. Under the right meteorological conditions, some odors may still be offensive several miles from the source.

Implementation of this Program Component would have the potential to generate odorous emissions during construction activities. Construction activities are not typically sources of nuisance odors, although construction could result in minor amounts of odorous emissions associated with diesel exhaust or evaporation of VOCs from architectural coatings. These smells are largely due to the presence of sulfur and the creation of hydrocarbons during combustion. As shown in **Table 4.4-33**, above under question (b), construction would not result in significant emissions of SO<sub>x</sub>. Furthermore, construction would be temporary, and equipment would not be located in a single location throughout the duration of construction. Odorous hydrocarbons tend to dissipate quickly and would only affect receptors in the immediate vicinity, rather than a substantial number of people at any given time. Therefore, construction activities would not result in other emissions, such as odors, adversely affecting a substantial number of people, and impacts would be less than significant.

### **Operation**

Operation of this Program Component would not result in odor impacts because none of these components include odor-generating components. Pipelines are located belowground, and are enclosed. Furthermore, the monitoring wells and booster pump station would not involve handling of odorous materials or generation of odor emissions. Thus, no odor emissions would occur. Impacts would be less than significant.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant.*

*Mitigation Measures:*

**AQ-3:** *BBARWA will establish an odor complaint/response program and will respond to any odor complaints received for this Program by odor levels at the affected receptor following the methodology specified in the ASTM Recommended Practice E679-04. If the odor levels exceed the odor intensity value of 3.0 or greater on the 8-point n-butanol intensity scale, and odor response plan will be developed and initiated to minimize the potential for odor complaints as a result of the solar brine evaporation pond operations. Odor response shall include, but not be limited to, more frequent precipitated crystal removal from the solar brine evaporation pond shall, and application of odor neutralizing materials.*

*This odor response/complaint program shall begin once the Solar Evaporation Ponds are operational for at least one year thereafter. If no complaints are received within the first year of operations, the program shall conclude. If one or more complaints are received within the first year of operations, the program shall continue on for the duration of Program operations.*

*Level of Significance After Mitigation: Less Than Significant.*

Implementation of **MM AQ-3** would ensure that the only potential source of new odor generated by the Program—the solar brine evacuation ponds at BBARWA's WWTP—would be minimized through an odor complaint and response program. Therefore, through the implementation of **MM AQ-3**, Program operations would not result in other emissions, such as odors, adversely affecting a substantial number of people, and no impact would occur.

#### **4.4.6 Cumulative Impacts**

As previously shown in **Table 4.4-3**, the CAAQS designate the Program Area as nonattainment for O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> while the NAAQS designates the Program Area as nonattainment for O<sub>3</sub> and PM<sub>2.5</sub>.

AQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution*. In this report the AQMD clearly states (Page D-3):

*“...the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or Environmental Impact Report (EIR). The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for TAC emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.*

*Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.”*

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD’s recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the South Coast Air Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

#### **Construction Impacts**

The Program-specific evaluation of emissions presented in the preceding analysis demonstrates that Program construction-source air pollutant emissions would not result in exceedances of regional thresholds after implementation of **MM AQ-1** and **MM AQ-3**. Therefore, Program construction-source emissions would be considered less than significant on a project-specific and cumulative basis.

#### **Operational Impacts**

The Program-specific evaluation of emissions presented in the preceding analysis demonstrates that Program operation-source air pollutant emissions would not result in exceedances of regional thresholds after implementation of **MM AQ-2**. Therefore, Program operation-source emissions would be considered less than significant on a project-specific and cumulative basis.

#### **4.4.7 Unavoidable Significant Impacts**

The Programmatic evaluation of emissions presented in the preceding analysis demonstrates that after implementation of the recommended **MMs**, neither construction or operation of the Program would result in any exceedance of thresholds for a criteria pollutant. Furthermore, the Program is consistent with the AQMP; the air quality impact for Program-related LST impacts are considered to

be less than significant; and, sensitive receptors would not be subject to a significant air quality impact during Program construction or operations. Therefore, no unavoidable significant impact to air quality will result from implementing the Program.

## **4.5 BIOLOGICAL RESOURCES**

### **4.5.1 Introduction**

This Subchapter will evaluate the environmental impacts to the issue area of biological resources from implementation of the Replenish Big Bear Program (Program). The thresholds analyzed in this Subchapter are derived from Appendix G of the State CEQA Guidelines, which identifies the issues that examine whether the proposed Program would have a substantial adverse effect upon biological resources on a given proposed Program site as well as a substantial effect upon any biological resources adjacent to a given proposed Program site, or otherwise indirectly resulting in impacts to biological resources as a result of a implementation of a combination of Program projects or a singular Program project.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon as the specific locations of the monitoring wells is presently unknown. Additionally, the specific impacts on the Stickleback resulting from the change in water source proposed by the Program have not been forecasted in detail because this Program components will not be implemented in the short-term. However, the procedure by which impacts to this species from changing the water source at Shay Pond to advanced treated water must be analyzed in the future to are provided herein. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

The NOP determined that all of these issue areas would be analyzed in the DPEIR. These issues will be discussed below as set forth in the following framework:

- 4.5.1 Introduction
- 4.5.2 Environmental Setting: Biological and Physical Conditions of the Big Bear Valley
- 4.5.3 Regional Special Status Species and Habitats of Concern
- 4.5.4 Regulatory Setting
- 4.5.5 Thresholds of Significance
- 4.5.6 Potential Impacts
- 4.5.7 Cumulative Impact
- 4.5.8 Unavoidable Adverse Impacts

Two comments specific to this topic were received in response to the NOP, and two comments specific to this topic were received at the Scoping Meeting held on behalf of the Program. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

Much of the following text is abstracted directly from the Biological Resources & Jurisdictional Delineation Assessment (BRA) prepared by Jacobs Engineering Group (Jacobs), provided as **Appendix 12** of Volume 2.

### **4.5.2 Environmental Setting**

Note that all references provided herein can be found in the BRA prepared by Jacobs, provided as **Appendix 12** of Volume 2 to this DPEIR, in addition to the Memo prepared by GEI, provided as **Appendix 19** of Volume 2 to this DPEIR.



The Program Area is situated east/southeast of Big Bear Lake, in the Big Bear Valley area of the San Bernardino Mountains (**refer to Figures 4.5-1 through 4.5-9**). The Big Bear Valley area is subject to both seasonal and annual variations in temperature and precipitation. Average annual maximum temperatures peak at 80.8 °F in July and fall to an average annual minimum temperature of 20.3° F in January. Average annual precipitation ranges from nearly 40 inches at the west end of Big Bear Lake to 10-15 inches at the east end of the Big Bear Valley. Annual precipitation is highly variable, as it is common to have long dry periods (three to eight years) mixed with years of above-average precipitation.

The topography of the proposed Program Area footprint is flat, being mostly within existing paved roadways, WWTP facilities, and disturbed/graded areas. Much of the proposed Program would be implemented within and around Big Bear City, which has an elevation of approximately 6,770 feet amsl. However, the Sand Canyon Recharge Area are within the unincorporated community of Moonridge, which is south of Big Bear City. The Moonridge residential area is a mountain community built on moderate to steep slopes. The elevation of the proposed Sand Canyon Recharge Project ranges from approximately 7,275 feet amsl at the Sand Canyon Recharge Pipe Outlet, to 7,350 feet amsl at the highest point of the proposed conveyance pipeline.

Hydrologically, the Program Area is situated within the Bear Valley and Baldwin Hydrologic Sub-Areas (HSA 801.71 and 801.73). The Bear Valley HSA comprises a 34,333-acre drainage area, within the larger Santa Ana Watershed (Hydrologic Unit Code [HUC] 18070203). The Baldwin HSA comprises a 22,789-acre drainage, also within the Santa Ana Watershed. The Santa Ana River is the major hydrogeomorphic feature within the Santa Ana Watershed. One of several tributaries to the Santa Ana River is Bear Creek, which outflows from Big Bear Lake from the Bear Valley Dam located at the westernmost (downstream) end of Big Bear Lake. Big Bear Lake is one of the head waters of the Santa Ana River Watershed.

Soils are discussed in detail within the Geology and Soils Subchapter of this DPEIR (**Subchapter 4.8**). The following is extracted from this Subchapter, including the corresponding Table numbers. Soils within the Big Bear Valley generally include deep well-drained sands, sandy loams, silty loams on level alluvial basins and fans; and shallow to deep, well to excessively drained, sandy loams on the valley floor and on upland ridge areas (NRCS, 2022). The soils present within the service area vary slightly in physical properties but share similar characteristics. Soils within the eastern portion of the Big Bear Valley are presented in **Figure 4.8-7** and summarized in **Table 4.8-1**.



SOURCE: Google Earth

FIGURE 1

Regional Location  
Replenish Big Bear Project

FIGURE 4.5-1





SOURCE: Google Earth

FIGURE 2

FIGURE 4.5-2





SOURCE: Google Earth

FIGURE 3

Project Vicinity Topo  
Replenish Big Bear Project

FIGURE 4.5-3





SOURCE: Google Earth

FIGURE 4

FIGURE 4.5-4



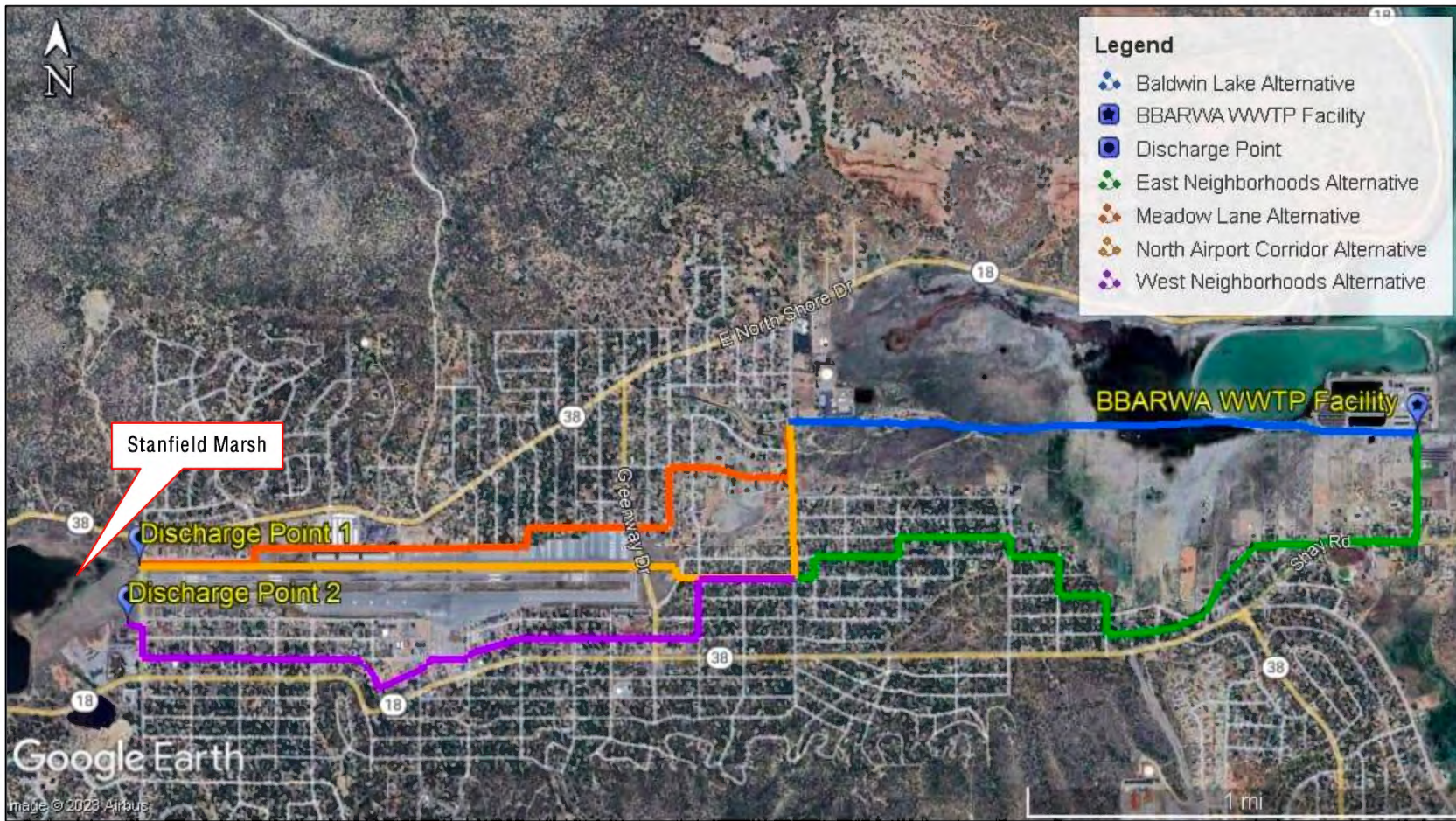


SOURCE: Google Earth

FIGURE 5

FIGURE 4.5-5





SOURCE: Google Earth

FIGURE 7

FIGURE 4.5-6





SOURCE: Google Earth

FIGURE 8a



Shay Pond Conveyance Pipeline  
Replenish Big Bear Project

FIGURE 4.5-7





SOURCE: Google Earth

FIGURE 8b

FIGURE 4.5-8





SOURCE: Google Earth

FIGURE 9

FIGURE 4.5-9

**Table 4.8-1  
 EASTERN BIG BEAR VALLEY SOILS**

Map Unit Symbol	Map Unit Name	Acres in Area of Interest	Percent of Area of Interest
132	Aquents-Grunney complex, 0 to 4 percent slopes	218.4	20.5%
301	Garloaf-Cariboucreek complex, 15 to 30 percent slopes	1.2	0.1%
302	Garloaf-Cariboucreek-Urban land complex, 9 to 15 percent slopes	9.2	0.9%
305	Moonridge-Shayroad-Cariboucreek complex, 0 to 4 percent slopes	197.4	18.5%
306	Moonridge-Cariboucreek-Urban land complex, 0 to 4 percent slopes	598.0	56.1%
309	Goldmountain-Deadmansridge-Deadpan complex, 15 to 30 percent slopes	0.6	0.1%
310	Goldmountain-Deadmansridge-Deadpan complex, 30 to 50 percent slopes	30.5	2.9%
315	Minnelusa-Cariboucreek complex, 9 to 15 percent slopes	10.1	1.0%
Totals for Area of Interest		1,065.4	100%

The soils in the vicinity of the Sand Canyon are shown on **Figure 4.8-8** and are summarized in **Table 4.8-2**. The most unusual soil complex occurs at the existing WWTP that will include the AWPf in the future when the new treatment facilities have been installed. The soil on the Baldwin Lakebed has a higher concentration of clay materials than the other soils that underlay the remaining Program Areas.

The Big Bear Valley area is comprised of small mountain communities in the SBNF that consist of a mix of residential and commercial development surrounded by undeveloped montane conifer forest (**Figures 4.5-1 through 4.5-3**). Existing land use surrounding the proposed Program footprint consists of residential neighborhoods, WWTP facilities, municipal airport, Stanfield Marsh and Baldwin Lake, and open space. Adjacent undeveloped National Forest land supports a mix of montane conifer forests, shrublands, and montane meadow, and ruderal plant communities.



**Table 4.8-2  
 SAND CANYON SOILS**

Map Unit Symbol	Map Unit Name	Acres in Area of Interest	Percent of Area of Interest
401	Garloaf-Cariboucreek-Urban land complex, 15 to 30 percent slopes	48.4	44.4%
413	Aquents-Riverwash complex, 0 to 4 percent slopes	46.9	43%
414	Moonridge-Urban land complex, 4 to 9 percent slopes	9.9	9.1%
BoD	Morical, very deep-Hecker families complex, 2 to 15 percent slopes	1.7	1.5%
BoE	Morical, very deep-Hecker families complex, 15 to 30 percent slopes	0.4	0.3%
DaF	Pacifico-Wapi families complex, 30 to 50 percent slopes	1.8	1.6%
<b>Totals for Area of Interest</b>		<b>109</b>	<b>100%</b>

**Existing Biological and Physical Conditions**

The proposed Program Area footprint is within both urban and natural/semi-natural environments. The East Neighborhoods, Meadow Lane, and West Neighborhoods Pipeline Alignment Options and associated discharge outlets (**Figure 4.5-4**), as well as the Sand Canyon recharge conveyance pipeline and associated discharge outlet, Sand Canyon Monitoring Wells, and new 600 gpm pump station at the existing Resort Storage Pond are all situated in a residential development setting (**Figure 4.5-5; Figure 4.5-6**). These conveyance pipeline alignments are entirely within existing disturbed/developed areas including paved roadways. The North Airport Corridor Pipeline Alignment Option is within a public airport setting, surrounded by residential development (**Figure 4.5-6**). The remaining monitoring wells, pump stations, and WWTP upgrades are situated within existing developed WWTP facilities (**Figure 4.5-9**). The proposed solar energy facilities would be constructed on existing rooftops and adjacent previously disturbed/graded areas around the BBARWA WWTP (**Figure 4.5-9**).

The Baldwin Lake Pipeline Alignment Option follows an existing unpaved trail alignment (West Baldwin Lake Trail) within montane meadow, shrubland, and temporarily to seasonally flooded lacustrine habitats (**Figure 4.5-6**). The Shay Pond Conveyance Pipeline would be constructed within an existing unpaved road (Cascade Street) surrounded by rural residential development and montane meadow habitat (**Figure 4.5-8**). The proposed Solar Evaporation Ponds would be constructed on BBARWA WWTP property, within a previously disturbed/graded section of Baldwin Lake consisting of temporarily to seasonally flooded lacustrine habitat (**Figure 4.5-9**).

Disturbances in the Program Area consist mostly of vehicular traffic and pedestrian use associated with the existing roads and residential developments, as well as existing utility infrastructure (i.e., the BBARWA WWTP) and associated WWTP operations. Other disturbances include feral livestock grazing in the vicinity of Shay Pond, domestic livestock grazing on the BBARWA WWTP property, disturbances associated with ongoing airport maintenance and operations at the Big Bear Airport, vegetation removal/weed abatement, and illegal dumping.

#### 4.5.2.1 Habitat

Habitats present within and/or adjacent the Program Area include:

- *Pinus jeffreyi* Forest & Woodland Alliance (Jeffrey pine forest and woodland)
- *Juniperus grandis* Woodland Alliance (mountain juniper woodland)
- *Artemisia tridentata* Shrubland Alliance (big sagebrush)
- *Schoenoplectus acutus* Herbaceous Alliance (hardstem bulrush marsh)
- Wet montane meadow habitat
- Temporarily-to-seasonally flooded lake (Baldwin Lake)

#### Sand Canyon

The undeveloped SBNF adjacent the Sand Canyon Recharge Conveyance Pipeline and Sand Canyon Conveyance Pipeline Discharge Outlet, Sand Canyon Monitoring Wells, and new 600 gpm pump station at the existing Resort Storage Pond supports mixed Jeffrey pine forest and woodland and mountain juniper woodland habitats. The Jeffrey pine forest and woodland habitat is characterized by an open to continuous tree canopy, with a sparse to intermittent shrub layer and varied herbaceous layer (Sawyer et al. 2009). The mountain juniper woodland habitat is characterized by an open to intermittent tree canopy, with a sparse to intermittent shrub layer and sparse or grassy herbaceous layer (Sawyer et al. 2009). Dominant or otherwise conspicuous species in these plant communities include Jeffrey pine (*Pinus jeffreyi*), Sierra juniper (*Juniperus grandis*), California black oak (*Quercus kelloggii*), white fir (*Abies concolor*), manzanita (*Arctostaphylos* spp.), common sagebrush (*Artemisia tridentata*), and desert mountain mahogany (*Cercocarpus ledifolius*).

#### Shay Pond

The habitat surrounding the Shay Pond Conveyance Pipeline alignment (Cascade Street) and discharge outlet consists of a mosaic of ruderal vegetation, big sagebrush, and wet montane meadow habitat. The big sagebrush habitat within this area is characterized by an open canopy, with a sparse to intermittent shrub layer dominated by common sagebrush (*Artemisia tridentata*) and an intermittent grassy herbaceous layer (Sawyer et al. 2009). The wet montane meadow habitat in this area is dominated by sedge (*Carex* spp.), rush (*Juncus* spp.), and beardless wild rye (*Elymus triticoides*). Non-native and ruderal vegetation within this area consists mostly of brome grasses (*Bromus* spp.), Russian thistle (*Salsola tragus*), and tumble mustard (*Sisymbrium altissimum*).

#### Baldwin Lake

The habitat surrounding the Baldwin Lake Pipeline Alignment Option consists of temporarily to seasonally flooded lake at the eastern end of the proposed alignment, transitioning to wet montane meadow habitat toward the middle of the alignment, and big sagebrush habitat near the western end of the alignment. Dominant species within these plant communities include fox tail barley (*Hordeum jubatum*), summer cypress (*Kochia scoparia*), prickly lettuce (*Lactuca serriola*), *Carex* spp., *Juncus* spp., beardless wild rye, and common sagebrush, respectively.

The proposed Solar Evaporation Ponds would be constructed within a previously disturbed/graded section of Baldwin Lake consisting of temporarily to seasonally flooded lacustrine habitat. Plant communities in this area consist of hardstem bulrush marsh dominated by tule (*Schoenoplectus acutus*), wet montane meadow habitat dominated by *Carex* spp. and *Juncus* spp., and ruderal vegetation dominated by goosefoot (*Chenopodium chenopodioides*), fox tail barley, summer cypress, and prickly lettuce.

The proposed solar energy facilities would be constructed on existing rooftops and adjacent previously disturbed/graded areas around the BBARWA WWTP consisting of bare ground and ruderal vegetation dominated by *Bromus* spp., Coastal heron's bill (*Erodium cicutarium*), summer cypress, prickly lettuce, and tumble mustard.

Please refer to Appendix C of the BRA for a complete list of all plant species observed on site during surveys.

#### **4.5.2.2 Wildlife**

This section details wildlife over the whole of the Program Area in Big Bear Valley. The proposed Program Area footprint is mostly within existing residential and commercial developments and the only species expected to occur within these areas are those adapted to an urban environment. During the survey, special attention was focused on those Program components that are within or immediately adjacent undeveloped areas, where special status species are more likely to occur, including the Baldwin Lake Pipeline Alignment Option, the proposed Solar Evaporation Ponds and solar energy facilities sites, the Shay Pond Conveyance Pipeline and discharge outlet site, and the Sand Canyon Recharge Pipe Outlet site. However, all facility locations that are known (all but the Sand Canyon Monitoring Wells) were surveyed for potential to support special status species.

##### **Amphibians and Reptiles**

The only amphibian species observed or otherwise detected within the Program Area during the reconnaissance level survey was the California toad (*Anaxyrus boreas halophilus*). Reptile species observed within the Program Area during survey included Skilton's skink (*Plestiodon skiltonianus skiltonianus*) and southern sagebrush lizard (*Sceloporus graciosus vandenburgianus*). Other common herp species expected to occur within the Program Area include southern Pacific rattlesnake (*Crotalus oreganus helleri*), San Diego alligator lizard (*Elgaria multicarinata webbiai*), San Diego gophersnake (*Pituophis catenifer annectens*), Great Basin fence lizard (*Sceloporus occidentalis longipes*), and mountain gartersnake (*Thamnophis elegans elegans*).

##### **Birds**

Birds were the most observed wildlife group during survey and species observed or otherwise detected in the Program Area during the reconnaissance level survey included:

- Red-winged Blackbird (*Agelaius phoeniceus*)
- Mallard (*Anas platyrhynchos*)
- Bufflehead (*Bucephala albeola*)
- Killdeer (*Charadrius vociferus*)
- Northern Flicker (*Colaptes auratus*)
- Common Raven (*Corvus corax*)
- Steller's Jay (*Cyanocitta stelleri*)
- Horned Lark (*Eremophila alpestris*)
- Brewer's Blackbird (*Euphagus cyanocephalus*)
- American Coot (*Fulica americana*)
- House Finch (*Haemorhous mexicanus*)
- Dark-eyed Junco (*Junco hyemalis*)
- American Wigeon (*Mareca americana*)
- Acorn Woodpecker (*Melanerpes formicivorus*)
- Brown-headed Cowbird (*Molothrus ater*)

- Ruddy Duck (*Oxyura jamaicensis*)
- Savannah Sparrow (*Passerculus sandwichensis*)
- Cliff Swallow (*Petrochelidon pyrrhonota*)
- Eared Grebe (*Podiceps nigricollis*)
- Pied-billed Grebe (*Podilymbus Podiceps*)
- Mountain Chickadee (*Poecile gambeli*)
- Western Bluebird (*Sialia mexicana*)
- Pygmy Nuthatch (*Sitta pygmaea*)
- Violet-green Swallow (*Tachycineta thalassina*)
- American Robin (*Turdus migratorius*)

### **Mammals**

Mammal species observed or otherwise detected within the Program Area during the reconnaissance level survey included coyote (*Canis latrans*), California ground squirrel (*Otospermophilus beecheyi*), western gray squirrel (*Sciurus griseus*), and Botta's pocket gopher (*Thomomys bottae*). Other common mammal species expected to occur within the Program Area include bobcat (*Lynx rufus*), Merriam's chipmunk (*Neotamias merriami*), mule deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), and American black bear (*Ursus americanus*). Additionally, numerous feral donkeys (*Equus asinus*) were observed during survey in the vicinity of Shay Pond and several domestic cattle were observed on Baldwin Lake at the BBARWA WWTP.

#### **4.5.2.3 Jurisdictional Waters**

The Program Area is within the Bear Valley and Baldwin Hydrologic Sub-Areas (HSA 801.71 and 801.73). The Bear Valley HSA comprises a 34,333-acre drainage area, within the larger Santa Ana Watershed (HUC 18070203). The Baldwin HSA comprises a 22,789-acre drainage, also within the Santa Ana Watershed. This watershed is primarily within San Bernardino County and includes portions of Riverside and Orange Counties with a small portion of Los Angeles County. The Santa Ana Watershed is bound on the north by the Mojave and Southern Mojave Watersheds, on the southeast by the Whitewater River and San Jacinto Watersheds, and on the west by the San Gabriel, Seal Beach, Newport Bay, and Aliso-San Onofre Watersheds. The Santa Ana Watershed encompasses a portion of the San Gabriel and San Bernardino Mountains in the north and is approximately 3,000 square miles in area. The Santa Ana River is the major hydrogeomorphic feature within the Santa Ana Watershed. One of several tributaries to the Santa Ana River is Bear Creek, which outflows from Big Bear Lake from the Bear Valley Dam located at the westernmost (downstream) end of Big Bear Lake. Big Bear Lake is one of the head waters of the Santa Ana River Watershed.

#### **4.5.3 Regional Special Status Species and Habitats of Concern**

Special status species are plants or animals that are legally protected under the Federal Endangered Species Act (FESA), CESA, or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. Special-status species include the following:

- Species listed or proposed for listing as threatened or endangered under the FESA (50 Code of Federal Regulations [CFR] 17.12 [listed plants]); 50 CFR 17.11 (listed animals); and various notices in the *Federal Register* (proposed species).
- Species that are candidates for possible future listing as threatened or endangered under FESA (76 Fed. Reg. 66370, October 26, 2011).

- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations 670.5).
- Species that meet the definitions of "rare" or "endangered" under CEQA (State CEQA Guidelines § 15380).
- Plants presumed by the California Native Plant Society (CNPS) to be "extinct in California" (Lists 1A, CNPS 2020).
- Plants considered by the CNPS to be "rare, threatened, or endangered in California" (Lists 1B and 2, CNPS 2020).
- Plants listed by CNPS as plants about which more information is needed to determine their status (List 3, CNPS 2020), and which may be included as special-status species on the basis of local significance or recent biological information.
- Plants listed by CNPS as plants of limited distribution or infrequent throughout a broader area in California (List 4, CNPS 2020); these plants are not "rare" from a statewide perspective but are uncommon enough that they are recommended for inclusion in environmental documents.
- Plant species listed as rare under the California Native Plant Protection Act (FGC §§ 1900, et seq.).
- Animal species of special concern to the CDFW (CDFW 2019).
- Bird species of conservation concern as identified by USFWS in *Birds of Conservation Concern 2008* (USFWS 2008).
- Animals that are fully protected in California (FGC Sections 3511 [birds], 4,700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]) (CDFW 2011).

According to the CNDDDB, 102 special status species (73 plant species, 29 animal species) and two sensitive habitats have been documented in the *Big Bear Lake, Big Bear City, Fawnskin and Moonridge* USGS 7.5-Minute Series Quadrangles (refer to Appendix A of the BRA). This list of special status species and habitats includes any State and/or Federally listed threatened or endangered species, California Fully Protected species, CDFW designated Species of Special Concern (SSC), and otherwise Special Animals. "Special Animals" is a general term that refers to all the taxa the CNDDDB is interested in tracking, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special status species." The CDFW considers the taxa on this list to be those of greatest conservation need.

The USFWS Information for Planning and Consultation System (IPaC) search identified three additional special status species as potentially occurring in the regional vicinity of the proposed Program. Of the 105 special status species identified by the CNDDDB and IPaC queries, 21 are State and/or Federally listed or proposed for listing as threatened or endangered species. **Table 4.5-1** (below) provides a list of all State and/or Federally listed or proposed threatened and endangered species identified by the CNDDDB and IPaC queries, where they are found (locally, adjacent to the proposed Program Area footprint, or within the proposed Program Area footprint), if suitable habitat for that species exists within the Program Area and whether the Program may affect that species.

**Table 4.5-1  
 PROGRAM AREA WILDLIFE HABITAT TYPES, LAND USES, AND TYPICAL VEGETATION**

Common Name	Scientific Name	Status
<b>Plants:</b>		
Cushenbury oxytheca	<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i>	FE
Cushenbury milk-vetch	<i>Astragalus albens</i>	FE



Common Name	Scientific Name	Status
ash-gray paintbrush	<i>Castilleja cinerea</i>	FT
Big Bear Valley sandwort	<i>Eremogone ursina</i>	FT
Parish's daisy	<i>Erigeron parishii</i>	FT
southern mountain buckwheat	<i>Eriogonum kennedyi</i> var. <i>austromontanum</i>	FT
Cushenbury buckwheat	<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	FE
San Bernardino Mountains bladderpod	<i>Physaria kingii</i> ssp. <i>bernardina</i>	FE
San Bernardino blue grass	<i>Poa atropurpurea</i>	FE
bird-foot checkerbloom	<i>Sidalcea pedata</i>	FE/SE
California dandelion	<i>Taraxacum californicum</i>	FE
slender-petaled thelypodium	<i>Thelypodium stenopetalum</i>	FE/SE
<b><u>Insects:</u></b>		
quino checkerspot butterfly	<i>Euphydryas editha quino</i>	FE
<b><u>Amphibians:</u></b>		
southern mountain yellow-legged frog	<i>Rana muscosa</i>	FE/SE
<b><u>Fish:</u></b>		
unarmored threespine stickleback	<i>Gasterosteus aculeatus williamsoni</i>	FE/SE
steelhead - southern California DPS	<i>Oncorhynchus mykiss irideus</i> pop. 10	FE
<b><u>Birds:</u></b>		
southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE/SE
bald eagle	<i>Haliaeetus leucocephalus</i>	FD/SE
California spotted owl	<i>Strix occidentalis occidentalis</i>	FPE
<b><u>Reptiles:</u></b>		
southern rubber boa	<i>Charina umbratica</i>	ST
Mojave desert tortoise	<i>Gopherus agassizii</i>	FT/ST

Notes: FE = Federally Endangered FT = Federally Threatened SE = State Endangered ST = State Threatened

The aquatic habitats required by southern mountain yellow-legged frog are absent from the Program Area and this species is considered extirpated from the Big Bear Valley (USFWS 2019). Likewise, the Program Area is outside the current range of the southern California steelhead (NMFS 2023). Additionally, the habitats required by southwestern willow flycatcher (i.e., riparian) and Mojave desert tortoise (i.e., desert scrub/desert woodland) are absent from the Program Area and these species have not been documented in the Program vicinity (within approximately three miles). Therefore, no further discussion of these species is warranted.

Although not a State or Federally listed species, the San Bernardino flying squirrel (*Glaucomys sabrinus californicus*) is a CDFW SSC and is considered a particularly sensitive species within the region. Furthermore, this species has been documented in the Program vicinity (within approximately three miles). Therefore, San Bernardino flying squirrel will be included in the impact analysis presented below, along with the State and/or Federally listed species that have been documented in the Program vicinity.

An analysis of the likelihood for occurrence of all CNDDDB special status species documented in the *Big Bear Lake*, *Big Bear City*, *Fawnskin*, and *Moonridge* quads is provided in Appendix A of the BRA. This analysis considers species' range as well as documentation within the vicinity of the Program Area and includes the habitat requirements for each species and the potential for their occurrence on site, based on required habitat elements and range relative to the current site conditions. A complete list of all special status species identified by the IPaC, CNDDDB, and California Native Plant Society Electronic Inventory (CNPSEI) databases as potentially occurring in the Program vicinity is provided in Appendix F of the BRA.

#### **4.5.3.1 Special Status Plant and Animal Species Potentially Occurring Along or Within the Program Assessment Areas, Specific to the Program**

The only State and/or Federally listed threatened or endangered species observed in the Program Area during survey was the State and Federally listed as endangered bird-foot checkerbloom (see analysis presented in **Subsection 4.5.6, Potential Impacts**). However, there is habitat within the Program Area that is suitable to support several other listed species that have been documented in the Program vicinity.

#### **Special Status Plant Species with Potential for Occurrence in the Program Area**

##### ***Cushenbury Milk-vetch – Endangered (Federal)***

The Federally listed as endangered Cushenbury milk-vetch is a silvery-white (pubescent), short-lived perennial herb in the pea family (Fabaceae). The stems form loose, prostrate mats, up 30 centimeters (11.8 inches) wide. The leaves are pinnately compound with 5 to 9 leaflets. The spreading or reflexed inflorescences (flower clusters) support 5 to 14 pink-purple bilateral flowers that develop crescent shaped fruit pods.<sup>37</sup> This species is typically found in rocky, carbonate substrates along washes and slopes within pinyon woodland, pinyon-juniper woodland, Joshua tree woodland, and blackbush scrub habitats on the northern (desert) slopes of the San Bernardino Mountains at elevations between 1,185 and 1,950 meters (3,888 to 6,397 feet). Cushenbury milk-vetch is typically found on soils derived directly from decomposing limestone rock.<sup>38</sup> This species typically blooms from March through June<sup>39</sup>.

##### **Suitable Habitat Locations in Program Area:**

- None

##### ***Ash-gray Paintbrush – Threatened (Federal)***

The Federally listed as threatened ash-gray paintbrush is a hemiparasitic, perennial herb in the broomrape family (*Orobanchaceae*), with several ascending to decumbent (trailing) grayish stems sprouting from the root crown. The stems are 1 to 2 decimeters (4 to 8 inches) tall. Ash-gray paintbrush is distinguished from other species of *Castilleja* within its range by its perennial nature, ashy-puberulent (covered with short hairs) stems and leaves, yellowish or reddish flowers, with calyx lobes of equal length. Host plants include *Eriogonum kennedyi* var. *austromontanum*, *Eriogonum kennedyi* var. *kennedyi*, *Eriogonum wrightii* var. *subscaposum*, *Artemisia tridentata*

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<sup>37</sup> Wojciechowski, Martin F. and Spellenberg, Richard. 2012, *Astragalus albens*, in Jepson Flora Project (eds.) *Jepson eFlora*, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=14672](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=14672), accessed on August 30, 2023.

<sup>38</sup> U.S. Fish and Wildlife Service (USFWS). 2009a. *Astragalus albens* (Cushenbury milk-vetch) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 21 pp.

<sup>39</sup> Calflora: Information on California plants for education, research and conservation. [web application]. 2022. Berkeley, California: The California Database [a non-profit organization]. Available at: <http://www.calflora.org/>. (Accessed: April 3, 2023).

ssp. *tridentata*, *Artemisia nova*, and other *Artemisia taxa*.<sup>40</sup> However, because this species also possesses photosynthetic green leaves that can produce sugars, it is termed hemiparasitic and does not require a host plant species for its survival. This species typically occupies the meadow/forest ecotone (transitional area of vegetation between two different plant communities) of the San Bernardino Mountains at elevations between 1,800 and 3,300 meters (5,905 to 10,827 feet.) and has been recorded in the following ecological communities: pebble plains, dry and wet forest meadows, mixed conifer forests, open pine forests, and pinyon-juniper woodlands. However, the primary habitat for this species is pebble plains, supporting one or more of the host plant species for ash-gray paintbrush. This species typically blooms from June through August.

**Suitable Habitat Locations in Program Area:**

- BBARWA WWTP Upgrades
- Baldwin Lake Pipeline Alignment Option

***Big Bear Valley Sandwort – Threatened (Federal)***

The Federally listed as threatened Big Bear Valley sandwort is a low, tufted perennial herb in the pink family (*Caryophyllaceae*). Individual plants are green, with stems from 10 to 18 centimeters (3.9 to 7.1 inches) long. The leaves are opposite and 0.5 to 1 centimeter (0.2 to 0.39 inches) long. The flowers are white, five-petaled, and arranged in open cymes (clusters). The petals are 0.2 to 0.45 centimeters (0.1 to 0.18 inches) long.<sup>41</sup> This species is typically found in pebble plain habitat in the northeastern San Bernardino Mountains of southwest San Bernardino County at elevations between 1,950 and 2,100 meters (6,393 to 6,885 feet.). Pebble plains are a rare plant community that occur in treeless, open patches within pine forests and pinyon-juniper woodlands that are comprised of clay soil mixed with quartzite pebbles and gravel that are continually pushed to the surface through frost action. Big Bear Valley sandwort is typically found within pebble plain habitat and is one of three indicator plant species, along with *Eriogonum kennedyi* var. *austromontanum*, and *Ivesia argyrocoma* var. *argyrocoma* defining a pebble plain. This species typically blooms from May through August.

**Suitable Habitat Locations in Program Area:**

- None

***Parish's Daisy – Threatened (Federal)***

The Federally listed as endangered Parish's daisy is a small perennial herb (subshrub) in the aster family (*Asteraceae*). The vertically oriented stems are few-branched near the mid-stem, silvery-hairy, especially distally, and grow to 10 to 35 centimeters (3.9 to 13.8 inches) in height.<sup>42</sup> The cauline leaves (sometimes absent by flowering) are linear and silvery-strigose. The composite flowers typically include 30 to 50 pink or white ray flowers. Parish's daisy typically occurs on rocky slopes, active washes, and outwash plains, in pinyon woodland, pinyon-juniper woodland, and blackbush scrub habitats along the northern (desert) slopes of the San Bernardino Mountains and Little San Bernardino Mountains at elevations between 1,050 and 2,245 meters

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<sup>40</sup> U.S. Fish and Wildlife Service (USFWS). 2013a. *Castilleja cinerea* (Ash-gray Paintbrush) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 44 pp.

<sup>41</sup> U.S. Fish and Wildlife Service (USFWS). 2015a. *Eriogonum ursina* (Bear Valley sandwort) 5-year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 47 pp.

<sup>42</sup> Keil, David J. and Nesom, Guy L. 2012. *Erigeron parishii*, in Jepson Flora Project (eds.) Jepson eFlora, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=2744](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=2744), accessed on August 30, 2023.

(3,445 to 7,365 feet).<sup>43</sup> This species is typically found on soils derived directly from decomposing limestone or dolomite. Parish's daisy typically blooms from May through August.

**Suitable Habitat Locations in Program Area:**

- None

***Southern Mountain Buckwheat – Threatened (Federal)***

The Federally listed as threatened southern mountain buckwheat is a woody-based, cushion-like, perennial plant in the buckwheat family (*Polygonaceae*). Individual plants are 8 to 15 centimeters (3.1 to 5.9 inches) tall, with stems forming loose, leafy mats, 14 to 36 centimeters (5.5 to 14.1 inches) wide. The leaves are oblanceolate (broadest above the middle and tapering toward the base) and 0.5 to 1 centimeter (0.2 to 0.4 inches) long, with dense white hair. The inflorescences (flower clusters) are 8 to 15 centimeters (3.2 to 5.9 inches) high, bearing head-like inflorescences. The perianth is white to rose and composed of inner and outer lobes that are similar in appearance.<sup>44</sup> This species is typically found in pebble plain habitat in the northeastern San Bernardino Mountains of southwest San Bernardino County at elevations between 2,000 and 2,200 meters (6,557 to 7,213 feet.). Southern mountain buckwheat is typically found within pebble plain habitat and is one of three indicator plant species, along with *Eremogone ursina*, and *Ivesia argyrocoma* var. *argyrocoma* defining a pebble plain. This species typically blooms from June through September.

**Suitable Habitat Locations in Program Area:**

- None

***Cushenbury Buckwheat – Endangered (Federal)***

The Federally listed as endangered Cushenbury buckwheat is a low, densely matted perennial in the buckwheat family (*Polygonaceae*) that reaches approximately 10 centimeters (4 inches) in height and forms a mat up to 51 centimeters (20 inches) in diameter.<sup>45</sup> This species is typically found within pinyon woodland, pinyon-juniper woodland, Joshua tree woodland, and blackbush scrub habitats on limestone or other carbonate soils at elevations between 1,400 and 2,400 meters (4,600 and 7,900 feet) in the San Bernardino Mountains. This species typically blooms from May to August.

**Suitable Habitat Locations in Program Area:**

- None

***San Bernardino Mountains bladderpod – Endangered (Federal)***

The Federally listed as endangered San Bernardino Mountains bladderpod is a silvery, short-lived perennial in the mustard family (*Brassicaceae*), that reaches approximately 5 to 15 centimeters (2 to 6 inches) in height.<sup>46</sup> The outer basal leaves are diamond-shaped to round, and the inner leaves are elliptic with petioles 2 to 5 centimeters (0.8 to 2 inches) long. The flower petals are

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<sup>43</sup> U.S. Fish and Wildlife Service (USFWS). 2009b. *Erigeron parishii* (Parish's daisy) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 21 pp.

<sup>44</sup> U.S. Fish and Wildlife Service (USFWS). 2015b. *Eriogonum kennedyi* var. *austromontanum* (southern mountain wild buckwheat) 5-year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 49 pp.

<sup>45</sup> U.S. Fish and Wildlife Service (USFWS). 2009c. *Eriogonum ovalifolium* var. *vineum* (Cushenbury buckwheat) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 19 pp.

<sup>46</sup> U.S. Fish and Wildlife Service (USFWS). 2009d. *Physaria* (*Lesquerella*) *kingii* subsp. *bernardina* (San Bernardino Mountains Bladderpod) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 18 pp.

yellow, and the fruits are spherical, pubescent, two-chambered, and contain 2 to 4 seeds per chamber. This species is typically found within single leaf pinyon-mountain juniper and white fir forest on limestone and dolomite soils and gentle to moderate slopes at elevations between 2,098 and 2,700 meters (6,883 and 8,800 feet) in the San Bernardino Mountains. This species typically blooms from May to June.

**Suitable Habitat Locations in Program Area:**

- None

***San Bernardino Blue Grass – Endangered (Federal)***

The Federally listed as endangered San Bernardino blue grass is a rhizomatous, tufted, perennial herb in the grass family (*Poaceae*) that grows to approximately 10 to 55 centimeters (1.2 to 2.8 inches) tall. This species is dioecious and the unisexual flower inflorescences (flower clusters) are 3 to 7 centimeters (3.2 to 5.9 inches) long, with smooth, appressed branches and glabrous spikelets.<sup>47</sup> San Bernardino blue grass occurs only in montane meadows at altitudes from 1,800 to 2,300 meters (5906 to 7546 feet) in San Bernardino and San Diego Counties.<sup>48</sup> This species typically blooms from May through September.

**Suitable Habitat Locations in Program Area:**

- Shay Pond Replacement Pipeline
- Shay Pond Conveyance Pipeline Alignment
- Stanfield Marsh Conveyance Pipeline Discharge Outlets
- BBARWA WWTP Upgrades
- Baldwin Lake Pipeline Alignment Option

***Bird-foot Checkerbloom – Endangered (Federal/State)***

The State and Federally listed as endangered bird-foot checkerbloom is a perennial herb in the mallow family (*Malvaceae*), with erect stems that grow to approximately 20 to 40 centimeters (7 to 16 inches) from a fleshy, nonrhizomatous taproot. This species is gynodioecious, with up to 25-centimeter-long, spike-like inflorescences that produce either bisexual or pistillate flowers that are rose-pink to magenta in color with dark veins.<sup>49</sup> The basal, cauline leaves are ternate-dissected, palmately five to seven parted into narrow, three lobe divisions, which are further dissected into linear to oblong segments.<sup>50</sup> Bird-foot checkerbloom occurs only in vernal moist meadows and sparsely vegetated, drier meadow sites at elevations from 1,600 to 2,500 meters (5,250 to 8,200 feet) in the Big Bear Valley of the San Bernardino Mountains in San Bernardino County. This species typically blooms from May through August.

**Suitable Habitat Locations in Program Area:**

- Shay Pond Replacement Pipeline
- Shay Pond Conveyance Pipeline Alignment
- Stanfield Marsh Conveyance Pipeline Discharge Outlets
- BBARWA WWTP Upgrades
- Baldwin Lake Pipeline Alignment Option

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<sup>47</sup> Soreng, Robert J. 2012, *Poa atropurpurea*, in Jepson Flora Project (eds.) *Jepson eFlora*, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=38798](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=38798), accessed on August 30, 2023.

<sup>48</sup> U.S. Fish and Wildlife Service (USFWS). 2008. *Poa atropurpurea* (San Bernardino Bluegrass) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 21 pp.

<sup>49</sup> Hill, Steven R. 2012. *Sidalcea pedata*, in Jepson Flora Project (eds.) *Jepson eFlora*, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=44435](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=44435), accessed on September 04, 2023.

<sup>50</sup> U.S. Fish and Wildlife Service (USFWS). 2011a. *Sidalcea pedata* (pedate checker-mallow) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 35 pp.



**California Dandelion – Endangered (Federal)**

The Federally listed as endangered California dandelion is a perennial herb in the aster family (*Asteraceae*) with 10 to 20 basal, oblanceolate, generally toothed, or occasionally shallowly lobed leaves, that grows to approximately 5 to 20 centimeters (2 to 8 inches) tall. This species produces yellow composite flowers with erect outer phyllaries that are lance-ovate to widely ovate with hornless tips and rounded, generally hornless main phyllaries.<sup>51</sup> California dandelion can be distinguished from the sympatric, nonnative, common dandelion (*Taraxacum officinale*) by the sharply cut or recurved-lobed leaves and reflexed outer phyllaries observed in the flowering plant of the latter species.<sup>52</sup> California dandelion occurs only in the relatively open edges or margins of moist meadow habitats at altitudes from 2,000 to 2,800 meters (6,700 to 9,000 feet) in the San Bernardino Mountains in San Bernardino County. This species typically blooms from May through August.

**Suitable Habitat Locations in Program Area:**

- Shay Pond Replacement Pipeline
- Shay Pond Conveyance Pipeline Alignment
- Stanfield Marsh Conveyance Pipeline Discharge Outlets
- BBARWA WWTP Upgrades
- Baldwin Lake Pipeline Alignment Option

**Slender-petaled Thelypodium – Endangered (Federal)**

The State and Federally listed as endangered slender-petaled thelypodium is a glabrous (lacks hairs), biennial herb in the mustard family (*Brassicaceae*) with a rosette of wavy basal leaves and 30 to 90 centimeter (11.8 to 35.4 inch) tall, simple, or branched distally stems, which have mid-cauline sessile, sagittate to clasping, entire leaves. This species has small lavender or white flowers with narrow (0.3 to 0.5 millimeter wide) linear petals that are crinkled between the blade and claw.<sup>53</sup> Slender-petaled thelypodium produces narrow, linear fruits that are 3 to 5 centimeters (1.2 to 2 inches) long.<sup>54</sup> This species occurs on vernal moist alkaline meadows, alkaline flats, and lakeshores at altitudes from 1,600 to 2,500 meters (5,250 to 8,200 feet) in the Big Bear Valley of the San Bernardino Mountains in San Bernardino County. All known populations of slender-petaled thelypodium are found on alkaline clay soils crossed by annually moist seeps and streams, indicating that soil hydrology is an important factor in determining distribution. This species is found towards the drier edges of moist meadows, or drier sparsely vegetated meadows, often growing up through sagebrush shrubs. This species typically blooms from May through September.

**Suitable Habitat Locations in Program Area:**

- Shay Pond Replacement Pipeline
- Shay Pond Conveyance Pipeline Alignment
- BBARWA WWTP Upgrades
- Baldwin Lake Pipeline Alignment Option

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<sup>51</sup> Brouillet, luc. 2012. *Taraxacum californicum*, in Jepson Flora Project (eds.) Jepson eFlora, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=5221](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=5221), accessed on September 04, 2023.

<sup>52</sup> U.S. Fish and Wildlife Service (USFWS). 2013b. *Taraxacum californicum* (California Taraxacum) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 55 pp.

<sup>53</sup> Al-Shehbaz, Ihsan A. 2012. *Thelypodium stenopetalum*, in Jepson Flora Project (eds.) *Jepson eFlora*, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=46370](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=46370), accessed on September 04, 2023.

<sup>54</sup> U.S. Fish and Wildlife Service (USFWS). 2011b. *Thelypodium stenopetalum* (slender-petaled mustard) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 34 pp.

## **Special-Status Animal Species with Potential for Occurrence in the Program Area**

### ***Unarmored Threespine Stickleback – Endangered (Federal/State)***

The State and Federally listed as endangered Stickleback is a small (up to six centimeters [2.4 inches]) freshwater fish in the stickleback family (*Gasterosteidae*) that is distinguished from the other two threespine stickleback subspecies primarily in that it lacks any protective lateral plates (modified scales). The Stickleback typically inhabits slow-moving streams or quiet-water microhabitats in swifter streams and rivers.<sup>55</sup> This species feeds on aquatic invertebrates and prefers aquatic refugia consisting of dense and abundant vegetation, algal mats, or barriers to swift water such as sand bars, floating vegetation, or low-flow road crossings. Although the Stickleback reproduces year-round, breeding activity usually slows from October to January, and this species likely only lives for about one year.

Historically, Stickleback occurred in many watersheds throughout southern California, including the headwaters of the Santa Clara River and low gradient parts of the Los Angeles River, San Gabriel River, and Santa Ana River in the Los Angeles Basin, the Santa Maria River drainage in San Luis Obispo County, and San Antonio Creek in Santa Barbara County.<sup>56</sup> In 1970, the Stickleback was listed as endangered under the Endangered Species Preservation Act of 1966 as a result of population declines due to urbanization, eutrophication, stream channelization, water releases, groundwater removal, declining water quality, nonnative predators, disease, introgression, competition, and stochastic extinction. In the San Bernardino Mountains, Stickleback is currently considered extant at only three sites: Sugarloaf Meadow Pond, Juniper Springs Pond, the vicinity of Shay Creek. The Shay Creek population of Stickleback at Shay Pond persists due to BBCCSD discharges of approximately 50 AFY of supplemental water into Shay Pond to prevent desiccation. The status of the remaining Stickleback population from the vicinity of Shay Creek, including those in Motorcycle Pond, Shay Creek, Weibe's Pond, and Baldwin Lake are considered intermittent or unknown (i.e., Weibe's Pond), primarily due to the ephemeral hydrologic regime within the Shay Creek system.

#### **Suitable Habitat Locations in Program Area:**

- Shay Pond Replacement Pipeline
- Shay Pond Conveyance Pipeline Alignment

### ***Quino Checkerspot Butterfly – Endangered (Federal)***

The Federally listed as endangered quino checkerspot butterfly is a butterfly in the checkerspot subfamily (*Melitaeinae*) of the brushfooted butterfly family (*Nymphalidae*) that occurs in Riverside and San Diego Counties and the northern areas of Baja California Norte, Mexico. This species occurs in patchy scrubland habitats characterized by mosaics of open areas and dense patches of shrubs.<sup>57</sup> Host plants required by quino checkerspot larvae for food sources include *Plantago erecta*, *Plantago patagonica*, *Anterrhinum coulterianum*, and *Collinsia concolor* (USFWS 2003). Although quino checkerspot butterfly historically ranged throughout much of non-montane southern California, this species has been extirpated from more than 75 % of its former range. Due to dramatic declines resulting primarily from habitat loss, degradation, and fragmentation, the USFWS listed the quino checkerspot butterfly as endangered on January 16, 1997, and the

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<sup>55</sup> U.S. Fish and Wildlife Service (USFWS). 2009e. Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) 5-year Review: Summary and Evaluation. Ventura Fish and Wildlife Office, Ventura, California. 37 pp.

<sup>56</sup> U.S. Fish and Wildlife Service (USFWS). 2021. Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) 5-year Review: Summary and Evaluation. Ventura Fish and Wildlife Office, Ventura, California. 21 pp.

<sup>57</sup> U.S. Fish and Wildlife Service (USFWS). National Wetlands Inventory. Available at: <http://wetlands.fws.gov>. (Accessed: April 3, 2023).

USFWS issued an incidental take permit for this species to the Riverside County Habitat Conservation Agency under the Multiple Species Habitat Conservation Plan (MSHCP) on June 22, 2004.

**Suitable Habitat Locations in Program Area:**

- None

***Bald Eagle – Delisted (Federal) / Endangered (State)***

The bald eagle (BAEA) was a Federally listed species until 2007 when it was delisted because of the increase in population. However, it remains a State listed endangered species and is covered under the MBTA of 1918, as well as the Bald and Golden Eagle Protection Act of 1940, as amended in 1962. BAEA are distinguished by a white head and white tail feathers, are powerful, brown birds that may weigh 14 pounds and have a wingspan of eight feet. Male eagles are smaller, weighing as much as 10 pounds and have a wingspan of six feet. Sometimes confused with Golden Eagles, BAEA are mostly dark brown until they are four to five years old and acquire their characteristic coloring. They live near rivers, lakes, and marshes where they can find fish, their staple food. BAEA will also feed on waterfowl, turtles, rabbits, snakes, and other small animals and carrion. BAEA require a good food base, perching areas, and nesting sites. Their habitat includes estuaries, large lakes, reservoirs, rivers, and some seacoasts.<sup>58</sup> In winter, the birds congregate near open water in tall trees for spotting prey and night roosts for sheltering.<sup>59</sup> They mate for life, choosing the tops of large trees to build nests, which they typically use and enlarge each year. In most of California, the breeding season lasts from about January through July or August. Nests may reach 10 feet across and weigh a half ton. They may also have one or more alternate nests within their breeding territory. The young eagles are flying within three months and are on their own about a month later.

Perches in the immediate vicinity of lakeshores form an essential habitat requirement for BAEA in the Big Bear Valley and the major threat to the continued existence of wintering BAEA in this area comes from development and modification of habitat near the shoreline.<sup>60</sup>

**Suitable Habitat Locations in Program Area:**

- Stanfield Marsh Conveyance Pipeline Discharge Outlets
- BBARWA WWTP Upgrades
- Baldwin Lake Pipeline Alignment Option

***Southern Rubber Boa – Threatened (State)***

The State listed as threatened southern rubber boa (rubber boa) is a small, rather stout-bodied snake with smooth scales and a blunt head and tail.<sup>61</sup> Adults grow to about 49.5-55.9 centimeters (19.5 to 22 inches) in length. Adult rubber boas are light brown or tan in dorsal color with an unmarked yellow venter; juveniles are pale without a distinct margin between dorsal and ventral coloration. Rubber boas are primarily fossorial and are rarely encountered on the surface, except on days and nights of high humidity and overcast sky. During warm months, this snake is typically

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<sup>58</sup> California Department of Fish and Wildlife (CDFW), 2016. Bald Eagles in California. Retrieved from: <https://www.wildlife.ca.gov/Conservation/Birds/Bald-Eagle>.

<sup>59</sup> California Department of Fish and Game (CDFW). California Interagency Wildlife Task Group. 1999. Life History Account for Bald Eagle. Sacramento, California.

<sup>60</sup> Walter, Hartmut, PhD. and Garrett, Kimbal L. 1981. The Effects of Human Activity on Wintering Bald Eagles in the Big Bear Valley, California. Unpublished report to U.S. Forest Service, 89 pp.

<sup>61</sup> Stewart, Glenn R., Jennings, Mark R., and Goodman Jr., Robert H. 2005. Sensitive Species of Snakes, Frogs, and Salamanders in Southern California Conifer Forest Areas: Status and Management. USDA Forest Service Gen. Tech. Rep. PSW-GTR-195. 2005.

active at night and on overcast days. Rubber boas hibernate during the winter, usually in crevices in rocky outcrops. Other potential hibernacula for this species may include rotting stumps.

Typical southern rubber boa habitat is mixed conifer-oak forest or woodland dominated by two or more of the following species: Jeffrey pine (*Pinus jeffreyi*), yellow pine (*P. ponderosa*), sugar pine (*P. lambertiana*), incense cedar (*Calocedrus decurrens*), white fir (*Abies concolor*), and black oak (*Quercus kelloggii*). Rubber boas are usually found near streams or wet meadows or within or under surface objects with good moisture retaining properties such as rotting logs. Much of the literature suggests that the rubber boa prefers moist conifer-oak forests and woodlands between 5,000 and 8,000 feet in elevation, especially in canyons and on cool, north facing slopes. However, the factors of overriding importance seem to be access to hibernation sites below the frost line and access to damp soil.<sup>62</sup> In all habitat types, rock outcrops and surface materials (i.e., rocks, logs, and a well-developed duff layer) are important habitat components because they provide cover and maintain soil moisture.<sup>63</sup>

**Suitable Habitat Locations in Program Area:**

- Shay Pond Replacement Pipeline
- Sand Canyon Recharge Conveyance Pipeline
- Sand Canyon Conveyance Pipeline Discharge Outlet

**California Spotted Owl – SSC**

The California spotted owl (SPOW) is considered an SSC by the CDFW and is listed as a Sensitive Species by the U.S. Forest Service (USFS). The SPOW breeds and roosts in forests and woodlands with large old trees and snags, high basal areas of trees and snags, dense canopies (≥70% canopy closure), multiple canopy layers, and downed woody debris. Large, old trees are the key component; they provide nest sites and cover from inclement weather and add structure to the forest canopy and woody debris to the forest floor. These characteristics typify old-growth or late-seral-stage habitats.<sup>64</sup> Because the SPOW selects stands that have higher structural diversity and significantly more large trees than those generally available, it is considered a habitat specialist. In southern California, SPOW principally occupy montane hardwood and montane hardwood-conifer forests, especially those with canyon live oak (*Quercus chrysolepis*) and bigcone Douglas-fir (*Pseudotsuga macrocarpa*), at mid to high elevations.

SPOW prey on small mammals, particularly dusky-footed woodrats (*Neotoma fuscipes*) at lower elevations (oak woodlands and riparian forests) and throughout southern California. The SPOW breeding season occurs from early spring to late summer or fall. Breeding spotted owls begin pre-laying behaviors, such as preening and roosting together, in February or March and juvenile owl dispersal likely occurs in September and October. The SPOW does not build its own nest but depends on finding suitable, naturally occurring sites in tree cavities or on broken-topped trees or snags, on abandoned raptor or common raven (*Corvus corax*) nests, squirrel nests, dwarf mistletoe (*Arceuthobium spp.*) brooms, or debris accumulations in trees. In the San Bernardino

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<sup>62</sup> Keasler, Gary L. 1982. Eastern San Bernardino Mountain southern rubber boa survey. Report prepared for the U.S. Department of Agriculture, Forest Service, San Bernardino National Forest, San Bernardino, California; 22 p. and 2 maps.

<sup>63</sup> Stewart, Glenn R. 1988. The rubber boa (*Charina bottae*) in California, with particular reference to the southern subspecies, *C. b. umbratica*. In: De Lisle, H. F.; Brown, P. R.; Kaufman, B.; McGurty, B.M., editors. Proceedings of the conference on California herpetology. Southwestern Herpetologists Society, Special Publication (4); 131-138.

<sup>64</sup> Davis, J., and Gould Jr., G. 2008. California Spotted Owl (*Strix occidentalis occidentalis*). In W.D. Shuford and T. Gardali (Eds.), *California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1*. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento

Mountains, platform nests predominate (59%) and were in trees with an average diameter at breast height (dbh) of 75 centimeters, whereas cavity nest trees and broken-top nest trees were significantly larger (mean dbh of 108.3 centimeters and 122.3 centimeters, respectively).<sup>65</sup>

According to LaHaye and Gutierrez (2005), urbanization in the form of primary and vacation homes has degraded or consumed some forest in most mountain ranges. The results of spotted owl surveys conducted between 1987 and 1998 in the San Bernardino Mountains indicated that a large area of potentially suitable spotted owl habitat, enough to support 10-15 pairs, existed between Running Springs and Crestline. However, only four pairs have been found in this area, and owls were found only in undeveloped sites. Thus, residential development within montane forests may preclude spotted owl occupancy, even when closed-canopy forest remains on developed sites.

**Suitable Habitat Locations in Program Area:**

- None

***San Bernardino Flying Squirrel – SSC***

The San Bernardino flying squirrel (flying squirrel) is considered an SSC by the CDFW and is listed as a Sensitive Species by the USFS. The flying squirrel is a nocturnally active, arboreal squirrel that is distinguished by the furred membranes extending from wrist to ankle that allow squirrels to glide through the air between trees at distances up to 91 meters (300 feet). The San Bernardino flying squirrel is the most southerly distributed subspecies of northern flying squirrel (*Glaucomys sabrinus*) and is paler in color and smaller than most other northern flying squirrel subspecies. It inhabits high-elevation mixed conifer forests comprised of white fir, Jeffrey pine, and black oak between ~4,000 to 8,500 feet. It has specific habitat requirements that include associations with mature forests, large trees, and snags, closed canopy, downed woody debris, and riparian areas, and it is sensitive to habitat fragmentation. It specializes in eating truffles (e.g. *hypogeous mycorrhizal sporocarps*) buried in the forest floor as well as arboreal lichens in winter when truffles are covered with snow and unavailable. This flying squirrel historically occurred as three isolated populations in the San Gabriel, San Bernardino, and San Jacinto Mountain forests.

Flying squirrel populations are adversely affected by habitat fragmentation. Rosenberg and Raphael (1984)<sup>66</sup> found that in northwestern California, the abundance of squirrels increased with stand size, they were generally absent in stands smaller than 20 hectares (ha), and approximately 75% of stands over 100 ha had flying squirrels. An additional problem with fragmented habitats is the constraints that open spaces pose to the movements of individuals and the colonization of unoccupied habitat patches. Mowrey and Zasada (1982) reported an average gliding distance of about 20 meters in *sabrinus*, with a maximum of 48 meters, and concluded that movements are unimpeded in areas with average openings of 20 meters and occasional openings of 30 to 40 meters.<sup>67</sup>

<sup>65</sup> LaHaye, William S. and Gutiérrez, R. J. 2005. The Spotted Owl in Southern California: Ecology and Special Concerns for Maintaining a Forest-Dwelling Species in a Human-Dominated Desert Landscape. In Barbara E. Kus and Jan L. Beyers (technical coordinators), *Planning for Biodiversity: Bringing Research and Management Together*. Gen. Tech. Rep. PSW-GTR-195. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 274 p.

<sup>66</sup> Rosenberg, K. V., and M. G. Raphael. 1984. Effects of forest fragmentation on vertebrates in douglas-fir forests. Pp. 263-272 In: *Wildlife 2000: Modeling habitat relationships of terrestrial vertebrates*, (J. Verner, M. L. Morrison, and C. J. Ralph, eds). Univ. Wisconsin Press, Madison, WI. 1-470 pp.

<sup>67</sup> Bolster, B.C., editor. 1998. Terrestrial Mammal Species of Special Concern in California. Draft Final Report prepared by P.V. Brylski, P.W. Collins, E.D. Pierson, W.E. Rainey and T.E. Kucera. Report submitted to California Department of Fish and Game Wildlife Management Division, Nongame Bird and Mammal Conservation Program for Contract No. FG3146WM.



**Suitable Habitat Locations in Program Area:**

- Sand Canyon Recharge Conveyance Pipeline
- Sand Canyon Conveyance Pipeline Discharge Outlet
- East Neighborhoods Pipeline Alignment Option
- West Neighborhoods Pipeline Alignment Option
- North Airport Corridor Pipeline Alignment Option
- Meadow Lane Pipeline Alignment Option

**Special-Status Habitat with Potential for Occurrence in the Program Area**

Several special status habitats have been documented in the Program vicinity (within approximately three miles) including pebble plains, southern California threespine stickleback stream, and USFWS designated Critical Habitat for several Federally listed threatened or endangered species. There is no pebble plain or pebble plain-like habitat within the proposed Program Area footprint. There is southern California threespine stickleback stream habitat within the Shay Pond Conveyance Pipeline alignment and possible Shay Pond Replacement Pipeline.

The nearest USFWS designated Critical Habitat units are adjacent the east side of the BBARWA WWTP and adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option, respectively. The Critical Habitat unit adjacent the east side of the BBARWA WWTP site consists of the North Shay Meadow USFWS designated Critical Habitat unit (Unit 6) for the Federally listed as endangered California dandelion. The Critical Habitat unit adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option consists of the Pan Hot Springs Meadow USFWS designated Critical Habitat unit (Unit 1) for the Federally listed as endangered San Bernardino blue grass and California dandelion.

For further information regarding flora and fauna that may have a potential to occur in the Big Bear Valley area, please refer to Appendix A, Special Status Species Occurrence Potential Analysis found in the BRA (**Appendix 19**).

**4.5.4 Regulatory Setting**

The proposed Program would be required to comply with the following Federal and State regulations and laws:

1. Compliance with NEPA and State CEQA Guidelines regarding sensitive biological resources
2. USACE Clean Water Act (CWA) Section 404 Permit
3. EPA 404 (b)1 Alternatives Analysis
4. Section 7 and/or 10 of FESA of 1973, as amended
5. MBTA
6. U.S. Bald Eagle Act
7. CESA
8. CDFW Streambed Alteration Agreement, (Section 1600 et seq. of the FGC)
9. State of California Native Plant Protection Act
10. Plant Protection and Management Ordinances (San Bernardino County Code Title 8, Div. 11)

#### **4.5.4.1 Federal**

##### **Federal Endangered Species Act**

FESA (1973) protects plants and wildlife that are listed by the USFWS and the National Marine Fisheries Service (NMFS) as endangered or threatened. Section 9 of FESA prohibits the taking of endangered wildlife, where taking is defined as any effort to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct” (50 CFR 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any endangered plant on federal land and removing, cutting, digging up, damaging, or destroying any endangered plant on non-federal land in knowing violation of state law (16 U.S. Code [U.S.C.] 1538). Under Section 7 of FESA, Federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect an endangered species (including plants) or its critical habitat. Through consultation and the issuance of a BO, the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity, provided the action will not jeopardize the continued existence of the species. FESA specifies that the USFWS designate habitat for a species at the time of its listing in which are found the physical or biological features “essential to the conservation of the species,” or which may require “special management consideration or protection...” (16 U.S.C. § 1533[a][3].2; 16 U.S.C. § 1532[a]). This designated Critical Habitat is then afforded the same protection under the FESA as individuals of the species itself, requiring issuance of an incidental take permit prior to any activity that results in “the destruction or adverse modification of habitat .... determined .... to be critical” (16 U.S.C § 1536[a][2]).

##### *Interagency Consultation and Biological Assessments*

Section 7 of FESA provides a means for authorizing the “take” of threatened or endangered species by Federal agencies, and applies to actions that are conducted, permitted, or funded by a Federal agency. The statute requires Federal agencies to consult with the USFWS or NMFS, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. If a proposed project “may affect” a listed species or destroy or modify critical habitat, the Lead Agency is required to prepare a biological assessment evaluating the nature and severity of the potential effect.

*Habitat Conservation Plans*, Section 10 of FESA, requires the acquisition of an incidental take permit from the USFWS by non-Federal landowners for activities that might incidentally harm (or “take”) endangered or threatened wildlife on their land. To obtain an Incidental Take Permit, an applicant must develop a Habitat Conservation Plan that is designed to offset any harmful impacts the proposed activity might have on the species.

##### **The Migratory Bird Treaty Act of 1918**

The MBTA of 1918 (16 U.S.C. 703-711) makes it unlawful to possess, buy, sell, purchase, barter or “take” any migratory bird listed in Title 50 of CFR Part 10. “Take” is defined as possession or destruction of migratory birds, their nests or eggs. Disturbances that cause nest abandonment and/or loss of reproductive effort or the loss of habitats upon which these birds depend may be a violation of the MTBA.

##### **Clean Water Act Section 404**

Wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and floodwaters, and water recharge, filtration,

and purification functions. Technical standards for delineating wetlands have been developed by the USACE which generally defines wetlands through consideration of three criteria: hydrology, soils, and vegetation. Under Section 404 of the CWA, the USACE is responsible for regulating the discharge of dredged or fill material into waters of the U.S. The term “waters” includes certain wetlands and non-wetland bodies of water that meet specific criteria as defined in the CFR and by federal case law.

Currently the applicability of the CWA in accordance with the “2023 Waters Rule” and must be harmonized with the Supreme Court of the U.S. (SCOTUS) rulings in *United States v. Riverside Bayview (Bayview)*<sup>68</sup>, *Solid Waste Agency of Northern Cook County v. Army Corps (SWANCC)*<sup>69</sup>, *Rapanos v. United States (Rapanos)*<sup>70</sup>, and *Sackett v. EPA (Sackett II)*<sup>71</sup> rulings.

The following summarizes the changes that may occur as a result of this ruling. The 2023 Rule defines the following Waters of the U.S. There are no changes from the Pre-2015 Waters Rule in the definitions of a(1), a(2), and a(4) Waters. However, there are nuance changes to a(3) Waters, and there are substantial changes to identifying a(5) Waters. In general, the 2023 Rule does not consider “isolated” as described in SWANCC, nor does it consider a need to have ties to interstate commerce (Bayview). This rule relies entirely on the definitions below for Traditionally Navigable Waters, and their impoundment and tributaries, which are established by having a “Significant Nexus” by contributing to the biological, chemical, or physical characteristics of a Traditionally Navigable Water.

During the first two months of the 2023 Rule implementation, several court cases have enjoined the use of the rule and subsequently have reverted to the Pre-2015 Rule. Currently 27 states are using the Pre-2015 Rule. However, California has not been enjoined and continues to fall under the 2023 Rule. On May 26, 2023 the SCOTUS ruled on Sackett II. In this ruling they found the CWA’s use of “waters” encompasses “only those relatively permanent, standing or continuously flowing bodies of water ‘forming geographic[a] features’ that are described in ordinary parlance as ‘streams, oceans, rivers, and lakes.’” 547 U. S., at 739 (quoting Webster’s New International Dictionary 2882 (2d ed. 1954) (Webster’s Second); original alterations omitted).

The SCOTUS appears to have struck down the use of the Significant Nexus Analysis, use of “Similarly Situated Waters” being combined to have a biological, chemical, or biological nexus to a Traditionally Navigable Water. Further, the Court has determined that Waters of the U.S. extend only to tributaries of traditionally navigable waters that have relatively permanent flows, such that they flow or are inundated unless there is unusually prolonged drought, or the ebb of a tide.

The USACE and EPA will continue to implement the Water of the U.S. Rule under these revised definitions, which may affect the applicability of USACE issued permits for elements of the Program and other projects. The EPA and the USACE will determine CWA jurisdiction over a project site and complete the “significant nexus test” as detailed in the guidelines and the USACE-approved Jurisdictional Determination Form.

### **Rivers and Harbors Act 1899**

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the USACE for the construction of any structure in or over any navigable waters of the U.S.

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<sup>68</sup> *United States v. Riverside Bayview Homes, Inc.* (1985) 474 U.S. 121.

<sup>69</sup> *Solid Waste Agency of Northern Cook Cty. v. Army Corps of Engineers* (2001) 531 U.S. 159.

<sup>70</sup> *Rapanos v. United States* (2006) 547 U.S. 715.

<sup>71</sup> *Sackett v. Environmental Protection Agency* (2023) 598 U.S. \_\_\_\_\_

### **Fish and Wildlife Coordination Act**

The Fish and Wildlife Coordination Act (16 U.S.C. Sections 661 to 667e et seq.) applies to any Federal project where any body of water is impounded, diverted, deepened, or otherwise modified. Implementing agencies are required to consult with the USFWS and the appropriate state wildlife agency.

### **Magnuson-Stevens Fishery Conservation and Management Act**

The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. Section 1801 et seq.) requires all Federal agencies to consult with the NMFS on all actions or proposed actions (permitted, funded, or undertaken by the agency) that may adversely affect fish habitats. It also requires cooperation among NMFS, the councils, fishing participants, and Federal and State agencies to protect, conserve, and enhance essential fish habitat, which is defined as those waters and substrates needed by fish for spawning, breeding, feeding, and growth to maturity.

### **Bald and Golden Eagle Protection Act**

The Bald and Golden Eagle Protection Act (The Eagle Act) (1940), amended in 1962, was originally implemented for the protection of bald eagles (*Haliaeetus leucocephalus*). In 1962, Congress amended The Eagle Act to cover golden eagles (*Aquila chrysaetos*), a move that was partially an attempt to strengthen protection of bald eagles, since the latter were often killed by people mistaking them for golden eagles. This Act makes it illegal to import, export, take (molest or disturb), sell, purchase, or barter any bald eagle or golden eagle or part thereof. The golden eagle, however, is accorded somewhat lighter protection under The Eagle Act than that of the bald eagle.

### **Executive Orders**

#### *Invasive Species—Executive Order (EO) 13112 (1999)*

Issued on February 3, 1999, promotes the prevention and introduction of invasive species and provides for their control and minimizes the economic, ecological, and human health impacts that invasive species cause through the creation of the Invasive Species Council and Invasive Species Management Plan.

#### *Protection of Wetlands—Executive Order 11990 (1977)*

Issued on May 24, 1977, helps avoid the long-term and short-term adverse impacts associated with destroying or modifying wetlands and avoiding direct or indirect support of new construction in wetlands when there is a practicable alternative.

#### *Migratory Bird—EO 13186 (2001)*

Issued on January 10, 2001, promotes the conservation of migratory birds and their habitats and directs Federal agencies to implement the MBTA. Protection and Enhancement of Environmental Quality—EO 11514 (1970a), issued on March 5, 1970, supports the purpose and policies of NEPA and directs Federal agencies to take measures to meet national environmental goals.

#### *Migratory Bird Treaty Reform Act*

The Migratory Bird Treaty Reform Act (Division E, Title I, Section 143 of the Consolidated Appropriations Act, 2005, PL 108-447) amends the MBTA (16 U.S.C. Sections 703 to 712) such that nonnative birds or birds that have been introduced by humans to the U.S. or its territories are excluded from protection under the Act. It defines a native migratory bird as a species present in the U.S. and its territories as a result of natural biological or ecological

processes. This list excluded two additional species commonly observed in the U.S., the rock pigeon (*Columba livia*) and domestic goose (*Anser domesticus*).

#### **4.5.4.2 State**

##### **California Endangered Species Act**

California Endangered Species Act (CESA) is similar to the main provisions of FESA and is administered by CDFW. Unlike its Federal counterpart, CESA applies the take prohibitions to not only listed threatened and endangered species, but also to State candidate species for listing. Section 86 of the FGC defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The CDFW maintains lists for Candidate-Endangered Species and Candidate-Threatened Species, which have the same protection as listed species. Under CESA the term "endangered species" is defined as a species of plant, fish, or wildlife, which is "in serious danger of becoming extinct throughout all, or a significant portion of its range" and is limited to species or subspecies native to California.

##### **Clean Water Act Section 401/Porter-Cologne Act**

California regulates water quality related to discharge of dredge or fill material into waters of the State pursuant to the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) and, when involving waters of the U.S., under its authority pursuant to Section 401 of the CWA. Section 401 compliance is a Federal mandate regulated by the State. The local RWQCB have jurisdiction over all those areas defined as jurisdictional under Section 404 of the CWA. In addition, the RWQCBs regulate water quality for all waters of the State, which may also include isolated wetlands, as defined by the Porter-Cologne Act (Porter Cologne; Ca. Water Code, Div. 7, Section 13000 et seq.). The RWQCB regulates discharges that can affect water quality of both waters of the U.S. and waters of the State. If there is no USACE jurisdiction over waters of the U.S., then the RWQCB regulates water quality of waters of the State through a Waste Discharge Permit, as required to comply with the Porter-Cologne Act when a Section 401 water quality certification would not apply.

##### **Sections 1600 through 1606 of the California Fish and Game Code**

This section requires that a Streambed Alteration Application be submitted to the CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." The CDFW reviews the proposed actions and, if necessary, submits to the applicant a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the applicant is the Streambed Alteration Agreement. Often, projects that require a Streambed Alteration Agreement also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the Streambed Alteration Agreement may overlap.

##### **California Fish and Game Codes**

All birds, and raptors specifically, and their nests, eggs and parts thereof are protected under Sections 3503.5 of the FGC. Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) is considered a violation of this code. Additionally, Section 3513 of the FGC prohibits the take or possession of any migratory non-game bird listed by the MBTA. The CDFW has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (California Fish & Game Code Section 1802). The CDFW, as a trustee agency under State CEQA Guidelines Section 15386, provides expertise in reviewing and commenting on environmental documents and makes and regulates protocols regarding potential negative impacts to biological resources held in California.



### **Fully Protected Species**

Four sections of the FGC list 37 fully protected species (i.e., Sections 3511, 4700, 5050, and 5515). These sections prohibit take or possession "at any time" of the species listed, with few exceptions, and state that "no provision of this code or any other law will be construed to authorize the issuance of permits or licenses to 'take' the species," and that no previously issued permits or licenses for take of the species "shall have any force or effect" for authorizing take or possession.

### **Bird Nesting Protections**

Bird nesting protections in Sections 3503, 3503.5, 3511, and 3513 of the FGC include the following:

- Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird.
- Section 3503.5 prohibits the take, possession, or needless destruction of any nests, eggs, or birds in the orders Falconiformes (new world vultures, hawks, eagles, ospreys, and falcons, among others), or Strigiformes (owls).
- Section 3511 prohibits the take or possession of fully protected birds.
- Section 3513 prohibits the take or possession of any migratory nongame bird or part thereof, as designated in the MBTA. To avoid violation of the take provisions, it is generally required that project-related disturbance at active nesting territories be reduced or eliminated during the nesting cycle.

### **California Migratory Bird Act-Assembly Bill 454**

Existing Federal law, the MBTA, provides for the protection of migratory birds, as specified. The MBTA also authorizes states and territories of the U.S. to make and enforce laws or regulations that give further protection to migratory birds, their nests, and eggs. Existing State law makes unlawful the taking or possession of any migratory nongame bird, or part of any migratory nongame bird, as designated in the MBTA, except as provided by rules and regulations adopted by the U.S. Secretary of the Interior under provisions of the MBTA..... (a) It is unlawful to take or possess any migratory nongame bird as designated in the MBTA (16 U.S.C. Sec. 703 et seq.), or any part of a migratory nongame bird described in this section, except as provided by rules and regulations adopted by the U.S. Secretary of the Interior under the MBTA.

### **Native Plant Protection Act**

The Native Plant Protect Act (NPPA) (1977) (FGC Sections 1900-1913) was created with the intent to "preserve, protect, and enhance rare and endangered plants in this State." The NPPA is administered by CDFW. The Fish and Game Commission has the authority to designate native plants as endangered or rare and to protect endangered and rare plants from take. CESA, discussed above at 4.5.4.2.1, provides further protection for rare and endangered plant species, but the NPPA remains part of the FGC.

### **Natural Communities Conservation Planning Act**

This Act was enacted to encourage broad-based planning to provide for effective protection and conservation of the state's wildlife resources while continuing to allow appropriate development and growth (FGC Sections 2800 to 2835). Natural Community Conservation Plans (NCCP) may be implemented, which identify measures necessary to conserve and manage natural biological diversity within the planning area, while allowing compatible and appropriate economic development, growth, and other human uses.

### **Senate Concurrent Resolution No. 17 – Oak Woodlands**

State Senate Concurrent Resolution No. 17 is legislation that requests State agencies having land use planning duties and responsibilities to assess and determine the effects of their decisions or actions within any oak woodlands containing Blue, Englemann, Valley, or Coast Live Oak. The measure requests those state agencies to preserve and protect native oak woodlands to the maximum extent feasible or provide replacement plantings where designated oak species are removed from oak woodlands. The **MMs**, as described above, will ensure that impacts to oak woodlands are less than significant.

#### **4.5.4.5 Local**

### **San Bernardino County Development Code**

The following provisions from the San Bernardino County Development Code help minimize biological resources impacts associated with new development projects and are relevant to the proposed Program.

**Chapter 88.01 (Plant Protection and Management).** This chapter provides regulatory and management guidance for plant resources in unincorporated areas as well as mixed public and private lands. It primarily addresses tree and vegetation removal in public land and private land in unincorporated areas.

**Section 88.01.050(f)(1[a]),** The location of the regulated tree or plant and/or its dripline interferes with an allowed structure, sewage disposal area, paved area, or other approved improvement or ground disturbing activity and there is no other alternative feasible location for the improvement.

**Section 88.01.070, Mountain Forest and Valley Tree Conservation.** This section conserves forest resources in the Mountain and Valley regions to supplement the Z'berg-Nejedly Forest Practice Act of 1973 (California Public Resources Code, § 4526 et seq.). It regulates private and commercial harvesting of trees on public and private land.

**Section 88.01.080, Riparian Plant Conservation.** This section addresses the health of riparian corridors, their impact on waterways within the region, their use as habitat by various plant and wildlife species, and their stabilization of stream banks.

**Chapter 88.02, Soil and Water Conservation.** This chapter promotes the health of soil communities to limit soil erosion potential and preserve air quality. This code primarily regulates ground-disturbing activities.

### **San Bernardino Countywide Plan**

The San Bernardino Countywide Plan offers goals and policies related to the protection of biological resources. These goals and policies are found in the Natural Resources Element and Land Use Element.

#### ***Natural Resources Element***

The Countywide Plan Natural Resources Element has the following goal and policies that relate to biological resources, including:

<b>Goal</b>	<b>NR-5</b>	An interconnected landscape of open spaces and habitat areas that promotes biodiversity and healthy ecosystems, both for their intrinsic value and for the value placed on them by residents and visitors.
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<b>Policy</b>	NR-5.1	Coordinated habitat planning. We participate in landscape-scale habitat conservation planning and coordinate with existing or proposed habitat conservation and natural resource management plans for private and public lands to increase certainty for both the conservation of species, habitats, wildlife corridors, and other important biological resources and functions; and for land development and infrastructure permitting.
	NR-5.2	Capacity for resource protection and management. We coordinate with public and nongovernmental agencies to seek funding and other resources to protect, restore, and maintain open space, habitat, and wildlife corridors for threatened, endangered, and other sensitive species.
	NR-5.3	Multiple-resource benefits. We prioritize conservation actions that demonstrate multiple resource preservation benefits, such as biology, climate change adaptation and resiliency, hydrology, cultural, scenic, and community character.
	NR-5.8	Invasive species. We require the use of non-invasive plant species with new development and encourage the management of existing invasive plant species that degrade ecological function.
	NR-5.2	Capacity for resource protection and management. We coordinate with public and nongovernmental agencies to seek funding and other resources to protect, restore, and maintain open space, habitat, and wildlife corridors for threatened, endangered, and other sensitive species.
	NR-5.2	Capacity for resource protection and management. We coordinate with public and nongovernmental agencies to seek funding and other resources to protect, restore, and maintain open space, habitat, and wildlife corridors for threatened, endangered, and other sensitive species.

**City of Big Bear Lake General Plan**

The City of Big Bear Lake General Plan Environmental Resources Element has the following goal and policies that relate to biological resources, including:

<b>Goal</b>	ER-1	Identification of significant biological resources within the planning area and mitigation of impacts to these resources from urban development, in balance with other needs of the community and with special consideration given to preservation of listed endangered species in conformance with federal and state laws.
<b>Policy</b>	ER-1.1	The City shall act to reasonably conserve habitat of special-status wildlife and native plant species as environmental, economic and aesthetic assets of the community.
	ER-1.3	The City shall proactively assist in regional efforts to maintain the ecological integrity of Big Bear Lake.
	ER-1.4	Collect available data on biological resources within the planning area to maintain an accurate and regularly updated map and information base on sensitive plant and animal species and habitat occurring in the planning area.
	ER-1.5	Encourage the maintenance of natural drainage channels in a manner which allows passage of wildlife and, if appropriate, the establishment of nature trails, while ensuring that these channels can accommodate flows adequately to meet flood control objective.

**City of Big Bear Lake Municipal Code**

**Chapter 17.10 Tree Conservations and Defensible Space.** The City of Big Bear Lake’s Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces stipulates development requirements for projects that would remove existing trees of 12” in diameter at breast height.

**1995 Water Quality Control Plan for the Santa Ana River Basin Plan (Basin Plan) as Amended in 2008, 2011, 2016, and 2019**

**Table 3-2** (extracted from the Chapter 3, Program Description, shows the designated beneficial uses of Big Bear Lake and Stanfield Marsh per the 1995 Water Quality Control Plan (WQCP) for the Santa Ana Basin Plan, as amended in 2008, 2011, 2016, and 2019.

**Table 3-2  
 BENEFICIAL USES OF BIG BEAR LAKE AND STANFIELD MARSH**

<b>Beneficial Uses</b>	<b>Big Bear Lake</b>	<b>Stanfield Marsh</b>
AGR - Agricultural Supply	✓	
COLD - Cold Freshwater Habitat	✓	✓
COMM – Commercial and Sportfishing	✓	
GWR - Groundwater Recharge	✓	
MUN - Municipal and Domestic Supply	✓	✓
RARE - Rare, Threatened, or Endangered Species	✓	✓
REC1 - Water Contact Recreation	✓	✓
REC2 - Non-Contact Water Recreation	✓	✓
SPWN - Spawning, Reproduction, and/or Early Development	✓	
WARM - Warm Freshwater Habitat	✓	
WILD - Wildlife Habitat	✓	✓

**Other Local Policies and Ordinances**

The local policies and ordinances pertaining to and protecting biological resources include the following:

- The City of Big Bear Lake’s Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces stipulates development requirements for projects that would remove existing trees of 12” in diameter at breast height.
- San Bernardino County Development Code<sup>72</sup> Plant Protection and Management (88.01), which requires a Tree Removal Permit in conjunction with the land use application or development permit. Where such applications or approvals are required, a Tree Removal Permit pursuant to San Bernardino County’s Development Code would be required. The San Bernardino County Development Code stipulates the following for the Mountain Region that would be applicable to the activities proposed under the proposed Program: 88.01.050(f)(1[a]), *The location of the regulated tree or plant and/or its dripline interferes with an allowed structure, sewage disposal area, paved area, or other approved improvement or ground disturbing activity and there is no other alternative feasible location for the improvement.*

<sup>72</sup> San Bernardino County, 2023. Development Code. <https://lus.sbcounty.gov/planning-home/development-code/> (accessed 09/14/23)

- CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)].
- When projects are converting timberland to another use, the operations are considered commercial timber operations even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581].

#### **4.5.5 Thresholds of Significance**

The criteria used to determine the significance of potential Program-related biological resource impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to biological resources if it would:

- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?
- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?
- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?
- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?
- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The potential biological changes in the environment are addressed in response to the above thresholds in the following analysis.

#### **4.5.5.1 Methodology**

##### **Biological Resources Assessment**

Data regarding biological resources in the Program Area were obtained through literature review and field investigation. Prior to performing the surveys, available databases, and documentation relevant to the Program Area were reviewed for documented occurrences of special status species in the Program vicinity (within approximately three miles). The USFWS threatened and endangered species occurrence data overlay, USFWS IPaC, and the most recent versions of the CNDDB (*Rarefind 5*) and CNPSEI databases were searched for special status species data in the *Big Bear Lake, Big Bear City, Fawnskin* and *Moonridge* USGS 7.5-Minute Series Quadrangles (Appendix F of the BRA). These databases contain records of reported occurrences of State and Federally listed species or otherwise sensitive species and habitats that may occur within the vicinity of the proposed Program Area footprint (within approximately three miles). Other available technical information on the biological resources of the area was also reviewed including previous surveys and recent findings.



### **Biological Resources Assessment Field Survey**

Jacobs's biologist Daniel Smith conducted a biological resources assessment of the Program Area in June and July of 2022 and made a follow-up survey visit in July of 2023. Much of the Program is expected to be restricted to existing paved roadways and developed WWTP site. However, several Program components would impact areas that have not previously been developed including:

- The "Baldwin Lake Pipeline Alignment Option" of the Stanfield Marsh conveyance pipeline from the BBARWA WWTP.
- The "North Airport Corridor Pipeline Alignment Option" of the Stanfield Marsh conveyance pipeline from the BBARWA WWTP.
- Approximately 350 LF of the Sand Canyon Recharge Conveyance Pipeline from the existing Resort Storage Pond.
- The Sand Canyon Conveyance Pipeline Discharge Outlet.
- The Shay Pond Discharge Project outlet at Shay Pond.
- The new Solar Evaporation Ponds at the BBARWA WWTP.
- Approximately 2.9 acres of new solar facilities within and adjacent to the WWTP.

Therefore, the reconnaissance-level field survey consisted of a pedestrian survey that encompassed 100% visual coverage of the undeveloped aspects of the Program, as well as the road shoulder along the proposed conveyance pipeline alignments, within the developed neighborhoods. No adjacent private properties were accessed during the survey. The purpose of the survey was to assess the Program Area for its potential to support special status species. Wildlife species were detected during field surveys by sight, calls, tracks, scat, and/or other signs. In addition to species observed, expected wildlife usage of the Program Area was determined based on known habitat preferences of regional wildlife species and knowledge of their relative distribution in the area. The focus of the faunal species survey was to identify potential habitat within and adjacent the proposed Program Area footprint for special status wildlife that may occur in the Program vicinity.

### **Floristic Botanical Survey**

A floristic botanical field survey was also conducted by Jacobs's biologist Daniel Smith in June and July of 2022, a follow-up survey in July of 2023. In accordance with the CDFW's March 20, 2018, *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*, the survey was conducted during the appropriate time of year, when the target species were both evident and identifiable. The target species consisted of those State and/or Federally listed plant species that have been documented in the Program vicinity (within approximately three miles), whose environmental requirements may be present within the Program Area. Target species included:

- Ash-gray paintbrush (*Castilleja cinerea*)
- Big Bear Valley sandwort (*Eremogone ursina*)
- Southern mountain buckwheat (*Eriogonum kennedyi* var. *austromontanum*)
- Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*)
- San Bernardino Mountains bladderpod (*Physaria kingii* ssp. *bernardina*)
- San Bernardino blue grass (*Poa atropurpurea*)
- Bird-foot checkerbloom (*Sidalcea pedata*)
- California dandelion (*Taraxacum californicum*)
- Slender-petaled thelypodium (*Thelypodium stenopetalum*)

Prior to conducting the survey, Mr. Smith visited multiple reference sites within the Big Bear Valley, where the target species are known to occur, to determine whether the target species

were identifiable at the time of the survey and to obtain a visual image of the target species, associated habitat, and associated natural communities. The reference sites that were visited prior to survey included previously documented occurrences within the Big Bear Valley, near the Aspen Glen Picnic Area (Big Bear Valley sandwort); the Eagle Point Rare Plant Preserve (ash-gray paintbrush, southern mountain buckwheat, bird-foot checkerbloom, California dandelion, and slender-petaled thelypodium); North Baldwin Meadow (San Bernardino blue grass); SBNF land northwest of the North Shore Drive/Division Drive intersection (Cushenbury buckwheat); and SBNF land in the vicinity of Holcomb Valley/Caribou Creek (San Bernardino Mountains bladderpod). All target species were evident and identifiable at the reference sites prior to the 2022 and 2023 survey visits. During the surveys, 100% visual coverage of the of the undeveloped aspects of the Program, as well as the road shoulder along the proposed conveyance pipeline alignments, was achieved by walking the proposed Program Area footprint and road shoulders, within and adjacent where Program related ground disturbance is expected to occur.

### ***Survey Limitations***

No private properties were accessed without landowner permission. No focused faunal surveys were conducted, and no small mammal trapping was performed. Approximately 350 LF of the Sand Canyon Recharge Conveyance Pipeline (**Figure 4.5-5**) would be constructed between two houses, which would require an easement. Permission from the property owners of these two private residences was not obtained at the time of survey. Therefore, this section of the Sand Canyon Recharge Conveyance Pipeline was not surveyed. Additionally, it is anticipated that the reuse of the existing pipeline from BBARWA extending almost the entire distance to Shay Pond will be possible. As this existing pipeline alignment is anticipated to be viable, the Shay Pond Replacement Pipeline alignment (**Figures 4.5-7 through 4.5-8**) was not surveyed because the Program Team does not currently anticipate that the installation of this pipeline will be necessary. The existing pipeline from BBARWA extending almost the entire distance to Shay Pond is belowground, and as such, its use would not cause any aboveground impacts that could affect special status species, habitats, jurisdictional features, or other biological resources. BBARWA expects that the existing pipeline that extends from the BBARWA WWTP to Shay Pond, which is presently not in use, will be sufficient to convey purified water from the AWPF at BBARWA's WWTP to the proposed short length of pipeline to Shay Pond Conveyance Pipeline (**Figures 4.5-7 through 4.5-8**). Thus, given that the existing pipeline is anticipated to be sufficient to serve the Shay Pond Discharge Project, the Shay Pond Replacement Pipeline is not anticipated to be necessary and as a result, the Shay Pond Replacement Pipeline alignment was not surveyed. Additional surveys shall be conducted prior to implementation of Program activities within either of these two potential alignments (Shay Pond Replacement Pipeline and Sand Canyon Recharge Conveyance Pipeline on private property), to assess potential Program related impacts to special status species and habitats that may occur in these areas.

### **Jurisdictional Waters Assessment**

In June of 2022 and July of 2023, Mr. Smith also evaluated the Program Area for the presence of riverine/riparian/wetland habitat and jurisdictional waters, i.e., Waters of the U.S., as regulated by the USACE and RWQCB, and/or jurisdictional streambed and associated riparian habitat as regulated by the CDFW. Prior to the field visits, aerial photographs of the Program Area were viewed and compared with the surrounding USGS 7.5-Minute Topographic Quadrangle maps to identify drainage features within the survey area as indicated from topographic changes, blue-line features, or visible drainage patterns. The USFWS National Wetland Inventory and EPA Water Program "My Waters" Google Earth Pro data layer was also reviewed to determine whether any hydrologic features and wetland areas had been documented within the vicinity of the site. Similarly, the USDA NRCS Web Soil Survey was reviewed for soil types found within the Program Area to identify the soil series in the area and to check these soils to determine whether they are

regionally identified as hydric soils. Upstream and downstream connectivity of surface waters (if present) were reviewed on Google Earth Pro aerial photographs and topographic maps to determine jurisdictional status. The lateral extent of potential USACE jurisdiction was measured at the Ordinary High Watermark (OHWM) in accordance with regulations set forth in 33CFR part 328 and the USACE guidance documents listed below:

- *USACE Wetlands Research Program Technical Report Y-87-1 (on-line edition), Wetlands Delineation Manual, Environmental Laboratory, 1987 (Wetland Delineation Manual).*
- *USACE Minimum Standards for Acceptance of Preliminary Wetlands Delineations, November 30, 2001 (Minimum Standards).*
- *USACE Jurisdictional Determination Form Instructional Guidebook, May 30, 2007 (JD Form Guidebook).*
- *USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), May 2010.*
- *USACE A Guide to Ordinary High-Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States, August 2014 (Delineation Manual).*

To be considered a *jurisdictional wetland* under the CWA, Section 404, an area must possess three (3) wetland characteristics: *hydrophytic vegetation*, *hydric soils*, and *wetland hydrology*.

- ▶ **Hydrophytic vegetation:** Hydrophytic vegetation is plant life that grows, and is typically adapted for life, in permanently or periodically saturated soils. The hydrophytic vegetation criterion is met if more than 50 % of the dominant plant species from all strata (tree, shrub, and herb layers) is considered hydrophytic. Hydrophytic species are those included on the 2018 National Wetland Plant Lists for the Arid West Region (USACE 2018). Each species on the lists is rated with a wetland indicator category, as shown in Table 1 (below). To be considered hydrophytic, the species must have *wetland indicator status*, i.e., be rated as Obligate Wetland (OBL), Facultative Wetland (FACW), or Facultative (FAC).

**Table 4.5-2  
 WETLAND INDICATOR VEGETATION CATEGORIES**

<b>Category</b>	<b>Probability</b>
Obligate Wetland (OBL)	Almost always occur in wetlands (estimated probability >99%)
Facultative Wetland (FACW)	Usually occur in wetlands (estimated probability 67 to 99%)
Facultative (FAC)	Equally likely to occur in wetlands and non-wetlands (estimated probability 34 to 66%)
Facultative Upland (FACU)	Usually occur in non-wetlands (estimated probability 67 to 99%)
Obligate Upland (UPL)	Almost always occur in non-wetlands (estimated probability >99%)

- ▶ **Hydric Soil:** Soil maps from the USDA NRCS Web Soil Survey (USDA 2021) were reviewed for soil types found within the Program Area. Hydric soils are saturated or inundated long enough during the growing season to develop anaerobic conditions that favor growth and regeneration of hydrophytic vegetation. There are several indirect indicators that may signify the presence of hydric soils including hydrogen sulfide generation, the presence of iron and manganese concretions, certain soil colors, gleying, and the presence of mottling. Generally, hydric soils are dark in color or may be gleyed (bluish, greenish, or grayish), resulting from soil development under anoxic (without oxygen) conditions. Bright mottles within an otherwise dark soil matrix indicate periodic saturation with intervening periods of soil aeration. Hydric indicators are particularly difficult to observe in sandy soils, which are often recently deposited soils of flood plains

(entisols) and usually lack sufficient fines (clay and silt) and organic material to allow use of soil color as a reliable indicator of hydric conditions. Hydric soil indicators in sandy soils include accumulations of organic matter in the surface horizon, vertical streaking of subsurface horizons by organic matter, and organic pans.

The hydric soil criterion is satisfied at a location if soils in the area can be inferred or observed to have a high groundwater table, if there is evidence of prolonged soil saturation, or if there are any indicators suggesting a long-term reducing environment in the upper part of the soil profile. Reducing conditions are most easily assessed using soil color. Soil colors were evaluated using the Munsell Soil Color Charts (Munsell 2000). Soil pits are dug (when necessary) to an approximate depth of 16-20 inches to evaluate soil profiles for indications of anaerobic and redoximorphic (hydric) conditions in the subsurface.

- ▶ ***Wetland Hydrology:*** The wetland hydrology criterion is satisfied at a location based upon conclusions inferred from field observations that indicate an area has a high probability of being inundated or saturated (flooded, ponded, or tidally influenced) long enough during the growing season to develop anaerobic conditions in the surface soil environment, especially the root zone (USACE 1987 and USACE 2008).

Evaluation of CDFW jurisdiction followed guidance in the FGC. Specifically, CDFW jurisdiction would occur where a stream has a definite course with a distinguishable bed and bank showing evidence of where waters rise to their highest level and to the extent of associated riparian vegetation.

#### **4.5.6 Potential Impacts**

The following discussion represents an analysis of the impacts from implementing the Program as proposed in Chapter 3, Program Description, in the context of the existing conditions within the Big Bear Valley.

- a) Would the Program have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS?**

The construction and operation of the infrastructure across all Program Categories required to support the Program may result in direct and indirect impacts on special-status wildlife species. The extent and nature of impacts on special-status wildlife species varies depending on the species under consideration, their range, and the type and quality of suitable habitats present.

In general, permanent and temporary direct impacts on special-status wildlife species during construction of the future infrastructure improvements across all Program Categories include mortality or injury, and disturbances to suitable habitats for special-status wildlife species, including disruption of wetland and streambeds; water pollution; and reptile, bird, and mammal burrow or nest disturbance. These habitat disturbances could lead to the permanent or temporary abandonment of these habitats by special-status species, a disruption in the life cycle of these species, or direct mortality or injury of individuals of these species.

Permanent and temporary indirect impacts on special-status wildlife species would occur through construction or maintenance activities associated with future Program facilities in a number of ways depending on the species and type of disturbance. Potential indirect impacts include erosion, soil compaction, increased siltation and sedimentation, fractures in the hardpan soils or

rock outcroppings, alteration of jurisdictional water hydrology, dust aerosolization, host plant stress, destruction of native vegetation, habitat fragmentation, and noise and light pollution. These indirect impacts could lead to the disturbance of special-status wildlife species such as a temporary shift in foraging patterns or territories, refugia abandonment, increased predation, decreased reproductive success, and reduced population viability.

Construction of any Program facility should only result in mostly minimal impacts on special-status wildlife species, because only a limited amount of marginal habitat for special-status wildlife species could be impacted by construction activities. The location where most of the proposed Program facilities will be installed or constructed occurs within built-up land, or otherwise disturbed locations (such as BBARWA's WWTP, etc.), and thus construction would potentially impact special-status wildlife species that use mostly urban/developed areas. This does not negate the fact that special-status species, critical habitat, and habitat supporting special status species exists within the Big Bear Valley, and may be impacted by a minimal number and type of facilities proposed as part of the Program, particularly the facilities that would be installed within Baldwin Lake or in more rural, native land areas such as Shay Pond.

Ongoing operations or maintenance activities requiring ground disturbance, clearing, or grubbing could cause erosion and sedimentation, or could indirectly affect the hydrology of nearby jurisdictional waters and the species that depend on these resources. Chemical runoff from trucks or equipment within the future Program facility ROW could indirectly degrade suitable habitat used by these species that are present adjacent to or within the management zone boundaries. If operational maintenance requires weed abatement activities, such as the use of herbicides, these activities could also contribute to chemical runoff and pollution of adjacent suitable habitats. However, maintenance activities that would have potential impacts on special-status wildlife species are limited to the Program ROW areas that are currently in service or that will be added to normal program operations and maintenance at existing facilities.

As biological resource impacts are highly site dependent, the following discussion analyzes the potential impacts on each project site location. These locations are:

- **BBARWA WWTP Upgrades Project**
  - BBARWA WWTP Upgrades
- **Solar Evaporation Ponds Project**
  - Solar Evaporation Ponds at the BBARWA WWTP Site
- **Sand Canyon Recharge Project**
  - Sand Canyon Recharge Conveyance Pipeline
  - Sand Canyon Conveyance Pipeline Discharge Outlet
  - Sand Canyon Booster Station
  - Sand Canyon Monitoring Wells (locations unknown)
- **Shay Pond Discharge Project**
  - Shay Pond Replacement Pipeline
  - Shay Pond Conveyance Pipeline Alignment
- **Stanfield Marsh/Big Bear Lake Discharge Project**
  - Stanfield Marsh Conveyance Pipeline Discharge Outlets
  - Alignment Option 1 to Discharge Point 1
    - Baldwin Lake Pipeline Alignment Option
    - Meadow Lane Pipeline Alignment Option



- Alignment Option 2 to Discharge Point 2
  - East Neighborhoods Pipeline Alignment Option
  - West Neighborhoods Pipeline Alignment Option

### **BBARWA WWTP Upgrades Project**

#### ***Ash-gray Paintbrush – Threatened (Federal)***

**Findings:** According to the CNDDDB, the nearest documented ash-gray paintbrush occurrences are adjacent the southeast corner of the BBARWA WWTP (1999) and approximately 400 feet north of the Baldwin Lake Pipeline Alignment Option (2016), within big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable habitat for this species within the proposed Program Area footprint near the western end of the BBARWA WWTP Site, in addition to potential hostplant species (*Artemisia* spp.) that are present in this area as well. However, ash-gray paintbrush was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, ash-gray paintbrush is considered absent from the proposed Program Area footprint at the time of survey and the Program will not affect this species. However, given that there is suitable habitat located in the vicinity of the BBARWA WWTP site, it is possible that the implementation of the facilities at the BBARWA WWTP site could impact this species. Therefore, mitigation is required to ensure that impacts to this species are avoided.

In order to identify the extent of special status species plants within a given Program component, the **MM BIO-2**, which requires preconstruction clearance surveys is necessary to avoid a potentially significant impact on this species.

**MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

Impacts would be less than significant through the implementation of mitigation.

***San Bernardino Blue Grass – Endangered (Federal)***

Findings: According to the CNDDDB, the next nearest documented San Bernardino blue grass occurrences (1981) are immediately adjacent the Shay Pond Conveyance Pipeline alignment and immediately adjacent the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 2) site, respectively. San Bernardino blue grass was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, San Bernardino blue grass is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. No potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

***Bird-foot Checkerbloom – Endangered (Federal/State)***

Findings: Bird-foot checkerbloom was observed within and adjacent the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Approximately 100+ individual bird-foot checkerbloom were observed within and adjacent the Baldwin Lake Pipeline Alignment Option and the Solar Evaporation Ponds footprint at the BBARWA WWTP (**Figure 4.5-11**). According to the CNDDDB, bird-foot checkerbloom was

also documented within the proposed Baldwin Lake Pipeline Alignment Option in 2019, near the west end of the alignment, as well as near the southeast corner of the BBARWA WWTP (2009). There is also suitable montane meadow habitat for this species within the possible Shay Pond Replacement Pipeline, as well as immediately adjacent the Shay Pond Conveyance Pipeline alignment and Stanfield Marsh Conveyance Pipeline Discharge Outlet components of the proposed Program, but not within the BBARWA WWTP Upgrade footprint, as this portion of the site has been developed with the facilities that support BBARWA's operations. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

***California Dandelion – Endangered (Federal)***

Findings: According to the CNDDDB, the next nearest documented California dandelion occurrences are immediately adjacent the southeast corner of the BBARWA WWTP site (2000) and approximately 1,000 feet north of the Baldwin Lake Pipeline Alignment Option (2008), near the west end of the alignment, respectively. There is suitable montane meadow habitat for this species within the Baldwin Lake Pipeline Alignment Option, as well as the proposed Solar Evaporation Ponds, immediately adjacent the Shay Pond Conveyance Pipeline alignment, and adjacent the Stanfield Marsh Conveyance Pipeline Discharge Outlet components of the proposed Program, but not within the BBARWA WWTP Upgrade footprint, as this portion of the site has been developed with the facilities that support BBARWA's operations. However, California dandelion was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, California dandelion is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

***Slender-petaled Thelypodium – Endangered (Federal)***

Findings: According to the CNDDDB, the next nearest documented slender-petaled thelypodium occurrence is immediately adjacent (to the north) the Baldwin Lake Pipeline Alignment Option (2019), within montane meadow and big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable montane meadow and big sagebrush habitat for this species within the Baldwin Lake Pipeline Alignment Option, as well as adjacent the Shay Pond Conveyance Pipeline components of the proposed Program, but not within the BBARWA WWTP Upgrade footprint, as this portion of the site has been developed with the facilities that support BBARWA's operations. However, slender-petaled thelypodium was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, slender-petaled thelypodium is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

***Unarmored Threespine Stickleback – Endangered (Federal/State)***

Findings: Stickleback have been documented within the Shay Creek system from Baldwin Lake at the downstream terminus of Shay Creek, to Shay Pond and Motorcycle Pond at the upstream extent of Shay Creek, but are not located within the BBARWA WWTP Upgrade footprint, as this portion of the site has been developed with the facilities that support BBARWA's operations and does not contain any water features that would support this species. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

***Bald Eagle – Delisted (Federal) / Endangered (State)***

Findings: The Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter at Big Bear Lake and Baldwin Lake. During a two-year study of the wintering BAEA population in the Big Bear Valley, it was estimated that about 30 individuals wintered in the Big Bear Valley. The wintering period for migrating BAEA in the Big Bear Valley area is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April (Walter and Garrett 1981). The highest numbers of wintering eagles in the area are in January and early February (Walter and Garrett 1981).

Since 2012, at least one resident pair (known as Jackie and Shadow) has been documented in the Big Bear Valley, which first nested successfully in 2012 and 2015. These eagles typically nest to the west of Grout Bay in the Fawnskin area, approximately five miles west of the Stanfield Marsh Conveyance Pipeline Discharge Outlet locations.

Big Bear Lake and Baldwin Lake support overwintering migratory BAEA and the BBARWA WWTP site is within suitable BAEA foraging habitat and adjacent BAEA for perching habitat along the Baldwin Lake shoreline. However, this species is not known to nest in the Program Area and given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, BAEA are not likely to nest within the Program Area. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

***Southern Rubber Boa – Threatened (State)***

Findings: According to the CNDDDB, the nearest documented rubber boa occurrence (2013) is approximately 0.5 mile north of the west end of the western end of the Baldwin Lake Pipeline Alignment Option, on the north side of East North Shore Drive (State Route 18 [SR 18]) (CDFW pers. comm.). There is some marginally suitable rubber boa habitat throughout the Program Area, however, given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, Southern Rubber Boa are not likely to be affected by the implementation of this Program Component. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

***San Bernardino Flying Squirrel – SSC***

Findings: The Flying Squirrels of Southern California is a project of the SDNHM, in collaboration with the USFS and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. According to the SDNHM database, flying squirrel have been documented in the vicinity of the Sand Canyon Recharge Conveyance Pipeline, as well as north of West North Shore Drive (State Route 38 [SR 38]), approximately 0.4 mile north of the Meadow Lane Pipeline Alignment Option. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, this species has been documented in residential areas in the Big Bear Valley and elsewhere. However, there is no suitable habitat at the BBARWA WWTP that could support this species, and therefore, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

***Cushenbury Milk-vetch – Endangered (Federal)***

Findings: According to the CNDDDB, the nearest documented Cushenbury milk-vetch occurrence (2021) is approximately 2.4 miles northeast of the BBARWA WWTP site. This occurrence is located along a ridge between Nelson ridge and Arrastre Creek, on soils derived from carbonate

and quartz monzonite in open pinyon woodland habitat (CNDDDB 2023). There are no documented Cushenbury milk-vetch occurrences in the Big Bear Valley.

The USFWS lists the primary constituent elements (PCEs) for Cushenbury milk-vetch designated Critical Habitat as:

1. Soils derived primarily from the upper and middle members of the Bird Spring Formation and Undivided Cambrian parent materials that occur on dry flats and slopes or along rocky washes with limestone outwash/deposits at elevations between 1,171 and 2,013 meters (3,864 and 6,604 feet).
2. Soils with intact, natural surfaces that have not been substantially altered by land use activities (e.g., graded, excavated, re-contoured, or otherwise altered by ground-disturbing equipment).
3. Associated plant communities that have areas with an open canopy cover and little accumulation of organic material (e.g., leaf litter) on the surface of the soil.

The associated plant communities (PCE 3) and carbonate or limestone substrates (PCE 1) Cushenbury milk-vetch requires do not occur within the proposed Program Area footprint. Furthermore, most of the proposed Program Area footprint has been previously disturbed and the soils on site are no longer intact, natural surfaces (PCE 2). Additionally, the Program Area is outside the known elevation range for this species, which has not been documented in the Big Bear Valley. Therefore, Cushenbury milk-vetch is presumed absent from the proposed Program Area footprint and the Program will not affect this species. No potential impacts to this species are anticipated.

***Big Bear Valley Sandwort – Threatened (Federal)***

Findings: According to the CNDDDB, the nearest documented Big Bear Valley sandwort occurrences are approximately 0.3 mile west (2021) and 0.5 mile north (1981) of the proposed Shay Pond Conveyance Pipeline alignment, within the Sawmill Pebble Plain Complex. However, there is no pebble plain or pebble plain-like habitat suitable for Big Bear Valley sandwort within the proposed Program Area footprint and this species was not detected during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, Big Bear Valley sandwort is considered absent from the proposed Program Area footprint at the time of survey and the Program will not affect this species. No potential impacts to this species are anticipated.

***Parish's Daisy – Threatened (Federal)***

Findings: According to the CNDDDB, the nearest documented Parish's daisy occurrence (1988) is approximately 1.8 miles northeast of the BBARWA WWTP site. This occurrence is located within a drainage along Nelson ridge, on soils derived from dolomite on carbonaceous rock in open pinyon and Joshua tree dominated woodland habitat (CNDDDB 2023). There are no documented Parish's daisy occurrences in the Big Bear Valley.

The USFWS lists the primary constituent elements (PCEs) for Parish's daisy designated Critical Habitat as:

1. Soils derived primarily from upstream or upslope limestone, dolomite, or quartz monzonite parent materials that occur on dry, rocky hillsides, shallow drainages, or outwash plains at elevations between 1,171 and 1,950 meters (3,842 and 6,400 feet).
2. Soils with intact, natural surfaces that have not been substantially altered by land use activities (e.g., graded, excavated, re-contoured, or otherwise altered by ground-disturbing equipment).
3. Associated plant communities that have areas with an open canopy cover.

The associated plant communities (PCE 3) and limestone, dolomite, or quartz monzonite substrates (PCE 1) Parish's daisy requires do not occur within the proposed Program Area



footprint. Furthermore, most of the proposed Program Area footprint has been previously disturbed and the soils on site are no longer intact, natural surfaces (PCE 2). Additionally, this species has not been documented in the Big Bear Valley. Therefore, Parish's daisy is presumed absent from the proposed Program Area footprint and the Program will not affect this species. No potential impacts to this species are anticipated.

***Southern Mountain Buckwheat – Threatened (Federal)***

Findings: According to the CNDDDB, the nearest documented southern mountain buckwheat occurrences are approximately 0.3 mile west (2021) and 0.5 mile north (1981) of the proposed Shay Pond Conveyance Pipeline alignment, within the Sawmill Pebble Plain Complex. However, there is no pebble plain or pebble plain-like habitat suitable for southern mountain buckwheat within the proposed Program Area footprint and this species was not detected during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, southern mountain buckwheat is considered absent from the proposed Program Area footprint at the time of survey and the Program will not affect this species. No potential impacts to this species are anticipated.

***Cushenbury Buckwheat – Endangered (Federal)***

Findings: According to the CNDDDB, the nearest documented Cushenbury buckwheat occurrence (2021) is approximately 0.5 miles northwest of the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 1) site, north of Stanfield Marsh, on limestone marble and dolomitic limestone soils (CNDDDB 2023).

The USFWS lists the primary constituent elements (PCEs) for Cushenbury buckwheat designated Critical Habitat as:

1. Soils derived primarily from the upper and middle members of the Bird Spring Formation and Bonanza King Formation parent materials that occur on hillsides at elevations between 4,600 to 7,900 feet (1,400 to 2,400 meters).
2. Soils with intact, natural surfaces that have not been substantially altered by land use activities (e.g., graded, excavated, re-contoured, or otherwise altered by ground-disturbing equipment).
3. Associated plant communities that have areas with an open canopy cover (generally less than 15 % cover) and little accumulation of organic material (e.g., leaf litter) on the surface of the soil (USFWS 1994).

The associated plant communities (PCE 3) and carbonate or limestone substrates (PCE 1) Cushenbury buckwheat requires do not occur within the proposed Program Area footprint. Furthermore, most of the proposed Program Area footprint has been previously disturbed and the soils on site are no longer intact, natural surfaces (PCE 2). Therefore, Cushenbury buckwheat is presumed absent from the proposed Program Area footprint and the Program will not affect this species. No potential impacts to this species are anticipated.

***San Bernardino Mountains bladderpod – Endangered (Federal)***

Findings: According to the CNDDDB, the nearest documented San Bernardino Mountains bladderpod occurrence (2019) is approximately 1,000 feet north of the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 1) site. This occurrence is located in mixed single leaf pinyon, mountain juniper, and white fir forest habitat, on several carbonate hills situated just north of Big Bear Lake and Stanfield Marsh (CNDDDB 2023).

The USFWS lists the primary constituent elements (PCEs) for San Bernardino Mountains bladderpod designated Critical Habitat as:

1. Soils derived primarily from Bonanza King Formation and Undivided Cambrian parent materials that occur on hillsides or on large rock outcrops at elevations between 6,883 and 8,800 feet (2,098 and 2,700 meters).
2. Soils with intact, natural surfaces that have not been substantially altered by land use activities (e.g., graded, excavated, re-contoured, or otherwise altered by ground-disturbing equipment).
3. Associated plant communities that have areas with an open canopy cover and little accumulation of organic material (e.g., leaf litter) on the surface of the soil (USFWS 1994).

The associated plant communities (PCE 3) and limestone or dolomite soils (PCE 1) San Bernardino Mountains bladderpod requires do not occur within the proposed Program Area footprint. Furthermore, most of the proposed Program Area footprint has been previously disturbed and the soils on site are no longer intact, natural surfaces (PCE 2). Therefore, San Bernardino Mountains bladderpod is presumed absent from the proposed Program Area footprint and the Program will not affect this species. No potential impacts to this species are anticipated.

#### ***Quino Checkerspot Butterfly – Endangered (Federal)***

Findings: Although there is a single quino checkerspot butterfly historic collection (1969) from approximately 2.7 miles south/southeast of the Shay Pond Conveyance Pipeline, the identity of this specimen is questionable (CNDDDB 2023). Furthermore, there are no other occurrences of this species documented in the Big Bear Valley and this species is considered extirpated in San Bernardino County. Therefore, quino checkerspot butterfly is not likely to occur in the Program Area and the Program will not affect this species. No potential impacts to this species are anticipated.

#### ***California Spotted Owl – SSC***

Findings: According to the CNDDDB Spotted Owl Observations Database (2023), the nearest documented SPOW observation is a SPOW activity center (e.g., a roosting or nesting site) located approximately one mile southeast of the Sand Canyon Recharge Conveyance Pipeline. However, the Program Area is within an existing urban and rural residential setting that is subject to a high level of human disturbance. Additionally, the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region. Therefore, SPOW are not likely to occur in the Program Area. However, While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW as a result of light pollution. Therefore, to minimize impacts to this species from light pollution, **MM BIO-12**, which would protect nocturnal species from direct night lighting, must be implemented to avoid a potentially significant impact on this species. Impacts would be less than significant with the implementation of **MM BIO-12**.

#### **Solar Evaporation Ponds Project**

##### ***Ash-gray Paintbrush – Threatened (Federal)***

Findings: According to the CNDDDB, the nearest documented ash-gray paintbrush occurrences are adjacent the southeast corner of the BBARWA WWTP (1999) and approximately 400 feet north of the Baldwin Lake Pipeline Alignment Option (2016), within big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable habitat for this species within the proposed Program Area footprint near the western end of the Baldwin Lake Pipeline Alignment Option and potential hostplant species (*Artemisia* spp.) are present in this area as well. Therefore, ash-gray paintbrush is considered absent from the proposed Program Area footprint at the time of survey and the Program will not affect this species. However, given that there is suitable habitat located in the vicinity of the BBARWA WWTP site

within which the Solar Evaporation Ponds would be installed, it is possible that the implementation of the Solar Evaporation Ponds could impact this species. Therefore, mitigation is required to ensure that impacts to this species are avoided.

In order to identify the extent of special status species plants within a given Program component, the **MM BIO-2**, which requires preconstruction clearance surveys is necessary to avoid a potentially significant impact on this species.

**MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

Impacts would be less than significant through the implementation of mitigation.

***San Bernardino Blue Grass – Endangered (Federal)***

Findings: According to the CNDDDB, the next nearest documented San Bernardino blue grass occurrences (1981) are immediately adjacent the Shay Pond Conveyance Pipeline alignment and immediately adjacent the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 2) site, respectively. There is also suitable montane meadow habitat for this species within the Baldwin Lake Pipeline Alignment Option, as well as the Solar Evaporation Ponds components of the proposed Program. However, San Bernardino blue grass was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, San Bernardino blue grass is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. However, given that there is suitable habitat located in the vicinity of the BBARWA WWTP site within which the Solar Evaporation Ponds would be installed, it is possible that the implementation of the Solar Evaporation Ponds could impact this species. Therefore, mitigation is required to ensure that impacts to this species are avoided.

In order to identify the extent of special status species plants within a given Program component, the **MM BIO-2**, which requires preconstruction clearance surveys, is necessary to avoid a potentially significant impact on this species.

**MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

Impacts would be less than significant through the implementation of mitigation.



***Bird-foot Checkerbloom – Endangered (Federal/State)***

Findings: Bird-foot checkerbloom was observed within and adjacent the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Approximately 100+ individual bird-foot checkerbloom were observed within and adjacent the Baldwin Lake Pipeline Alignment Option and the proposed Solar Evaporation Ponds footprint at the BBARWA WWTP (**Figure 4.5-11**). According to the CNDDDB, bird-foot checkerbloom was also documented within the proposed Baldwin Lake Pipeline Alignment Option in 2019, near the west end of the alignment, as well as near the southeast corner of the BBARWA WWTP (2009). There is also suitable montane meadow habitat for this species within the possible Shay Pond Replacement Pipeline, as well as immediately adjacent the Shay Pond Conveyance Pipeline alignment and Stanfield Marsh Conveyance Pipeline Discharge Outlet components of the proposed Program. Given that bird-foot checkerbloom is present within the proposed Program Area footprint, the Program may affect this species and construction of the proposed Solar Evaporation Ponds, as currently described, is likely to adversely affect this species. Thus, in order to avoid an adverse effect on this species, mitigation is necessary that would fully reduce impacts to a level of less than significant.

**MM BIO-1** would minimize the potential for the Solar Evaporation Ponds to impact bird-foot checkerbloom as a result of Program implementation.

In order to identify the extent of the bird-foot checkerbloom, and other special status species plants within a given Program component, **MM BIO-2**, which requires preconstruction clearance surveys, shall be implemented.

**MM BIO-3 and BIO-4** require orange construction fencing to be installed where special status plant species are found adjacent to a given project footprint. These measures will ensure that the bird-foot checkerbloom will be protected from construction impacts at the evaporation pond site within BBARWA's WWTP site (shown on **Figure 4.5-10**).

**MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

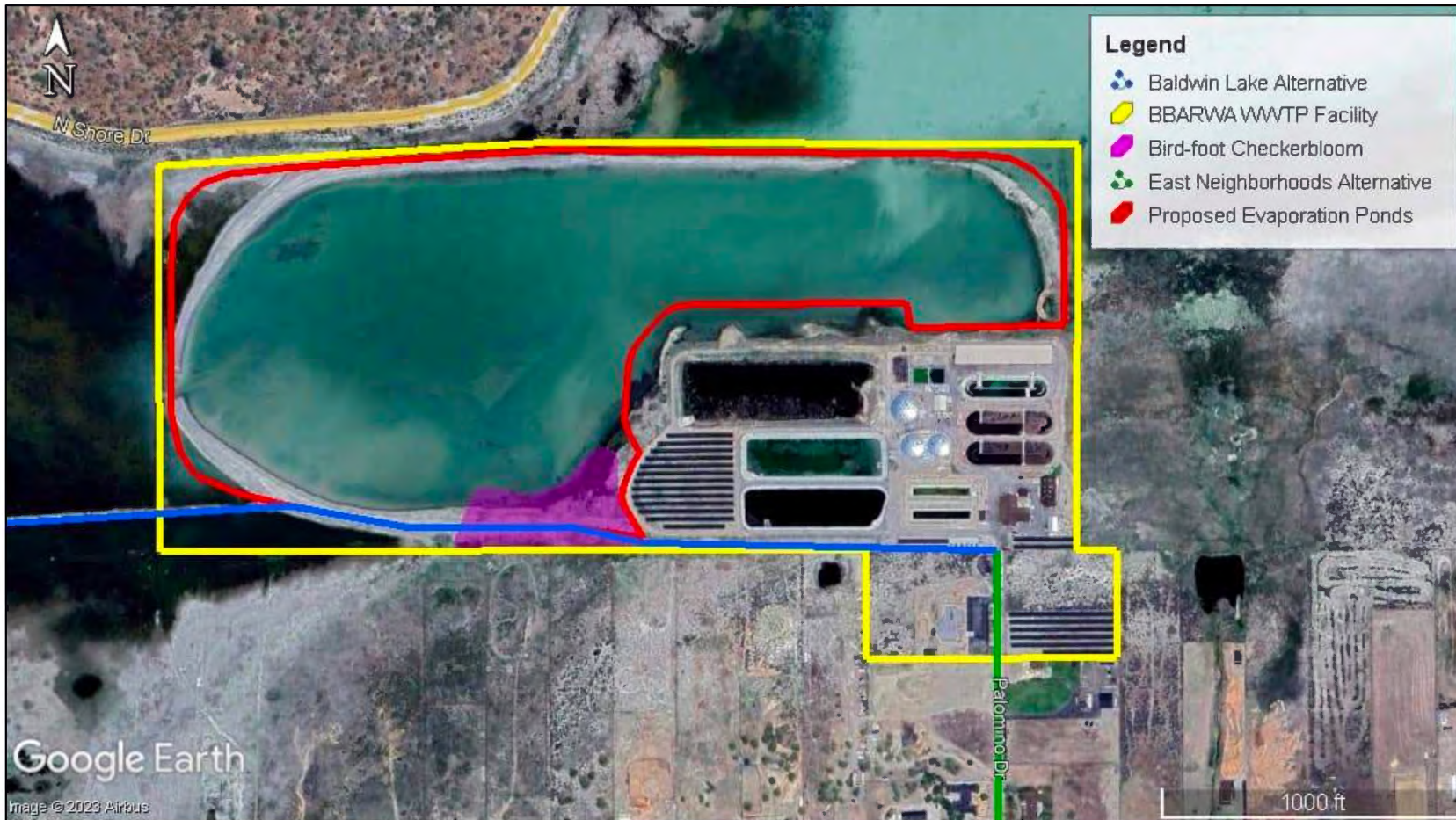


FIGURE 11

Bird-foot Checkerbloom (*Sidalcea pedata*) Observations  
Replenish Big Bear Project

FIGURE 4.5-10





SOURCE: Google Earth

FIGURE 12a

FIGURE 4.5-11

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

Thus, with the implementation of **MMs BIO-1 through BIO-4**, and **MMs BIO 13 through BIO-25**, impacts would be less than significant.

***California Dandelion – Endangered (Federal)***

Findings: According to the CNDDDB, the next nearest documented California dandelion occurrences are immediately adjacent the southeast corner of the BBARWA WWTP site (2000) and approximately 1,000 feet north of the Baldwin Lake Pipeline Alignment Option (2008), near the west end of the alignment, respectively. There is suitable montane meadow habitat for this species within the proposed Solar Evaporation Ponds. However, California dandelion was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, California dandelion is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. However, given that there is suitable habitat located in the vicinity of the BBARWA WWTP site within which the Solar Evaporation

Ponds would be installed, it is possible that the implementation of the Solar Evaporation Ponds could impact this species. Therefore, mitigation is required to ensure that impacts to this species are avoided.

In order to identify the extent of special status species plants within a given Program component, the **MM BIO-2**, which requires preconstruction clearance surveys, is necessary to avoid a potentially significant impact on this species.

**MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.



**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

Impacts would be less than significant through the implementation of mitigation.

***Slender-petaled Thelypodium – Endangered (Federal)***

Findings: According to the CNDDDB, the next nearest documented slender-petaled thelypodium occurrence is immediately adjacent (to the north) the Baldwin Lake Pipeline Alignment Option (2019), within montane meadow and big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable montane meadow and big sagebrush habitat for this species within the Solar Evaporation Ponds area. However, slender-petaled thelypodium was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, slender-petaled thelypodium is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. However, given that there is suitable habitat located in the vicinity of the BBARWA WWTP site within which the Solar Evaporation Ponds would be installed, it is possible that the implementation of the Solar Evaporation Ponds could impact this species. Therefore, mitigation is required to ensure that impacts to this species are avoided.

In order to identify the extent of special status species plants within a given Program component, the **MM BIO-2**, which requires preconstruction clearance surveys, is necessary to avoid a potentially significant impact on this species.

**MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.  
Impacts would be less than significant through the implementation of mitigation.

***Unarmored Threespine Stickleback – Endangered (Federal/State)***

***Findings:*** Stickleback have been documented within the Shay Creek system from Baldwin Lake at the downstream terminus of Shay Creek, to Shay Pond and Motorcycle Pond at the upstream

extent of Shay Creek, but are not located within the BBARWA WWTP Upgrade footprint, as this portion of the site is an extension of BBARWA's WWTP site and does not contain any water features that would support this species. Thus, no potential impacts to this species from implementation of the Solar Evaporation Ponds Project are anticipated.

***Bald Eagle – Delisted (Federal) / Endangered (State)***

Findings: The Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter at Big Bear Lake and Baldwin Lake. During a two-year study of the wintering BAEA population in the Big Bear Valley, it was estimated that about 30 individuals wintered in the Big Bear Valley. The wintering period for migrating BAEA in the Big Bear Valley area is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April (Walter and Garrett 1981). The highest numbers of wintering eagles in the area are in January and early February (Walter and Garrett 1981).

Since 2012, at least one resident pair (known as Jackie and Shadow) has been documented in the Big Bear Valley, which first nested successfully in 2012 and 2015. These eagles typically nest to the west of Grout Bay in the Fawnskin area, approximately five miles west of the Stanfield Marsh Conveyance Pipeline Discharge Outlet locations.

Big Bear Lake and Baldwin Lake support overwintering migratory BAEA and the BBARWA WWTP site is within suitable BAEA foraging habitat and adjacent BAEA for perching habitat along the Baldwin Lake shoreline. However, this species is not known to nest in the Program Area and given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, BAEA are not likely to nest within the Program Area. However, the Solar Evaporation Ponds and Baldwin Lake Pipeline Alignment Option should be constructed when those portions of Baldwin Lake are dry, as BAEA prey (i.e., fish, waterfowl.), BAEA would be expected to be absent from the Program Area. Bald eagle may utilize lakeshore perches when Baldwin Lake is dry, but since the Program will not be removing any Baldwin lakeshore trees, the only real potential for adverse impacts to overwintering BAEA is if the construction disturbance affects their utilization of these perches for foraging on fish and waterfowl. Foraging on fish and waterfowl only occurs when Baldwin Lake is wet. Thus, if construction occurs when Baldwin Lake is dry, the use of the perches would not be affected. Thus, **MM BIO-9** is required to ensure that construction occurs under these conditions, and impacts to Bald Eagle are fully mitigated. With the implementation of **MM BIO-9**, impacts would be less than significant.

***Southern Rubber Boa – Threatened (State)***

Findings: According to the CNDDB, the nearest documented rubber boa occurrence (2013) is approximately 0.5 mile north of the west end of the western end of the Baldwin Lake Pipeline Alignment Option, on the north side of East North Shore Drive (State Route 18 [SR 18]) (CDFW pers. comm.). There is some marginally suitable rubber boa habitat throughout the Program Area, however, given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, Southern Rubber Boa are not likely to be affected by the implementation of this Program Component. Thus, no potential impacts to this species from implementation of the Solar Evaporation Ponds Project are anticipated.

***San Bernardino Flying Squirrel – SSC***

Findings: The Flying Squirrels of Southern California is a project of the SDNHM, in collaboration with the USFS and the USFWS, to try to determine the distribution and habitat use of the flying

squirrel in southern California. According to the SDNHM database, flying squirrel have been documented in the vicinity of the Sand Canyon Recharge Conveyance Pipeline, as well as north of West North Shore Drive (State Route 38 [SR 38]), approximately 0.4 mile north of the Meadow Lane Pipeline Alignment Option. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, this species has been documented in residential areas in the Big Bear Valley and elsewhere. However, there is no suitable habitat at within the Solar Evaporation Ponds footprint that could support this species, and therefore, no potential impacts to this species are anticipated.

### ***California Spotted Owl – SSC***

Findings: According to the CNDDDB Spotted Owl Observations Database (2023), the nearest documented SPOW observation is a SPOW activity center (e.g., a roosting or nesting site) located approximately one mile southeast of the Sand Canyon Recharge Conveyance Pipeline. However, the Program Area is within an existing urban and rural residential setting that is subject to a high level of human disturbance. Additionally, the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region. Therefore, SPOW are not likely to occur in the Program Area. However, While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW as a result of light pollution. Therefore, to minimize impacts to this species from light pollution, **MM BIO-12**, which would protect nocturnal species from direct night lighting, must be implemented to avoid a potentially significant impact on this species. Impacts would be less than significant with the implementation of **MM BIO-12**.

### ***Species Considered Absent for this Program Component Area***

Findings: Please refer to the discussion under BBARWA WWTP, which describes the findings as to why the following species are considered absent from the entirety of the Program Area, including the Solar Evaporation Ponds.

- Cushenbury Milk-vetch – Endangered (Federal)
- Big Bear Valley Sandwort – Threatened (Federal)
- Parish's Daisy – Threatened (Federal)
- Southern Mountain Buckwheat – Threatened (Federal)
- Cushenbury Buckwheat – Endangered (Federal)
- San Bernardino Mountains bladderpod – Endangered (Federal)
- Quino Checkerspot Butterfly – Endangered (Federal)

No potential impacts to the above species are anticipated.

### **Sand Canyon Recharge Project**

#### ***Ash-gray Paintbrush – Threatened (Federal)***

Findings: According to the CNDDDB, the nearest documented ash-gray paintbrush occurrences are adjacent the southeast corner of the BBARWA WWTP (1999) and approximately 400 feet north of the Baldwin Lake Pipeline Alignment Option (2016), within big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable habitat for this species within the proposed Program Area footprint near the western end of the Baldwin Lake Pipeline Alignment Option and potential hostplant species (*Artemisia* spp.) are present in this area as well. However, ash-gray paintbrush was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, ash-gray paintbrush is considered absent from

the proposed Program Area footprint at the time of survey and the Program will not affect this species. No potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

***San Bernardino Blue Grass – Endangered (Federal)***

Findings: San Bernardino blue grass has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDDB, the next nearest documented San Bernardino blue grass occurrences (1981) are immediately adjacent the Shay Pond Conveyance Pipeline alignment and immediately adjacent the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 2) site, respectively. There is also suitable montane meadow habitat for this species within the Baldwin Lake Pipeline Alignment Option, as well as the Solar Evaporation Ponds components of the proposed Program. However, San Bernardino blue grass was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, San Bernardino blue grass is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. No potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

***Bird-foot Checkerbloom – Endangered (Federal/State)***

Findings: Bird-foot checkerbloom was observed within and adjacent the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Approximately 100+ individual bird-foot checkerbloom were observed within and adjacent the Baldwin Lake Pipeline Alignment Option and the proposed Solar Evaporation Ponds footprint at the BBARWA WWTP (**Figure 4.5-11**). According to the CNDDDB, bird-foot checkerbloom was also documented within the proposed Baldwin Lake Pipeline Alignment Option in 2019, near the west end of the alignment, as well as near the southeast corner of the BBARWA WWTP (2009). There is also suitable montane meadow habitat for this species within the possible Shay Pond Replacement Pipeline, as well as immediately adjacent the Shay Pond Conveyance Pipeline alignment and Stanfield Marsh Conveyance Pipeline Discharge Outlet components of the proposed Program. Given that bird-foot checkerbloom is present within the proposed Program Area footprint, the Program may affect this species and construction of the Baldwin Lake Pipeline Alignment Option and proposed Solar Evaporation Ponds, as currently described, is likely to adversely affect this species. However, as no suitable habitat exists within the Sand Canyon Recharge Project footprint, it is not anticipated that this Program Component would impact this species. No potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

***California Dandelion – Endangered (Federal)***

Findings: According to the CNDDDB, the next nearest documented California dandelion occurrences are immediately adjacent the southeast corner of the BBARWA WWTP site (2000) and approximately 1,000 feet north of the Baldwin Lake Pipeline Alignment Option (2008), near the west end of the alignment, respectively. There is no suitable habitat for this species within the Sand Canyon Recharge Project footprint. California dandelion was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, California dandelion is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. However, as no suitable habitat exists within the Sand Canyon Recharge Project footprint, it is not anticipated that this Program Component would



impact this species. No potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

***Slender-petaled Thelypodium – Endangered (Federal)***

Findings: According to the CNDDDB, the next nearest documented slender-petaled thelypodium occurrence is immediately adjacent (to the north) the Baldwin Lake Pipeline Alignment Option (2019), within montane meadow and big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is no suitable habitat for this species within the Sand Canyon Recharge Project footprint. However, slender-petaled thelypodium was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, slender-petaled thelypodium is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. However, as no suitable habitat exists within the Sand Canyon Recharge Project footprint, it is not anticipated that this Program Component would impact this species. No potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

***Unarmored Threespine Stickleback – Endangered (Federal/State)***

Stickleback have been documented within the Shay Creek system from Baldwin Lake at the downstream terminus of Shay Creek, to Shay Pond and Motorcycle Pond at the upstream extent of Shay Creek, but are not located within the Sand Canyon Recharge Project. Thus, no potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

***Bald Eagle – Delisted (Federal) / Endangered (State)***

Findings: The Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter at Big Bear Lake and Baldwin Lake. During a two-year study of the wintering BAEA population in the Big Bear Valley, it was estimated that about 30 individuals wintered in the Big Bear Valley. The wintering period for migrating BAEA in the Big Bear Valley area is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April (Walter and Garrett 1981). The highest numbers of wintering eagles in the area are in January and early February (Walter and Garrett 1981).

Since 2012, at least one resident pair (known as Jackie and Shadow) has been documented in the Big Bear Valley, which first nested successfully in 2012 and 2015. These eagles typically nest to the west of Grout Bay in the Fawnskin area, approximately five miles west of the Stanfield Marsh Conveyance Pipeline Discharge Outlet locations.

Big Bear Lake and Baldwin Lake support overwintering migratory BAEA, but this does not occur in the vicinity of the Sand Canyon Recharge Project footprint. This species is not known to nest in the Sand Canyon Recharge Project footprint, and therefore implementation of this Program Component would not result in any potential impacts to this species. No potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

***Southern Rubber Boa – Threatened (State)***

Findings: According to the CNDDDB, the nearest documented rubber boa occurrence (2013) is approximately 0.5 mile north of the west end of the western end of the Baldwin Lake Pipeline Alignment Option, on the north side of East North Shore Drive (State Route 18 [SR 18]) (CDFW pers. comm.). Additionally, although the Sand Canyon Recharge Pipe Outlet and portions of the Sand Canyon Recharge Conveyance Pipeline are adjacent undeveloped areas of potentially

suitable rubber boa habitat consisting of mixed Jeffrey pine forest and woodland and mountain juniper woodland habitats, there is no suitable rubber boa habitat within the proposed footprint of these Program components.

Due to the environmental conditions and existing disturbances within and adjacent the proposed Program Area footprint, as currently described, rubber boa is very unlikely to occur within the proposed Program Area footprint. Therefore, the proposed Program may affect, but is not likely to adversely affect this species. However, as described above, as there is some marginally suitable rubber boa habitat in the vicinity of the Sand Canyon Recharge Project. As such, **MM BIO-10** is required to avoid a potentially significant impact on this species, and ensure that pre-construction southern rubber boa surveys are conducted to ensure avoidance of impacts to this species. Impacts to this species would be less than significant with the implementation of **MM BIO-10**.

### ***San Bernardino Flying Squirrel – SSC***

Findings: The Flying Squirrels of Southern California is a project of the SDNHM, in collaboration with the USFS and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. According to the SDNHM database, flying squirrel have been documented in the vicinity of the Sand Canyon Recharge Conveyance Pipeline, as well as north of West North Shore Drive (State Route 38 [SR 38]), approximately 0.4 mile north of the Meadow Lane Pipeline Alignment Option. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, this species has been documented in residential areas in the Big Bear Valley and elsewhere. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, there is a moderate potential for flying squirrel to occur in the Program Area and species-specific impacts avoidance and minimization measures are recommended, as required by **MM BIO-11**, for the Sand Canyon Recharge Conveyance Pipeline implementation. Impacts on this species from implementation of the Sand Canyon Recharge Conveyance Pipeline would be less than significant with the implementation of mitigation.

### ***California Spotted Owl – SSC***

Findings: According to the CNDDDB Spotted Owl Observations Database (2023), the nearest documented SPOW observation is a SPOW activity center (e.g., a roosting or nesting site) located approximately one mile southeast of the Sand Canyon Recharge Conveyance Pipeline. However, the Program Area is within an existing urban and rural residential setting that is subject to a high level of human disturbance. Additionally, the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region. Therefore, SPOW are not likely to occur in the Program Area. However, While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW as a result of light pollution. Therefore, to minimize impacts to this species from light pollution, **MM BIO-12**, which would protect nocturnal species from direct night lighting, must be implemented to avoid a potentially significant impact on this species. Impacts would be less than significant with the implementation of **MM BIO-12**.

### ***Species Considered Absent for this Program Component Area***

Findings: Please refer to the discussion under BBARWA WWTP, which describes the findings as to why the following species are considered absent from the entirety of the Program Area, including the Sand Canyon Recharge Project.

- Cushenbury Milk-vetch – Endangered (Federal)
- Big Bear Valley Sandwort – Threatened (Federal)

- Parish's Daisy – Threatened (Federal)
- Southern Mountain Buckwheat – Threatened (Federal)
- Cushenbury Buckwheat – Endangered (Federal)
- San Bernardino Mountains bladderpod – Endangered (Federal)
- Quino Checkerspot Butterfly – Endangered (Federal)

No potential impacts to the above species are anticipated.

### **Shay Pond Discharge Project**

#### ***Ash-gray Paintbrush – Threatened (Federal)***

Findings: According to the CNDDDB, the nearest documented ash-gray paintbrush occurrences are adjacent the southeast corner of the BBARWA WWTP (1999) and approximately 400 feet north of the Baldwin Lake Pipeline Alignment Option (2016), within big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). Ash-gray paintbrush habitat is not anticipated to exist within the Shay Pond Discharge Project footprint. However, as the Shay Pond Replacement Pipeline alignment was not surveyed in detail, as a result of the fact that BBARWA anticipates that the existing pipeline between the BBARWA WWTP site and Shay Pond can be utilized, additional surveys must be conducted prior to implementation of Program activities within either both the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline (**Figures 4.5-7 through 4.5-8**), to assess potential Program related impacts to special status species and habitats that may occur in these areas, otherwise a potentially significant impact on a special status species may occur. This is necessary, in particular, to assess potential Program related effects on San Bernardino blue grass, California dandelion, slender-petaled thelypodium, and other special status plant species that may occur in this area. Thus, **MMs BIO-7 and BIO-8** are necessary to minimize impacts from the Shay Pond Discharge Project on this species. **MM BIO-7** would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDDB will be notified and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

**MM BIO-8** would ensure that no sediment or pollutants enter Shay Pond/Shay Creek during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat. Impacts would be less than significant with the implementation of mitigation.

#### ***San Bernardino Blue Grass – Endangered (Federal)***

Findings: San Bernardino blue grass has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDDB, the next nearest documented San Bernardino blue grass occurrences (1981) are immediately adjacent the Shay Pond Conveyance Pipeline alignment. However, San Bernardino blue grass was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, San Bernardino blue grass is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, additional surveys would be necessary prior to implementation of Program activities, to assess potential Program related impacts to San Bernardino blue grass and other special status species that may occur in this area. The potential for this species to occur within these areas must be surveyed, otherwise a potentially significant impact on a special status species may occur. This is necessary, in

particular, to assess potential Program related effects on San Bernardino blue grass, California dandelion, slender-petaled thelypodium, and other special status plant species that may occur in this area. Thus, **MMs BIO-7 and BIO-8** are necessary to minimize impacts from the Shay Pond Discharge Project on this species. **MM BIO-7** would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDDB will be notified and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

**MM BIO-8** would ensure that no sediment or pollutants enter Shay Pond/Shay Creek during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat. Impacts would be less than significant with the implementation of mitigation.

***Bird-foot Checkerbloom – Endangered (Federal/State)***

Findings: Bird-foot checkerbloom was observed within and adjacent the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Approximately 100+ individual bird-foot checkerbloom were observed within and adjacent the Baldwin Lake Pipeline Alignment Option and the proposed Solar Evaporation Ponds footprint at the BBARWA WWTP (**Figure 4.5-11**). According to the CNDDDB, bird-foot checkerbloom was also documented within the proposed Baldwin Lake Pipeline Alignment Option in 2019, near the west end of the alignment, as well as near the southeast corner of the BBARWA WWTP (2009). There is also suitable montane meadow habitat for this species within the possible Shay Pond Replacement Pipeline, as well as immediately adjacent the Shay Pond Conveyance Pipeline alignment and Stanfield Marsh Conveyance Pipeline Discharge Outlet components of the proposed Program. Given that bird-foot checkerbloom is present within the proposed Program Area footprint, the Program may affect this species. Thus, prior to implementation of the Shay Pond Discharge Project, additional surveys would be necessary to assess potential Program related impacts to this species. The potential for this species to occur within these areas must be surveyed, otherwise a potentially significant impact on a special status species may occur. Thus, **MMs BIO-7 and BIO-8** are necessary to minimize impacts from the Shay Pond Discharge Project on this species. **MM BIO-7** would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDDB will be notified and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

**MM BIO-8** would ensure that no sediment or pollutants enter Shay Pond/Shay Creek during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat. Impacts would be less than significant with the implementation of mitigation.

***California Dandelion – Endangered (Federal)***

Findings: California dandelion has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDDB, the next nearest documented California dandelion occurrences are immediately adjacent the southeast corner of the BBARWA WWTP site (2000) and approximately 1,000 feet north of the Baldwin Lake Pipeline Alignment Option (2008), near the west end of the alignment, respectively. There is suitable montane meadow habitat for this species immediately adjacent the Shay Pond Conveyance Pipeline alignment. However, California dandelion was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, California dandelion is considered absent from the proposed

Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, additional surveys would be necessary prior to implementation of Program activities, to assess potential Program related impacts to California dandelion and other special status species that may occur in this area. Thus, prior to implementation of the Shay Pond Discharge Project, additional surveys would be necessary to assess potential Program related impacts to this species. The potential for this species to occur within these areas must be surveyed, otherwise a potentially significant impact on a special status species may occur. Thus, **MMs BIO-7 and BIO-8** are necessary to minimize impacts from the Shay Pond Discharge Project on this species. **MM BIO-7** would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDDB will be notified and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

**MM BIO-8** would ensure that no sediment or pollutants enter Shay Pond/Shay Creek during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat. Impacts would be less than significant with the implementation of mitigation.

***Slender-petaled Thelypodium – Endangered (Federal)***

Findings: Slender-petaled thelypodium has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDDB, the next nearest documented slender-petaled thelypodium occurrence is immediately adjacent (to the north) the Baldwin Lake Pipeline Alignment Option (2019), within montane meadow and big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable montane meadow and big sagebrush habitat for this species adjacent the Shay Pond Discharge Project components of the proposed Program. However, slender-petaled thelypodium was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, slender-petaled thelypodium is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, additional surveys would be necessary prior to implementation of Program activities, to assess potential Program related impacts to slender-petaled thelypodium and other special status species that may occur in this area. Thus, prior to implementation of the Shay Pond Discharge Project, additional surveys would be necessary to assess potential Program related impacts to this species. The potential for this species to occur within these areas must be surveyed, otherwise a potentially significant impact on a special status species may occur. Thus, **MMs BIO-7 and BIO-8** are necessary to minimize impacts from the Shay Pond Discharge Project on this species. **MM BIO-7** would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDDB will be notified and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

**MM BIO-8** would ensure that no sediment or pollutants enter Shay Pond/Shay Creek during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat. Impacts would be less than significant with the implementation of mitigation.



***Unarmored Threespine Stickleback – Endangered (Federal/State)***

**Findings:** Stickleback have been documented within the Shay Creek system from Baldwin Lake at the downstream terminus of Shay Creek, to Shay Pond and Motorcycle Pond at the upstream extent of Shay Creek. The possible Shay Pond Replacement Pipeline extends through Shay Meadow, in the immediate vicinity of Shay Creek. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, the Program could potentially result in adverse effects to the Stickleback that intermittently inhabit this portion of Shay Creek. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline.

The goal of the Shay Pond Conveyance Pipeline and associated discharge outlet component of the proposed Program is to provide a more sustainable water source needed to maintain and enhance suitable Stickleback habitat conditions in Shay Pond. The Program could increase the amount of water supplied to Shay Pond from the current 50 AFY to a maximum of 80 AFY. The proposed Shay Pond Conveyance Pipeline would be constructed in an existing unpaved roadway and the discharge outlet would be constructed in an upland area immediately adjacent Shay Pond. Therefore, construction activities associated with the installation of the proposed conveyance pipeline and discharge outlet will not affect this species.

The utilization of the Program Water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. The purified water generated by the AWPf at BBARWA, proposed under this Program, could potentially significantly impact the species, if the water source lacks the nutrients necessary to support the species, or contains any constituents that, when introduced into the Stickleback habitat, would adversely impact the species. The impacts to this species were analyzed on a more programmatic level, so that, should the individual project go forward in the future, mitigation would stipulate the steps necessary to minimize impacts from changing the water source at Shay Pond. Therefore, should the Program Team decide to modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**, below. This **MM** details the additional studies that will be necessary to ensure that the product water is suitable to support this species. Impacts to this species would be less than significant with the implementation of **MM BIO-6**.

***Bald Eagle – Delisted (Federal) / Endangered (State)***

**Findings:** The Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter at Big Bear Lake and Baldwin Lake. During a two-year study of the wintering BAEA population in the Big Bear Valley, it was estimated that about 30 individuals wintered in the Big Bear Valley. The wintering period for migrating BAEA in the Big Bear Valley area is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April (Walter and Garrett 1981). The highest numbers of wintering eagles in the area are in January and early February (Walter and Garrett 1981).

Since 2012, at least one resident pair (known as Jackie and Shadow) has been documented in the Big Bear Valley, which first nested successfully in 2012 and 2015. These eagles typically nest to the west of Grout Bay in the Fawnskin area, approximately five miles west of the Stanfield Marsh Conveyance Pipeline Discharge Outlet locations.

Big Bear Lake and Baldwin Lake support overwintering migratory BAEA, but this does not occur in the vicinity of the Shay Pond Discharge Project footprint. This species is not known to nest in

the Shay Pond Discharge Project footprint, and therefore implementation of this Program Component would not result in any potential impacts to this species. No potential impacts to this species are anticipated.

***Southern Rubber Boa – Threatened (State)***

Findings: According to the CNDDDB, the nearest documented rubber boa occurrence (2013) is approximately 0.5 mile north of the west end of the western end of the Baldwin Lake Pipeline Alignment Option, on the north side of East North Shore Drive (State Route 18 [SR 18]) (CDFW pers. comm.). There is some marginally suitable rubber boa habitat in the vicinity of the Baldwin Lake Pipeline Alignment Option consisting of mixed wet montane meadow and big sagebrush habitat, with scattered trees, large shrubs, and woody debris. Additionally, the Baldwin Lake Pipeline Alignment Option crosses an ephemeral stream (Caribou Creek) near the western end of the alignment. However, the mixed conifer-oak forest or woodland habitats that rubber boa typically occur in are absent from this area and there are no nearby rock outcrops, downed logs, or tree stumps that could provide potential rubber boa hibernacula.

There is suitable rubber boa habitat in the vicinity of the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline.

Due to the environmental conditions and existing disturbances within and adjacent the proposed Program Area footprint, as currently described, rubber boa is very unlikely to occur within the proposed Program Area footprint. Therefore, the proposed Program may affect, but is not likely to adversely affect this species. However, as described above, as there is some marginally suitable rubber boa habitat in the vicinity of the Shay Pond Discharge Project. As such, **MM BIO-10** is required to avoid a potentially significant impact on this species, and ensure that pre-construction southern rubber boa surveys are conducted to ensure avoidance of impacts to this species. Impacts to this species would be less than significant with the implementation of **MM BIO-10**.

***San Bernardino Flying Squirrel – SSC***

Findings: The Flying Squirrels of Southern California is a project of the SDNHM, in collaboration with the USFS and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. According to the SDNHM database, flying squirrel have been documented in the vicinity of the Sand Canyon Recharge Conveyance Pipeline, as well as north of West North Shore Drive (State Route 38 [SR 38]), approximately 0.4 mile north of the Meadow Lane Pipeline Alignment Option. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, this species has been documented in residential areas in the Big Bear Valley and elsewhere. Thus, there is a moderate potential for flying squirrel to occur in the Program Area and species-specific impacts avoidance and minimization measures are recommended. However, as there is no suitable habitat located within the Shay Pond Discharge Project, no impacts to this species are anticipated.

***California Spotted Owl – SSC***

Findings: According to the CNDDDB Spotted Owl Observations Database (2023), the nearest documented SPOW observation is a SPOW activity center (e.g., a roosting or nesting site) located approximately one mile southeast of the Sand Canyon Recharge Conveyance Pipeline. However, the Program Area is within an existing urban and rural residential setting that is subject to a high level of human disturbance. Additionally, the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the

region. Therefore, SPOW are not likely to occur in the Program Area. However, While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW as a result of light pollution. Therefore, to minimize impacts to this species from light pollution, **MM BIO-12**, which would protect nocturnal species from direct night lighting, must be implemented to avoid a potentially significant impact on this species. Impacts would be less than significant with the implementation of **MM BIO-12**.

***Species Considered Absent for this Program Component Area:***

Findings: Please refer to the discussion under BBARWA WWTP, which describes the findings as to why the following species are considered absent from the entirety of the Program Area, including the Shay Pond Discharge Project.

- Cushenbury Milk-vetch – Endangered (Federal)
- Big Bear Valley Sandwort – Threatened (Federal)
- Parish's Daisy – Threatened (Federal)
- Southern Mountain Buckwheat – Threatened (Federal)
- Cushenbury Buckwheat – Endangered (Federal)
- San Bernardino Mountains bladderpod – Endangered (Federal)
- Quino Checkerspot Butterfly – Endangered (Federal)

No potential impacts to the above species are anticipated.

**Stanfield Marsh/Big Bear Lake Discharge Project**

***Ash-gray Paintbrush – Threatened (Federal)***

Findings: According to the CNDDDB, the nearest documented ash-gray paintbrush occurrences are adjacent the southeast corner of the BBARWA WWTP (1999) and approximately 400 feet north of the Baldwin Lake Pipeline Alignment Option (2016), within big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable habitat for this species within the proposed Program Area footprint near the western end of the Baldwin Lake Pipeline Alignment Option and potential hostplant species (*Artemisia* spp.) are present in this area as well. However, ash-gray paintbrush was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, ash-gray paintbrush is considered absent from the proposed Program Area footprint at the time of survey and the Program will not affect this species. Given that there is suitable habitat located in the vicinity of the Baldwin Lake Pipeline Alignment Option, it is possible that, if the Baldwin Lake Pipeline Alignment Option is selected, potentially significant impacts to this species could occur. In implementing the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option, no impacts would occur and no mitigation would be required. However, for the Baldwin Lake Pipeline Alignment Option mitigation, is required to ensure that impacts to this species are avoided.

**MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

***San Bernardino Blue Grass – Endangered (Federal)***

Findings: San Bernardino blue grass has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDDB, the next nearest documented San Bernardino blue grass occurrences (1981) are immediately adjacent the Shay Pond Conveyance Pipeline alignment and immediately adjacent the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 2) site, respectively. There is also suitable montane meadow habitat for this species within the Baldwin Lake Pipeline Alignment Option, as well as the Solar Evaporation Ponds components of the proposed Program. However, San Bernardino blue grass was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, San Bernardino blue grass is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Given that there is suitable habitat located in the vicinity of the Baldwin Lake Pipeline Alignment Option, it is possible that, if the Baldwin Lake Pipeline Alignment Option is selected, potentially significant impacts to this species could occur. In implementing the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option, no impacts would occur and no mitigation would be required. However, for the Baldwin Lake Pipeline Alignment Option mitigation, is required to ensure that impacts to this species are avoided.

**MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant. Overall, through the implementation of mitigation, impacts to this species would be less than significant.

***Bird-foot Checkerbloom – Endangered (Federal/State)***

Findings: Bird-foot checkerbloom was observed within and adjacent the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Approximately 100+ individual bird-foot checkerbloom were observed within and adjacent the Baldwin Lake Pipeline Alignment Option and the proposed Solar Evaporation Ponds footprint at the BBARWA WWTP (**Figure 4.5-11**). According to the CNDDDB, bird-foot checkerbloom was also documented within the proposed Baldwin Lake Pipeline Alignment Option in 2019, near the west end of the alignment, as well as near the southeast corner of the BBARWA WWTP (2009). Given that bird-foot checkerbloom is present within the proposed Program Area footprint, the Program may affect this species and construction of the Baldwin Lake Pipeline Alignment Option, as currently described, is likely to adversely affect this species. If the species cannot be avoided due to the design or other engineering constraints, impacts to this species from implementation of the Baldwin Lake Pipeline Alignment Option would be significant and unavoidable. In implementing the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option, no impacts

would occur and no mitigation would be required, as this species does not occur within these Alignment Options.

In order to identify the extent of the bird-foot checkerbloom, and other special status species plants within a given Program component, **MM BIO-2**, which requires preconstruction clearance surveys, shall be implemented.

The Baldwin Lake Pipeline Alignment Option is being considered by BBARWA, as it would avoid a large portion of construction within residential roadways that would otherwise occur under other Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options. If the Baldwin Lake Pipeline Alignment Option is selected, **MM BIO-5** would be necessary to minimize impacts to the bird-foot checkerbloom species to the greatest extent feasible without avoiding this Alignment Option completely, but it would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. Therefore, even with the implementation of the above mitigation measures, impacts to this species cannot be fully avoided due to its presence within the Baldwin Lake Pipeline Alignment Option.

While impacts to this species cannot be fully avoided, additional mitigation shall be implemented to further minimize impacts to this species to the greatest extent feasible. Thus, **MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to the greatest extent feasible. However, as stated above, **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. No impacts would occur to this species from implementation of the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option.

***California Dandelion – Endangered (Federal)***

Findings: California dandelion has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDDB, the next nearest documented California dandelion occurrences are immediately adjacent the southeast corner of the BBARWA WWTP site (2000) and approximately 1,000 feet north of the Baldwin Lake Pipeline Alignment Option (2008), near the west end of the alignment, respectively. There is suitable montane meadow habitat for this species within the Baldwin Lake Pipeline Alignment Option. However, California dandelion was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, California dandelion is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Given that there is suitable habitat located in the vicinity of the Baldwin Lake Pipeline Alignment Option, it is possible that, if the Baldwin Lake Pipeline Alignment Option is selected, potentially significant impacts to this species could occur. In implementing the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option, no impacts would occur and no mitigation would be



required. However, for the Baldwin Lake Pipeline Alignment Option mitigation, is required to ensure that impacts to this species are avoided.

**MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant. Overall, through the implementation of mitigation, impacts to this species would be less than significant.

***Slender-petaled Thelypodium – Endangered (Federal)***

Findings: Slender-petaled thelypodium has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDDB, the next nearest documented slender-petaled thelypodium occurrence is immediately adjacent (to the north) the Baldwin Lake Pipeline Alignment Option (2019), within montane meadow and big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable montane meadow and big sagebrush habitat for this species within the Baldwin Lake Pipeline Alignment Option. However, slender-petaled thelypodium was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, slender-petaled thelypodium is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, additional surveys would be necessary prior to implementation of Program activities, to assess potential Program related impacts to slender-petaled thelypodium and other special status species that may occur in this area. Given that there is suitable habitat located in the vicinity of the Baldwin Lake Pipeline Alignment Option, it is possible that, if the Baldwin Lake Pipeline Alignment Option is selected, potentially significant impacts to this species could occur. In implementing the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option, no impacts would occur and no mitigation would be required. However, for the Baldwin Lake Pipeline Alignment Option mitigation, is required to ensure that impacts to this species are avoided.

**MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant. Overall, through the implementation of mitigation, impacts to this species would be less than significant.

***Unarmored Threespine Stickleback – Endangered (Federal/State)***

Stickleback have been documented within the Shay Creek system from Baldwin Lake at the downstream terminus of Shay Creek, to Shay Pond and Motorcycle Pond at the upstream extent

of Shay Creek, but are not located within any of the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option footprints. Thus, no potential impacts to this species are anticipated.

***Bald Eagle – Delisted (Federal) / Endangered (State)***

Findings: The Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter at Big Bear Lake and Baldwin Lake. During a two-year study of the wintering BAEA population in the Big Bear Valley, it was estimated that about 30 individuals wintered in the Big Bear Valley. The wintering period for migrating BAEA in the Big Bear Valley area is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April (Walter and Garrett 1981). The highest numbers of wintering eagles in the area are in January and early February (Walter and Garrett 1981).

Since 2012, at least one resident pair (known as Jackie and Shadow) has been documented in the Big Bear Valley, which first nested successfully in 2012 and 2015. These eagles typically nest to the west of Grout Bay in the Fawnskin area, approximately five miles west of the Stanfield Marsh Conveyance Pipeline Discharge Outlet locations.

Big Bear Lake and Baldwin Lake support overwintering migratory BAEA and the BBARWA WWTP site is within suitable BAEA foraging habitat and adjacent BAEA for perching habitat along the Baldwin Lake shoreline. However, this species is not known to nest in the Program Area and given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, BAEA are not likely to nest within the Program Area. However, the Baldwin Lake Pipeline Alignment Option should be constructed when those portions of Baldwin Lake are dry, as BAEA prey (i.e., fish, waterfowl.), BAEA would be expected to be absent from the Program Area. Bald eagle may utilize lakeshore perches when Baldwin Lake is dry, but since the Program will not be removing any Baldwin lakeshore trees, the only real potential for adverse impacts to overwintering BAEA is if the construction disturbance affects their utilization of these perches for foraging on fish and waterfowl. Foraging on fish and waterfowl only occurs when Baldwin Lake is wet. Thus, if construction occurs when Baldwin Lake is dry, the use of the perches would not be affected. Thus, **MM BIO-9** is required to ensure that construction occurs under these conditions, and impacts to Bald Eagle are fully mitigated. With the implementation of **MM BIO-9**, impacts would be less than significant.

***Southern Rubber Boa – Threatened (State)***

Findings: According to the CNDDDB, the nearest documented rubber boa occurrence (2013) is approximately 0.5 mile north of the west end of the western end of the Baldwin Lake Pipeline Alignment Option, on the north side of East North Shore Drive (State Route 18 [SR 18]) (CDFW pers. comm.). There is some marginally suitable rubber boa habitat in the vicinity of the Baldwin Lake Pipeline Alignment Option consisting of mixed wet montane meadow and big sagebrush habitat, with scattered trees, large shrubs, and woody debris. Additionally, the Baldwin Lake Pipeline Alignment Option crosses an ephemeral stream (Caribou Creek) near the western end of the alignment. However, the mixed conifer-oak forest or woodland habitats that rubber boa typically occur in are absent from this area and there are no nearby rock outcrops, downed logs, or tree stumps that could provide potential rubber boa hibernacula. Given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, Southern Rubber Boa are not likely to be affected by the implementation of this Program Component. Thus, no potential impacts to this species from implementation of the Stanfield Marsh/Big Bear Lake Discharge Project are anticipated.

### ***San Bernardino Flying Squirrel – SSC***

**Findings:** The Flying Squirrels of Southern California is a project of the SDNHM, in collaboration with the USFS and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. According to the SDNHM database, flying squirrel have been documented in the vicinity of the Sand Canyon Recharge Conveyance Pipeline, as well as north of West North Shore Drive (State Route 38 [SR 38]), approximately 0.4 mile north of the Meadow Lane Pipeline Alignment Option. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, there is a moderate potential for flying squirrel to occur in the Program Area and species-specific impacts avoidance and minimization measures are recommended, as required by **MM BIO-11**, for the Meadow Lane Pipeline Alignment Option, East Neighborhoods Pipeline Alignment Option, and West Neighborhoods Pipeline Alignment Option, implementation. Implementation of the Baldwin Lake Pipeline Alignment Option does not require implementation of mitigation to avoid impacts to this species, as no suitable habitat exists within this Alignment Option. Impacts on this species from implementation of the Meadow Lane Pipeline Alignment Option, East Neighborhoods Pipeline Alignment Option, and West Neighborhoods Pipeline Alignment Option would be less than significant with the implementation of mitigation.

### ***California Spotted Owl – SSC***

**Findings:** According to the CNDDDB Spotted Owl Observations Database (2023), the nearest documented SPOW observation is a SPOW activity center (e.g., a roosting or nesting site) located approximately one mile southeast of the Sand Canyon Recharge Conveyance Pipeline. However, the Program Area is within an existing urban and rural residential setting that is subject to a high level of human disturbance. Additionally, the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region. Therefore, SPOW are not likely to occur in the Program Area. However, While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW as a result of light pollution. Therefore, to minimize impacts to this species from light pollution, **MM BIO-12**, which would protect nocturnal species from direct night lighting, must be implemented to avoid a potentially significant impact on this species. Impacts would be less than significant with the implementation of **MM BIO-12**.

### ***Species Considered Absent for this Program Component Area***

**Findings:** Please refer to the discussion under BBARWA WWTP, which describes the findings as to why the following species are considered absent from the entirety of the Program Area, including the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options.

- Cushenbury Milk-vetch – Endangered (Federal)
- Big Bear Valley Sandwort – Threatened (Federal)
- Parish's Daisy – Threatened (Federal)
- Southern Mountain Buckwheat – Threatened (Federal)
- Cushenbury Buckwheat – Endangered (Federal)
- San Bernardino Mountains bladderpod – Endangered (Federal)
- Quino Checkerspot Butterfly – Endangered (Federal)

No potential impacts to the above species are anticipated.

### **Conclusion**

**Table 4.5-3** (below) provides a list of all state and/or federally listed or proposed threatened and endangered species identified by the CNDDDB and IPaC queries, where they are found (locally,

adjacent to the proposed Program Area footprint, or within the proposed Program Area footprint), if suitable habitat for that species exists within the Program Area and whether the Program may affect that species.

**Table 4.5-3  
 LISTED SPECIES DOCUMENTED IN THE PROGRAM VICINITY**

Common Name	Scientific Name	Status	Found Locally	Found Adjacent	Found Within	Suitable Habitat	Program Affect
<b><u>Plants:</u></b>							
Cushenbury oxytheca	<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i>	FE	No	No	No	None	No impact
Cushenbury milk-vetch	<i>Astragalus albens</i>	FE	No	No	No	None	No impact
ash-gray paintbrush	<i>Castilleja cinerea</i>	FT	Yes	Yes	No	Yes	Less than significant impact with mitigation
Big Bear Valley sandwort	<i>Eremogone ursina</i>	FT	Yes	No	No	None	No impact
Parish's daisy	<i>Erigeron parishii</i>	FT	No	No	No	None	No impact
southern mountain buckwheat	<i>Eriogonum kennedyi</i> var. <i>austromontanum</i>	FT	Yes	No	No	None	No impact
Cushenbury buckwheat	<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	FE	Yes	No	No	None	No impact
San Bernardino Mountains bladderpod	<i>Physaria kingii</i> ssp. <i>bernardina</i>	FE	No	No	No	None	No impact
San Bernardino blue grass	<i>Poa atropurpurea</i>	FE	Yes	Yes	No	Yes	Less than significant impact with mitigation
bird-foot checkerbloom	<i>Sidalcea pedata</i>	FE/SE	Yes	Yes	Yes	Yes	Significant Impact
California dandelion	<i>Taraxacum californicum</i>	FE	Yes	Yes	No	Yes	Less than significant impact with mitigation
slender-petaled thelypodium	<i>Thelypodium stenopetalum</i>	FE/SE	Yes	Yes	No	Yes	Less than significant impact with mitigation
<b><u>Insects:</u></b>							
quino checkerspot butterfly	<i>Euphydryas editha quino</i>	FE	No	No	No	None	No impact
<b><u>Amphibians:</u></b>							
southern mountain yellow-legged frog	<i>Rana muscosa</i>	FE/SE	No	No	No	None	No impact
<b><u>Fish:</u></b>							
unarmored threespine stickleback	<i>Gasterosteus aculeatus williamsoni</i>	FE/SE	Yes	Yes	No	Adjacent	Less than significant impact with mitigation
steelhead - southern California DPS	<i>Oncorhynchus mykiss irideus</i> pop. 10	FE	No	No	No	None	No impact
<b><u>Birds:</u></b>							
southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE/SE	No	No	No	None	No impact

Common Name	Scientific Name	Status	Found Locally	Found Adjacent	Found Within	Suitable Habitat	Program Affect
bald eagle	<i>Haliaeetus leucocephalus</i>	FD/SE	Yes	Yes	No	Adjacent	Less than significant impact with mitigation
California spotted owl	<i>Strix occidentalis occidentalis</i>	FPE	No	No	No	None	Less than significant impact with mitigation
<b>Reptiles:</b>							
southern rubber boa	<i>Charina umbratica</i>	ST	Yes	No	No	Yes	Less than significant impact
Mojave desert tortoise	<i>Gopherus agassizii</i>	FT/ST	No	No	No	None	No impact

Notes: FE = Federally Endangered FT = Federally Threatened SE = State Endangered ST = State Threatened

Ultimately, several special status plant species have been documented in the vicinity of the possible Shay Pond Replacement Pipeline including the federally listed as endangered San Bernardino blue grass and California dandelion, and the state and federally listed as endangered slender-petaled thelypodium. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline and this alignment was not included in the floristic botanical field surveys. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, additional surveys would be necessary prior to implementation of Program activities, to assess potential Program related effects on San Bernardino blue grass, California dandelion, slender-petaled thelypodium, and other special status species that may occur in this area. Additionally, precautionary measures are recommended to avoid Program related effects on the state and federally listed as endangered bird-foot checkerbloom for all Program Components except for implementation of the Baldwin Lake Pipeline Alignment Option, if selected as the preferred Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option.

The Program would have a potentially significant impact the state and federally listed as endangered Stickleback, the state listed (federally delisted) as endangered BAEA, and the state listed as threatened southern rubber boa. Additionally, there is a moderate potential for the California SSC San Bernardino flying squirrel to occur in the Program Area. Therefore, precautionary measures are recommended to avoid or minimize any potential Program related effects on Stickleback, BAEA, rubber boa, and flying squirrel to a level of less than significant. Each of these measures are necessary to reduce impacts to these species, and their purpose in reducing impacts to each these species are discussed in detail under **MMs**, below.

**Other Physical Changes to the Environment**

No physical changes to the present conditions at the LV Site would be expected to occur at the LV Site from the change in discharge volume that would occur under the proposed Program. As such, no biological resources are expected to be directly or indirectly impacted by the reduced discharge to the LV Site that would occur as a result of Program implementation.

The impacts to the Shay Pond from the introduction of the new purified water source resulting from the implementation of the Program, have been identified above, and mitigative actions are proposed below under *Mitigation Measures*. The Program would provide a more sustainable water source needed to maintain and enhance suitable Stickleback habitat conditions in Shay Pond. The utilization of the Program Water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source

supporting the Stickleback. However, the necessary steps required to ensure protection of the Stickleback should the Shay Pond Discharge Project go forward in the future has been documented herein and the change in water source at Shay Pond in support of the Stickleback has been analyzed herein at a programmatic level. The purified water generated by the AWPf at BBARWA, proposed under this Program, could potentially significantly impact the species if the water source lacks the nutrients necessary to support the species, or contains any constituents that, when introduced into the Stickleback habitat, would adversely impact the species. The impacts to this species were analyzed on a more programmatic level, so that, should the individual project go forward in the future, mitigation would stipulate the steps necessary to minimize impacts from changing the water source at Shay Pond. Therefore, should the Program Team decide to modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**, below. This **MM** details the additional studies that will be necessary to ensure that the product water is suitable to support this species. Impacts to this species would be less than significant with the implementation of **MM BIO-6**.

Impacts to special status species may occur if the beneficial uses listed in **Table 3-2** are obstructed as a result of the proposed Program from the discharge of purified water to Big Bear Lake via Stanfield Marsh. Beneficial uses of Big Bear Lake and Stanfield Marsh include Wildlife Habitat (WILD)—i.e. uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources—and Rare, Threatened, or Endangered Species (RARE)—uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered. Thus, maintaining the beneficial uses of these water bodies is paramount to protecting the rare, threatened, and/or endangered species, and wildlife habitats found therein.

In order to determine whether the Program would impact beneficial uses of Stanfield Marsh or Big Bear Lake, water quality objectives must be analyzed, as these objectives inform the beneficial use determination analyzed below. If the water quality objectives are met by the purified water discharge to Stanfield Marsh and Big Bear Lake, then the beneficial uses can demonstrably be preserved by the Program, and thereby protect special status habitats and species that are protected by the beneficial uses of these waters.

A technical memorandum (Memo) was prepared by GEI titled “*Analysis of Aquatic Life Effects of Replenish Big Bear Program’s Discharge to Stanfield Marsh*,” and dated October 2023 (**Appendix 19**) to determine whether the Program Water would contain any constituents of interest (COI) that could impact rare, threatened, and endangered species, or any other beneficial use of either Big Bear Lake or Stanfield Marsh. This Memo evaluated modeled outputs from Dr. Anderson’s Big Bear Lake model, partial data from the BBARWA AWPf pilot study collected from June through September 2023, and the antidegradation analysis to evaluate potential impacts on beneficial uses related to aquatic life. The Memo also described the data gaps that limit GEI’s understanding of how the Stanfield Marsh/Big Bear Lake discharge will affect beneficial uses related to aquatic life and how these beneficial uses of Stanfield Marsh and Big Bear Lake will be protected through the implementation of the Program. Data gaps and sources of uncertainty were addressed by recommending an adaptive management and monitoring plan.

The discharge to Shay Pond was not evaluated by GEI in this Memo because this Program Component will not be implemented in the near future. This is because the utilization of the Program Water in support of Shay Pond resulting from the implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the



regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. Should the Program Team decide to modify the water supply at Shay Pond, the water quality impacts on the Stickleback and Shay Pond shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**.

The GEI Memo reviewed and identified the beneficial uses of Stanfield Marsh and Big Bear Lake that protect aquatic life, wildlife, and habitats to assess the water quality conditions that could impact these beneficial uses. The beneficial uses of both Stanfield Marsh and Big Bear Lake are listed in **Table 4.11-1**. The beneficial uses defined in the Santa Ana Basin Plan for Big Bear Lake and Stanfield Marsh that protect aquatic life, wildlife, and habitats and are described below:

- **Commercial and Sport Fishing (COMM)** Uses of water for commercial or recreational collection of fish and shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.
  - This beneficial use protects commercial fishing, which can be an indicator of the health of the wildlife and special status species utilizing Big Bear Lake for foraging and food, such as Bald Eagle. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not significantly impact wildlife, special status habitats, and special status species.
- **Warm Freshwater Habitat (WARM)** Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
  - This beneficial use protects warm water ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not significantly impact wildlife, special status habitats, and special status species.
- **Cold Freshwater Habitat (COLD)** Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
  - This beneficial use protects cold water ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not significantly impact wildlife, special status habitats, and special status species.
- **Wildlife Habitat (WILD)** Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
  - This beneficial use protects ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not significantly impact wildlife, special status habitats, and special status species.
- **Rare, Threatened, or Endangered Species (RARE)** Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.
  - This beneficial use protects habitats that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use

indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not significantly impact wildlife, special status habitats, and special status species.

The parameters that were identified by the GEI Memo that could potentially impact these beneficial uses are algae, temperature, nutrients, dissolved oxygen, pH, boron, and reinvasion by undesirable species. The general observations, analyses, and conclusions of are summarized in Section 4.11. A brief overview of these indicators is provided below, which discusses how the COMM, WARM, COLD, WILD, and RARE beneficial uses can be maintained as part of the Program, thereby protecting the special status species and habitats by which the beneficial uses support.

### ***Algae***

It is possible that the rewetting of Stanfield Marsh will result in an increase in biologically available phosphorus,<sup>73</sup> which would increase algal growth in Stanfield Marsh, and in Big Bear Lake, if Stanfield Marsh spilled to the lake during rewetting. The increase in phosphorus depends on interstitial pore size, total organic carbon in soils,<sup>74</sup> presence of aquatic vegetation, and the extent of the varial zone.<sup>75</sup> A small varial zone may help reduce the amount of phosphorus that is re-released into the aquatic environment. Other factors can include the seasonal timing of rewetting and the amount of uptake and storage by rooted and floating macrophytes – management strategies such as planting of rooted macrophytes can be employed during rewetting, to reduce the amount of phosphorus that remains in Stanfield Marsh and moved into the Big Bear Lake.<sup>76</sup> Limiting the available nutrients in the water column would reduce the probability of nuisance algae blooms. Physical conditions in the rewetted Stanfield Marsh and projected levels of phosphorus in the Program Water should not contribute to increased levels of cyanobacteria. The rewetted Stanfield Marsh will be shallow and well-mixed.<sup>77</sup> Cyanobacteria benefit from stratified conditions because of their natural buoyancy but do not thrive in well-mixed water columns. Thus, it is not anticipated that excessive algal growth in inland surface receiving waters would occur, and therefore, the narrative criterion for algae is predicted to be met by the proposed Program. As a result, the beneficial uses would be maintained under the Program, thereby protecting the special status species and habitats by which the beneficial uses support. No impacts related to beneficial uses from algae are anticipated to occur.

### ***Temperature***

The COLD beneficial use is more stringent than the WARM beneficial use. Because Stanfield Marsh was mostly dry from 2015 through 2022, temperature modeling was required to estimate Program effects.<sup>78</sup> Dr. Anderson used his Big Bear Lake model to simulate a run for a five-year period, with minimum effluent temperatures of 12 degrees Celsius (°C), a maximum temperature of 22°C, and a scenario of approximately 2,200 AFY of discharge.

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<sup>73</sup> Surridge, B. W. J., A. L. Heathwaite, and A. J. Baird. 2012. Phosphorus mobilization and transport within a long-restored floodplain wetland. *Ecological Engineering* 44:348-359.

<sup>74</sup> Gale, P. M., K. R. Reddy, and D. A. Graetz. 1994. Phosphorus retention by wetland soils used for treated wastewater disposal. *Journal of Environmental Quality* 23(2):370-377.

<sup>75</sup> Song, K-Y., K-D., Zoh, and H. Kang. 2007. Release of phosphate in a wetland by changes in hydrological regime. *Science of the Total Environment* 380(1-3):13-18.

<sup>76</sup> Steffenhagen, P., D. Zak, K. Shultz, T. Timmermann, and S. Zerbe. 2012. Biomass and nutrient stock of submersed and floating macrophytes in shallow lakes formed by rewetting of degraded fens. *Hydrobiologia* 692:99-109.

<sup>77</sup> Dr. Anderson, personal communication 08/2023

<sup>78</sup> Dr. Anderson, M. 2022a. Assessment of Inflow Temperature on Temperature in Stanfield Marsh and Big Bear Lake.

Under the modeling scenario, water temperature excursions over 5°F/2.8°C in Stanfield Marsh only occurred during discrete periods when water levels were exceptionally low ( $\leq 1$  meter). However, because of the frequency at which low water levels would occur, the number of excursions would be substantial. Results from the Assessment of Inflow Temperature on Temperature in Stanfield Marsh and Big Bear Lake prepared by Dr. Anderson highlighted some important general findings. Stanfield Marsh and Big Bear Lake are hydrologically connected through a set of culverts. For water flows to move from Stanfield Marsh into Big Bear Lake, Stanfield Marsh must first be filled before it starts flowing into the Big Bear Lake. Warm Program Water discharged to the easternmost section of Stanfield Marsh will quickly lose heat through exchange with the atmosphere and will be diluted with existing water. Higher lake levels afford greater opportunity for heat loss and dilution such that temperature effects are more likely at low lake levels. As a result of the modeling, the addition of warm Program Water to Stanfield Marsh does not alter the heat budget for Big Bear Lake and is not predicted to alter lake temperature, duration, or intensity of thermal stratification.

Program-specific information about inflow temperatures is needed to conduct a more complete analysis. Temperature represents beneficial uses for both Stanfield Marsh and Big Bear Lake that could potentially impact special status species if obstructed by the Program. As such, mitigation is necessary to minimize the potential for inflow temperature to Stanfield Marsh and Big Bear Lake falls within the confines of the narrative temperature WQO. **MM HYD-1** would monitor the temperature of the Program Water and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the temperature based beneficial uses are maintained under the Program, thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from temperature would be less than significant through the implementation of mitigation.

### ***Nutrients***

Nutrient constituents are typically TIN, TN, TP, and chlorophyll-a. As discussed in the Antidegradation Analysis (**Appendix 3**), the proposed discharge is estimated to improve water quality in Big Bear Lake for TN, TP, and chlorophyll-a, maintain similar water quality for TIN. The predicted long-term average concentrations of TIN, TN, TP, and chlorophyll-a were lower with the proposed Program Water at various rates as compared to the predicted baseline condition, except for TIN under the 2,210 AFY + TP Offset. It is unclear why the model predicted increased TIN under this scenario while all other scenarios showed significantly reduced TIN values relative to the modeled baseline; however, the modeled difference in TIN between the Baseline and 2,210 AFY + TP Offset scenarios is approximately 4 percent, which is within the range of model variance and is considered statistically insignificant.

Although modeling shows the projected long-term average concentration of TIN is similar to the modeled baseline condition, the pilot study results (**Appendix 19** Table 3 of GEI's TM) indicated that the average TIN exceeded the Santa Ana Basin WQO. Treatment process optimization is being explored to attain a higher removal efficiency to meet the most stringent TIN WQO of 0.15 ppm. As TIN has a WQO under the Basin Plan, if this objective is not met, the beneficial uses of Stanfield Marsh and/or Big Bear Lake that could potentially impact special status species may be obstructed by the Program. For the purposes of this analysis, it is assumed that treatment optimization will result in attainment of 0.15 ppm TIN. As a result, the beneficial uses would be maintained under the Program, thereby protecting the special status species and habitats by which the beneficial uses support. However, if additional treatment equipment is needed to meet this objective or if regulatory compliance mechanisms are pursued to allow discharge above the objectives, consistency with the Program CEQA documentation will be verified, and, if determined

necessary to comply with CEQA, subsequent CEQA documentation will be conducted. Impacts under this issue would therefore be less than significant.

### **Data Gaps and Limitations**

Although modeling and a pilot study has been conducted for this Program, there are still some data gaps to better understand the potential impacts to the designated beneficial uses for Stanfield Marsh and Big Bear Lake with respect to aquatic wildlife and plants. These data gaps would be best resolved when Program Water is discharged to Stanfield Marsh, and and further, would be monitored with mitigative adaptation to any impacts through **MM HYD-1**. Constituents of interest with data gaps are boron, dissolved oxygen, pH, and temperature. These constituents are further explained below. However, the specific data gaps for each COI are outlined as follows:

- **Boron:** There is uncertainty as to how boron would be assimilated into Stanfield Marsh. It appears that uptake by plants can be a significant source of sequestration of boron, suggesting that management of rooted macrophytes may provide a method of removing excess boron from Stanfield Marsh. To determine potential impacts on aquatic wildlife and plants in Stanfield Marsh and Big Bear Lake, it is recommended to conduct boron monitoring once Program Water is discharged to Stanfield Marsh. Quarterly monitoring is recommended of the Program Water to observe the boron concentration prior to introduction into Stanfield Marsh and at the existing TMDL Sampling Station MWDL9. This location is already an established sampling station through the Big Bear Lake Nutrient TMDL and is representative of Stanfield
- **Dissolved Oxygen:** Dissolved Oxygen has a narrative WQO that must be met pursuant to the WARM and COLD beneficial uses, and is therefore integral to protecting the special status species and habitats that are supported by the beneficial uses of Stanfield Marsh and Big Bear Lake. Data is not currently available to predict dissolved oxygen levels in Stanfield Marsh, Big Bear Lake, or purified water. However, low dissolved oxygen levels could be ameliorated through aeration of effluent. Stanfield Marsh is shallow enough that stratification is unlikely to occur (Dr. Anderson, personal communication). In other words, the water column in Stanfield Marsh would be mixed through water movement and via wind mixing, which would facilitate roughly equal concentrations of dissolved oxygen throughout the water column. Also, it is possible to speculate on dissolved oxygen levels in the Program Water, but there is considerable uncertainty surrounding what will happen when this Program Water enters Stanfield Marsh. Low-nutrient water entering Stanfield Marsh may also suppress dissolved oxygen levels by reducing algae and macrophyte production of dissolved oxygen (Dr. Anderson, personal communication). To determine potential impacts to aquatic wildlife, once Program Water is discharged into Stanfield Marsh, dissolved oxygen should be monitored during and after re-wetting of Stanfield Marsh at the Program Water effluent and at existing TMDL Sampling Station MWDL9. If observed dissolved oxygen levels do not meet the Basin Plan WQO designated beneficial uses for COLD and WARM, mitigative actions may include but not be limited to the introduction of a chemical or mechanical intervention to stabilize dissolved oxygen levels. MM HYD-1 would monitor the dissolved oxygen levels of the Program Water and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs, and thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from dissolved oxygen would be less than significant through the implementation of mitigation.
- **pH:** The buffering capacity of Stanfield Marsh itself is currently unknown because it has been mostly dry since 2015, but soil chemistry has a large effect on the pH of small bodies of water. As such, it is not presently known precisely how the Program will impact the pH

of Stanfield Marsh, and therefore observation of how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation, is necessary to bridge this data gap. To determine potential impacts to aquatic wildlife, once Program Water is discharged into Stanfield Marsh, pH should be monitored during and after re-wetting of Stanfield Marsh at the Program Water effluent and at existing TMDL Sampling Station MWDL9. If observed pH levels do not meet the Basin Plan WQO for inland surface waters, the beneficial uses of Stanfield Marsh and/or Big Bear Lake that could potentially impact special status species may be obstructed by the Program. As such, mitigative actions may include but not be limited to introduction of a chemical intervention to stabilize pH levels. **MM HYD-1** would monitor the pH levels of the Program Water and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs, and thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from pH would be less than significant through the implementation of mitigation.

- **Temperature:** There is uncertainty about predicted temperatures arise because no temperature data are available for the Program's Water - theoretical temperature ranges were developed using data from a pilot project near sea level and corrected for elevation, but still, there is a gap in data that can only be filled once the Program is operational. As indicated in earlier discussions on the temperature modeling data, additional monitoring is recommended once the Program's Water is discharged into Stanfield Marsh. Temperature modeling is recommended to be conducted using an online analyzer to obtain continuous readings of the Program Water effluent and in Stanfield Marsh. Similar to previous discussions on location of monitoring, the existing TMDL Sampling Station MWDL9 can be utilized. If observed temperature levels do not meet the Basin Plan WQO designated beneficial uses for COLD and WARM, mitigative actions may include but not be limited to introduction of a temperature cooling mechanism to lower the temperature of the Program Water introduced into Stanfield Marsh. **MM HYD-1** would monitor the temperature of the Program Water discharge, and if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the temperature based beneficial uses are maintained under the Program, thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from temperature would be less than significant through the implementation of mitigation.
- **Reinvasion of Invasive Species:** Invasive plants and aquatic animals (vertebrate or otherwise) will be able to access Stanfield Marsh when it is rewetted. Because it is upstream of Big Bear Lake, it may be desirable to prevent contamination of Stanfield Marsh by species such as Eurasian Watermilfoil (*Myriophyllum spicatum*) and Common Carp (*Cyprinus carpio*), which are known invasive species that appear in Big Bear Lake. Proliferation of Eurasian Watermilfoil can cause periodic depression in dissolved oxygen levels, and this species adversely affects all beneficial uses relating to the protection of aquatic life. As the reinvasion by undesirable species can only occur once Stanfield Marsh is rewetted, monitoring is the only means by which to observe whether such species become invasive in Stanfield Marsh from Program implementation. Thus, it is recommended for monitoring to be conducted at least on a bi-yearly basis to observe the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake, which shall be a requirement of Program implementation through **MM HYD-1**. Furthermore, mitigative actions under **MM HYD-1** if invasive species are observed would include invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions to remove the invasive species present as a result of

introduction of the Program Water. Additionally, **MM HYD-1** requires an account of invasive species within Stanfield Marsh and Big Bear Lake to be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program. This would protect the beneficial uses of Stanfield Marsh and Big Bear Lake by preventing invasive species proliferation in Stanfield Marsh and Big Bear Lake, thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from invasive species would be less than significant through the implementation of mitigation.

Overall, the general findings of this Memo are that the Program water discharge to Big Bear Lake via Stanfield Marsh is not anticipated to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFS. In fact, the provision of additional high-quality water to Big Bear Lake via Stanfield Marsh is more likely to benefit the habitat and thereby the species supported by the habitat at Big Bear Lake and Stanfield Marsh because the provision of additional water would promote growth of the existing habitat and creation of new habitat that would facilitate a commensurate increase in habitat availability for species supported by the habitat within the Stanfield Marsh. However, there are data gaps that must be addressed to support GEI's understanding of the impacts. Data gaps and sources of uncertainty are addressed as part of an AMMP that will be enforced through **MM HYD-1**.

The Program's Water would help support the RARE and WILD beneficial uses simply by re-wetting the area. **Exhibit 4.5-1** shows Big Bear Lake area was at a record low in 2018 and Stanfield Marsh was dry. Extensive modeling by Dr. Anderson showed that the release of water into Big Bear Lake through Stanfield Marsh would result in large increases in lake water surface elevation and lake water surface area. **Exhibit 4.5-2** shows this increase in inundated area would extend into Stanfield Marsh. Even under a scenario of protracted drought, defined as the fifth percentile of flows entering Stanfield Marsh and Big Bear Lake, at least some water would remain in Stanfield Marsh. This is in stark contrast to existing conditions, wherein the Stanfield Marsh has been mostly dry for several years. Some potential benefits are outlined below.

- Availability of water will allow the establishment of riparian plants, macrophytes, and algae, as well as the invertebrate and vertebrate fauna that rely upon them.
- Some organisms have the ability to adapt to extremely variable environments. For example, highly mobile animals (e.g., waterfowl) will avoid or emigrate from dry areas, and drought-tolerant plants can survive in a wide variety of moisture regimes or can remain dormant for long periods of time. However, less mobile/more specialized species are excluded from highly unpredictable environments. Reducing the degree of disturbance (i.e., episodic drying) will allow more species to utilize the area.
- Maintaining water levels in Stanfield Marsh may also increase lakeshore fringe habitat, which is currently limited due to water level fluctuations. This habitat type is utilized by rare birds (American Bald Eagle *Haliaeetus leucocephalus*, Southwestern Willow Flycatcher *Empidonax traillii extimus*), rare mammals (San Bernardino Flying Squirrel *Glaucomys sarinus*), and rare plants (Slender-petaled Thelypodium *Thelypodium stenopetalum*). Other more common species would benefit from the presence of lakeshore fringe and open water habitat as well. These include amphibians, ducks/wading birds, and bats that forage over open water.

Returning a reliable source of water to Stanfield Marsh would unequivocally benefit wildlife, particularly aquatic or semi-aquatic species.



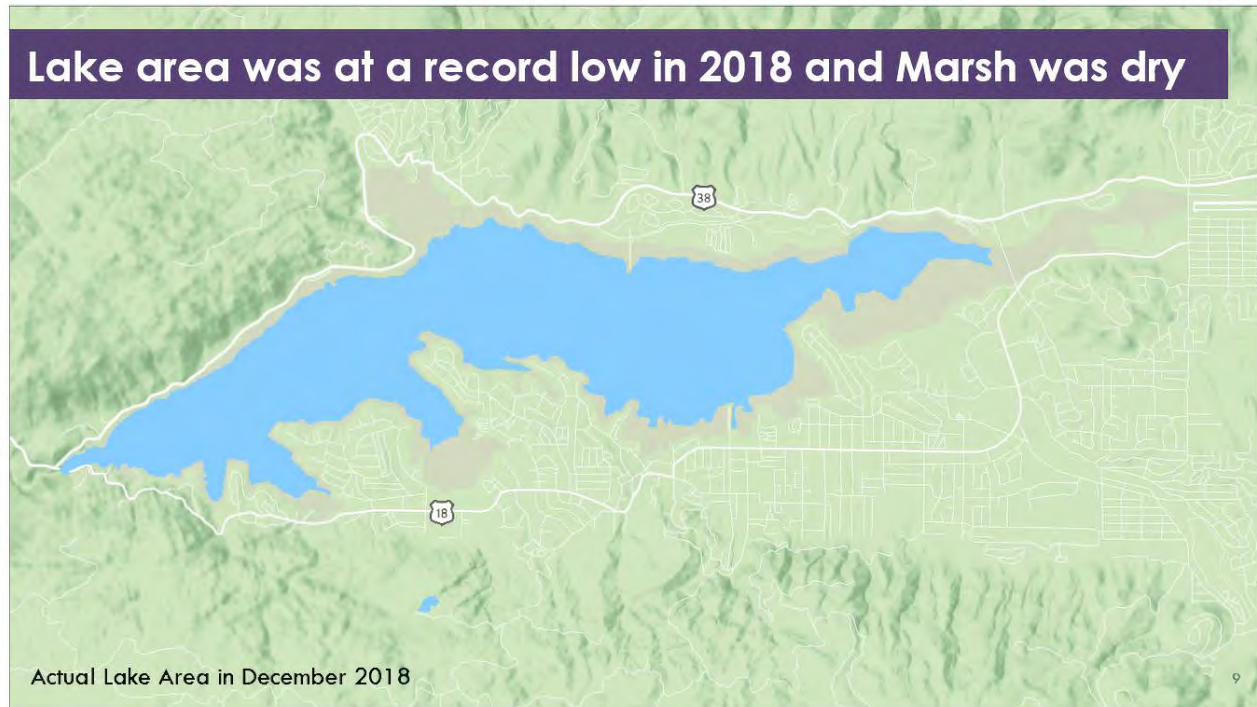


Exhibit 4.5-1: Lake Area at Record Low in 2018

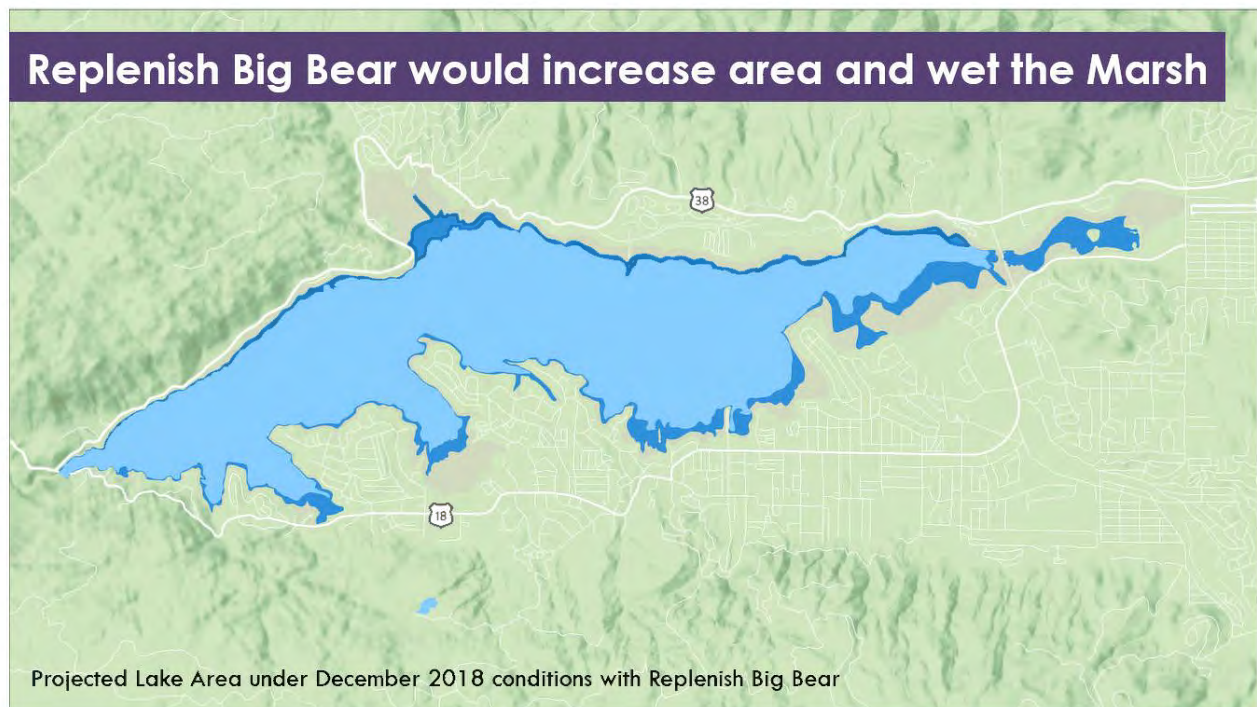


Exhibit 4.5-2: Lake Area with Program Implementation Under Dry Conditions

**Beneficial Use Conclusion**

As previously stated, impacts to special status species may occur if the beneficial uses listed in **Table 3-2** are obstructed as a result of the proposed Program from the discharge of purified water

to Big Bear Lake via Stanfield Marsh. Beneficial uses of Big Bear Lake and Stanfield Marsh include Wildlife Habitat (WILD)—i.e. uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources—and Rare, Threatened, or Endangered Species (RARE)—uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered. Thus, maintaining the beneficial uses of these water bodies is paramount to protecting the rare, threatened, and/or endangered species, and wildlife habitats found therein. Based on the above discussion, the Program's Water to Stanfield Marsh/Big Bear Lake would have a less than significant potential to obstruct the beneficial use of either Stanfield Marsh or Big Bear Lake with the implementation of **MM HYD-1**. Impacts would be less than significant through the implementation of mitigation. In addition, the Program's Water would help support the RARE and WILD beneficial uses simply by re-wetting the area.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

To reduce or prevent activities that may adversely affect sensitive species identified in **Table 4.5-3**, above, the following **MMs** will be incorporated into any specific projects and/or contractor specifications for future project-specific impacts to protect sensitive resources and habitat.

**MM BIO-1** would minimize the potential for the Solar Evaporation Ponds to impact bird-foot checkerbloom as a result of Program implementation.

**BIO-1** *The Solar Evaporation Ponds shall be designed to avoid areas where bird-foot checkerbloom is known to occur (specifically, the areas that are delineated on Figure 4.5-10). The area where bird-foot checkerbloom is known to occur shall be verified by a qualified biologist prior to the commencement of construction. Orange construction fencing, or similarly visible material should be installed around the area where bird-foot checkerbloom is located, as determined by the qualified biologist, and this area shall be completely avoided as a feature of the solar evaporation pond design.*

In order to identify the extent of the bird-foot checkerbloom, and other special status species plants within a given Program component, the following measure requiring preconstruction clearance surveys shall be required.

**BIO-2** *Preconstruction clearance surveys shall be conducted by a qualified biologist who is familiar with the local flora, to determine if any special status plant species are present within the proposed disturbance area prior to construction of any individual Program component. Botanical surveys shall be conducted during the appropriate time of year, when target species are both evident and identifiable.*

**MM BIO-3** and **BIO-4** requires orange construction fencing to be installed where special status plant species are found adjacent to a given project footprint. This measure will ensure that the bird-foot checkerbloom will be protected from construction impacts at the evaporation pond site within BBARWA's WWTP site (shown on **Figure 4.5-10**).

**BIO-3** *If any listed bird-foot checkerbloom is found by the onsite biological monitor, or by construction personnel who are educated in species avoidance pursuant to **MM BIO-16**, within the proposed disturbance area(s), then orange construction fencing, or similarly*

*visible material should be installed around the area where they are located, and this area shall be completely avoided. This measure applies to the Solar Evaporation Ponds Project as shown on Figure 4.5-10. This measure does not apply to the Baldwin Lake Pipeline Alignment Option, should this alignment be the selected Alignment Option. If the Baldwin Lake Pipeline Alignment Option is selected, the bird-foot checkerbloom plants shall be handled pursuant to MM BIO-5.*

**BIO-4** *If any other listed special status species are found within the proposed disturbance area(s), then orange construction fencing, or similarly visible material should be installed around the area where they are located, and this area shall be completely avoided. This measure does not apply to the Baldwin Lake Pipeline Alignment Option, should this alignment be the selected alternative. If the Baldwin Lake Pipeline Alignment Option is selected, the bird-foot checkerbloom plants shall be handled pursuant to MM BIO-5.*

The Baldwin Lake Pipeline Alignment Option is being considered by BBARWA, as it would avoid a large portion of construction within residential roadways that would otherwise occur under other Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options. If the Baldwin Lake Pipeline Alignment Option is selected, **MM BIO-5** would be necessary to minimize impacts to the bird-foot checkerbloom species, but it would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option.

**BIO-5** *Where feasible, the Baldwin Lake Pipeline Alignment Option shall be designed to avoid the areas within BBARWA's property where bird-foot checkerbloom is known to occur (shown on Figure 4.5-10). Otherwise, should BBARWA choose to install the Baldwin Lake Pipeline Alignment Option as it is currently proposed, BBARWA shall proceed as follows:*

- *At least 20 days prior to construction within areas containing the bird-foot checkerbloom, BBARWA shall notify USFWS and CDFW of the construction plan, and potential impacts to the bird-foot checkerbloom. BBARWA shall offer USFWS and CDFW a window of 20 days to opt to collect plants and/or plant seeds prior to construction.*
- *If neither CDFW nor USFWS opt to collect plants and/or plant seeds, BBARWA shall transplant the plants to a location where the plants can be conserved and protected outside of the Baldwin Lake Pipeline Alignment Option APE.*

The proposed Program may result in a change in water source to the Stickleback, which has a potential to significantly impact the species, if the water source lacks the nutrients necessary to support the species, or contains any constituents that, when introduced into the Stickleback habitat, would adversely impact the species. The impacts to this species have been analyzed on a more programmatic level, so that, should the individual project go forward in the future, the mitigation described below would stipulate the steps necessary to minimize impacts from changing the water source at Shay Pond. Therefore, should the Program Team ultimately decide to modify the water supply at Shay Pond, the implementation of an AMMP would ensure that the change in water source is supportive of the Stickleback and does not result in any adverse impacts to the species, as required by **MM BIO-6**, below. Furthermore, should the impacts to the Stickleback fall outside the scope of that which has been analyzed in this DPEIR, preparation of a project-specific subsequent CEQA documentation would be required. **MM BIO-6** would be required to ensure the preparation of the additional studies that will be necessary to ensure that the product water is suitable to support the Stickleback at Shay Pond. Therefore, should the Program Team ultimately modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**, below.

**BIO-6** *In order to change the water source at Shay Pond, an AMMP shall be developed by BBARWA. The implementing agency—BBARWA, in association with BBCCSD—shall coordinate with USFWS and CDFW to obtain verbal agreement on the approach to forecast impacts to the Stickleback. Then, the implementing agency or biologist familiar with the Stickleback contracted to the implementing agency shall draft a MOU (that would be between BBARWA and/or BBCCSD and USFWS and/or CDFW) to lay a solid framework for the development of an AMMP. The MOU will determine if additional permitting will be required from both the State and Federal government for the take of an endangered species.*

*The AMMP shall identify a sampling and monitoring program for the lifespan of the Program. This will include any triggers or adaptive management strategies that could be implemented to improve conditions for the Stickleback, including alterations to water temperature, inclusion of bubblers to increase dissolved oxygen or other techniques to be identified. The AMMP must be approved by USFWS and CDFW in order to carry out a pilot study in which it will be determined whether the change in water source for the Stickleback is feasible.*

The possible Shay Pond Replacement Pipeline (**Figures 4.5-7 through 4.5-8**) was not surveyed because the Program Team does not currently anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. This is because BBARWA expects that the existing pipeline that extends to Shay Pond will be sufficient in the event that this project (utilization of Program Water to replace the potable water utilized to support the Stickleback at Shay Pond) ultimately was to go forward. Additional surveys should be conducted prior to implementation of Program activities within either both the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline (**Figures 4.5-7 through 4.5-8**), to assess potential Program related impacts to special status species and habitats that may occur in these areas. In particular, to assess potential Program related effects on San Bernardino blue grass, California dandelion, slender-petaled thelypodium, and other special status species that may occur in this area.

**MM BIO-7** would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDDB will be notified and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

**BIO-7** *Prior to implementation of the replacement pipeline from the BBARWA WWTP to the Shay Pond Conveyance Pipeline and the new Shay Pond Conveyance Pipeline (Figures 4.5-7 through 4.5-8), a site-specific biological resources assessment shall be conducted by a qualified biologist familiar with Big Bear Valley flora and fauna. This survey shall be conducted in accordance with appropriate standards by a qualified biologist/ecologist. If sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDDB will be notified and the following subsequent mitigation actions will be taken:*

- a. BBARWA shall provide compensation for sensitive habitat acreage lost by acquiring and protecting in perpetuity (through property or mitigation bank credit acquisition) habitat for the sensitive species at a ratio of not less than 1:1 for habitat lost. The property acquisition shall include the presence of at least one animal or plant per animal or plant lost at the development site to compensate for the loss of individual sensitive species.*
- b. The final mitigation may differ from the above values based on negotiations between the implementing agency and USFWS and CDFW for any incidental take permits for listed species. BBARWA and/or the implementing agency shall retain a copy of the*

*incidental take permit as verification that the mitigation of significant biological resource impacts at a project site with sensitive biological resources has been accomplished.*

- c. *Preconstruction botanical surveys for special-status plant communities and special-status plant species will be conducted in areas that were not previously surveyed because of access or timing issues or project design changes; pre-construction surveys for special-status plant communities and special-status plant species will be conducted before the start of ground-disturbing activities during the appropriate blooming period(s) for the species. If special-status plants or plant communities are identified, the following hierarchy of actions shall be taken: a) find an alternative site; b) avoid the plants and maintain them onsite after completing the project; or c) provide compensatory mitigation offsite.*

**MM BIO-8** would ensure that no sediment or pollutants enter Shay Pond/Shay Creek during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat.

**BIO-8** *Appropriate BMPs (e.g., silt fence) should be implemented during construction of the Shay Pond Conveyance Pipeline to ensure that no sediment or pollutants enter Shay Pond/Shay Creek, such that construction does not impact the Stickleback and/or its habitat.*

Bald Eagle perches in the immediate vicinity of lakeshores form an essential habitat requirement for BAEA in the Big Bear Valley. Big Bear Lake and Baldwin Lake support overwintering migratory BAEA and the BBARWA WWTP site is within suitable BAEA foraging habitat and adjacent BAEA for perching habitat along the Baldwin Lake shoreline. However, this species is not known to nest in the Program Area and given the existing human disturbance adjacent the Program site, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, BAEA are not likely to nest within the Program Area. However, the proposed Solar Evaporation Ponds and Baldwin Lake Pipeline Alignment Option should be constructed when those portions of Baldwin Lake are dry, as BAEA prey (i.e., fish, waterfowl.), BAEA would be expected to be absent from the Program Area. Bald eagle may utilize lakeshore perches when Baldwin Lake is dry, but since the Program will not be removing any Baldwin lakeshore trees, the only real potential for adverse impacts to overwintering BAEA is if the construction disturbance affects their utilization of these perches for foraging on fish and waterfowl. Foraging on fish and waterfowl only occurs when Baldwin Lake is wet. Thus, if construction occurs when Baldwin Lake is dry, the use of the perches would not be affected. Thus, **MM BIO-9** is required to ensure that construction occurs under these conditions, and impacts to Bald Eagle are fully mitigated.

**BIO-9** *All construction activities associated with the proposed Solar Evaporation Ponds shall be conducted when the portion of Baldwin Lake where this Program component will occur is dry.*

There is some marginally suitable rubber boa habitat in the vicinity of the Baldwin Lake Pipeline Alignment Option and there is suitable rubber boa habitat in the vicinity of the possible replacement pipeline from the BBARWA WWTP to the Shay Pond Conveyance Pipeline. Also, the Sand Canyon Recharge Pipe Outlet and portions of the Sand Canyon Recharge Conveyance Pipeline are adjacent undeveloped areas of potentially suitable rubber boa habitat consisting of mixed Jeffrey pine forest and woodland and mountain juniper woodland habitats. As such, **MM BIO-10** is required to ensure that pre-construction southern rubber boa surveys are conducted to ensure avoidance of impacts to this species.



- BIO-10**
- 1. Preconstruction rubber boa surveys shall be conducted for each Program component that would provide 100% visual coverage of any undeveloped areas within the proposed Program Area footprint and would consist of a systematic ground search that would focus on moveable surface materials such as rocks, logs, duff, and man-made debris that may provide shelter for rubber boa.**
  - 2. Rubber boa exclusion fence (e.g., silt fence) shall be installed around the perimeter of the Sand Canyon Recharge Pipe Outlet construction site prior to commencement of any Program related ground disturbing activities in this area. All construction activities shall be restricted to within the fenced disturbance limits to avoid potential harm to rubber boa that may be present in nearby habitat.**
  - 3. A qualified biologist who is familiar with southern rubber boa and its habits shall be present on site during initial ground disturbing activities within or adjacent any potential rubber boa habitat to monitor the clearing/removal of any surface objects that could potentially provide rubber boa refugia or hibernacula (e.g., rotting logs/stumps, duff layer). The biological monitor shall visually inspect under any surface cover objects prior to their removal to ensure no rubber boa are harmed or killed.**
  - 4. All open trenches shall be backfilled or covered at the end of the day and ramped to allow rubber boa and other wildlife to escape.**
  - 5. If a rubber boa is found during preconstruction presence/absence surveys or during construction activities, all site-specific project activities shall be halted, CDFW shall be contacted, and a CESA Incidental Take Permit shall be obtained from CDFW prior to reinitiating project activities.**

Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, there is a moderate potential for flying squirrel to occur in the Program Area and species-specific impacts avoidance and minimization measures are recommended, as required by **MM BIO-11**, below.

- BIO-11**
- 1. To ensure the Program does not impact flying squirrel, preconstruction surveys for each Program Component (except those occurring at the BBARWA WWTP) shall be conducted to identify potentially suitable cavity nesting sites and foraging habitat, prior to the removal of any trees or downed woody debris.**
  - 2. If suitable flying squirrel cavity nesting sites are detected within the proposed Program Area footprint, then coordination with the CDFW would be necessary to determine appropriate minimization and MMs to offset Program related impacts to this species prior to the commencement of construction within the area within which the suitable flying squirrel cavity nesting sites are located.**

While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW or flying squirrel as a result of light pollution. Therefore, to minimize impacts to these species from light pollution, the following **MM** shall be implemented.

- BIO-12**
- To avoid potential impacts to nocturnal species such as the California Spotted Owl (SPOW) and flying squirrel, due to light pollution, project related night lighting (both temporary and permanent) shall be directed away from adjacent areas to protect nocturnal species from direct night lighting. Shielding shall be incorporated in project designs to ensure ambient lighting in adjacent areas is not increased.**



**MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities, which would ensure direct and indirect impacts to the species identified under **Table 4.5-3** with a potential for the Program to affect, are minimized to the extent feasible.

- BIO-13** *During final design and prior to issuance of construction permits each specific infrastructure improvement project, a BRMP shall be prepared to:*
- *Assemble the biological resources MMs to be applied for each specific infrastructure improvement in the future;*
  - *Specify the terms and conditions from applicable permits and agreements and make provisions for monitoring assignments, scheduling, and responsibility;*
  - *Discuss habitat replacement and revegetation, protection during ground-disturbing activities, performance (growth) standards, maintenance criteria, and monitoring requirements for temporary and permanent native plant community impacts.*
  - *The parameters of the BRMP will be formed with the MMs from subsequent CEQA documentation (if required), including terms and conditions as applicable from the USFWS, USACE, SWRCB/RWQCB, and CDFW.*

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to sensitive biological resources and the species identified under **Table 4.5-2**, including the potential effects of invasive species, are reduced to a level of less than significant, except where otherwise noted herein.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

- BIO-14** *As part of completion of the final site development, after ground disturbance has occurred within or adjacent to any natural area, the disturbed areas shall be revegetated using a plant mix of native plant species that are suitable for long term vegetation management at the specific site, which shall be implemented in cooperation with regulatory agencies and with oversight from a biologist. The seeds mix shall be verified to contain the minimum amount of invasive plant species seeds reasonably available for the Program Area.*

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

- BIO-15** *During construction, equipment will be washed before entering the project footprint to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species. Mud and plant materials will be removed from construction equipment when working in native plant communities, near special-status plant communities, or in areas where special-status plant species have been identified.*

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

- BIO-16** *Personnel who work onsite will attend a Contractor Education and Environmental Training session conducted by a biologist. The environmental training will cover general and specific biological information on the special-status plant species that may be present near the construction site, including the distribution of the resources, the*

*recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws.*

*The Contractor Education and Environmental Training sessions will be given before the initiation of construction activities and repeated, as needed, when new personnel begin work within the project limits. Daily updates and synopsis of the training will be performed during the daily safety ("tailgate") meeting. All personnel who attend the training will be required to sign an attendance list stating that they have received the Contractor Education and Environmental Training, and such tracking sheets shall be maintained for inspection by the implementing agency.*

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

**BIO-17** *A biological monitor shall be present during construction Activities in areas where impacts to riparian, riverine, wetland, endangered species or endangered species Critical Habitat occurs. A biological monitor (or monitors) will be present onsite during construction activities that could result in direct or indirect impacts on sensitive biological resources (including listed species) and to oversee permit compliance and monitoring efforts for all special-status resources.*

*A biological monitor (biologist) is any person who has a bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field and/or has demonstrated field experience in and knowledge about the identification and life history of the special-status species or jurisdictional waters that could be affected by project activities. The biological monitor(s) will be responsible for monitoring the Contractor to ensure compliance with the Section 404 Individual Permit, Section 401 Water Quality Certification and LSA Agreements. Activities to ensure compliance would include performing construction-monitoring activities, including monitoring environmental fencing, identifying areas where special-status plant species are or may be present, and advising the Contractor of methods that may minimize or avoid impacts on these resources. Biological monitor(s) will be required to be present in all areas during ground disturbance activities and for all construction activities conducted within or adjacent to identified Environmentally Sensitive Areas, Wildlife Exclusion Fencing, and Non-Disturbance Zones as defined by the project biologist.*

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

**BIO-18** *All food-related trash items (e.g., wrappers, cans, bottles, food scraps) will be disposed of in closed containers and removed at least once a week from the construction site.*

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

**BIO-19** *Use of rodenticides and herbicides in the project footprint will be restricted at the direction of the project biologist. This measure is necessary to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species. Where pesticides must be used, they must be used in full accordance with use instructions for the particular chemical and at the direction of the project biologist.*

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

**BIO-20** *Exclusion barriers (e.g., silt fences) will be installed at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction. The design specifications of the exclusion fencing will be determined through consultation with the USFWS and/or CDFW, as appropriate. Clearance surveys will be conducted for special-status species after the exclusion fence is installed in compliance with USFWS and/or CDFW requirements. The project biologist shall determine the frequency in which clearance surveys will be conducted to determine the efficacy of the exclusion fencing.*

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**BIO-21** *Prior to the commencement of construction, the implementing agency shall identify staging areas for construction equipment to be utilized during construction that will be located outside sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridors.*

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

**BIO-22** *Plastic mono-filament netting (erosion-control matting) or similar material will not be used in erosion control materials to prevent potential harm to wildlife. Materials such as coconut coir matting or tackified hydroseeding compounds will be used as substitutes.*

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

**BIO-23** *During ground-disturbing activities, project-related vehicle traffic will be restricted within the construction area to established roads, construction areas, and other designated areas to prevent avoidable impacts. Access routes will be clearly flagged; traffic outside of the designated areas will be prohibited. Furthermore, the use of motorized vehicles within sensitive habitat areas and linkages shall be prohibited except for crucial maintenance and/or construction activities.*

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

**BIO-24** *All excavated, steep-sided holes or trenches more than 8 inches deep will be covered at the close of each working day with plywood or similar materials, or a minimum of one escape ramp constructed of earth fill for every 10 feet of trenching will be provided to prevent the entrapment of wildlife. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. All culverts or similar enclosed structures with a diameter of 4 inches or greater will be covered, screened, or stored more than 1*

***foot off the ground to prevent use by wildlife. Stored material will be cleared for common and special-status wildlife species before the pipe is subsequently used or moved.***

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

**BIO-25** *Prior to the commencement of construction, a Weed Control Plan will be developed for the implementing agency by the project biologist to minimize or avoid the spread of weeds during ground-disturbing activities. In the Weed Control Plan, the following topics will be addressed:*

- *A Schedule for noxious weed surveys shall be addressed.*
- *Weed control treatments shall be addressed and ultimately implemented by the implementing agency, including permitted herbicides, and manual and mechanical methods for application; herbicide application will be restricted in Environmentally Sensitive Areas (as defined by the project biologist).*
- *The timing of the weed control treatment for each plant species shall be addressed.*
- *Fire prevention measures shall be addressed.*

*The implementing agency shall maintain records demonstrating implementation of the Weed Control Plan, and shall make those records available to inspection by the implementing agency upon request.*

**MM HYD-1** is required to ensure that monitoring and adaptive mitigation is implemented to protect to beneficial uses of Stanfield Marsh and Big Bear Lake, minimizing impacts to the RARE and WILD designations thereof. This would ensure that the protection of special status habitats and species extended as part of the beneficial use of these water bodies, would be maintained, thereby minimizing potential impacts thereof.

**HYD-1** *BBARWA, in collaboration with BBMWD and BBCCSD, will collect samples at the pertaining locations. That is BBARWA will monitor the Program Water, BBMWD will collect samples in the Stanfield Marsh and Big Bear Lake, and BBCCSD will collect samples in Shay Pond. BBARWA will develop the AAMP and will coordinate with BBMWD and BBCCSD to implement the AMMP for the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (when implemented). The AMMP will consist of the following;*

- *Conduct a monitoring plan to:*
  - *Collect quarterly boron samples of Program Water (i.e., purified water before it is discharged to Stanfield Marsh or Shay Pond (when implemented)), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented);*
  - *Monitor the dissolved oxygen and pH of the Program Water, in Stanfield Marsh (if permitted), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented) during and after re-wetting of Stanfield Marsh or Shay Pond;*
  - *Continuously monitor temperature of the Program Water, Stanfield Marsh, and Shay Pond (when implemented); and*
  - *Collect quarterly chloride samples of Program Water stored in Big Bear Lake at the existing TMDL Sampling Station MWDL9 to assess the impacts on the Bear Valley Basin.*
  - *Collect nutrient (i.e., TIN, TP, TN, ammonia, nitrate as N, nitrite as N) samples of the Program Water at the frequency stated in the NPDES permit.*
- *Implement a TP Offset Program, expected to be stipulated in BBARWA's future NPDES permit;*
- *Monitor the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake on at least a bi-yearly basis. If observed, mitigative actions, such as invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions shall be undertaken to remove the invasive*

*species present as a result of introduction of the Program Water. An account of invasive species within Stanfield Marsh and Big Bear Lake shall be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program.*

*If temperature, dissolved oxygen, boron, or pH levels exceed the NPDES permit requirements, BBARWA shall pursue mitigation actions which may include, but are not limited to the following:*

- Introduction of chemical or mechanical intervention to stabilize pH levels and dissolved oxygen.*
- Introduction of native plants to absorb boron at Stanfield Marsh or Shay Pond (when implemented).*
- Introduction of a temperature cooling mechanism to lower the temperature of the Program Water before being introduced to the Stanfield Marsh or Shay Pond (when implemented).*

*If recharging Program Water stored in Big Bear Lake would result in exceedance of any of the limits set in the future Sand Canyon Recharge Area WDR permit, the discharge of Program Water to the Sand Canyon Recharge Area would be paused until permit conditions are met.*

*The AMMP shall be aligned with the future requirements of the NPDES and WDR permits.*

#### *Level of Significance After Mitigation: Significant and Unavoidable*

Impacts to all species identified under **Table 4.5-3**—specifically, to BAEA, southern rubber boa, and San Bernardino flying squirrel—can be avoided through implementation of **MMs BIO-9** through **BIO-25** and **HYD-1**, with the exception of impacts to the bird-foot checkerbloom. As discussed above, impacts to the bird-foot checkerbloom, which is a Federally and State designated endangered plant species, would be potentially significant and unavoidable. While **MMs BIO-1** through **BIO-4** would minimize impacts to bird-foot checkerbloom from construction of the Solar Evaporation Ponds to a level of less than significant, **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option.

Impacts to the Stickleback have not been fully analyzed herein, as the implementation of the Shay Pond Discharge Project has been tabled by the Program Team for the foreseeable future. As such, if the Program Team envisions utilizing the purified water generated by the AWPf proposed by this Program, a follow-on environmental determination shall fully assess these impacts. Furthermore, the provisions of **MM BIO-6** shall be followed to ensure that the proper procedure is followed to determine how the use of purified water generated by the AWPf would impact these species, in cooperation with the regulatory agencies (CDFW and USFWS) governing the protection of this species.

Additional surveys must be conducted prior to implementation of Program activities within both the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline (**Figures 4.5-7 through 4.5-8**) to assess potential Program related impacts to special status species and habitats that may occur in these areas. In particular, to assess potential Program related effects on San Bernardino blue grass, California dandelion, slender-petaled thelypodium, and other special status species that may occur in this area, because as with the impacts to the Stickleback, the habitat within the Shay Pond Replacement Pipeline has not been fully analyzed as the implementation of the Shay Pond Discharge Project has been tabled by the Program Team for the foreseeable future. Implementation of **MM BIO-7** and **BIO-8** would ensure that impacts from installation of the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline would be minimized to a level of less than significant.

### **Cumulative Impact Analysis**

Cumulative development within the Big Bear Valley includes conversion of open undeveloped land to urban and rural development. This future cumulative development has the potential to reduce the availability of suitable habitat for special-status species. To mitigate the effects of the cumulative impacts on special status species and habitat values from implementation of the proposed Program, **MMs** identified above would ensure that Program related impacts on all special status species would be minimized to a level of less than significant, except for the Program impacts on the bird-foot checkerbloom.

There are other areas within the overall Program Area of potential impact where the resource impacts from constructing new infrastructure may cause unavoidable significant adverse impacts on biological resources. These areas are highly dependent upon the final design of each Program facility, i.e., individual project, and if those actions cannot be reasonably or feasibly offset, the ultimate design of these Program improvements must be based on sound engineering. In each case where most environmental impacts cannot be fully avoided, it may be possible to avoid certain impacts by designs that avoid such impacts through sound mitigation-based planning at each step. Given the speculative nature of the locations of proposed Program facilities, there is a potential that an individual Program facility may be developed and have operations within an area containing biological resources that cannot be avoided, even at the design level. This is anticipated to be the case for the bird-foot checkerbloom.

The loss of potentially suitable habitat for special-status species as a result of cumulative development would primarily result from the total conversion of undeveloped land to urban and rural development. This potential conversion by cumulative development is considered a potentially significant impact on special-status species. Since the Program would also result in potentially significant impacts on special-status species, the Program's contribution is considered cumulatively considerable, however, for all species identified in **Table 4.5-3**, except the bird-foot checkerbloom, the Program's contributions to cumulatively considerable significant impacts under this issue, can be mitigated to a level of less than cumulatively considerable. Regardless, impacts to the bird-foot checkerbloom are forecast to potentially experience an unavoidable cumulatively significant impact if the Baldwin Lake Pipeline Alignment Option is selected as the preferred Lake Discharge Alignment. Thus, a cumulatively significant impact may result.

*Cumulative Measures: **MMs BIO-1 through BIO-25** are required to minimize cumulative impacts on special status species to the greatest extent feasible.*

*Level of Significance After Mitigation: Cumulatively Significant*

- b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS?**

Critical habitat has been designated for several species adjacent to, directly overlapping, or in the general vicinity of the Program Area. As discussed under **Subsection 4.5.3.1.3**, several special status habitats have been documented in the Program vicinity (within approximately three miles) including pebble plains, southern California threespine stickleback stream, and USFWS designated Critical Habitat for several Federally listed threatened or endangered species. There is no pebble plain or pebble plain-like habitat within the entirety of the proposed Program Area footprint.

As biological resource impacts are highly site dependent, the following discussion analyzes the potential impacts to sensitive habitats on each project site location. These locations are:



- **BBARWA WWTP Upgrades Project**
  - BBARWA WWTP Upgrades
- **Solar Evaporation Ponds Project**
  - Solar Evaporation Ponds at the BBARWA WWTP Site
- **Sand Canyon Recharge Project**
  - Sand Canyon Recharge Conveyance Pipeline
  - Sand Canyon Conveyance Pipeline Discharge Outlet
  - Sand Canyon Booster Station
  - Sand Canyon Monitoring Wells (locations unknown)
- **Shay Pond Discharge Project**
  - Shay Pond Replacement Pipeline
  - Shay Pond Conveyance Pipeline Alignment
- **Stanfield Marsh/Big Bear Lake Discharge Project**
  - Stanfield Marsh Conveyance Pipeline Discharge Outlets
  - Alignment Option 1 to Discharge Point 1
    - Baldwin Lake Pipeline Alignment Option
    - Meadow Lane Pipeline Alignment Option
  - Alignment Option 2 to Discharge Point 2
    - East Neighborhoods Pipeline Alignment Option
    - West Neighborhoods Pipeline Alignment Option

#### **BBARWA WWTP Upgrades Project**

The nearest USFWS designated Critical Habitat units to this Program Component are adjacent the east side of the BBARWA WWTP and adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option, respectively. The Critical Habitat unit adjacent the east side of the BBARWA WWTP site consists of the North Shay Meadow USFWS designated Critical Habitat unit (Unit 6) for the Federally listed as endangered California dandelion. The Critical Habitat unit adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option consists of the Pan Hot Springs Meadow USFWS designated Critical Habitat unit (Unit 1) for the Federally listed as endangered San Bernardino blue grass and California dandelion. However, no portion of the proposed Program Component footprint is within these Critical Habitat units, or any other Critical Habitat. Therefore, the BBARWA WWTP Upgrades Project will not result in the loss or adverse modification of USFWS designated Critical Habitat. Impacts would be less than significant.

#### **Solar Evaporation Ponds Project**

The nearest USFWS designated Critical Habitat units to this Program Component are adjacent the east side of the Solar Evaporation Ponds site and adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option, respectively. The Critical Habitat unit adjacent the east side of the BBARWA WWTP and Solar Evaporation Ponds site consists of the North Shay Meadow USFWS designated Critical Habitat unit (Unit 6) for the Federally listed as endangered California dandelion. The Critical Habitat unit adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option consists of the Pan Hot Springs Meadow USFWS designated Critical Habitat unit (Unit 1) for the Federally listed as endangered San Bernardino blue grass and California dandelion. However, no portion of the proposed Program Component footprint is within these Critical Habitat units, or any other Critical Habitat. Therefore, the Solar Evaporation Ponds Project will not result in the loss or adverse modification of USFWS designated Critical Habitat. Impacts would be less than significant.

### **Sand Canyon Recharge Project**

The nearest USFWS designated Critical Habitat units to this Program Component are adjacent the east side of the BBARWA site and adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option, respectively. No portion of the proposed Program Component footprint is within these Critical Habitat units, or any other Critical Habitat. Therefore, the Solar Evaporation Ponds Project will not result in the loss or adverse modification of USFWS designated Critical Habitat. Impacts would be less than significant.

### **Shay Pond Discharge Project**

There is southern California threespine stickleback stream habitat within the Shay Pond Conveyance Pipeline alignment and possible Shay Pond Replacement Pipeline. However, BBARWA expects that the existing pipeline that extends from the BBARWA WWTP to Shay Pond, which is presently not in use, will be sufficient to convey Program Water from the AWPf at BBARWA's WWTP to the proposed short length of pipeline to Shay Pond Conveyance Pipeline (**Figures 4.5-7 through 4.5-8**). As a replacement pipeline is not anticipated to be necessary from the AWPf at the BBARWA WWTP to Shay Pond, the conveyance pipeline was not surveyed. Furthermore, as this replacement pipeline alignment would not be installed in the near-term future (due to the regulatory requirements related to changing the water source at Shay Pond), BBARWA anticipates that surveys of this replacement pipeline alignment would better reflect current conditions if performed within a more proximate timeframe to construction, should this Program component be necessary. Additionally, the proposed footprint of the Shay Pond Conveyance Pipeline is entirely within existing unpaved roadway and upland. The Program could increase the amount of water supplied to Shay Pond from the current 50 AFY to an anticipated maximum of 80 AFY, which, if the amount of water supplied to Shay Pond was increased, it could enhance Stickleback habitat conditions in Shay Pond and potentially, the downstream portion of Shay Creek. Therefore, the Program would not result in any loss or adverse modification pebble plains or southern California threespine stickleback stream. However, additional surveys must be conducted prior to implementation of Program activities within the Shay Pond Replacement Pipeline (**Figures 4.5-7 through 4.5-8**) to assess potential project-related impacts to special status habitats that may occur in the Program Area. Therefore, without **MMs BIO-6 through BIO-8**, a significant impact to the southern California threespine stickleback stream habitat could occur. Implementation of **MM BIO-7** and **BIO-8** would ensure that impacts to critical habitat, riparian habitat or other sensitive natural communities from installation of the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline would be minimized to a level of less than significant.

As such, implementation of **MM BIO-6 through BIO-8** are necessary to minimize impacts to southern California threespine stickleback stream habitat from Program implementation. Impacts would be less than significant with the implementation of mitigation.

### **Stanfield Marsh/Big Bear Lake Discharge Project**

The nearest USFWS designated Critical Habitat units are adjacent the east side of the BBARWA WWTP and adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option, respectively. The Critical Habitat unit adjacent the east side of the BBARWA WWTP site consists of the North Shay Meadow USFWS designated Critical Habitat unit (Unit 6) for the Federally listed as endangered California dandelion. The Critical Habitat unit adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option consists of the Pan Hot Springs Meadow USFWS designated Critical Habitat unit (Unit 1) for the Federally listed as endangered San Bernardino blue grass and California dandelion. However, no portion of the proposed Program Area footprint is within these Critical Habitat units, or any other Critical Habitat. Therefore, the

Program will not result in the loss or adverse modification of USFWS designated Critical Habitat. Impacts would be less than significant.

### **Other Physical Changes to the Environment**

No physical changes beyond that which presently occurs or could occur under the existing conditions at the LV Site are proposed by the Program. As such, no biological resources, including critical habit, of which none exists at the LV Site, are expected to be directly or indirectly impacted by the reduced discharge to the LV Site that would occur as a result of Program implementation.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: **MMs BIO-6 through BIO-8** are necessary to minimize impacts to southern California threespine stickleback stream habitat from Program implementation.*

**BIO-6** *In order to change the water source at Shay Pond, an AMMP shall be developed by BBARWA. The implementing agency—BBARWA, in association with BBCCSD—shall coordinate with USFWS and CDFW to obtain verbal agreement on the approach to forecast impacts to the Stickleback. Then, the implementing agency or biologist familiar with the Stickleback contracted to the implementing agency shall draft a MOU (that would be between BBARWA and/or BBCCSD and USFWS and/or CDFW) to lay a solid framework for the development of an AMMP. The MOU will determine if additional permitting will be required from both the State and Federal government for the take of an endangered species.*

*The AMMP shall identify a sampling and monitoring program for the lifespan of the Program. This will include any triggers or adaptive management strategies that could be implemented to improve conditions for the Stickleback, including alterations to water temperature, inclusion of bubblers to increase dissolved oxygen or other techniques to be identified. The AMMP must be approved by USFWS and CDFW in order to carry out a pilot study in which it will be determined whether the change in water source for the Stickleback is feasible.*

**BIO-7** *Prior to implementation of the replacement pipeline from the BBARWA WWTP to the Shay Pond Conveyance Pipeline and the new Shay Pond Conveyance Pipeline (Figures 4.5-7 through 4.5-8), a site-specific biological resources assessment shall be conducted by a qualified biologist familiar with Big Bear Valley flora and fauna. This survey shall be conducted in accordance with appropriate standards by a qualified biologist/ecologist. If sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDB will be notified and the following subsequent mitigation actions will be taken:*

- a. *BBARWA shall provide compensation for sensitive habitat acreage lost by acquiring and protecting in perpetuity (through property or mitigation bank credit acquisition) habitat for the sensitive species at a ratio of not less than 1:1 for habitat lost. The property acquisition shall include the presence of at least one animal or plant per animal or plant lost at the development site to compensate for the loss of individual sensitive species.*
- b. *The final mitigation may differ from the above values based on negotiations between the implementing agency and USFWS and CDFW for any incidental take permits for listed species. BBARWA and/or the implementing agency shall retain a copy of the incidental take permit as verification that the mitigation of significant biological resource impacts at a project site with sensitive biological resources has been accomplished.*
- c. *Preconstruction botanical surveys for special-status plant communities and special-status plant species will be conducted in areas that were not previously*

*surveyed because of access or timing issues or project design changes; pre-construction surveys for special-status plant communities and special-status plant species will be conducted before the start of ground-disturbing activities during the appropriate blooming period(s) for the species. If special-status plants or plant communities are identified, the following hierarchy of actions shall be taken: a) find an alternative site; b) avoid the plants and maintain them onsite after completing the project; or c) provide compensatory mitigation offsite.*

**BIO-8** *Appropriate BMPs (e.g., silt fence) should be implemented during construction of the Shay Pond Conveyance Pipeline to ensure that no sediment or pollutants enter Shay Pond/Shay Creek, such that construction does not impact the Stickleback and/or its habitat.*

*Level of Significance After Mitigation: Less Than Significant*

The proposed Program may result in a change in water source to the Stickleback, which has a potential to significantly impact the species, if the water source lacks the nutrients necessary to support the species, or contains any constituents that, when introduced into the Stickleback habitat, would adversely impact the species. The impacts to this species have been analyzed on a more programmatic level, so that, should the individual project go forward in the future, the mitigation described below would stipulate the steps necessary to minimize impacts from changing the water source at Shay Pond. Therefore, should the Program Team ultimately decide to modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**. **MM BIO-6** would ensure that impacts to critical habitat, riparian habitat or other sensitive natural communities from the change in water source at Shay Pond would be minimized to a level of less than significant.

Furthermore, as discussed under issue (a), above, implementation of **MMs BIO-7** and **BIO-8** would ensure that impacts to critical habitat, riparian habitat or other sensitive natural communities from installation of the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline would be minimized to a level of less than significant.

### **Cumulative Impact Analysis**

Implementation of cumulative development within the Big Bear Valley could result in potential impacts to riparian habitat and special status natural communities. Cumulative development could encroach into areas adjacent to existing drainages and creeks that could contain riparian habitat. In addition, cumulative development could result in potential impacts on riparian habitat. Certain areas within the Big Bear Valley that contain critical habitat for species may not be fully mitigable, and an unavoidable significant adverse biological resource impact may occur. As project specific impacts on critical habitat, riparian habitat or other sensitive natural communities are less than significant with mitigation, the project-specific impacts to critical habitat, riparian habitat or other sensitive natural communities would not be substantial enough to contribute cumulatively considerable contributions to significant adverse impacts thereof. Thus, the Program's contribution to cumulative impacts would be less than cumulatively considerable.

*Cumulative Measures: **MMs BIO-6, BIO-7, and BIO-8** are required to minimize direct and indirect cumulative effects to riparian habitat or other sensitive natural communities.*

*Level of Significance After Mitigation: Less Than Significant*

**c) Would the project have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

Direct impacts on natural and man-made features include the removal or modification of local hydrology, the redirection of flow, and the placement of fill material. In the case of man-made features, these impacts would remove or disrupt the limited biological functions that these features provide. In natural areas, these activities would remove or disrupt the hydrology, vegetation, wildlife use, water quality conditions, and other biological functions provided by the resources.

Temporary impacts on jurisdictional waters include the placement of temporary fill during construction in both man-made and natural jurisdictional waters. Temporary fill could be placed during the construction of access roads and staging/equipment storage areas. The temporary fill would result in a temporary loss of jurisdictional waters and could potentially increase erosion and sediment transport into adjacent areas.

Potential indirect impacts on jurisdictional waters include a number of water-quality-related impacts: erosion and transport of fine sediments or fill downstream of construction to unintentional release of contaminants into jurisdictional waters that are outside of the project footprint. These discharges would indirectly impact adjacent or downstream jurisdictional waters.

As wetland impacts are highly site dependent, the following discussion analyzes the potential impacts to sensitive habitats on each project site location. These locations are:

- **BBARWA WWTP Upgrades Project**
  - BBARWA WWTP Upgrades
- **Solar Evaporation Ponds Project**
  - Solar Evaporation Ponds at the BBARWA WWTP Site
- **Sand Canyon Recharge Project**
  - Sand Canyon Recharge Conveyance Pipeline
  - Sand Canyon Conveyance Pipeline Discharge Outlet
  - Sand Canyon Booster Station
  - Sand Canyon Monitoring Wells (locations unknown)
- **Shay Pond Discharge Project**
  - Shay Pond Replacement Pipeline
  - Shay Pond Conveyance Pipeline Alignment
- **Stanfield Marsh/Big Bear Lake Discharge Project**
  - Stanfield Marsh Conveyance Pipeline Discharge Outlets
  - Alignment Option 1 to Discharge Point 1
    - Baldwin Lake Pipeline Alignment Option
    - Meadow Lane Pipeline Alignment Option
  - Alignment Option 2 to Discharge Point 2
    - East Neighborhoods Pipeline Alignment Option
    - West Neighborhoods Pipeline Alignment Option

## **BBARWA WWTP Upgrades Project**

### ***USACE 404 Permit***

The two most common types of permits issued by USACE under Section 404 of the CWA to authorize the discharge of dredged or fill material into Waters of the U.S. are: a nation-wide permit (NWP) or an individual permit (IP). NWPs are general permits for specific categories of activities that result in minimal impacts to aquatic resources. The discharge must not cause the loss of greater than 1/2 acre to Waters of the U.S., including the loss of no more than 300 LF of streambed. Projects proposed under this Program that would exceed these limits would likely require an IP. If the USACE 404 Permit requirements were not met by Program implementation, a significant impact under this issue could occur. Based on the type of site modifications proposed as part of the BBARWA WWTP Upgrades Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. Therefore, no impacts related to compliance with a USACE 404 Permit would be anticipated.

### ***Regional Water Quality Control Board 401 Certification***

The Program Area in the Big Bear Valley is within the jurisdiction of the Santa Ana Regional Board. Under Section 401 of the CWA, the RWQCB must certify that the discharge of dredged or fill material into Waters of the U.S. does not violate State water quality standards. The RWQCB also regulates impacts to Waters of the State of California under the Porter-Cologne Act through issuance of a CGP, State General WDR, or WDRs, depending upon the level of impact and the waterway. In addition to the formal application materials and fee (based on area of impact), a copy of the appropriate CEQA documentation must be included with the application. If the RWQCB 401 Certification requirements were not met by Program implementation, a significant impact under this issue could occur. However, based on the type of site modifications proposed as part of the BBARWA WWTP Upgrades Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring CWA Section 401 Water Quality Certification would be required. Therefore, no impacts related to compliance with the CWA Section 401 Water Quality Certification would be anticipated.

### ***FGC Section 1602 Lake or Streambed Alteration Agreement***

An FGC Section 1602 LSA Agreement is required for all activities that alter streams and lakes and their associated riparian habitat. In addition to the formal application materials and fee (based on cost of the project), a copy of the appropriate CEQA documentation must be included with the application. In addition to the BRA field survey, Jacobs also assessed the proposed Program Area footprint for the presence of any State and/or Federal jurisdictional waters. Stanfield Marsh is a jurisdictional wetland that is subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW, respectively (**Figure 4.5-11**). Any potential Program impacts to these aquatic resources would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Prior to implementation of any Program Components that may impact State and/or Federal jurisdictional waters, a formal jurisdictional delineation should be conducted by a qualified delineation specialist to determine the extent of any potential Program related impacts to aquatic resources and the appropriate regulatory permitting (if any) required. If the FGC Section 1602 LSA Agreement requirements were not met by Program implementation, a significant impact under this issue could occur. In the case of the BBARWA WWTP Upgrades Project, the BBARWA WWTP site area that would be impacted has been completely developed, and therefore, it is not anticipated that an FGC Section 1602 LSA Agreement would be required. Therefore, no impacts related to compliance with the FGC Section 1602 would be anticipated.



## **Solar Evaporation Ponds Project**

### ***USACE 404 Permit***

The two most common types of permits issued by USACE under Section 404 of the CWA to authorize the discharge of dredged or fill material into Waters of the U.S. are: a NWP or IP. NWPs are general permits for specific categories of activities that result in minimal impacts to aquatic resources. The discharge must not cause the loss of greater than 1/2 acre to Waters of the U.S., including the loss of no more than 300 LF of streambed. Projects proposed under this Program that would exceed these limits would likely require an IP. If the USACE 404 Permit requirements were not met by Program implementation, a significant impact under this issue could occur. Based on the type of site modifications proposed as part of the BBARWA WWTP Upgrades Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. Therefore, no impacts related to compliance with a USACE 404 Permit would be anticipated.

### ***Regional Water Quality Control Board 401 Certification***

The Program Area in the Big Bear Valley is within the jurisdiction of the Santa Ana Regional Board. Under Section 401 of the CWA, the RWQCB must certify that the discharge of dredged or fill material into Waters of the U.S. does not violate State water quality standards. The RWQCB also regulates impacts to Waters of the State of California under the Porter-Cologne Act through issuance of a CGP, State General WDR, or WDRs, depending upon the level of impact and the waterway. In addition to the formal application materials and fee (based on area of impact), a copy of the appropriate CEQA documentation must be included with the application. If the RWQCB 401 Certification requirements were not met by Program implementation, a significant impact under this issue could occur. However, based on the type of site modifications proposed as part of the Solar Evaporation Ponds Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring CWA Section 401 Water Quality Certification would be required. Therefore, no impacts related to compliance with the CWA Section 401 Water Quality Certification would be anticipated.

Waste discharges that can be exempted from the California Code of Regulations requirements are issued WDRs and are regulated by the WDR Program. Typical discharge types include domestic or municipal wastewater, food processing related wastewater, and industrial wastewater. Thus, the actions proposed by the Solar Evaporation Ponds Project is anticipated to require a WDR issued by the RWQCB. This is a mandatory requirement that does not require mitigation to ensure compliance. Thus, impacts related to compliance with RWQCB WDR requirements from implementation of the Solar Evaporation Ponds Project would be less than significant.

### ***FGC Section 1602 Lake or Streambed Alteration Agreement***

An FGC Section 1602 LSA Agreement is required for all activities that alter streams and lakes and their associated riparian habitat. In addition to the formal application materials and fee (based on cost of the project), a copy of the appropriate CEQA documentation must be included with the application. In addition to the BRA field survey, Jacobs also assessed the proposed Program Area footprint for the presence of any State and/or Federal jurisdictional waters. Stanfield Marsh is a jurisdictional wetland that is subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW, respectively (**Figure 4.5-11**). Any potential Program impacts to these aquatic resources would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Prior to implementation of any Program Components that may impact State and/or Federal jurisdictional waters, a formal jurisdictional delineation should be conducted by a qualified delineation specialist to determine the extent of any potential Program related impacts to aquatic

resources and the appropriate regulatory permitting (if any) required. If the FGC Section 1602 LSA Agreement requirements were not met by Program implementation, a significant impact under this issue could occur. Baldwin Lake is a water of the State of California, and as the Solar Evaporation Ponds would be installed within Baldwin Lake, potential Program impacts to aquatic resources from implementation of this project would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. **MM BIO-26** would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project. The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. Furthermore, **MMs BIO-14 through BIO-25** address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on wetlands within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species that could impact wetlands.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for wetlands to be impacted during construction as a result of construction worker awareness.

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, including wetlands thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby wetlands habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of wetlands, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, and movement adjacent to the construction area that could impact wetlands, thereby minimizing any impacts thereof.

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, mitigation is required to minimize impacts to a level of less than significant.

### **Sand Canyon Recharge Project**

#### ***USACE 404 Permit***

The two most common types of permits issued by USACE under Section 404 of the CWA to authorize the discharge of dredged or fill material into Waters of the U.S. are: a NWP or an IP. NWPs are general permits for specific categories of activities that result in minimal impacts to aquatic resources. The discharge must not cause the loss of greater than 1/2 acre to Waters of the U.S., including the loss of no more than 300 LF of streambed. Projects proposed under this Program that would exceed these limits would likely require an IP. If the USACE 404 Permit requirements were not met by Program implementation, a significant impact under this issue could occur. Based on the type of site modifications proposed as part of the Sand Canyon Recharge Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. Therefore, no impacts related to compliance with a USACE 404 Permit would be anticipated.

#### ***Regional Water Quality Control Board 401 Certification***

The Program Area in the Big Bear Valley is within the jurisdiction of the Santa Ana Regional Board. Under Section 401 of the CWA, the RWQCB must certify that the discharge of dredged or fill material into Waters of the U.S. does not violate State water quality standards. The RWQCB also regulates impacts to Waters of the State of California under the Porter-Cologne Act through issuance of a CGP, State General WDR, or WDRs, depending upon the level of impact and the waterway. In addition to the formal application materials and fee (based on area of impact), a copy of the appropriate CEQA documentation must be included with the application. If the RWQCB 401 Certification requirements were not met by Program implementation, a significant impact under this issue could occur. However, based on the type of site modifications proposed as part of the Sand Canyon Recharge Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring CWA Section 401 Water Quality Certification would be required. Therefore, no impacts related to compliance with the CWA Section 401 Water Quality Certification would be anticipated.

Waste discharges that can be exempted from the California Code of Regulations requirements are issued WDRs and are regulated by the WDR Program. Typical discharge types include domestic or municipal wastewater, food processing related wastewater, and industrial wastewater. Thus, the actions proposed by the Sand Canyon Conveyance Pipeline Discharge Outlet is anticipated to require a WDR issued by the RWQCB. This is a mandatory requirement that does not require mitigation to ensure compliance. Thus, impacts related to compliance with RWQCB WDR requirements from implementation of the Sand Canyon Conveyance Pipeline Discharge Outlet would be less than significant.

***FGC Section 1602 Lake or Streambed Alteration Agreement***

An FGC Section 1602 LSA Agreement is required for all activities that alter streams and lakes and their associated riparian habitat. In addition to the formal application materials and fee (based on cost of the project), a copy of the appropriate CEQA documentation must be included with the application. In addition to the BRA field survey, Jacobs also assessed the proposed Program Area footprint for the presence of any State and/or Federal jurisdictional waters. Stanfield Marsh is a jurisdictional wetland that is subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW, respectively (**Figure 4.5-11**). Any potential Program impacts to these aquatic resources would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Prior to implementation of any Program Components that may impact State and/or Federal jurisdictional waters, a formal jurisdictional delineation should be conducted by a qualified delineation specialist to determine the extent of any potential Program related impacts to aquatic resources and the appropriate regulatory permitting (if any) required. If the FGC Section 1602 LSA Agreement requirements were not met by Program implementation, a significant impact under this issue could occur. The Sand Canyon Channel is a water of the State of California, and as the Sand Canyon Conveyance Pipeline Discharge Outlet would outlet to the Sand Canyon Channel, potential Program impacts to aquatic resources from implementation of this project would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. **MM BIO-26** would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project. The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. Furthermore, **MMs BIO-14 through BIO-25** address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on wetlands within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species that could impact wetlands.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for wetlands to be impacted during construction as a result of construction worker awareness.

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, including wetlands thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby wetlands habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of wetlands, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, and movement adjacent to the construction area that could impact wetlands, thereby minimizing any impacts thereof.

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, mitigation is required to minimize impacts to a level of less than significant.

### **Shay Pond Discharge Project**

#### ***USACE 404 Permit***

The two most common types of permits issued by USACE under Section 404 of the CWA to authorize the discharge of dredged or fill material into Waters of the U.S. are: a NWP or IP. NWPs are general permits for specific categories of activities that result in minimal impacts to aquatic resources. The discharge must not cause the loss of greater than 1/2 acre to Waters of the U.S., including the loss of no more than 300 LF of streambed. Projects proposed under this Program that would exceed these limits would likely require an IP. If the USACE 404 Permit requirements were not met by Program implementation, a significant impact under this issue could occur. Based on the type of site modifications proposed as part of the Shay Pond Discharge Project, it is not

anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. Therefore, no impacts related to compliance with a USACE 404 Permit would be anticipated.

***Regional Water Quality Control Board 401 Certification***

The Program Area in the Big Bear Valley is within the jurisdiction of the Santa Ana Regional Board. Under Section 401 of the CWA, the RWQCB must certify that the discharge of dredged or fill material into Waters of the U.S. does not violate State water quality standards. The RWQCB also regulates impacts to Waters of the State of California under the Porter-Cologne Act through issuance of a CGP, State General WDR, or WDRs, depending upon the level of impact and the waterway. In addition to the formal application materials and fee (based on area of impact), a copy of the appropriate CEQA documentation must be included with the application. If the RWQCB 401 Certification requirements were not met by Program implementation, a significant impact under this issue could occur. However, based on the type of site modifications proposed as part of the Shay Pond Discharge Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring CWA Section 401 Water Quality Certification would be required. Therefore, no impacts related to compliance with the CWA Section 401 Water Quality Certification would be anticipated.

Waste discharges that can be exempted from the California Code of Regulations requirements are issued WDRs and are regulated by the WDR Program. Typical discharge types include domestic or municipal wastewater, food processing related wastewater, and industrial wastewater. Thus, the actions proposed by the Shay Pond Conveyance Pipeline Discharge Outlet and Shay Pond Replacement Pipeline are anticipated to require a WDR issued by the RWQCB. This is a mandatory requirement that does not require mitigation to ensure compliance. Thus, impacts related to compliance with RWQCB WDR requirements from implementation of the Shay Pond Conveyance Pipeline Discharge Outlet and Shay Pond Replacement Pipeline would be less than significant.

***FGC Section 1602 Lake or Streambed Alteration Agreement***

An FGC Section 1602 LSA Agreement is required for all activities that alter streams and lakes and their associated riparian habitat. In addition to the formal application materials and fee (based on cost of the project), a copy of the appropriate CEQA documentation must be included with the application. In addition to the BRA field survey, Jacobs also assessed the proposed Program Area footprint for the presence of any State and/or Federal jurisdictional waters. Stanfield Marsh is a jurisdictional wetland that is subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW, respectively (**Figure 4.5-11**). Any potential Program impacts to these aquatic resources would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Prior to implementation of any Program Components that may impact State and/or Federal jurisdictional waters, a formal jurisdictional delineation should be conducted by a qualified delineation specialist to determine the extent of any potential Program related impacts to aquatic resources and the appropriate regulatory permitting (if any) required. If the FGC Section 1602 LSA Agreement requirements were not met by Program implementation, a significant impact under this issue could occur. Shay Pond is a water of the State of California, and as the Shay Pond Conveyance Pipeline Discharge Outlet would be installed to discharge into Shay Pond, potential Program impacts to aquatic resources from implementation of this project would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. **MM BIO-26** would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project. The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional



areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. Furthermore, **MMs BIO-14 through BIO-25** address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on wetlands within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species that could impact wetlands.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for wetlands to be impacted during construction as a result of construction worker awareness.

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, including wetlands thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby wetlands habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of wetlands, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, and movement adjacent to the construction area that could impact wetlands, thereby minimizing any impacts thereof.

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, mitigation is required to minimize impacts to a level of less than significant.

Caribou Creek is a water of the State of California, and as the Shay Pond Replacement Pipeline traverses through Caribou Creek, potential Program impacts to aquatic resources from implementation of this project would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Thus, mitigation (**MM BIO-14 through BIO-25, BIO-26 and BIO-27**) is required to minimize impacts to a level of less than significant.

### **Stanfield Marsh/Big Bear Lake Discharge Project**

#### ***USACE 404 Permit***

The two most common types of permits issued by USACE under Section 404 of the CWA to authorize the discharge of dredged or fill material into Waters of the U.S. are: a NWP or IP. NWPs are general permits for specific categories of activities that result in minimal impacts to aquatic resources. The discharge must not cause the loss of greater than 1/2 acre to Waters of the U.S., including the loss of no more than 300 LF of streambed. Projects proposed under this Program that would exceed these limits would likely require an IP. If the USACE 404 Permit requirements were not met by Program implementation, a significant impact under this issue could occur.

Based on the type of site modifications proposed as part of the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. However, as the Stanfield Marsh Conveyance Pipeline Discharge Outlet(s) is a part of this Project, and, based on the design of this project, it is known that discharge to Waters of the U.S. will occur. Thus, as discharge to Waters of the U.S. are anticipated to occur as a result of the Stanfield Marsh Conveyance Pipeline Discharge Outlet discharge of Program Water to Stanfield Marsh, impacts to Waters of the U.S. may occur and a USACE 404 Permit is likely to be required. Thus, mitigation is required to minimize impacts to a level of less than significant. **MM BIO-26** would ensure that jurisdictional features are documented in accordance with State and Federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project. The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of State or Federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. Furthermore, **MMs BIO-14 through BIO-25** address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on wetlands within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species that could impact wetlands.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for wetlands to be impacted during construction as a result of construction worker awareness.

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, including wetlands thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby wetlands habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of wetlands, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, and movement adjacent to the construction area that could impact wetlands, thereby minimizing any impacts thereof.

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, through the implementation of the above mitigation measures, impacts would be less than significant.

***Regional Water Quality Control Board 401 Certification***

The Program Area in the Big Bear Valley is within the jurisdiction of the Santa Ana Regional Board. Under Section 401 of the CWA, the RWQCB must certify that the discharge of dredged or fill material into Waters of the U.S. does not violate State water quality standards. The RWQCB also regulates impacts to Waters of the State of California under the Porter-Cologne Act through issuance of a CGP, State General WDR, or WDRs, depending upon the level of impact and the waterway. In addition to the formal application materials and fee (based on area of impact), a copy of the appropriate CEQA documentation must be included with the application. If the RWQCB 401 Certification requirements were not met by Program implementation, a significant impact under this issue could occur.

Based on the type of site modifications proposed as part of the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. However, as the Stanfield Marsh Conveyance Pipeline Discharge Outlet(s) is a part of this Project, and, for the same reasons outlined above under CWA Section 401 permitting, based on the design of this project, it is known that discharge to Waters of the U.S. will occur. Therefore, violation of State water quality standards for Waters of the U.S. may occur and a CWA Section 401 permit is likely to be required. Thus, mitigation (**MM BIO-26** and **BIO-27**) is required to minimize impacts to a level of less than significant.

Waste discharges that can be exempted from the California Code of Regulations requirements are issued WDRs and are regulated by the WDR Program. Typical discharge types include domestic or municipal wastewater, food processing related wastewater, and industrial wastewater. Thus, the actions proposed by the Baldwin Lake Pipeline Alignment Option is anticipated to require a WDR issued by the RWQCB. This is a mandatory requirement that does not require mitigation to ensure compliance. Thus, impacts related to compliance with RWQCB WDR requirements from implementation of the Baldwin Lake Pipeline Alignment Option would be less than significant.

***FGC Section 1602 Lake or Streambed Alteration Agreement***

An FGC Section 1602 LSA Agreement is required for all activities that alter streams and lakes and their associated riparian habitat. In addition to the formal application materials and fee (based on cost of the project), a copy of the appropriate CEQA documentation must be included with the application.

In addition to the BRA field survey, Jacobs also assessed the proposed Program Area footprint for the presence of any State and/or Federal jurisdictional waters. Stanfield Marsh is a jurisdictional wetland that is subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW, respectively (**Figure 4.5-11**). Therefore, any proposed permanent or temporary impacts to Stanfield Marsh associated with the Stanfield Marsh Conveyance Pipeline Discharge Outlet may require CWA Sections 404/401 permits from the USACE and RWQCB, as well as a LSA Agreement from the CDFW. Baldwin Lake, Caribou Creek, Shay Pond/Shay Creek, and the Sand Canyon Channel are all waters of the State of California (**Figures 4.5-12 through 4.5-15**). Therefore, potential Program impacts to these aquatic resources would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Prior to implementation of any Program Components that may impact State and/or Federal jurisdictional waters, a formal jurisdictional delineation should be conducted by a qualified delineation specialist to determine the extent of any potential Program related impacts to aquatic resources and the appropriate regulatory permitting (if any) required. If the FGC Section 1602 LSA Agreement requirements were not met by Program implementation, a significant impact under this issue could occur. Based on the

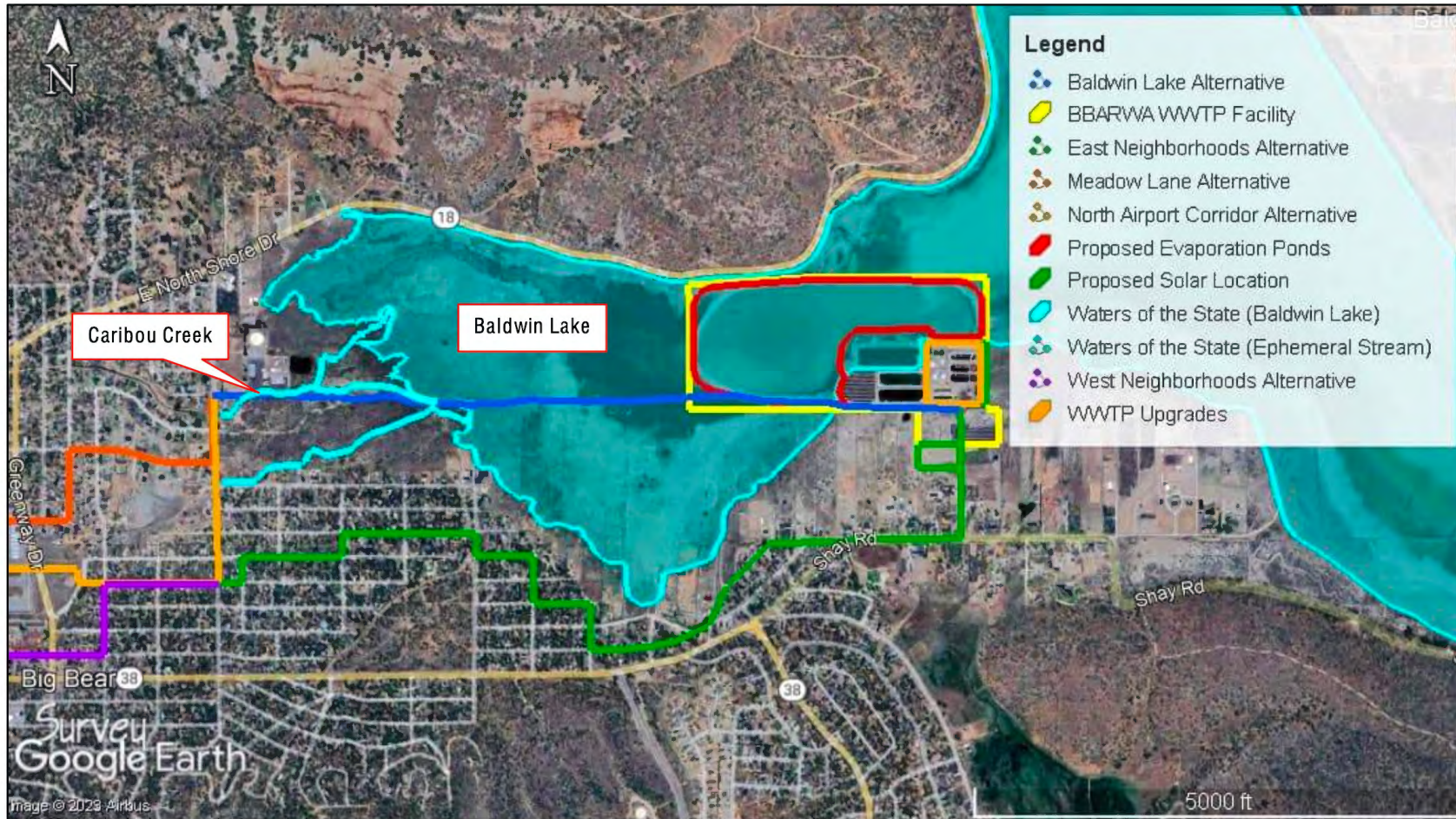


SOURCE: Google Earth

FIGURE 12a

FIGURE 4.5-11





SOURCE: Google Earth

FIGURE 12b

FIGURE 4.5-12



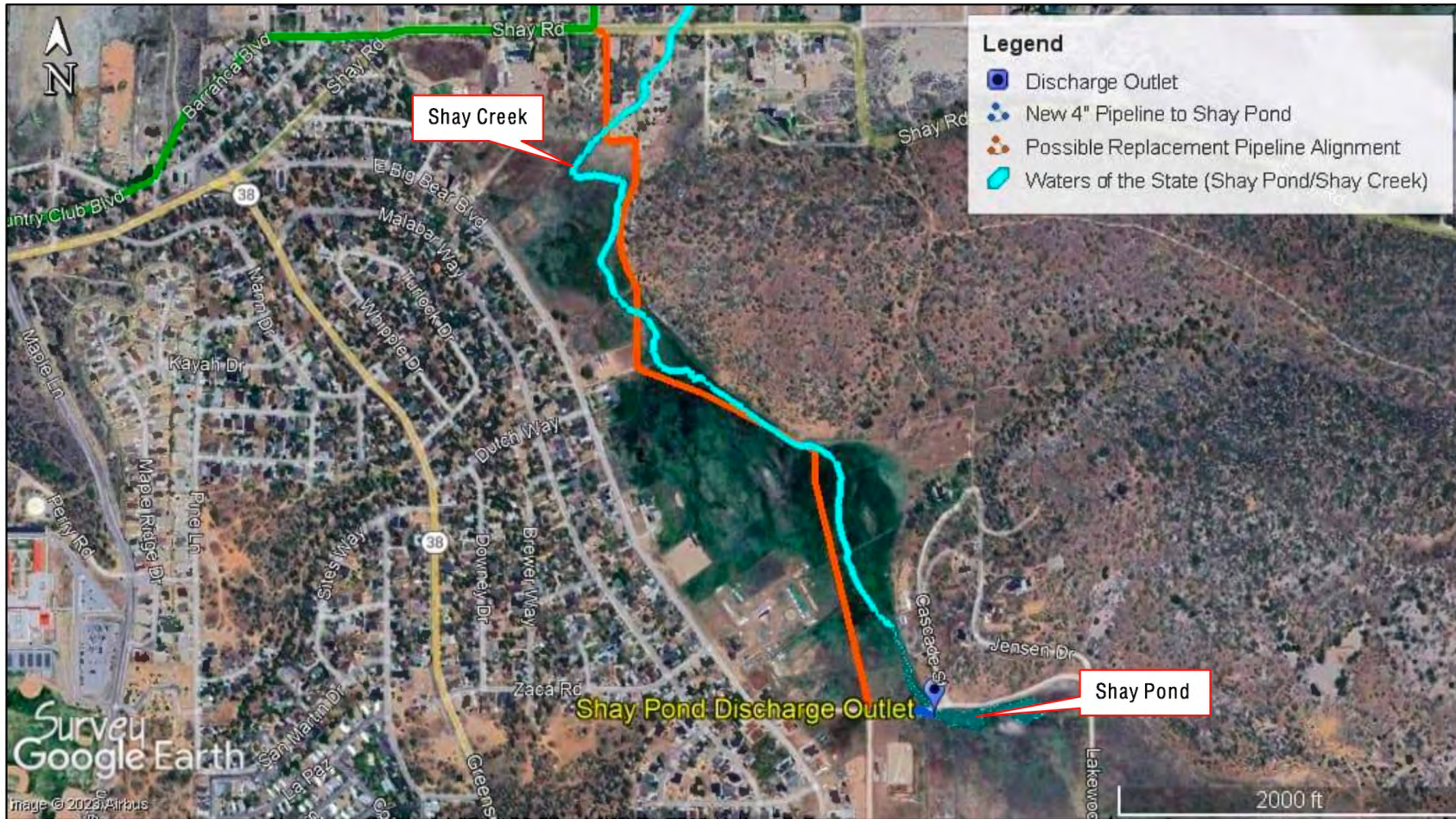


SOURCE: Google Earth

FIGURE 12c

FIGURE 4.5-13





SOURCE: Google Earth

FIGURE 12d

FIGURE 4.5-14





FIGURE 12e

design of this project, temporary impacts to Stanfield Marsh associated with the Stanfield Marsh Conveyance Pipeline Discharge Outlet may require CWA Sections 404/401 permits from the USACE and RWQCB, as well as a LSA Agreement from the CDFW. Thus, mitigation is required to minimize impacts to a level of less than significant. **MM BIO-26** would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project. The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. Furthermore, **MMs BIO-14 through BIO-25** address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on wetlands within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species that could impact wetlands.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for wetlands to be impacted during construction as a result of construction worker awareness.

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, including wetlands thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby wetlands habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of wetlands, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, and movement adjacent to the construction area that could impact wetlands, thereby minimizing any impacts thereof.

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, mitigation is required to minimize impacts to a level of less than significant.

Baldwin Lake is a water of the State of California, and as the Baldwin Lake Pipeline Alignment Option traverses through Baldwin Lake, potential Program impacts to aquatic resources from implementation of this project would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Thus, mitigation (**MM BIO-14 through BIO-25, BIO-26 and BIO-27**) is required to minimize impacts to a level of less than significant.

For all other Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, the area that would be impacted has been completely developed, and therefore, it is not anticipated that an FGC Section 1602 LSA Agreement would be required. Therefore, no impacts related to compliance with the FGC Section 1602 would be anticipated.

#### **Other Physical Changes to the Environment**

No physical changes beyond that which presently occurs or could occur under the existing conditions at the LV Site are proposed by the Replenish Big Bear Program. As such, no biological resources, including federally protected wetlands, of which none exists at the LV Site, are expected to be directly or indirectly impacted by the reduced discharge to the LV Site that would occur as a result of Program implementation.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**MMs BIO-14 through BIO-25** are required to minimize direct and indirect effects to federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. For discussion of **MMs BIO-14 through BIO-25**, please refer to analysis above throughout this section. **BIO-26 and BIO-27** are discussed below:

**BIO-14** *As part of completion of the final site development, after ground disturbance has occurred within or adjacent to any natural area, the disturbed areas shall be revegetated using a plant mix of native plant species that are suitable for long term vegetation management at the specific site, which shall be implemented in cooperation with regulatory agencies and with oversight from a biologist. The seeds mix shall be verified*

*to contain the minimum amount of invasive plant species seeds reasonably available for the Program Area.*

**BIO-15** *During construction, equipment will be washed before entering the project footprint to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species. Mud and plant materials will be removed from construction equipment when working in native plant communities, near special-status plant communities, or in areas where special-status plant species have been identified.*

**BIO-16** *Personnel who work onsite will attend a Contractor Education and Environmental Training session conducted by a biologist. The environmental training will cover general and specific biological information on the special-status plant species that may be present near the construction site, including the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws.*

*The Contractor Education and Environmental Training sessions will be given before the initiation of construction activities and repeated, as needed, when new personnel begin work within the project limits. Daily updates and synopsis of the training will be performed during the daily safety (“tailgate”) meeting. All personnel who attend the training will be required to sign an attendance list stating that they have received the Contractor Education and Environmental Training, and such tracking sheets shall be maintained for inspection by the implementing agency.*

**BIO-17** *A biological monitor shall be present during construction Activities in areas where impacts to riparian, riverine, wetland, endangered species or endangered species Critical Habitat occurs. A biological monitor (or monitors) will be present onsite during construction activities that could result in direct or indirect impacts on sensitive biological resources (including listed species) and to oversee permit compliance and monitoring efforts for all special-status resources.*

*A biological monitor (biologist) is any person who has a bachelor’s degree in biological sciences, zoology, botany, ecology, or a closely related field and/or has demonstrated field experience in and knowledge about the identification and life history of the special-status species or jurisdictional waters that could be affected by project activities. The biological monitor(s) will be responsible for monitoring the Contractor to ensure compliance with the Section 404 Individual Permit, Section 401 Water Quality Certification and LSA Agreements. Activities to ensure compliance would include performing construction-monitoring activities, including monitoring environmental fencing, identifying areas where special-status plant species are or may be present, and advising the Contractor of methods that may minimize or avoid impacts on these resources. Biological monitor(s) will be required to be present in all areas during ground disturbance activities and for all construction activities conducted within or adjacent to identified Environmentally Sensitive Areas, Wildlife Exclusion Fencing, and Non-Disturbance Zones as defined by the project biologist.*

**BIO-18** *All food-related trash items (e.g., wrappers, cans, bottles, food scraps) will be disposed of in closed containers and removed at least once a week from the construction site.*

**BIO-19** *Use of rodenticides and herbicides in the project footprint will be restricted at the direction of the project biologist. This measure is necessary to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species. Where pesticides must be used, they must be used in full accordance with use instructions for the particular chemical and at the direction of the project biologist.*



- BIO-20** *Exclusion barriers (e.g., silt fences) will be installed at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction. The design specifications of the exclusion fencing will be determined through consultation with the USFWS and/or CDFW, as appropriate. Clearance surveys will be conducted for special-status species after the exclusion fence is installed in compliance with USFWS and/or CDFW requirements. The project biologist shall determine the frequency in which clearance surveys will be conducted to determine the efficacy of the exclusion fencing.*
- BIO-21** *Prior to the commencement of construction, the implementing agency shall identify staging areas for construction equipment to be utilized during construction that will be located outside sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridors.*
- BIO-22** *Plastic mono-filament netting (erosion-control matting) or similar material will not be used in erosion control materials to prevent potential harm to wildlife. Materials such as coconut coir matting or tackified hydroseeding compounds will be used as substitutes.*
- BIO-23** *During ground-disturbing activities, project-related vehicle traffic will be restricted within the construction area to established roads, construction areas, and other designated areas to prevent avoidable impacts. Access routes will be clearly flagged; traffic outside of the designated areas will be prohibited. Furthermore, the use of motorized vehicles within sensitive habitat areas and linkages shall be prohibited except for crucial maintenance and/or construction activities.*
- BIO-24** *All excavated, steep-sided holes or trenches more than 8 inches deep will be covered at the close of each working day with plywood or similar materials, or a minimum of one escape ramp constructed of earth fill for every 10 feet of trenching will be provided to prevent the entrapment of wildlife. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. All culverts or similar enclosed structures with a diameter of 4 inches or greater will be covered, screened, or stored more than 1 foot off the ground to prevent use by wildlife. Stored material will be cleared for common and special-status wildlife species before the pipe is subsequently used or moved.*
- BIO-25** *Prior to the commencement of construction, a Weed Control Plan will be developed for the implementing agency by the project biologist to minimize or avoid the spread of weeds during ground-disturbing activities. In the Weed Control Plan, the following topics will be addressed:*
- A Schedule for noxious weed surveys shall be addressed.*
  - Weed control treatments shall be addressed and ultimately implemented by the implementing agency, including permitted herbicides, and manual and mechanical methods for application; herbicide application will be restricted in Environmentally Sensitive Areas (as defined by the project biologist).*
  - The timing of the weed control treatment for each plant species shall be addressed.*
  - Fire prevention measures shall be addressed.*
- The implementing agency shall maintain records demonstrating implementation of the Weed Control Plan, and shall make those records available to inspection by the implementing agency upon request.*
- BIO-26** *Any future project that must discharge fill into a channel or otherwise alter a streambed shall be minimized to the extent feasible, and any discharge of fill not avoidable shall be mitigated through compensatory mitigation. Mitigation can be provided by restoration of temporary impacts, enhancement of existing resources, or purchasing into any*

*authorized mitigation bank or in-lieu fee program; by selecting a site of comparable acreage near the site and enhancing it with a native riparian habitat or invasive species removal in accordance with a habitat mitigation plan approved by regulatory agencies; or by acquiring sufficient compensating habitat to meet regulatory agency requirements. Typically, regulatory agencies require mitigation for jurisdictional waters without any riparian or wetland habitat to be mitigated at a 1:1 ratio. For loss of any riparian or other wetland areas, the mitigation ratio will begin at 2:1, and the ratio will rise based on the type of habitat, habitat quality, and presence of sensitive or listed plants or animals in the affected area. This increase in ratio will be determined by the regulatory agency. A Habitat Mitigation and Monitoring Proposal shall be prepared by a biologist or regulatory specialist and reviewed and approved by the appropriate regulatory agencies. These agencies (USACE, RWQCB, CDFW and any other applicable regulatory agency with jurisdiction over the proposed facility improvement) can impose greater mitigation requirements in their permits, but the implementing agency will utilize the ratios outlined above as the minimum required to offset or compensate for impacts to jurisdictional waters, riparian areas or other wetlands.*

**BIO-27** *A federal and state jurisdictional water preconstruction survey shall be conducted by a biologist or regulatory specialist at least six months before the start of ground-disturbing activities to identify and map all jurisdictional waters in the project footprint and up to a 250-foot buffer around the project footprint, subject to legal property access restrictions. The purpose of this survey is to confirm the extent of jurisdictional waters as defined by state and federal law are within the project footprint and adjacent up to 250-foot buffer. If possible, surveys would be performed during the spring, when plant species are in bloom and hydrological indicators are most readily identifiable. These results would then be used to calculate impact acreages and determine the amount of compensatory mitigation required to offset the loss of wetland functions and values in accordance with MM BIO-26.*

*Level of Significance After Mitigation: Less Than Significant*

As stated above, unforeseen direct impacts, indirect impacts, and temporary impacts to natural and man-made water bodies may occur depending upon the design of the infrastructure improvement, and the construction methodology required. **MM BIO-26** would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project. The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. Furthermore, **MMs BIO-14 through BIO-25** address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

**MM BIO-14** would require revegetation of natural areas with native species to minimize the Project's temporary impacts on wetlands within the area.

**MM BIO-15** would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species that could impact wetlands.

**MM BIO-16** would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for wetlands to be impacted during construction as a result of construction worker awareness.

**MM BIO-17** would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, including wetlands thereby minimizing any impacts thereof.

**MM BIO-18** would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby wetlands habitats, thereby minimizing any impacts thereof.

**MM BIO-19** would prevent the use of rodenticides and herbicides to prevent poisoning of wetlands, thereby minimizing any impacts thereof.

**MM BIO-20** would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, and movement adjacent to the construction area that could impact wetlands, thereby minimizing any impacts thereof.

**MM BIO-21** would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

**MM BIO-22** would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

**MM BIO-23** would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

**MM BIO-24** would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

**MM BIO-25** would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, through the implementation of mitigation, the Program would have a less than significant impact on federally and state protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

### **Cumulative Impact Analysis**

The conversion of undeveloped areas to cumulative development, within the Big Bear Valley may increase effects on protected wetland habitats. Cumulative development that encroaches into wetland habitat areas or indirectly impacts wetland habitat through the increase of upstream urban runoff could result in a cumulatively significant impact. Other cumulative impacts may include direct impacts such as the removal or modification of local hydrology, the redirection of flow, and the placement of fill material. Potential indirect impacts on jurisdictional waters include a number of water-quality-related impacts: erosion and transport of fine sediments or fill downstream of construction to unintentional release of contaminants into jurisdictional waters that are outside of the project footprint. Temporary impacts on jurisdictional waters include the placement of temporary fill during construction in both man-made and natural jurisdictional waters. Temporary fill could be placed during the construction of access roads and staging/equipment storage areas. The temporary fill would result in a temporary loss of jurisdictional waters and could potentially increase erosion and sediment transport into adjacent areas.

Since the Program could potentially benefit wetlands and habitats at Stanfield Marsh and Big Bear Lake, and because the proposed Program would not significantly impact wetlands elsewhere in the Big Bear Valley as a result of development of Program facilities, the Program's contribution to potential impacts on wetland habitat would be less than cumulatively considerable with the implementation of mitigation. Implementation of **MMs BIO-14 through BIO-27** would reduce the future facilities under the Program's contribution to cumulative wetland impacts to less than cumulatively considerable through compensation and implementation of construction and operational BMPs to control stormwater pollutants from exiting a proposed facility site and compliance with regulatory requirements.

*Cumulative Measures: **MMs BIO-14 through BIO-27** are required to minimize direct and indirect cumulative effects to riparian habitat or other sensitive natural communities.*

*Level of Significance After Mitigation: Less Than Significant*

**d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

Please refer to the discussion under issue (a), above. The proposed Program will be developed within the Big Bear Valley, which contains many areas that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites.

As biological resource impacts are highly site dependent, the following discussion analyzes the potential impacts to sensitive habitats on each project site location. These locations are:

- **BBARWA WWTP Upgrades Project**
  - BBARWA WWTP Upgrades
- **Solar Evaporation Ponds Project**
  - Solar Evaporation Ponds at the BBARWA WWTP Site
- **Sand Canyon Recharge Project**
  - Sand Canyon Recharge Conveyance Pipeline
  - Sand Canyon Conveyance Pipeline Discharge Outlet
  - Sand Canyon Booster Station
  - Sand Canyon Monitoring Wells (locations unknown)

- **Shay Pond Discharge Project**
  - Shay Pond Replacement Pipeline
  - Shay Pond Conveyance Pipeline Alignment
- **Stanfield Marsh/Big Bear Lake Discharge Project**
  - Stanfield Marsh Conveyance Pipeline Discharge Outlets
  - Alignment Option 1 to Discharge Point 1
    - Baldwin Lake Pipeline Alignment Option
    - Meadow Lane Pipeline Alignment Option
  - Alignment Option 2 to Discharge Point 2
    - East Neighborhoods Pipeline Alignment Option
    - West Neighborhoods Pipeline Alignment Option

### **BBARWA WWTP Upgrades Project**

There are many stream channels that traverse this area that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. The creeks and bodies of water listed below are shown on **Figures 4.5-11 through 4.5-15**. For the BBARWA WWTP Upgrades, the following impacts on wildlife movement or migration may occur:

- **Construction Impacts:** These facilities are anticipated to be confined to already developed spaces that would not serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. This is particularly the case because the BBARWA facility is fenced, which prevents wildlife movement on the ground in the area. However, it is possible that trees or vegetation within the existing BBARWA site may support nesting birds. As such, mitigation to protect nesting birds (**MMs BIO-16, BIO-28 and BIO-29**) is necessary to minimize impacts thereof. Impacts would be less than significant with the implementation of mitigation.
- **Operational Impacts:** Once installed, these facilities installed at the BBARWA site would be consistent with the existing wastewater facilities located at the BBARWA site, and as the overall setting of the site would remain confined to the existing developed spaces, no operational changes in wildlife movement would be anticipated to occur.

### **Solar Evaporation Ponds Project**

There are many stream channels that traverse this area that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. The creeks and bodies of water listed below are shown on **Figures 4.5-11 through 4.5-15**. For the Solar Evaporation Ponds, the following impacts on wildlife movement or migration may occur:

- **Construction Impacts:** This facility is anticipated to be confined to already developed spaces that would not serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. This is particularly the case because the BBARWA facility is fenced, which prevents wildlife movement on the ground in the area. However, it is possible that trees or vegetation within the existing BBARWA site may support nesting birds. As such, mitigation to protect nesting birds (**MMs BIO-16, BIO-28 and BIO-29**) is necessary to minimize impacts thereof. Impacts would be less than significant with the implementation of mitigation.
- **Operational Impacts:** One of the commenters on the NOP raised concern that waterfowl may utilize the brine settlement ponds, when full, which could result in significant impacts

should the waterfowl consume the brine. As such, as mitigation is necessary to minimize the potential for birds to utilize the Solar Evaporation Ponds.

### **Sand Canyon Recharge Project**

There are many stream channels that traverse this area that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. The creeks and bodies of water listed below are shown on **Figures 4.5-11 through 4.5-15**. For the Sand Canyon Monitoring Wells downstream of Sand Canyon, the following impacts on wildlife movement or migration may occur:

- **Construction Impacts:** The monitoring wells are anticipated to be confined to already developed spaces that would not serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. However, as the locations are presently unknown, it is possible that trees or vegetation within these sites may support nesting birds. As such, mitigation to protect nesting birds (**MMs BIO-16, BIO-28 and BIO-29**) is necessary to minimize impacts thereof. Impacts would be less than significant with the implementation of mitigation.
- **Operational Impacts:** Once installed, the monitoring wells would occupy a small footprint within already developed spaces that would not serve to enable movement of native resident or migratory fish or wildlife species, and as the overall setting of the site would remain confined to developed spaces, no operational changes in wildlife movement would be anticipated to occur.

For the Sand Canyon Recharge Conveyance Pipeline, the following impacts on wildlife movement or migration may occur:

- **Construction Impacts:** This pipeline alignment would occur within existing road ROW or within a small portion of forested area within residentially owned property by which an easement would be acquired to facilitate the installation of the proposed Sand Canyon Recharge Conveyance Pipeline. It is anticipated that the entirety of the pipeline alignment is confined within roadways and developed populated areas that would not serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. However, it is possible that trees or vegetation within the project footprint may support nesting birds. As such, mitigation to protect nesting birds (**MMs BIO-16, BIO-28 and BIO-29**) is necessary to minimize impacts thereof.
- **Operational Impacts:** Once installed, the pipeline would be located below ground, and the outlet would be located below grade. The surface will be recompacted and returned to original condition, thereby no operational changes in wildlife movement would be anticipated to occur.

For the Sand Canyon Conveyance Pipeline Discharge Outlet, the following impacts on wildlife movement or migration may occur:

- **Construction Impacts:** The Sand Canyon Channel could result in construction impacts from the installation of the Sand Canyon outlet may cause adverse impacts on migratory species through disturbing or harming nesting birds, which protected under the MTBA, but given the very small footprint of the outlet, and similar to the discharge point at Stanfield Marsh, these impacts would be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained and impacts thereof are



minimized for the temporary duration of construction. As stated above, **MM BIO-26** would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project, and thereby may impact wildlife linkages and/or wildlife corridors. The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. The impacts to jurisdictional features would thereby be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained for the temporary duration of construction. Thus, with implementation of mitigation, impacts would be less than significant.

- **Operational Impacts:** Once installed, the outlet would be located below grade. The footprint of the outlet would occupy less than a 10' x 10' area, including the erosion control, which would be designed to blend in with the existing channel surface area. As this feature would be of a small footprint and would be of a small surface area that would not block access to the channel by wildlife, no wildlife movement would be anticipated to be impacted over the long-term.

For the Sand Canyon Booster Station, the following impacts on wildlife movement or migration may occur:

- **Construction Impacts:** This facility is anticipated to be confined to already developed spaces that would not serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. However, it is possible that trees or vegetation within the Sand Canyon Booster Station site may support nesting birds. As such, mitigation to protect nesting birds (**MMs BIO-28 and BIO-29**) is necessary to minimize impacts thereof.
- **Operational Impacts:** Once installed, the Sand Canyon Booster Station would be consistent with the existing water storage facilities located at the Pump Station site, and as the overall setting of the site would remain confined to the existing developed spaces, no operational changes in wildlife movement would be anticipated to occur.

### **Shay Pond Discharge Project**

There are many stream channels that traverse this area that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. The creeks and bodies of water listed below are shown on **Figures 4.5-11 through 4.5-15**. For the new Shay Pond Pipeline and Shay Pond Replacement Pipeline, the following impacts on wildlife movement or migration may occur:

- **Construction Impacts:** Shay Pond/Shay Creek could result in construction impacts from the installation of the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline. Construction may cause adverse impacts on migratory species through disturbing or harming nesting birds, which protected under the MTBA, but similar to the discharge point at Stanfield Marsh, these impacts would be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained and impacts thereof are minimized for the temporary duration of construction.

**MM BIO-26** would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project, and thereby may impact wildlife linkages and/or wildlife corridors. The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. The impacts to jurisdictional features would thereby be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained for the temporary duration of construction. Thus, with implementation of mitigation, impacts would be less than significant.

- Operational Impacts: Once installed, the Shay Pond pipeline would be located below ground, and the outlet would be located below grade. The surface will be recompacted and returned to original condition, thereby no operational changes in wildlife movement would be anticipated to occur.

### **Stanfield Marsh/Big Bear Lake Discharge Project**

There are many stream channels that traverse this area that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. The creeks and bodies of water listed below are shown on **Figures 4.5-11 through 4.5-15**.

Discharge Pipeline and outlet to Stanfield Marsh:

- Construction Impacts: Baldwin Lake, Caribou Creek, Stanfield Marsh and Big Bear Lake could be impacted in various ways by the proposed Program. Stanfield Marsh and Big Bear Lake are anticipated to benefit from the implementation of the proposed Program as a result of increased water available in Big Bear Lake. The discharge point at Stanfield Marsh will be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained for the temporary duration of construction. **MM BIO-26** would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project, and thereby may impact wildlife linkages and/or wildlife corridors. The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. The impacts to jurisdictional features would thereby be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained for the temporary duration of construction. Thus, with implementation of mitigation, impacts would be less than significant.

Based on the discussion under issue (a) (which asks, would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW and USFWS?), above, the proposed discharge of Program Water to Stanfield Marsh/Big Bear Lake would have a less than significant potential to obstruct the beneficial use of either Stanfield Marsh or Big Bear Lake with the

implementation of **MM HYD-1**. Protecting the beneficial uses of these water bodies would protect the RARE<sup>79</sup> and WILD<sup>80</sup> designations of Stanfield Marsh and Big Bear Lake, thereby minimizing impacts to migratory species supported by Stanfield Marsh and Big Bear Lake. This is because migratory species, in addition to special status species, and other animals and habitats are protected under these beneficial use designations. Furthermore, migratory species utilizing Stanfield Marsh and Big Bear Lake would likely experience enhanced habitat as a result of the proposed Program, and thereby would not be subject to adverse impacts from the proposed Program.

- **Operational Impacts:** Once installed, the pipeline would be located below ground, and the outlet would be located below grade. The surface will be recompact and returned to original condition, thereby no operational changes in wildlife movement would be anticipated to occur.

All facilities: in regards to nesting bird impacts, although BAEA and SPOW are not likely to nest in the Program Area due to existing disturbances within and adjacent the proposed Program footprint, the Program Area is suitable to support other nesting bird species. Most native bird species are protected from unlawful take by the MBTA. Additionally, the State of California provides protection for native bird species and their nests in the FGC. In general, impacts to all bird species (common and special status) can be avoided by conducting work outside of the nesting season, which is generally February 1st through August 31st. However, if all work cannot be conducted outside of nesting season, the precautionary measures are recommended to ensure MBTA compliance.

#### **Other Physical Changes to the Environment**

No physical changes beyond that which presently occurs or could occur under the existing conditions at the LV Site are proposed by the Replenish Big Bear Program. As such, no wildlife movement would be expected to be directly or indirectly impacted by the reduced discharge to the LV Site that would occur as a result of Program implementation.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: **MMs BIO-16 and BIO-26, BIO-27, BIO-28, BIO-29 and HYD-1** are required to minimize the Program's potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. For discussion of **MMs BIO-16 and HYD-1** please refer to analysis above throughout this section. **MMs BIO-28 and BIO-29** are discussed below:*

**BIO-16** ***Personnel who work onsite will attend a Contractor Education and Environmental Training session conducted by a biologist. The environmental training will cover general and specific biological information on the special-status plant species that may be present near the construction site, including the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws.***

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<sup>79</sup> Rare, Threatened, or Endangered Species (RARE) Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

<sup>80</sup> Wildlife Habitat (WILD) Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

*The Contractor Education and Environmental Training sessions will be given before the initiation of construction activities and repeated, as needed, when new personnel begin work within the project limits. Daily updates and synopsis of the training will be performed during the daily safety (“tailgate”) meeting. All personnel who attend the training will be required to sign an attendance list stating that they have received the Contractor Education and Environmental Training, and such tracking sheets shall be maintained for inspection by the implementing agency.*

**BIO-17** *A biological monitor shall be present during construction Activities in areas where impacts to riparian, riverine, wetland, endangered species or endangered species Critical Habitat occurs. A biological monitor (or monitors) will be present onsite during construction activities that could result in direct or indirect impacts on sensitive biological resources (including listed species) and to oversee permit compliance and monitoring efforts for all special-status resources.*

*A biological monitor (biologist) is any person who has a bachelor’s degree in biological sciences, zoology, botany, ecology, or a closely related field and/or has demonstrated field experience in and knowledge about the identification and life history of the special-status species or jurisdictional waters that could be affected by project activities. The biological monitor(s) will be responsible for monitoring the Contractor to ensure compliance with the Section 404 Individual Permit, Section 401 Water Quality Certification and LSA Agreements. Activities to ensure compliance would include performing construction-monitoring activities, including monitoring environmental fencing, identifying areas where special-status plant species are or may be present, and advising the Contractor of methods that may minimize or avoid impacts on these resources. Biological monitor(s) will be required to be present in all areas during ground disturbance activities and for all construction activities conducted within or adjacent to identified Environmentally Sensitive Areas, Wildlife Exclusion Fencing, and Non-Disturbance Zones as defined by the project biologist.*

**BIO-18** *All food-related trash items (e.g., wrappers, cans, bottles, food scraps) will be disposed of in closed containers and removed at least once a week from the construction site.*

**BIO-19** *Use of rodenticides and herbicides in the project footprint will be restricted at the direction of the project biologist. This measure is necessary to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species. Where pesticides must be used, they must be used in full accordance with use instructions for the particular chemical and at the direction of the project biologist.*

**BIO-20** *Exclusion barriers (e.g., silt fences) will be installed at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction. The design specifications of the exclusion fencing will be determined through consultation with the USFWS and/or CDFW, as appropriate. Clearance surveys will be conducted for special-status species after the exclusion fence is installed in compliance with USFWS and/or CDFW requirements. The project biologist shall determine the frequency in which clearance surveys will be conducted to determine the efficacy of the exclusion fencing.*

**BIO-21** *Prior to the commencement of construction, the implementing agency shall identify staging areas for construction equipment to be utilized during construction that will be located outside sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridors.*

**BIO-22** *Plastic mono-filament netting (erosion-control matting) or similar material will not be used in erosion control materials to prevent potential harm to wildlife. Materials such as coconut coir matting or tackified hydroseeding compounds will be used as substitutes.*

**BIO-23** *During ground-disturbing activities, project-related vehicle traffic will be restricted within the construction area to established roads, construction areas, and other designated areas to prevent avoidable impacts. Access routes will be clearly flagged; traffic outside of the designated areas will be prohibited. Furthermore, the use of motorized vehicles within sensitive habitat areas and linkages shall be prohibited except for crucial maintenance and/or construction activities.*

**BIO-24** *All excavated, steep-sided holes or trenches more than 8 inches deep will be covered at the close of each working day with plywood or similar materials, or a minimum of one escape ramp constructed of earth fill for every 10 feet of trenching will be provided to prevent the entrapment of wildlife. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. All culverts or similar enclosed structures with a diameter of 4 inches or greater will be covered, screened, or stored more than 1 foot off the ground to prevent use by wildlife. Stored material will be cleared for common and special-status wildlife species before the pipe is subsequently used or moved.*

**BIO-25** *Prior to the commencement of construction, a Weed Control Plan will be developed for the implementing agency by the project biologist to minimize or avoid the spread of weeds during ground-disturbing activities. In the Weed Control Plan, the following topics will be addressed:*

- *A Schedule for noxious weed surveys shall be addressed.*
- *Weed control treatments shall be addressed and ultimately implemented by the implementing agency, including permitted herbicides, and manual and mechanical methods for application; herbicide application will be restricted in Environmentally Sensitive Areas (as defined by the project biologist).*
- *The timing of the weed control treatment for each plant species shall be addressed.*
- *Fire prevention measures shall be addressed.*

*The implementing agency shall maintain records demonstrating implementation of the Weed Control Plan, and shall make those records available to inspection by the implementing agency upon request.*

**BIO-26** *Any future project that must discharge fill into a channel or otherwise alter a streambed shall be minimized to the extent feasible, and any discharge of fill not avoidable shall be mitigated through compensatory mitigation. Mitigation can be provided by restoration of temporary impacts, enhancement of existing resources, or purchasing into any authorized mitigation bank or in-lieu fee program; by selecting a site of comparable acreage near the site and enhancing it with a native riparian habitat or invasive species removal in accordance with a habitat mitigation plan approved by regulatory agencies; or by acquiring sufficient compensating habitat to meet regulatory agency requirements. Typically, regulatory agencies require mitigation for jurisdictional waters without any riparian or wetland habitat to be mitigated at a 1:1 ratio. For loss of any riparian or other wetland areas, the mitigation ratio will begin at 2:1, and the ratio will rise based on the type of habitat, habitat quality, and presence of sensitive or listed plants or animals in the affected area. This increase in ratio will be determined by the regulatory agency. A Habitat Mitigation and Monitoring Proposal shall be prepared by a biologist or regulatory specialist and reviewed and approved by the appropriate regulatory agencies. These agencies (USACE, RWQCB, CDFW and any other applicable regulatory agency with jurisdiction over the proposed facility improvement) can impose greater mitigation requirements in their permits, but the implementing agency will utilize the ratios outlined above as the minimum required to offset or compensate for impacts to jurisdictional waters, riparian areas or other wetlands.*

- BIO-27** *A federal and state jurisdictional water preconstruction survey shall be conducted by a biologist or regulatory specialist at least six months before the start of ground-disturbing activities to identify and map all jurisdictional waters in the project footprint and up to a 250-foot buffer around the project footprint, subject to legal property access restrictions. The purpose of this survey is to confirm the extent of jurisdictional waters as defined by state and federal law are within the project footprint and adjacent up to 250-foot buffer. If possible, surveys would be performed during the spring, when plant species are in bloom and hydrological indicators are most readily identifiable. These results would then be used to calculate impact acreages and determine the amount of compensatory mitigation required to offset the loss of wetland functions and values in accordance with BIO-26.*
- BIO-28** *To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal will be conducted outside of the State identified nesting season for applicable bird species (nesting season is approximately from February 15 through September 15 of a given calendar year, depending on the species). Alternatively, nesting bird surveys shall be conducted by a qualified avian biologist no more than three (3) days prior to vegetation clearing or ground disturbance activities.*
- Preconstruction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If no active nests are found, no further action would be required. If an active nest is found, the biologist shall set appropriate no-work buffers around the nest which would be based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity, and duration of disturbance. There are no standard nest buffers specified in the MBTA or within the FGC. Disturbance factors including nest location, human activity, activity duration, and noise level may influence nesting behavior and reproductive success, shall be considered by the project biologist in coordination with CDFW and USFWS (as appropriate) in establishing standard buffer distances for individual species on a project- and site-specific basis. The nest(s) and buffer zones shall be field checked weekly by a qualified biological monitor. The approved no-work buffer zone shall be clearly marked in the field, within which no disturbance activity should commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive.*
  - Preconstruction nesting bird surveys shall include a nighttime component to address the potential for presence of nocturnal species. The nesting bird surveys shall consist of a minimum of five (5) consecutive survey days and shall include an additional three (3) consecutive nights of survey for nocturnal species. Nocturnal surveys shall be conducted between the hours of 9:00 pm. and midnight, during appropriate weather conditions (e.g., no rain or winds).*
  - Vegetation removal, including any tree removal or pruning, and structure demolition shall be conducted outside the typical nesting season (i.e., between September 1st and January 31st), to the maximum extent feasible. Otherwise, the provisions of the preconstruction nesting bird surveys, above, shall suffice to ensure impacts to nesting birds are minimized.*
- BIO-29** *To avoid any harm to waterfowl that may utilize the Solar Evaporation Ponds, BBARWA shall install bird deterrents at the Solar Evaporation Ponds to discourage waterfowl use of the ponds. The deterrent shall encompass access control through tarps or screens limiting bird access to the surface of the Solar Evaporation Ponds.*
- HYD-1** *BBARWA, in collaboration with BBMWD and BBCCSD, will collect samples at the pertaining locations. That is BBARWA will monitor the Program Water, BBMWD will collect samples in the Stanfield Marsh and Big Bear Lake, and BBCCSD will collect samples in Shay Pond. BBARWA will develop the AAMP and will coordinate with*



***BBMWD and BBCCSD to implement the AMMP for the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (when implemented). The AMMP will consist of the following;***

- ***Conduct a monitoring plan to:***
  - ***Collect quarterly boron samples of Program Water (i.e., purified water before it is discharged to Stanfield Marsh or Shay Pond (when implemented)), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented);***
  - ***Monitor the dissolved oxygen and pH of the Program Water, in Stanfield Marsh (if permitted), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented) during and after re-wetting of Stanfield Marsh or Shay Pond;***
  - ***Continuously monitor temperature of the Program Water, Stanfield Marsh, and Shay Pond (when implemented); and***
  - ***Collect quarterly chloride samples of Program Water stored in Big Bear Lake at the existing TMDL Sampling Station MWDL9 to assess the impacts on the Bear Valley Basin.***
  - ***Collect nutrient (i.e., TIN, TP, TN, ammonia, nitrate as N, nitrite as N) samples of the Program Water at the frequency stated in the NPDES permit.***
- ***Implement a TP Offset Program, expected to be stipulated in BBARWA's future NPDES permit;***
- ***Monitor the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake on at least a bi-yearly basis. If observed, mitigative actions, such as invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions shall be undertaken to remove the invasive species present as a result of introduction of the Program Water. An account of invasive species within Stanfield Marsh and Big Bear Lake shall be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program.***

***If temperature, dissolved oxygen, boron, or pH levels exceed the NPDES permit requirements, BBARWA shall pursue mitigation actions which may include, but are not limited to the following:***

- ***Introduction of chemical or mechanical intervention to stabilize pH levels and dissolved oxygen.***
- ***Introduction of native plants to absorb boron at Stanfield Marsh or Shay Pond (when implemented).***
- ***Introduction of a temperature cooling mechanism to lower the temperature of the Program Water before being introduced to the Stanfield Marsh or Shay Pond (when implemented).***

***If recharging Program Water stored in Big Bear Lake would result in exceedance of any of the limits set in the future Sand Canyon Recharge Area WDR permit, the discharge of Program Water to the Sand Canyon Recharge Area would be paused until permit conditions are met.***

***The AMMP shall be aligned with the future requirements of the NPDES and WDR permits.***

*Level of Significance After Mitigation: Less Than Significant*

Mitigation to protect nesting birds will be implemented by Watermaster and stakeholders of the Big Bear Valley in future through **MM BIO-28**. **MM BIO-28** will require a nesting bird survey that demonstrates that no bird nests will be disturbed during project construction, or construction will occur entirely outside of nesting season. This will ensure that nesting birds are not impacted by construction activities thereby ensuring compliance with the MBTA and Bird nesting protections (Sections 3503, 3503.5, 3511, and 3513) in the FGC. **MM BIO-29** would protect migratory birds

that may otherwise use the Solar Evaporation Ponds when full during operation of the proposed Program in the future, and would therefore minimize operational impacts to migratory and nesting birds.

As stated above, **MM BIO-26** would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project, and thereby may impact wildlife linkages and/or wildlife corridors. The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. The impacts to jurisdictional features would thereby be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained for the temporary duration of construction.

**MM BIO-16** would require education of the construction workers, which would ensure that the principals of the **MMs** identified herein intended to comply with the law are known by the construction workers, which would ensure further protection of nesting birds that could otherwise be impacted by construction. **MM HYD-1** is required to ensure that monitoring and adaptive mitigation is implemented to protect to beneficial uses of Stanfield Marsh and Big Bear Lake, minimizing impacts to the RARE and WILD designations thereof. This would ensure that the protection of migratory species and wildlife linkages extended as part of the beneficial use of these water bodies, would be maintained, thereby minimizing potential impacts thereof. As such, the mitigation provided above minimizes the impacts under this issue to a level of less than significant.

### **Cumulative Impact Analysis**

Implementation of cumulative development within the Big Bear Valley could result in potential impacts to riparian habitat and special status natural communities. Cumulative development could encroach into areas adjacent to existing drainages and creeks that could contain riparian habitat. In addition, cumulative development could result in potential impacts on riparian habitat. Certain areas within the Big Bear Valley that contain critical habitat for species may not be fully mitigable, and an unavoidable significant adverse biological resource impact may occur. Even with mitigation, the significant project-specific impacts to critical habitat, riparian habitat or other sensitive natural communities could be substantial enough to contribute cumulatively considerable contributions to significant adverse impacts thereof. Thus, the Program's contribution to cumulative impacts could be considerable and would represent a significant cumulative impact.

*Cumulative Measures: **MMs BIO-16, BIO-26, BIO-27, BIO-28, BIO-29, and HYD-1** are required to minimize the cumulative potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.*

*Level of Significance After Mitigation: Less Than Significant*

- e) **Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

The local policies and ordinances pertaining to and protecting biological resources include the following:

- The City of Big Bear Lake's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces stipulates development requirements for projects that would remove existing trees of 12" in diameter at breast height.
- San Bernardino County Development Code<sup>81</sup> Plant Protection and Management (88.01), which requires a Tree Removal Permit in conjunction with the land use application or development permit. Where such applications or approvals are required, a Tree Removal Permit pursuant to San Bernardino County's Development Code would be required. The San Bernardino County Development Code stipulates the following for the Mountain Region that would be applicable to the activities proposed under the proposed Program: 88.01.050(f)(1[a]), *The location of the regulated tree or plant and/or its dripline interferes with an allowed structure, sewage disposal area, paved area, or other approved improvement or ground disturbing activity and there is no other alternative feasible location for the improvement.*
- CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)].
- When projects are converting timberland to another use, the operations are considered commercial timber operations even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581].

Compliance with the above local policies and ordinances is necessary to prevent a significant impact from occurring under this issue.

As biological resource impacts are highly site dependent, the following discussion analyzes the potential impacts to sensitive habitats on each project site location. These locations are:

- **BBARWA WWTP Upgrades Project**
  - BBARWA WWTP Upgrades
- **Solar Evaporation Ponds Project**
  - Solar Evaporation Ponds at the BBARWA WWTP Site
- **Sand Canyon Recharge Project**
  - Sand Canyon Recharge Conveyance Pipeline
  - Sand Canyon Conveyance Pipeline Discharge Outlet
  - Sand Canyon Booster Station
  - Sand Canyon Monitoring Wells (locations unknown)
- **Shay Pond Discharge Project**
  - Shay Pond Replacement Pipeline
  - Shay Pond Conveyance Pipeline Alignment
- **Stanfield Marsh/Big Bear Lake Discharge Project**
  - Stanfield Marsh Conveyance Pipeline Discharge Outlets
  - Alignment Option 1 to Discharge Point 1
    - Baldwin Lake Pipeline Alignment Option
    - Meadow Lane Pipeline Alignment Option
  - Alignment Option 2 to Discharge Point 2
    - East Neighborhoods Pipeline Alignment Option
    - West Neighborhoods Pipeline Alignment Option

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<sup>81</sup> San Bernardino County, 2023. Development Code. <https://lus.sbcounty.gov/planning-home/development-code/> (accessed 09/14/23)

### **BBARWA WWTP Upgrades Project**

BBARWA WWTP Upgrades would result in the following impacts to local policies and ordinances pertaining to biological resources:

- **Construction Impacts:** While no other Program Component is anticipated to result in the removal of trees, the precise locations for other facilities have not been fine tuned. Thus, in the event that the proposed Program would result in tree removal outside of the City of Big Bear Lake, in areas under San Bernardino County jurisdiction, the Program must comply with the San Bernardino County Development Code<sup>82</sup> Plant Protection and Management (88.01), which requires a Tree Removal Permit in conjunction with the land use application or development permit. Where such applications or approvals are required, a Tree Removal Permit pursuant to San Bernardino County's Development Code would be required. As such, in order to ensure compliance with San Bernardino County's Development Code, mitigation shall be required. **MM AES-3** would ensure that future Program projects conform to tree preservation ordinances within the City of Big Bear Lake and San Bernardino County within which future projects are installed. This would minimize conflicts with local policies and ordinances pertaining to biological resources. Thus, impacts would be less than significant through the implementation of mitigation.
- **Operational Impacts:** No trees would be impacted once the pipeline is installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

### **Solar Evaporation Ponds Project**

The Solar Evaporation Ponds Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

- **Construction Impacts:** None of the policies pertaining to or protecting biological resources outlined above would apply to this Program component. This is because no trees would be impacted by construction. No impacts are anticipated.
- **Operational Impacts:** Given that no trees would be impacted by construction, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

### **Sand Canyon Recharge Project**

The Sand Canyon Monitoring Wells would result in the following impacts to local policies and ordinances pertaining to biological resources:

- **Construction Impacts:** The precise location for the proposed Sand Canyon Monitoring Wells is not yet known, but the general location is anticipated to be downstream of the Sand Canyon Recharge Area. The installation of the Sand Canyon Monitoring Wells could impact trees within the City of Big Bear Lake. The City of Big Bear Lake's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces stipulates development requirements for projects that would remove existing trees of 12" in diameter at breast height. It is unknown precisely how many trees and what size trees will be removed as part of the installation of this Program Component. Thus, the proposed project will be required to comply with the City of Big Bear Lake Municipal Code for this and any other Program Component that will impact trees of 12" in diameter at breast height; mitigation is provided below to ensure compliance with this requirement. **MM AES-3** would ensure that future Program projects conform to tree preservation ordinances within the City of Big Bear Lake and San Bernardino County within which future projects are installed. This

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<sup>82</sup> San Bernardino County, 2023. Development Code. <https://lus.sbcounty.gov/planning-home/development-code/> (accessed 09/14/23)

would minimize conflicts with local policies and ordinances pertaining to biological resources.

In addition to the required compliance with City of Big Bear Lake regulations pertaining to tree removal, tree removal is also regulated by CAL FIRE. CAL FIRE designates sites containing trees/timberland resources as being “timberland use.” CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)]. Also, when projects are converting timberland to another use, the operations are considered commercial timber operations even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581]. However, CAL FIRE offers a number of exemptions that could apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. These exemptions are the “Public Agency, Public and Private Utility Right of Way Exemption”<sup>83</sup> and the “Less Than 3 Acre Conversion Exemption.”<sup>84</sup> The proposed Program will be required to comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation described below. If an exemption is not available, the project will be required to comply with the above state regulations, and therefore prepare a full THP to obtain a TCP. Without compliance with the above regulations, the proposed Program could result in a potentially significant impact from tree removal and nonconformance with policies and regulations pertaining to trees. Thus, in order to avoid a potentially significant impact, the proposed Program must comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation (**MM AGF-1**) described below. **MM AGF-1** would ensure compliance with CAL FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these **MMs**, impacts would be less than significant. Thus, impacts would be less than significant with the implementation of mitigation.

- Operational Impacts: No trees would be impacted once the monitoring wells are installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Recharge Conveyance Pipeline would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: As discussed under **Subchapter 4.2, Aesthetics**, the Sand Canyon Recharge Conveyance Pipeline has a potential to require the removal of several trees because the alignment will traverse through the two private properties as shown on **Figure 3-31**. Thus, the proposed project will impact scenic resources including trees as part of the proposed project. The installation of this section of pipeline would impact trees within the City of Big Bear Lake. The City of Big Bear Lake’s Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces stipulates development requirements for projects that would remove existing trees of 12” in diameter at breast height. Though

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<sup>83</sup> State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(b)(c):

[https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form\\_rev112020.pdf](https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form_rev112020.pdf) (accessed 09/14/23)

<sup>84</sup> State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(a):

<https://www.fire.ca.gov/media/30xkpwxc/caltrees-less-than-3-acre-conversion-exemption-form.pdf> (accessed 09/14/23)

the general location for the Sand Canyon Recharge Conveyance Pipeline has been established, the precise location for this short pipeline alignment is presently unknown. Thus, it is unknown precisely how many trees and what size trees will be removed as part of the installation of this Program Component. Thus, the proposed project will be required to comply with the City of Big Bear Lake Municipal Code for this and any other Program Component that will impact trees of 12" in diameter at breast height; mitigation is provided below to ensure compliance with this requirement. **MM AES-3** would ensure that future Program projects conform to tree preservation ordinances within the City of Big Bear Lake and San Bernardino County within which future projects are installed. This would minimize conflicts with local policies and ordinances pertaining to biological resources.

In addition to the required compliance with City of Big Bear Lake regulations pertaining to tree removal, tree removal is also regulated by CAL FIRE. CAL FIRE offers a number of exemptions that could apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. These exemptions are the "Public Agency, Public and Private Utility Right of Way Exemption" and the "Less Than 3 Acre Conversion Exemption." The proposed Program will be required to comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation described below. If an exemption is not available, the project will be required to comply with the above state regulations, and therefore prepare a full THP to obtain a TCP. Without compliance with the above regulations, the proposed Program could result in a potentially significant impact from tree removal and nonconformance with policies and regulations pertaining to trees. Thus, in order to avoid a potentially significant impact, the proposed Program must comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation (**MM AGF-1**) described below. **MM AGF-1** would ensure compliance with CAL FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these **MMs**, impacts would be less than significant. Thus, impacts would be less than significant with the implementation of mitigation.

Operational Impacts: No trees would be impacted once the pipeline is installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Conveyance Pipeline Discharge Outlet would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: None of the policies pertaining to or protecting biological resources outlined above would apply to this Program component. This is because no trees would be impacted by construction. No impacts are anticipated.
- Operational Impacts: Given that no trees would be impacted by construction, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Booster Station would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: None of the policies pertaining to or protecting biological resources outlined above would apply to this Program component. This is because no trees would be impacted by construction. No impacts are anticipated.



- Operational Impacts: Given that no trees would be impacted by construction, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

### **Shay Pond Discharge Project**

The Shay Pond Discharge Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: None of the policies pertaining to or protecting biological resources outlined above would apply to this Program component. This is because no trees would be impacted by construction. No impacts are anticipated.
- Operational Impacts: Given that no trees would be impacted by construction, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

### **Stanfield Marsh/Big Bear Lake Discharge Project**

The Stanfield Marsh/Big Bear Lake Discharge Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: While no other Program Component is anticipated to result in the removal of trees, the precise alignments for pipelines and other facilities have not been fine tuned. Thus, in the event that the proposed Program would result in tree removal outside of the City of Big Bear Lake, in areas under San Bernardino County jurisdiction, the Program must comply with the San Bernardino County Development Code<sup>85</sup> Plant Protection and Management (88.01), which requires a Tree Removal Permit in conjunction with the land use application or development permit. Where such applications or approvals are required, a Tree Removal Permit pursuant to San Bernardino County's Development Code would be required. The San Bernardino County Development Code stipulates the following for the Mountain Region that would be applicable to the activities proposed under the proposed Program: 88.01.050(f)(1[a]), *The location of the regulated tree or plant and/or its dripline interferes with an allowed structure, sewage disposal area, paved area, or other approved improvement or ground disturbing activity and there is no other alternative feasible location for the improvement.* As such, in order to ensure compliance with San Bernardino County's Development Code, mitigation shall be required. **MM AES-3** would ensure that future Program projects conform to tree preservation ordinances within the City of Big Bear Lake and San Bernardino County within which future projects are installed. This would minimize conflicts with local policies and ordinances pertaining to biological resources. Thus, impacts would be less than significant through the implementation of mitigation.
- Operational Impacts: No trees would be impacted once the pipeline is installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

Based on the discussions above, compliance with local policies and ordinances pertaining to biological resources as a result of Program implementation requires mitigation to avoid a significant impact. Thus, through compliance with CAL FIRE, San Bernardino County, and City of Big Bear Lake regulations, as enforced through **MMs AES-3** and **AGF-1**, below, impacts would be less than significant.

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<sup>85</sup> San Bernardino County, 2023. Development Code. <https://lus.sbcounty.gov/planning-home/development-code/> (accessed 09/14/23)

### **Other Physical Changes to the Environment**

No physical changes beyond that which presently occurs or could occur under the existing conditions at the LV Site are proposed by the Replenish Big Bear Program. As such, no conflict with any local policies or ordinances protecting biological resources would be expected to occur as a result of the reduced discharge to the LV Site that would occur as a result of Program implementation.

*Level of Significance Before Mitigation: Potentially Significant*

#### *Mitigation Measures:*

**AES-3:** *Should the removal of trees be required for a specific Program Component, the implementing agency shall comply with the applicable local jurisdiction's municipal code or development code pertaining to the removal of trees. For Program Components within the City of Big Bear Lake, the implementing agency shall comply with the City's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces, where applicable. For Program Components within San Bernardino County, the implementing agency shall comply with the San Bernardino County Development Code Plant Protection and Management (88.01), where applicable.*

**AGF-1:** *Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a "Public Agency, Public and Private Utility Right of Way Exemption" (1104.1(b)(c)) or a "Less Than 3 Acre Conversion Exemption" (1104.1(a)). Should an exemption for the removal of trees subject to CAL FIRE timberland conversation regulations be unavailable due to the limitations set forth by CAL FIRE of one exemption per agency per five years, the implementing agency shall prepare and submit a Timberland Conversion Permit (TCP) pursuant to California Public Resources Code 4621(a) and a Timber Harvesting Plan (THP) pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.*

*Level of Significance After Mitigation: Less Than Significant*

**MM AES-3** would ensure that future Program projects conform to tree preservation ordinances within the City of Big Bear Lake and San Bernardino County within which future projects are installed. This would minimize conflicts with local policies and ordinances pertaining to biological resources. **MM AGF-1** would ensure compliance with CAL FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these **MMs**, impacts would be less than significant.

### **Cumulative Impact Analysis**

Implementation of cumulative development within the Big Bear Valley could be located in areas that are currently protected by local policies or ordinances within the City of Big Bear Lake and San Bernardino County within which Program projects may be implemented. Therefore, cumulative development could result in potentially significant cumulative impacts on biological resources protected by local policies or ordinances. Since development in accordance with the Program could result in potential impacts to biological resources protected by local policies or ordinances, the Program's contribution to cumulative impacts could be considerable without the implementation of mitigation. Implementation of **MMs AES-3 and AGF-1** would reduce the proposed Program's contribution to cumulative biological resources impacts to less than

cumulatively considerable through compliance with the local regulations that protect biological resources.

*Cumulative Measures: **MMs AES-3 and AGF-1** are required.*

*Level of Significance After Mitigation: Less Than Significant*

f) **Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

Please refer to the discussion under response issue (e) above, as well as responses **Subchapter 4.2(c) under Aesthetics and 4.3(c) under Agriculture and Forestry Resources**. The Biological Resources Assessment provided as **Appendix 12** concluded that the project is not located in an area within a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan.

As biological resource impacts are highly site dependent, the following discussion analyzes the potential impacts to sensitive habitats on each project site location. These locations are:

- **BBARWA WWTP Upgrades Project**
  - BBARWA WWTP Upgrades
- **Solar Evaporation Ponds Project**
  - Solar Evaporation Ponds at the BBARWA WWTP Site
- **Sand Canyon Recharge Project**
  - Sand Canyon Recharge Conveyance Pipeline
  - Sand Canyon Conveyance Pipeline Discharge Outlet
  - Sand Canyon Booster Station
  - Sand Canyon Monitoring Wells (locations unknown)
- **Shay Pond Discharge Project**
  - Shay Pond Replacement Pipeline
  - Shay Pond Conveyance Pipeline Alignment
- **Stanfield Marsh/Big Bear Lake Discharge Project**
  - Stanfield Marsh Conveyance Pipeline Discharge Outlets
  - Alignment Option 1 to Discharge Point 1
    - Baldwin Lake Pipeline Alignment Option
    - Meadow Lane Pipeline Alignment Option
  - Alignment Option 2 to Discharge Point 2
    - East Neighborhoods Pipeline Alignment Option
    - West Neighborhoods Pipeline Alignment Option

#### **BBARWA WWTP Upgrades Project**

BBARWA WWTP Upgrades would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the BBARWA WWTP Upgrades Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the BBARWA WWTP Upgrades Project would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.

- Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

### **Solar Evaporation Ponds Project**

The Solar Evaporation Ponds Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the Solar Evaporation Ponds Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the Solar Evaporation Ponds Project would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.
- Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

### **Sand Canyon Recharge Project**

The Sand Canyon Monitoring Wells would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the BBARWA WWTP Upgrades Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. CAL FIRE designates sites containing trees/timberland resources as being “timberland use.” CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)]. Also, when projects are converting timberland to another use, the operations are considered commercial timber operations even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581]. However, CAL FIRE offers a number of exemptions that could apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. These exemptions are the “Public Agency, Public and Private Utility Right of Way Exemption”<sup>86</sup> and the “Less Than 3 Acre Conversion Exemption.”<sup>87</sup> The proposed Program will be required to comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation described below. If an exemption is not available, the project will be required to comply with the above state regulations, and therefore prepare a full THP to obtain a TCP. Without compliance with the above regulations, the proposed Program could result in a potentially significant impact from resulting in a conflict with the provisions of an adopted Habitat Conservation Plan,

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<sup>86</sup> State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(b)(c):

[https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form\\_rev112020.pdf](https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form_rev112020.pdf) (accessed 09/14/23)

<sup>87</sup> State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(a):

<https://www.fire.ca.gov/media/30xkpwXu/caltrees-less-than-3-acre-conversion-exemption-form.pdf> (accessed 09/14/23)

Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Thus, in order to avoid a potentially significant impact, the proposed Program must comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation (**MM AGF-1**) described below. **MM AGF-1** would ensure compliance with CAL FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these **MMs**, impacts would be less than significant. Thus, impacts would be less than significant with the implementation of mitigation. **MM AGF-1** would ensure compliance with CAL FIRE regulations, and would therefore minimize conflicts thereof. With the implementation of these **MMs**, impacts would be less than significant. Thus, impacts would be less than significant with the implementation of mitigation.

- Operational Impacts: No trees would be impacted once the monitoring wells are installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Recharge Conveyance Pipeline would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the BBARWA WWTP Upgrades Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. CAL FIRE designates sites containing trees/timberland resources as being “timberland use.” CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)]. Also, when projects are converting timberland to another use, the operations are considered commercial timber operations even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581]. However, CAL FIRE offers a number of exemptions that could apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. These exemptions are the “Public Agency, Public and Private Utility Right of Way Exemption”<sup>88</sup> and the “Less Than 3 Acre Conversion Exemption.”<sup>89</sup> The proposed Program will be required to comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation described below. If an exemption is not available, the project will be required to comply with the above state regulations, and therefore prepare a full THP to obtain a TCP. Without compliance with the above regulations, the proposed Program could result in a potentially significant impact from resulting in a conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Thus, in order to avoid a potentially significant impact, the proposed Program must comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation (**MM AGF-1**) described below. **MM AGF-1** would ensure compliance with CAL

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<sup>88</sup> State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(b)(c):

[https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form\\_rev112020.pdf](https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form_rev112020.pdf) (accessed 09/14/23)

<sup>89</sup> State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(a):

<https://www.fire.ca.gov/media/30xkpwxc/caltrees-less-than-3-acre-conversion-exemption-form.pdf> (accessed 09/14/23)

FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these **MMs**, impacts would be less than significant.

- Operational Impacts: No trees would be impacted once the monitoring wells are installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Conveyance Pipeline Discharge Outlet would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the Sand Canyon Conveyance Pipeline Discharge Outlet. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the Sand Canyon Conveyance Pipeline Discharge Outlet would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.
- Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Booster Station would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the Solar Evaporation Ponds Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the Solar Evaporation Ponds Project would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.
- Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

### **Shay Pond Discharge Project**

The Shay Pond Discharge Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the Shay Pond Discharge Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the Shay Pond Discharge Project would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.
- Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.



### **Stanfield Marsh/Big Bear Lake Discharge Project**

The Stanfield Marsh/Big Bear Lake Discharge Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

- Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the Stanfield Marsh/Big Bear Lake Discharge Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the Stanfield Marsh/Big Bear Lake Discharge Project would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.
- Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

### **Other Physical Changes to the Environment**

No physical changes beyond that which presently occurs or could occur under the existing conditions at the LV Site are proposed by the Replenish Big Bear Program. As such, no conflict with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan would occur as a result of the reduced discharge to the LV Site that would occur as a result of Program implementation.

*Level of Significance: Potentially Significant*

*Mitigation Measures: **MM AGF-1** is required to minimize the potential for conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

**AGF-1:** *Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a “Public Agency, Public and Private Utility Right of Way Exemption” (1104.1(b)(c)) or a “Less Than 3 Acre Conversion Exemption” (1104.1(a)).*

*Level of Significance After Mitigation: Significant and Unavoidable*

**MM AGF-1** would ensure compliance with CAL FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these **MM**, impacts would be less than significant.

### **Cumulative Impact Analysis**

Implementation of cumulative development within the Big Bear Valley could be located in areas with existing Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, cumulative development within these areas would conflict with the provisions of the plans and would represent a potentially significant impact. Since development in accordance with the Program could result in potential impacts to existing CAL FIRE regulations, the Program’s contribution to cumulative impacts could be considerable without the implementation of mitigation. The implementation of **MM AGF-1** would reduce some contribution to cumulative impacts through either compliance with CAL FIRE regulations. Therefore, based on the discussion above, the Program’s contribution under this issue is

considered less than cumulatively considerable, and would not result in a significant or cumulatively considerable adverse impact.

*Cumulative Measures: **MM AFR-1** is required to minimize the potential for cumulatively considerable conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

*Level of Significance After Mitigation: Less Than Significant*

#### **4.5.7 Unavoidable Adverse Impacts**

As discussed throughout this subchapter, there is a potential that a future Program facility may be developed in an area containing significant biological resources that cannot be avoided. Though substantial mitigation is provided to minimize impacts under most circumstances for future Program facilities, no feasible mitigation exists to completely avoid impacts to biological resources within the Big Bear Valley.

A potential to adversely impact bird-foot checkerbloom from Program implementation exists. The Baldwin Lake Pipeline Alignment Option is being considered by BBARWA, as it would avoid a large portion of construction within residential roadways that would otherwise occur under other Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options. If the Baldwin Lake Pipeline Alignment Option is selected, **MM BIO-5** would be necessary to minimize impacts to the bird-foot checkerbloom species, but it would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option.

Consequently, the Program could cause an unavoidable significant adverse or cumulatively considerable impact on biological resources. However, impacts to all other species and habitats were determined to be less than significant, through the implementation of **MMs BIO-1** through **BIO-28** and **HYD-1**. Regardless, because of the potential for the Program to adversely impact the bird-foot checkerbloom, the proposed Program is forecast to cause significant unavoidable adverse impacts to biological resources.

## 4.6 CULTURAL RESOURCES

### 4.6.1 Introduction

This Subchapter will evaluate the environmental impacts to the issue area of cultural resources from the implementation of the Replenish Big Bear Program (Program). The following topics address whether the Program would alter or destroy a historic site; cause a substantial adverse change in the significance of a historical resource as defined in California Code of Regulations, Section 15064.5; alter or destroy an archaeological site; cause a substantial adverse change in the significance of an archaeological resource pursuant to California Code of Regulations, Section 15064.5; or, disturb any human remains, including those interred outside of formal cemeteries; restrict existing religious or sacred uses within the potential impact area. The purpose of the cultural resources evaluation of this DPEIR is to provide a spatial analysis of previously identified cultural resources and to provide a broad assessment of the potential for as-yet undocumented historical, archaeological, or paleontological resources to be encountered within the Program Area. In this way, the sensitivity for such resources to be encountered in a specific Program Area can be incorporated into the planning process for future statutory/regulatory compliance considerations.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Additionally, access to private/fenced properties between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option was not possible, as such the area was not able to be surveyed for cultural resources (refer to **Figure 4.6-1a**). However, note that the whole of the Program Area has been researched for the potential for unearthing cultural resources utilizing the research methods presented in Cultural Resources Report prepared by CRM TECH provided as **Appendix 13**, Volume 2 to this DPEIR. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

Cultural resources<sup>1</sup> represent the physical evidence or a place associated with past human activity. Cultural resources can be a building, structure, site, landscape, object, or natural feature that can be characterized temporally as prehistoric or historical in origin:

- Prehistoric cultural resources are the result of cultural activities of the ancestors and predecessors of contemporary Native Americans, and often retain traditional and spiritual significance values in them. Examples of prehistoric cultural resources include the archaeological remains of Native American villages and campsites; food processing, lithic resource procurement, or tool-making localities; and human burials and cremations. They may also consist of trails, rock art and geoglyphs, and isolated artifacts.
- Historical cultural resources are any human-made environmental features that contain significance values for human activity during the historic period, from the beginning of European colonization to 50 years before present (B.P.). Examples include buildings, structures, and their remains; roads, irrigation works, and other infrastructure/engineering features; and refuse deposits. They may relate to mission activities, travel and exploration, settlement and homesteading, cattle and sheep herding, mining, agriculture, industrial and commercial development, and urban/suburban expansion, among other themes. In the Program Area, historical cultural resources may date to as early as the Spanish exploration period in the late 18th century.

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<sup>1</sup> Native American Heritage Commission, 2023. Understanding Cultural Resources.  
<https://nahc.ca.gov/resources/understanding-cultural-resources/> (accessed 10/16/23)



FIGURE 4.6-1a

Cultural Resource issues will be discussed below as set in the following framework:

- 4.6.1 Introduction
- 4.6.2 Environmental Setting: Cultural Resources
- 4.6.3 Sensitivity Assessment
- 4.6.4 Regulatory Setting
- 4.6.5 Thresholds of Significance
- 4.6.6 Potential Impacts
- 4.6.7 Unavoidable Adverse Impacts

One comment letter regarding cultural resource issues was raised as part of the NOP. No comments were received at the Scoping Meetings held for the proposed Project. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

#### **4.6.2 Environmental Setting**

Note that all references provided herein can be found in the Cultural Resources Report prepared by CRM TECH provided as **Appendix 13**, Volume 2 to this DPEIR.

The APE that was explored in the Cultural Resources Report includes the following Program facilities: the BBARWA WWTP Upgrades, solar, Solar Evaporation Ponds (at BBARWA WWTP site), all pipeline alignments (except the area between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option), all pump stations, the monitoring wells at the BBARWA WWTP, and the Sand Canyon Conveyance Pipeline Discharge Outlet. The APE does not include the up to two monitoring wells that would be installed downstream of the Sand Canyon discharge point because these monitoring well sites have not yet been identified. Further, the APE does not include the portion of the Meadow Lane Pipeline Alignment Option between Meadow Lane and Mountain View Boulevard because the area requires encroachment onto private/fenced property that could not be arranged prior to the publication of this DPEIR.

Situated in the eastern portion of Big Bear Valley and deep in the San Bernardino Mountains, the APE is characterized by its alpine climate and forest-dominated environment, in sharp contrast to the Mediterranean climate and desert environment in most of southern California. Seasonal temperatures in Big Bear Valley range from an average low of 9°F in January to an average high of 89°F in July, much closer to the national average than to that of the nearby San Bernardino-Riverside region (NOAA n.d.). The average annual precipitation reaches more than 18 inches of rainfall and 35 inches of snowfall (ibid.). Most of the APE is situated in the vicinity of Baldwin Lake, the only large natural lake in the San Bernardino Mountains, the shoreline of which is subject to substantial changes due to ambient mountain runoff.

The largest portion of the APE falls within the 93.5-acre BBARWA WWTP site at 122 Palomino Drive, on a peninsula on the south shore of Baldwin Lake, along with the Agency's headquarters at 121 Palomino Drive and an adjacent two-acre field (**Figures 4.6-1b and 4.6-3**). Next largest is some 14 acres within the Sand Canyon Recharge Area and channel, a northwest-southeast trending drainage in the Moonridge area, and the one-acre Shay Pond recharge (**Figures 4.6-1b through 4.6-4**). Another component of the APE is approximately 34,810 LF of pipeline alignment within various roads in residential areas to the west of Baldwin Lake and in the southern portion of the Moonridge area (**Figures 4.6-1b through 4.6-4**). At these locations, the project plans will expand and improve discharge areas and groundwater recharge capabilities, install monitoring wells and pump stations, and implement other upgrades.



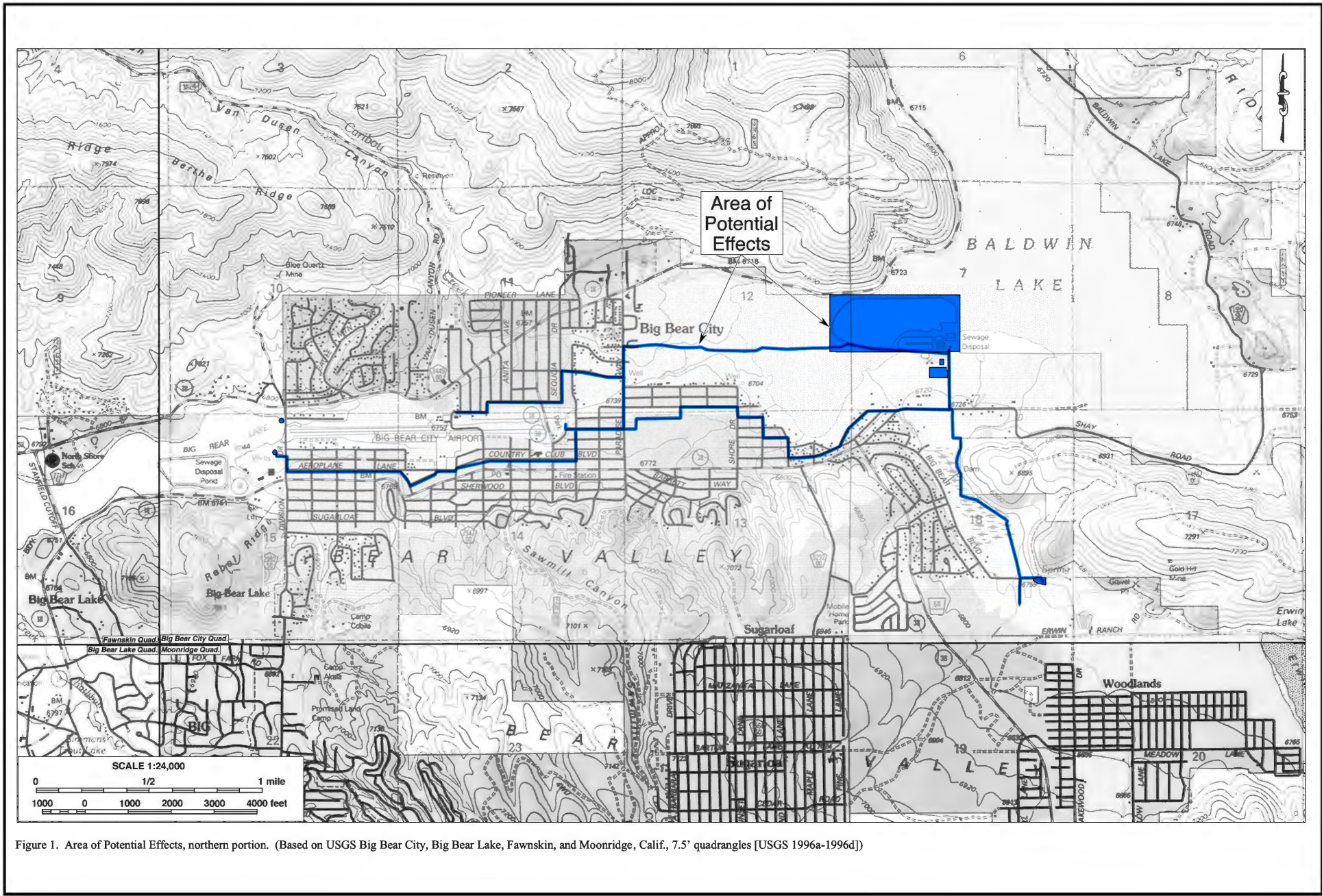


Figure 1. Area of Potential Effects, northern portion. (Based on USGS Big Bear City, Big Bear Lake, Fawnskin, and Moonridge, Calif., 7.5' quadrangles [USGS 1996a-1996d])

FIGURE 4.6-1b



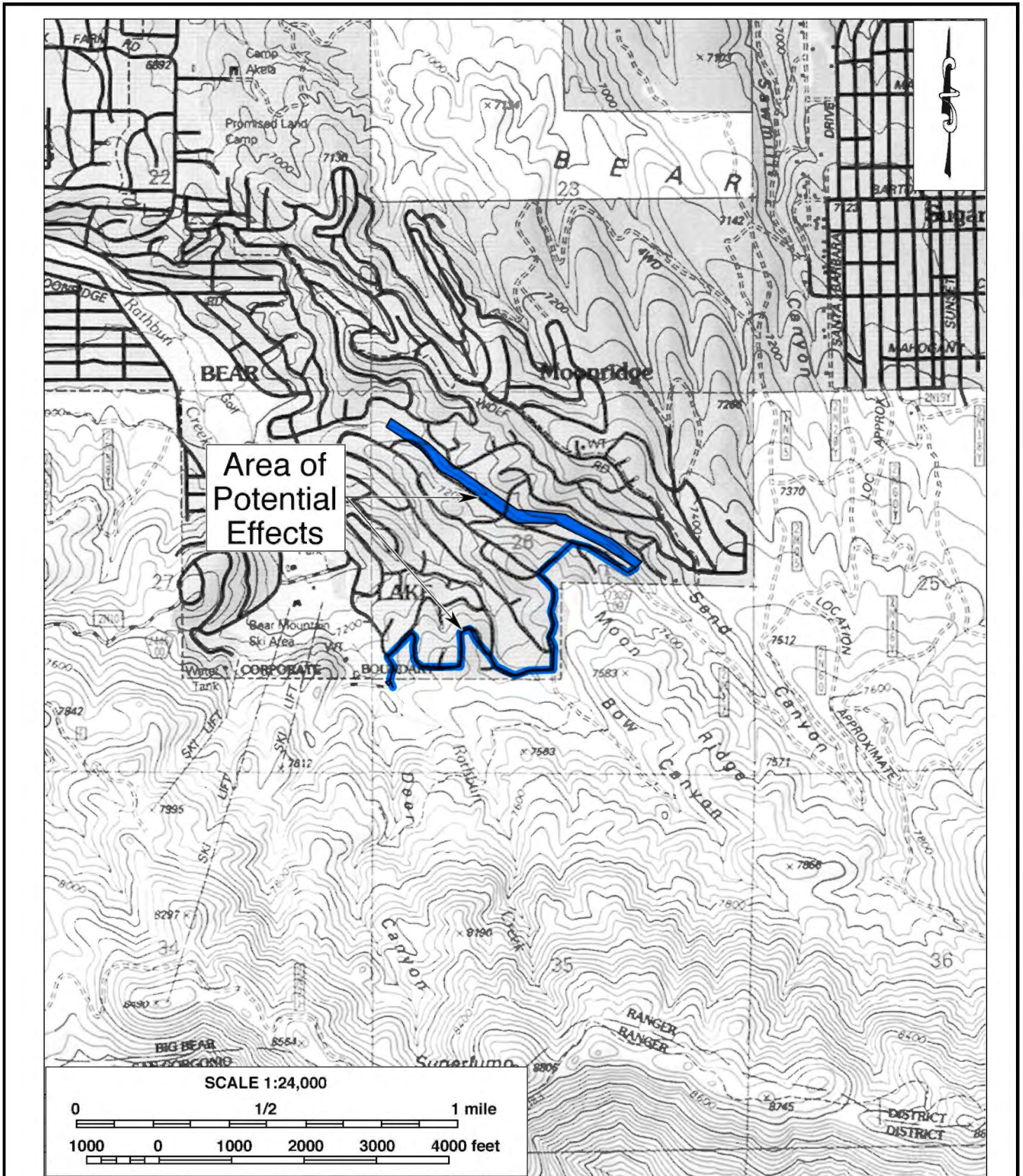


Figure 2. Area of Potential Effects, southern portion. (Based on USGS Moonridge, Calif., 7.5' quadrangle [USGS 1996d])

FIGURE 4.6-2



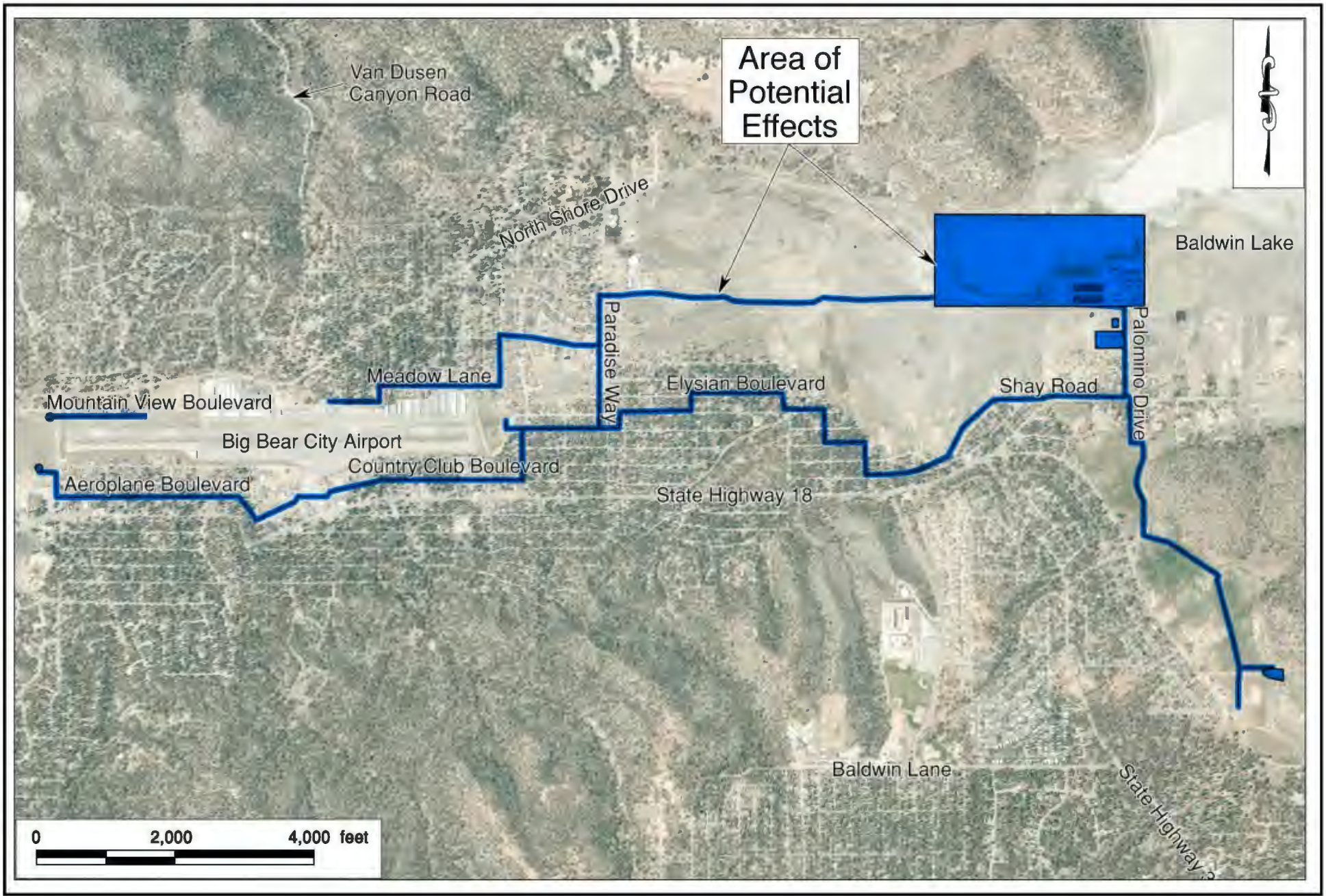


FIGURE 4.6-3



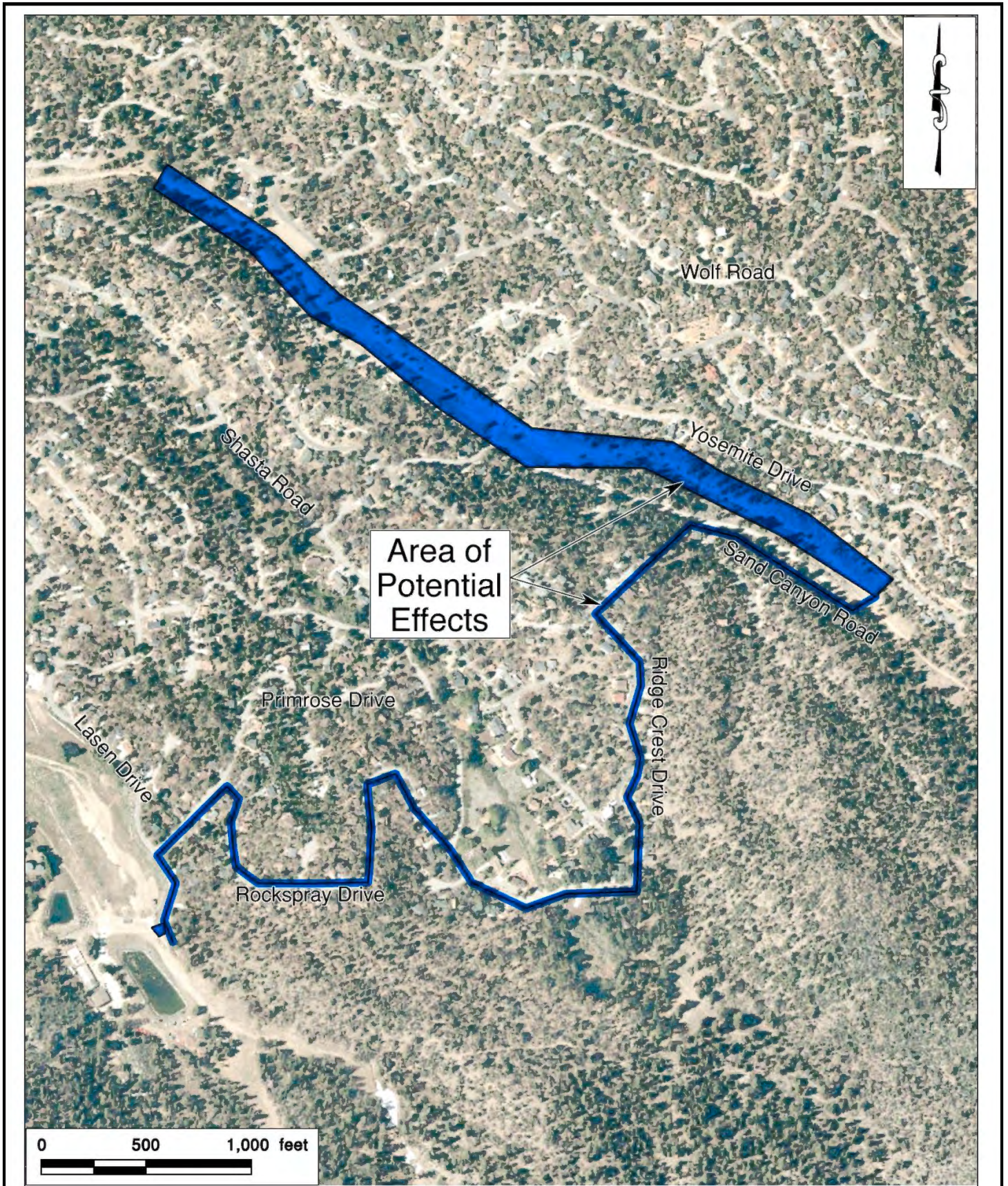


Figure 4. Aerial view of the APE, southern portion. (Based on Google Earth imagery)

FIGURE 4.6-4



The ground surface throughout the APE has been extensively disturbed by construction and maintenance of the existing WWTP facilities and public roads, by mechanical clearing of the open field, and by water movement and discharge activities at Sand Canyon Channel and Shay Pond (**Exhibit 4.6-1**, below). Surface soils are composed of sandy alluvium mixed with quartzite and granitic cobbles. Elevations in the APE range from approximately 6,000 to 9,900 feet amsl, with the lower elevations near the Baldwin Lake shoreline. Vegetation in the vicinity includes conifer and evergreen trees, low-lying brush and grasses, and landscaping plants near the roadways.



**Exhibit 4.6-1. TYPICAL LANDSCAPES IN THE APE.**

Notes: Clockwise from top left: northernmost setting pond in the BBARWA treatment plant, view to the northeast; elevated berm at the plant, view to the north; pipeline alignment from Mt. View Boulevard toward the treatment plant, view to the east; open field adjacent to the BBARWA headquarters, view to the north; pipeline alignment at the intersection of Paradise Way and Greenfall Lane, view to the south; Sand Canyon Channel, view to the northwest. (Photographs taken between April 21 and July 19, 2023)

#### **4.6.2.1 Archaeological Context**

The earliest evidence of human occupation in inland southern California was discovered below the surface of an alluvial fan in the northern portion of Big Bear Mountains, overlooking the San Jacinto Valley, with radiocarbon dates clustering around 9,500 (B.P.; Horne and McDougall 2008). Another site found near the shoreline of Lake Elsinore, close to the confluence of Temescal Wash and the San Jacinto River, yielded radiocarbon dates between 8,000 and 9,000 B.P. (Grenda 1997). Additional sites with isolated Archaic dart points, bifaces, and other associated lithic artifacts from the same age range have been found in the Cajon Pass area of the San Bernardino Mountains, typically on top of knolls with good viewsheds (Basgall and True 1985; Goodman and McDonald 2001; Goodman 2002; Milburn et al. 2008).

The cultural history of southern California has been summarized into numerous chronologies, including those developed by Chartkoff and Chartkoff (1984), Warren (1984), and others. Specifically, the prehistory of the inland region has been addressed by O'Connell et al. (1974), McDonald et al. (1987), Keller and McCarthy (1989), Grenda (1993), Goldberg (2001), and Horne and McDougall (2008). Although the beginning and ending dates of the recognized cultural horizons vary among different parts of the region, the general framework for the prehistory can be broken into three primary periods:

- Paleoinian Period (ca. 18,000-9,000 B.P.): Native peoples of this period created fluted spearhead bases designed to be hafted to wooden shafts. The distinctive method of thinning bifaces and spearhead preforms by removing long, linear flakes leave diagnostic Paleoinian markers at tool-making sites. Other artifacts associated with the Paleoinian toolkit include choppers, cutting tools, retouched flakes, and perforators. Sites from this period are very sparse across the landscape and most are deeply buried.
- Archaic Period (ca. 9,000-1,500 B.P.): Archaic sites are characterized by abundant lithic scatters of considerable size with many biface thinning flakes, bifacial preforms broken during manufacture, and well-made groundstone bowls and basin metates. As a consequence of making dart points, many biface thinning waste flakes were generated at individual production stations, which is a diagnostic feature of Archaic sites.
- Late Prehistoric Period (ca. 1,500 B.P.-contact): Sites from this period typically contain small lithic scatters from the manufacture of small arrow points, expedient groundstone tools such as tabular metates and unshaped manos, wooden mortars with stone pestles, acorn or mesquite bean granaries, ceramic vessels, shell beads suggestive of extensive trading networks, and steatite implements such as pipes and arrow shaft straighteners.

#### **4.6.2.2 Ethnohistorical Context**

Big Bear Valley lies in the heart of the homeland of the Serrano, which together with Vanyume people, linguistically a subgroup, also includes part of the San Gabriel Mountains, much of the San Bernardino Valley, and the Mojave River Valley in the southern portion of the Mojave Desert, reaching as far east as the Cady, Bullion, Sheep Hole, and Coxcomb Mountains. The name "Serrano" was derived from a Spanish term meaning "mountaineer" or "highlander." The basic written sources on Serrano culture are Kroeber (1925), Strong (1929), and Bean and Smith (1978). The following ethnographic discussion of the Serrano people is based mainly on these sources.

At least two Serrano clans lived in or near Big Bear Valley during prehistoric and protohistoric times, according to Strong (1929:11), settling mostly on elevated terraces, hills, and finger ridges near where flowing water emerged from the mountains. The Yuhavetum (or Yuhaaviatam) clan's

territory stretched from Big Bear Valley to the present-day Highland area in the San Bernardino Valley. The Pervetum clan's territory extended from the vicinity of Big Bear Valley to the headwaters of the Santa Ana River, across Sugarloaf Mountain. The two clans often intermarried. The clans were, in turn, affiliated with one of two exogamous moieties, the Wildcat (Tukutam) or the Coyote (Wahiiam). The core of the unit was the patrilineage, although women retained their own lineage names after marriage.

In Serrano oral tradition, Big Bear Valley area is known as Yuhaaviat, or "Pine Place," and is remembered as the point of origin for the nearby YSMN (Ramos 2009). It is well-documented in ethnographic literature that Big Bear Valley figures prominently in the Serrano creation story. As Kroeber (1925:619) notes:

Kukitat [younger brother of Pakrokitat, creator of Man], feeling death approach, gave instructions for his cremation; but the suspected coyote, although sent away on a pretended errand, returned in time to squeeze through badger's legs in the circle of the mourners and make away with Kukitat's heart. This happened at Hatauva (compare Luiseño Tova, where Wiyot died) in Bear Valley.

In a newspaper article, James Ramos, former Chairman of YSMN, generally corroborates Kroeber's account and provides the accurate spelling of the deities' names in the Serrano language, Kruktat and Pakruktat (Ramos 2009). In addition, he identifies the location of Hatauva as being in the general vicinity of a white quartz dome known to tribal members as Aapahunane't, or Eye of God, to the east of Baldwin Lake (ibid.).

Prior to European contact, Serrano subsistence was defined by the surrounding landscape and primarily based on the gathering of wild and cultivated foods and hunting, exploiting nearly all of the resources available. Common tools included manos and metates, mortars and pestles, hammerstones, fire drills, awls, arrow straighteners, and stone knives and scrapers. These lithic tools were made from locally sourced material as well as materials procured through trade or travel. They also used wood, horn, and bone spoons and stirrers; baskets for winnowing, leaching, transporting, parching, storing, and cooking; and pottery vessels for carrying water, storage, cooking, and serving food and drink.

Although contact with Europeans may have occurred as early as 1771 or 1772, Spanish influence on Serrano lifeways was minimal until the 1810s, when a mission asistencia was established on the southern edge of Serrano territory. Between then and the end of the mission era in 1834, most of the Serrano in the western portion of their traditional territory were removed to the nearby missions. In the eastern portion, a series of punitive expeditions in 1866-1870 resulted in the death or displacement of almost all remaining Serrano population in the San Bernardino Mountains. Today, most Serrano descendants are affiliated with the Yuhaaviatam of San Manuel Nation, the Morongo Band of Mission Indians, or the Serrano Nation of Indians.

#### **4.6.2.3 Historical Context**

In 1772, a small force of Spanish soldiers under the command of Pedro Fages, military comandante of Alta California, became the first Europeans to set foot in the San Bernardino Mountains, followed shortly afterwards by the famed explorer Francisco Garcés in 1776 (Beck and Haase 1974:15). During the next 70 years, however, the Spanish and Mexican colonization activities in Alta California, concentrated predominantly in the coastal regions, left little physical impact on the San Bernardinos. Aside from occasional explorations and punitive expeditions against livestock raiders, the mountainous hinterland of California remained largely beyond the



attention of the missionaries, the rancheros, and the provincial authorities. The name “San Bernardino” was bestowed on the region in the 1810s, when the mission asistencia and an associated rancho were established under that name in present-day Loma Linda (Lerch and Haenszel 1981).

For Big Bear Valley area, the historic period began in 1845, when Benjamin “Benito” Wilson, influential ranchero in the San Bernardino Valley, and a group of young Californios “discovered” Big Bear Valley while avenging an Indian raid (Drake 1949:12). Observing a large number of grizzly bears in the vicinity of today’s Baldwin Lake, Wilson bestowed “Bear Lake” as its original name. Some 30 years later, the lake’s had become Baldwin Lake, named for Elias J. “Lucky” Baldwin, who owned most of the land around the lakebed between 1874 and 1909, and briefly operated the nearby Gold Mountain Mine in 1874-1875.

After the U.S. annexation of Alta California in 1848, the dense forest covering the mountainside became the scene—and victim—of a booming lumber industry, which brought the first wagon roads and industrial establishments into the San Bernardino Mountains (Robinson 1989:23). In Big Bear Valley, lumbering was largely limited to a number of small sawmills in support of local construction (*ibid.*:44-45), meanwhile mining quickly rose when gold was discovered near Baldwin Lake in 1855 (Robinson 1989:47). Then in 1860, William F. Holcomb hit “pay dirt” on a hillside above Big Bear Valley, and later again in Big Bear Valley now bearing his name, triggering a gold rush that brought 1,000 prospectors to the San Bernardino Mountains by that fall (Holcomb 1900:273-276; Robinson 1989:48-50). By the late 19th century, mining was big business, with Elias J. “Lucky” Baldwin’s Gold Mountain Mining Company usurping individual prospectors as the dominant force in the industry (Drake 1949:19; Robinson 1989:57-71). Still, the much-anticipated “mother lode” was never found, and by the late 1940s mining was no longer the leading industry in Big Bear Valley (Core 1980:11-12; Robinson 1989:57, 61-62, 70-71).

Around the same time as the Bear-Holcomb Valley gold rush, the San Bernardino Mountains’ reputation as a premium summer grazing ground for sheep and cattle also grew, with Big Bear Valley at the epicenter (Robinson 1989:85). Some of the most prominent figures in early local history, including Augustus “Gus” Knight, Sr., James W. Smart, John R. Metcalf, and the Talmadge brothers, were also among those at the forefront of the cattle industry (*ibid.*:85-86). Beef sales from Big Bear Valley peaked in 1921 before going into decline afterwards, as increasing resort and residential development drove up real estate value and shrank the availability of pastureland (Drake 1949:25; Robinson 1989:88, 93-94).

Along with its colorful history in lumber, gold, and cattle, Big Bear Valley owes much of its growth over the past century to the creation of Big Bear Lake, a reservoir built for the purpose of irrigating the vast citrus groves in the eastern San Bernardino Valley. Frank E. Brown and Edward G. Judson, founders of the Redlands colony, organized the Bear Valley Land and Water Company in 1883 and completed the construction of the Big Bear dam in 1884 (Robinson 1989:170). The reservoir was filled during the following winter (Hall 1888:188; Hinckley 1974:41). The project’s much-celebrated success was cut short over the next five years as the company’s successors attempted to expand the irrigation scheme into Riverside County and became overextended (Robinson 1989:173).

A financial panic in 1893 was later compounded in the late 1890s by drought so severe that Big Bear Lake completely dried up in the summers of 1898, 1899, and 1900 (Hinckley 1983:1). As a remedy, in 1903, citrus growers in the Redlands-Highland area incorporated as Mutual and took over the Bear Valley system (*ibid.*:1-2; Robinson 1989:173). Between 1910 and 1912, the new water company constructed the second Big Bear dam that is still in use today (Hinckley 1974:43;

1983:11). The new dam, although only 20 feet higher than the first, substantially increased the size of the reservoir and nearly tripled its capacity (Robinson 1989:174).

By the 1890s, excessive logging and sheep grazing in the San Bernardino Mountains had given rise to a forest conservation movement among residents of the San Bernardino Valley to protect the watershed. In 1893, the movement succeeded in persuading the U.S. government to create the San Bernardino Forest Reserve, later renamed the SBNF, and over the next few decades effectively brought an end to logging and sheep grazing in the San Bernardino Mountains (Robinson 1989:96-99; Robinson and Risher 1990:9).

Meanwhile, Big Bear Lake proved a powerful lure for vacationers and sportsmen, who would commandeer the log cabins left by construction crews (Atchley 1980:21-22). In 1887, the State authorities stocked the lake with thousands of Lake Tahoe trout, signaling the beginning of its development as a recreational property (ibid.:22). Three decades later, in 1916, Mutual officially dedicated the lake surface to the free use by the public for hunting, fishing, and boating (Hinckley 1983:43, 79), thereby guaranteeing Big Bear Valley's future as one of the most popular mountain resorts in southern California.

The first commercial resort established on the lakeshore was Gus Knight, Jr., and John Metcalf's Bear Valley Hotel, which opened for business in 1888 (Atchley 1980:22-23). After the Redlands-based Pine Knot Resort Company purchased the hotel in 1906 and renamed it the Pine Knot Lodge, a small community bearing the same name began to form around the lodge (Robinson 1989:181- 182). Knight would later develop the Wild Rose Park and Knight's Camp near Baldwin Lake (ibid.), and in the meantime became a tireless promoter for the construction of new and better roads between the San Bernardino Valley and his resorts. His efforts helped bring about the roads through City Creek Canyon (1892), Mill Creek Canyon (1888), and Santa Ana Canyon (1899), and culminated with the completion of Rim of the World Drive in 1915 (Atchley 1980:23-26; Robinson 1989:179-183).

The completion of Rim of the World Drive brought about an exponential rise in the number of resorts in Big Bear Valley from two in 1913 to 52 in 1921 (Drake 1949:26; Robinson 1989:183-185). Winter snow in the mountains held its own attraction and brought a new set of residents and visitors as Big Bear Valley area became a year-round getaway. A popular but rudimentary ski jump built in 1932 to the south of Pine Knot spurred the formation of the Big Bear Lake Park District two years later, which in turn brought about the first ski lift in Big Bear Valley in 1949 (Robinson 1989:193-194). Since then, winter sports have become one of Big Bear Valley's leading attractions.

Adding to the allure, in the early 20th century Hollywood moviemakers found Big Bear Valley to be a suitable scenic backdrop for films such as *Paint Your Wagon*, *The Parent Trap*, *Bonanza*, *Kissin' Cousins*, and *Dr. Dolittle* (Atchley 1980:24-25). In 1916, Mutual started a land boom in Big Bear Valley when it created a subsidiary, the Bear Valley Development Company, to subdivide, sell, and lease the company's land holdings around the reservoir (Hinckley 1983:42). Other landowners in Big Bear Valley, such as the Knights and the Talmadges, soon joined in to take advantage of the increasing popularity of Big Bear Lake (Robinson 1989:187). The boom continued into the 1920s, with summer homes springing up at the rate of 50 to 100 per year (Robinson 1989:189). In 1938, Pine Knot and its surrounding area became known as the community of Big Bear Lake, while a smaller cluster of homes and hostelries between Big Bear and Baldwin Lakes became Big Bear City (ibid.:193).

More recent developments in Big Bear Valley began in earnest after the end of World War II (WW II) (NETR Online 1938-1969), with progress along Big Bear Lake's shoreline eclipsing Baldwin Lake due to its seasonal nature. In 1980, Big Bear Lake became the first incorporated city in the San Bernardino Mountains, while less urbanized communities in the eastern portion of Big Bear Valley, including Moonridge and Big Bear City, have remained unincorporated to the present time.

### **Historical Background Research**

Despite Big Bear Valley's long history of Native American habitation and early Euro-American enterprises such as gold mining, lumbering, and cattle ranching, the only human-made features known to be present in or near the APE in the 1850s were two Indian trails (**Figures 4.6-5 and 4.6-6**). The "dry bed of Bear Lake," or present-day Baldwin Lake, was noted about 1,500 feet to the east of the northern portion of the APE at that time (**Figure 4.6-5**). By the turn of the century, a sparse web of roads has emerged in the project vicinity, connecting a few named locations in the eastern Big Bear Valley, such as Gold Mountain, Saragossa Springs, Doble and, closest to the APE, Lakeview Mill (**Figure 4.6-7**).

By the mid-20th century, Big Bear City had taken shape, marked by a dense grid of roads lined by buildings, with the similar but smaller communities of Sugarloaf, Woodlands, and Moonridge also established nearby (NETR Online 1938; 1945; **Figures 4.6-8 and 4.6-9**). Development in this area continued through the rest of the 20th century, albeit at a slower pace than the City of Big Bear Lake (NETR Online 1945- 2020). Nevertheless, over the next three decades new buildings filled most of the neighborhoods, and by the end of the 20th century there were few vacant lots left (NETR Online 1945-2002; Google Earth 1985-2002). The pace of development has since steadied, with the surrounding area retaining a largely rural character to this day (NETR Online 2002- 2020; Google Earth 2002-2022).

Construction began on the WWTP and oxidation ponds in circa 1966 (San Bernardino County Sun 1965), with weather-related setbacks faced during construction once work was almost completed (San Bernardino County Sun 1967). In December 1966, sewer trenches were washed out in storms, and a pump station was installed but inoperable (*ibid.*). The WWTP facility is apparent in an aerial photo taken in 1969, with the two balance chambers, the berm surrounding the facility, and what may be an oxidation pond that is no longer present visible (NETR Online 1969). Clarifiers No. 1 and No. 2 and rotors were later constructed in April 1974 (Burton 2023), followed by the two southernmost aeration tanks and basins and several outbuildings (NETR Online 1983).

As a result of further growth in eastern Big Bear Valley, a Joint Powers Agreement was signed in 1972 between the BBCCSD and the Big Bear Lake Sanitation District—which is the precursor to the City of Big Bear Lake, incorporated in 1980—and San Bernardino County to develop a study regarding sewage treatment, disposal, and wastewater management (Burton 2023). This would lead to the formation of the Big Bear Valley Wastewater Planning Commission and ultimately, and in 1974, BBARWA. Expansions and upgrades continued at the WWTP through the formation of BBARWA, including at least six outfall line modifications and realignments between 1981 and 2011, and the construction of a 10- million-gallon storage pond at the WWTP in 2002 (*ibid.*).

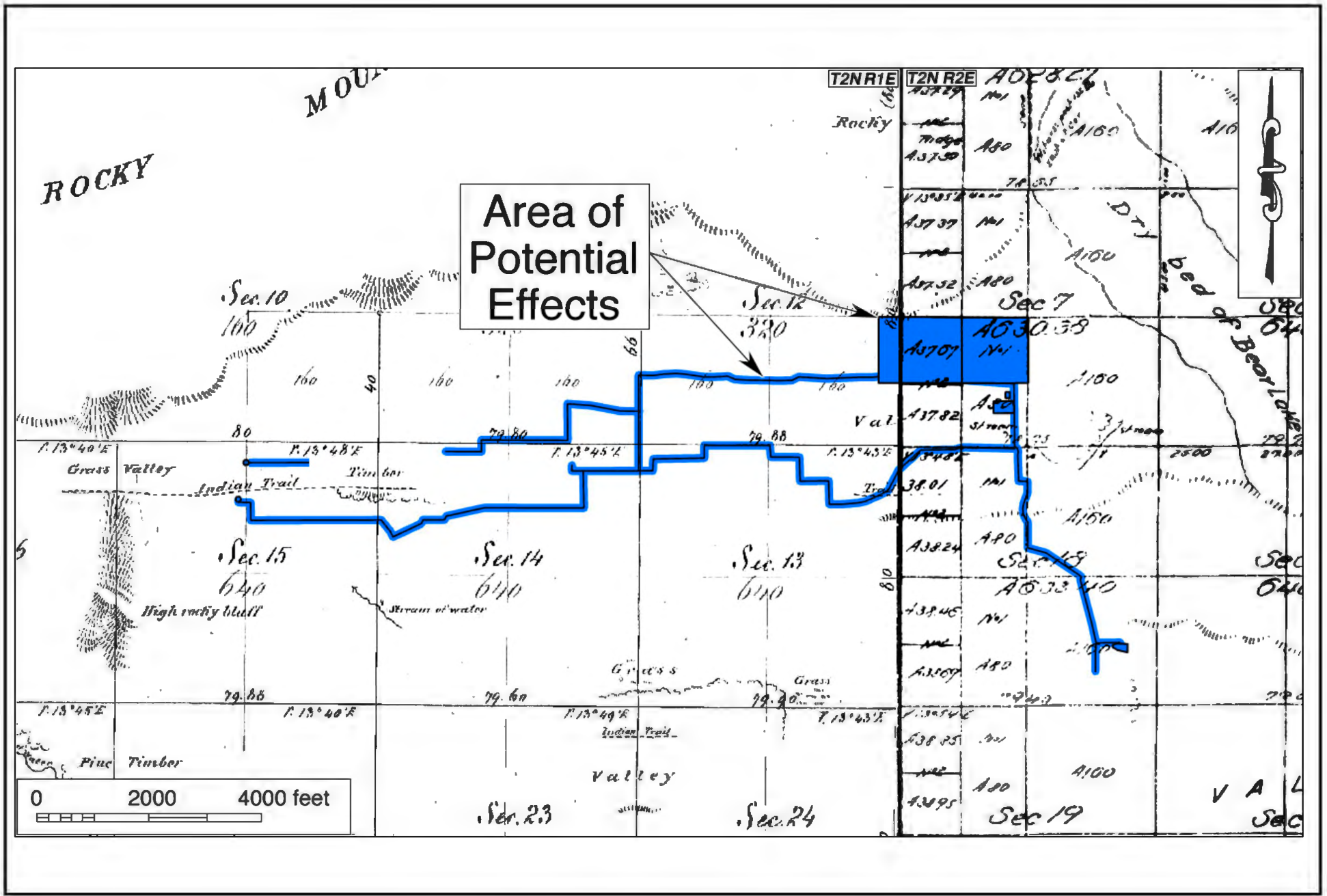


FIGURE 4.6-5

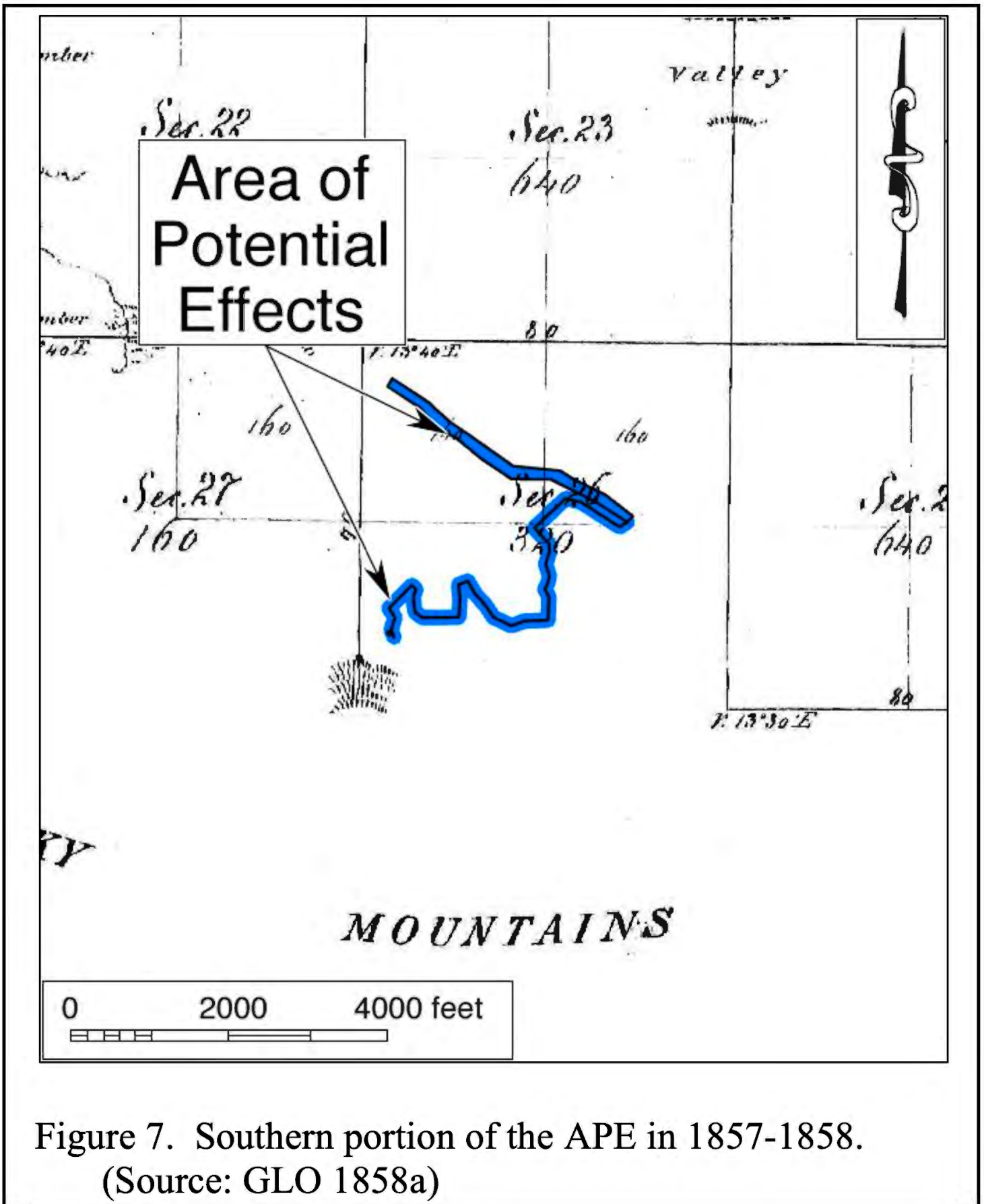


Figure 7. Southern portion of the APE in 1857-1858.  
 (Source: GLO 1858a)

FIGURE 4.6-6



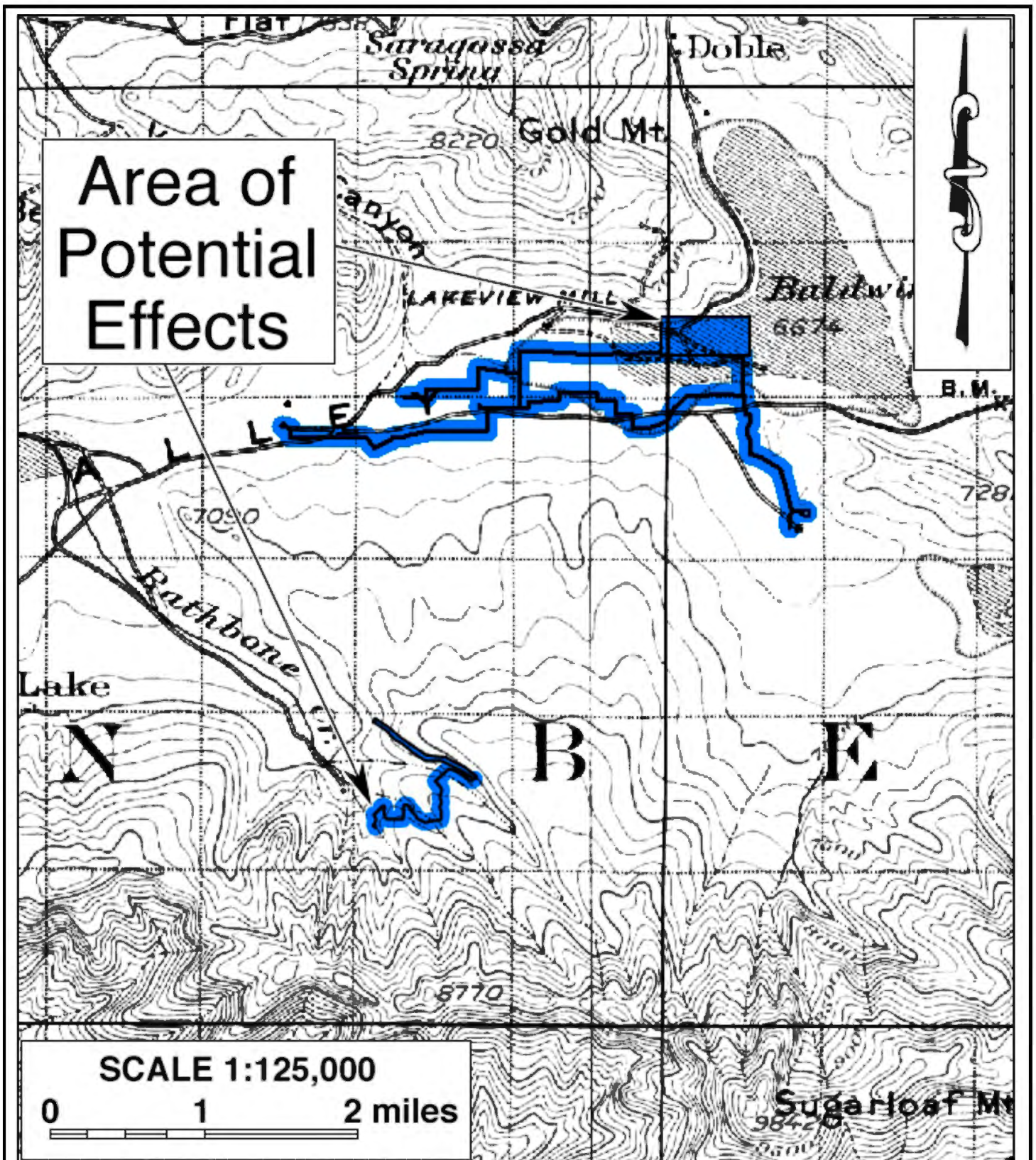


Figure 8. The APE in 1899. (Source: USGS 1902)

FIGURE 4.6-7



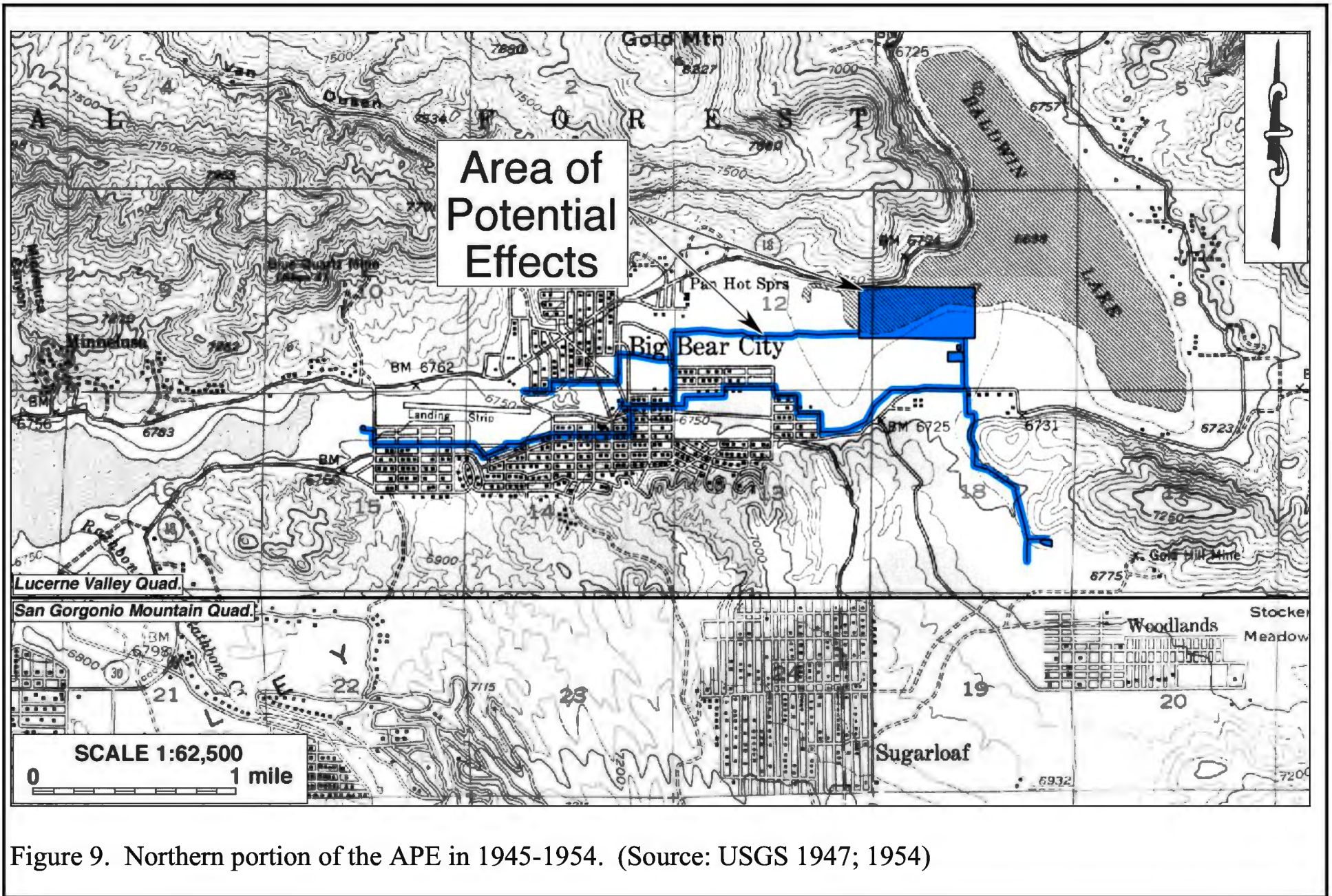


Figure 9. Northern portion of the APE in 1945-1954. (Source: USGS 1947; 1954)

FIGURE 4.6-8



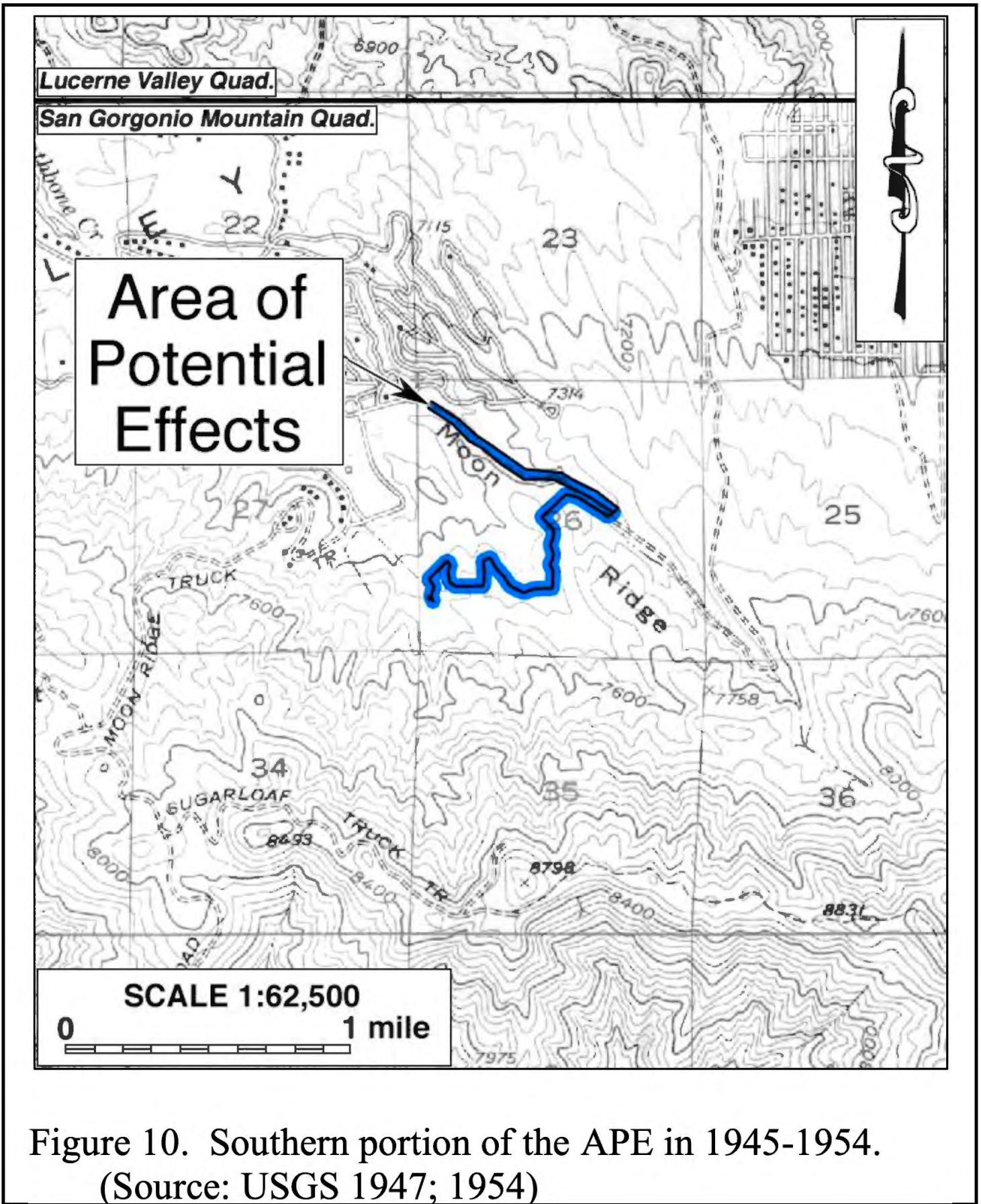


FIGURE 4.6-9

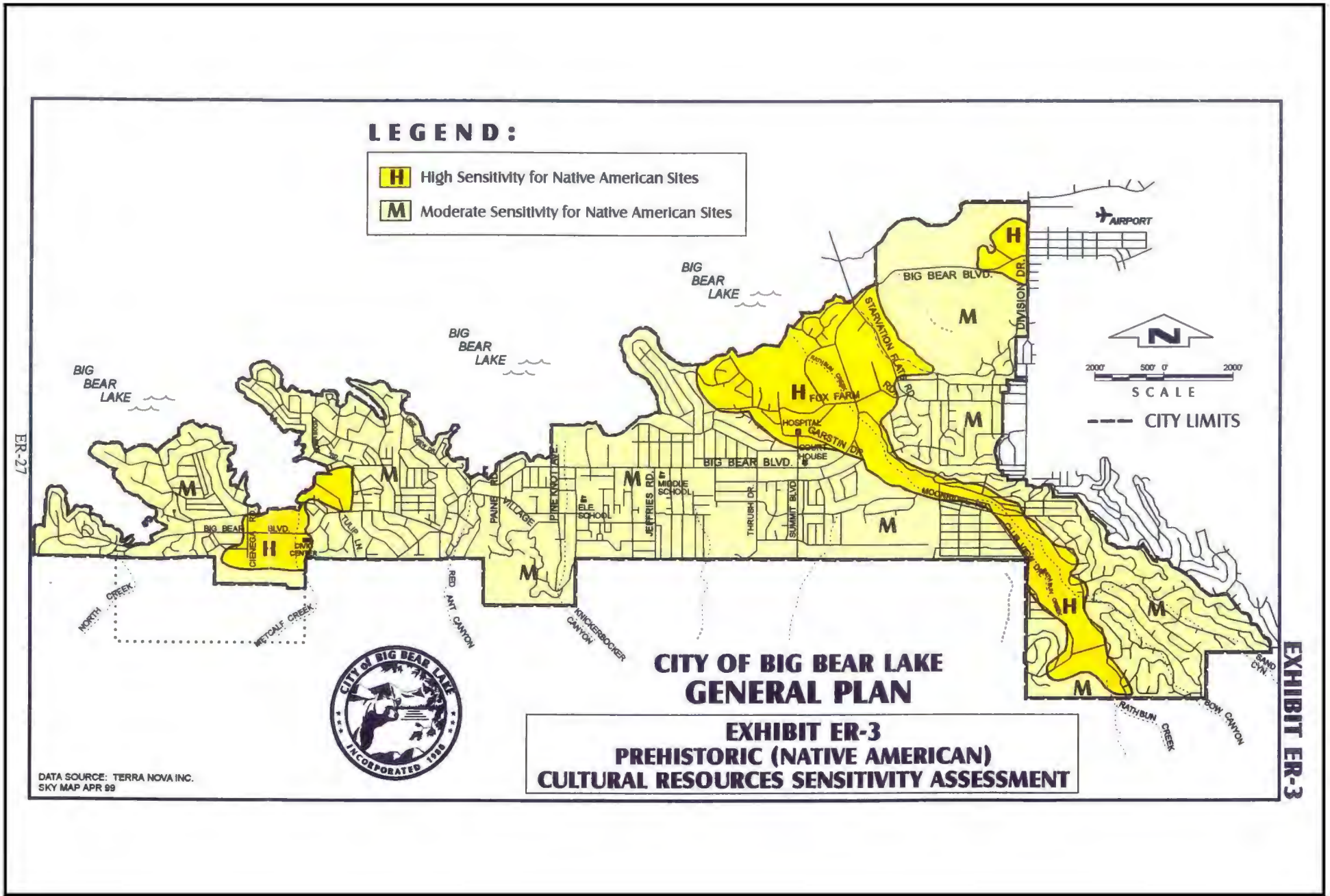


FIGURE 4.6-10

**4.6.3 Sensitivity Assessment**

**4.6.3.1 Historical/Archaeological Resources**

As a part of the cultural resource investigations for the DPEIR, existing records at the appropriate repositories were consulted to identify relative concentrations of known cultural resources within the planning area. Known cultural resources are those that have been previously identified through inclusion in one or more of the following inventories: National Register of Historic Places, California Register of Historical Resources, California Historical Landmarks, California Points of Historic Interest, California Historical Resources Inventory, and the various local registers.

For Big Bear Valley, this information is maintained at SCCIC and EIC of CHRIS. Located on the campuses of California State University, Fullerton, and University of California, Riverside, SCCIC and EIC are the official cultural resource records repositories for the Counties of Los Angeles and San Bernardino and for the County of Riverside, respectively.

According to SCCIC records, various portions of the APE were included in some two dozen past cultural resources studies completed between 1977 and 2011, but the APE as a whole had not been surveyed systematically prior to the study undertaken as part of the Cultural Resources Report. As a result of these past studies, SCCIC records identified 16 historical/archaeological resources as lying partially within the APE, including 1 prehistoric (i.e., Native American) site, 1 natural feature that acquired cultural significance, and segments of 14 roads dating to the historic period (see Appendix 3 of the Cultural Resources Report [**Appendix 13**, Volume 2] for locations). These 16 known cultural resources are listed in Table 4.6-1, and further information about them is presented in Appendix 4 of the Cultural Resources Report (**Appendix 13**, Volume 2). Representing the cumulative findings of the past studies, the spatial distribution of these known cultural resources provides some insight for assessing the potential for similar resources to be present in the vicinity and helps identify areas of heightened sensitivity.

**Table 4.6-1  
 PREVIOUSLY RECORDED CULTURAL RESOURCES IN THE APE**

<b>Primary Number</b>	<b>Other Designation</b>	<b>Description</b>
36-002060	CA-SBR-2060	Prehistoric lithic scatter
36-015027	CPHI No. SBr-014	Baldwin Lake
36-024007	CA-SBR-15192H	Division Drive
36-024051	CA-SBR-15236H	Bufflehead Drive
36-024052	CA-SBR-15237H	Teal Drive
36-024053	CA-SBR-15238H	Gold Mountain Drive
36-024054	CA-SBR-15239H	Mount Doble Drive
36-024059	CA-SBR-15244H	Arbor Lane
36-024547	CA-SBR-15588H	Shore Drive
36-024556	CA-SBR-15597H	Gildart Drive
36-024557	CA-SBR-15598H	Rose Hill Drive
36-024558	CA-SBR-15599H	Saw Mill Drive
36-024559	CA-SBR-15600H	Pinon Drive
36-024560	CA-SBR-15601H	Big Tree Drive
36-024562	CA-SBR-15603H	Pine View Drive
36-024563	CA-SBR-15604H	Holcomb View Drive



Prehistoric site 36-002060 was originally recorded in 1969 as containing “points, flakes (some obsidian), and sherds” that was scattered over a half-mile near the present-day intersection of Shay Road and Palomino Drive (Simpson 1969:1). These or similar artifacts were observed during field visits in 1989 and 1990, and the catalog expanded to include additional flakes, scrapers, primary flakes, a projectile point (McKenna 1989:1), as well as manos, possible metate fragments, and a bone needle (Love and DeWitt 1990:1). A monitoring program in 1996 further noted recovery of three quartzite flakes and 11 tested cores (Sander 1996:2). Most recently, the site area was revisited in 2004, after much of the land had been developed for residential use (NETR Online 2002; 2005; County of San Bernardino n.d.), but only three flakes were observed at that time (Zavala et al. 2004:1).

Baldwin Lake (36-015027) received official recognition in 1973 as California Point of Historical Interest No. SBr-014 as the only naturally occurring lake in the San Bernardino Mountains and because of its colorful early history in connection to the 1845 Wilson expedition (State of California 1973; see “Historical Context,” above). In addition, as mentioned above (see “Ethnohistorical Context”), local Serrano creation legend identifies Baldwin Lake as the location where the deity Kruktat died and was cremated (Kroeber 1925:619; Ramos 2009). As such, Baldwin Lake, the original Bear Lake before the present-day Big Bear Lake reservoir was built, is clearly a property of both Native American traditional cultural value and later Anglo-American historical interest.

The 14 road segments in the APE were all recorded during a 2011 reconnaissance-level study of road ROW in the Big Bear City area between Big Bear Lake and Baldwin Lake. They were described predominantly as paved two-lane roads that generally date to the early post WWII years.

Within the one-mile scope of the records search, SCCIC records identify roughly 150 additional previous studies, in all covering roughly 80% of the total acreage, attesting to the vigorous development in the Big Bear City area in recent decades. These studies have resulted in the recording of some 250 additional cultural resources within the one-mile radius. Of these, 120 were prehistoric in origin, including 76 archaeological sites and 46 isolates, or localities with fewer than three artifacts. The rest of the previously recorded cultural resources dated to the historic period, including 110 sites and a handful of isolates. Among the sites were refuse scatters, mining prospects, camp remains, and linear features such as roads, ditches, and fences, and the isolates included cans and a metal badge. The locations of these resources are provided in Appendix 3 of **Appendix 13**.

The prehistoric sites were predominantly bedrock milling features, lithic scatters, and sites that contained both, in one case with a scatter of ceramic sherds as well, with at least one rock shelter and a trail also recorded. The types of sites are associated mostly with resources procurement, but several of the larger lithic scatters and/or bedrock milling feature clusters were interpreted as village sites or camp sites. The majority of the prehistoric isolates consisted of lithic flakes, either of jasper or quartzite materials. Other isolate types included milling slabs, mano and mano fragments, and point fragments.

#### **4.6.3.2 Gearchaeological Sensitivity Analysis**

According to Bortugno and Spittler (1986), the APE is situated upon lake deposits (QI) and well-dissected alluvial fan sediments (Qod), both of them Pleistocene in age, as well as Holocene-age undifferentiated alluvium (Q). Miller (2004) has mapped the surface sediments at the BBARWA WWTP and along the northerly pipeline alignments as mostly Qyf and some QI, with Qs sediments present along the southerly alignments in the northern portion of the APE. Qyf is defined as young



alluvial fan deposits of Holocene and late Pleistocene age, Q1 is very young lacustrine deposits (lake deposits) of Holocene age, and Qs is very young surficial deposits dating to the late Holocene, including wash, fan, colluvium, and alluvial-valley deposits (ibid.).

In light of their relatively young age and alluvial origin, the subsurface sediments in the APE have the potential to contain buried deposits of prehistoric cultural remains. However, geospatial analyses of known prehistoric sites in the vicinity show the majority of these sites, especially the potential habitation sites, to be located primarily to the north or southeast, away from the shores of Baldwin Lake. While the APE would likely have been used for resource procurement, travel, and occasional camping during these activities, the potential for inundation along the shores of Baldwin Lake as part of seasonal cycles would not have made the WWTP site or most of the pipeline alignments ideal areas for long-term habitation. This is corroborated by the ethnographic literature that identifies foothills as the preferred settlement environment for Native Americans of the inland region (Bean and Smith 1978).

Most of the APE, nearly 94 of 110 acres, lies within the lakebed of Baldwin Lake, while much of the rest is along natural drainages. Neither of these settings would have been considered suitable for permanent villages in ancient times. As most of it coincides with existing water facilities and public roads, the ground surface in the APE has typically been extensively disturbed by construction and maintenance activities as well as natural fluvial erosion. In short, land in these settings is not conducive to either the deposition or the preservation of potentially significant prehistoric cultural remains.

According to as-built plans for a recent street improvement project on nearby Big Bear Boulevard, underground electric and gas lines within the ROW required excavations to the depth of four ft and eight inches for the placement of a six-inch-diameter conduit (Caltrans 2013: U28-U29). While no such data has been obtained for the current APE, a similar depth of prior disturbance is typical within the ROW for paved roads. Other than the relatively shallow disturbances along the proposed pipeline alignments and for equipment upgrades at existing facility sites, the most notable, deep-reaching disturbance will be associated with the monitoring wells, which are small-diameter borings reaching well beyond any expected subsurface archaeological deposits. Based on these considerations, the likelihood of encountering intact, potentially significant prehistoric cultural remains within the vertical APE appears to be relatively low.

#### **4.6.4 Regulatory Setting**

The cultural resources component of this DPEIR is prepared to address the installation and operation of the components of the Program, including construction of new facilities and associated structures, modification to existing facilities, pipeline installation, and other earth-moving operations. The locations of the facilities proposed under the Program are generally well defined, with the only facilities with locations that have not yet been identified are the Sand Canyon Monitoring Wells, the general locations for which are known, but the site-specific locations are not known at this time beyond that the locations of the monitoring wells will be downstream of the Sand Canyon Recharge Area.

Activities requiring excavation or movement of soil material at any location within the planning area have potential to adversely affect cultural resources. In most but not all cases, however, pipelines will be installed along existing roadways and public ROW where development has already occurred, thus the chances of uncovering previously unidentified cultural resources are diminished. During BBARWA WWTP upgrades, such as the booster pump station, monitoring well, and evaporation pond construction, the chances of encountering cultural resources are

greater than along existing roadways, but the actual potential of discovery at each location is substantially different and highly site-specific.

The impact assessment presented below focuses on physical changes to the landscape at a project site and any potential adverse impacts these changes may have on any historical or archeological resources that exist at the site. For purposes of forecasting Program impacts, it is assumed that all projects will be approved and implemented as proposed and described in the Program Description in this document.

#### **4.6.4.1 Federal**

##### **National Historic Preservation Act**

Cultural resources are protected through the National Historic Preservation Act (NHPA) of 1966, as amended (54 U.S.C. 300101 et seq.), and the implementing regulations, Protection of Historic Properties (36 CFR Part 800), the Archaeological and Historic Preservation Act of 1974, and the Archaeological Resources Protection Act of 1979. Prior to implementing an “undertaking” (e.g., issuing a Federal permit), the NHPA (54 U.S.C. 306108) requires Federal agencies to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation and the State Historic Preservation Officer (SHPO) a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register of Historic Places (National Register). Under the NHPA, properties of traditional religious and cultural importance to a Tribe are eligible for inclusion in the NRHP (54 U.S.C. 302706). Also, under the NHPA, a resource is considered significant if it meets the NRHP listing criteria at 36 CFR 60.4.

##### **National Register of Historic Places**

The National Register was established by the NHPA, as “an authoritative guide to be used by Federal, State, and local governments, private groups and citizens to identify the Nation’s historic resources and to indicate what properties should be considered for protection from destruction or impairment” (CFR 36 Section 60.2). The National Register recognizes both historical-period and prehistoric archaeological properties that are significant at the national, state, and local levels. In the context of the project, which does not involve any historical-period structures, the following National Register criteria are given as the basis for evaluating archaeological resources.

To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (U.S. Department of the Interior, 1995):

- Are associated with events that have made a significant contribution to the broad patterns of our history;
- Are associated with the lives of persons significant in our past;
- Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least fifty years old to be eligible for National Register listing (U.S. Department of the Interior, 1995).

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as “the ability of a property to convey its significance” (U.S. Department of the Interior, 1995). The

National Register recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association.

#### **4.6.4.2 State**

The State implements the NHPA through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains CHRIS. The SHPO is an appointed official who implements historic preservation programs within the State's jurisdictions.

#### **California Register of Historical Resources**

The California Register of Historical Resources (California Register) is "an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change." (California Public Resources Code § 5024.1[a]). The criteria for eligibility for the California Register are based upon National Register criteria (California Public Resources Code § 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

To be eligible for the California Register, a prehistoric or historical-period property must be significant at the local, State, and/or Federal level under one or more of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the California Register must meet one of the criteria of significance described above, and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. It is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the National Register, but it may still be eligible for listing in the California Register.

Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed on the National Register and those formally determined eligible for the National Register;
- California Registered Historical Landmarks from No. 770 onward; and
- Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the California Register.

Other resources that may be nominated to the California Register include:

- Historical resources with a significance rating of Category 3 through 5 (Those properties identified as eligible for listing in the National Register, California Register, and/or a local jurisdiction register);
- Individual historical resources;
- Historical resources contributing to historic districts; and
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

### **California Historic Landmarks**

California Historical Landmarks (CHLs) are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value and that have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resource also must be approved for designation by the County Board of Supervisors (or the city or town council in whose jurisdiction it is located); be recommended by the State Historical Resources Commission; and be officially designated by the Director of California State Parks. The specific standards now in use were first applied in the designation of CHL #770. CHLs #770 and above are automatically listed in the California Register.

To be eligible for designation as a landmark, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type in the State or within a large geographic region (Northern, Central, or Southern California);
- It is associated with an individual or group having a profound influence on the history of California; or
- It is a prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

### **California Points of Historical Interest**

California Points of Historical Interest (PHI) are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. PHI designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the California Register. No historic resource may be designated as both a landmark and a point. If a point is later granted status as a landmark, the point designation will be retired. In practice, the point designation program is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance.

To be eligible for designation as a PHI, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type within the local geographic region (city or county);
- It is associated with an individual or group having a profound influence on the history of the local area; or
- It is a prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder.

### **California Environmental Quality Act**

Under the California Environmental Quality Act (CEQA) (California Public Resources Code] Section 21084.1), a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. State CEQA Guidelines Section 15064.5(a) defines a historical resource as: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register; (2) a resource included in a local register of historical resources, as defined in California Public Resources Code Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of California Public Resources Code Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a Lead Agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the Lead Agency, provided the Lead Agency's determination is supported by substantial evidence in light of the whole record. The fact that a resource does not meet the three criteria outlined above does not preclude the Lead Agency from determining that the resource may be an historical resource as defined in California Public Resources Code Sections 5020.1(j) or 5024.1.

As described by California Public Resources Code Section 21084.1 and Section 15064.5 of the State CEQA Guidelines, should a project cause a substantial adverse change (defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired) in the significance of an historical resource, the lead agency must identify potentially feasible measures to mitigate these effects (State CEQA Guidelines Sections 15064.5(b)(1) and 15064.5(b)(4)).

Archaeological resources are defined in State CEQA Guidelines Section 21083.2, which states that a "unique" archaeological resource is an archaeological artifact, object, or site that has a high probability of meeting any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information,
- Has a special and particular quality such as being the oldest of its type or the best available example of its type, or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Unique archaeological resources as defined in State CEQA Guidelines Section 21083.2 may require reasonable efforts to preserve resources in place (State CEQA Guidelines Section 21083.1(a)). If preservation in place is not feasible, **MMs** shall be required. Additionally, the State CEQA Guidelines state that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (State CEQA Guidelines Section 15064.5(c)(4)).

### **California Health and Safety Code Section 7050.5, 7051, and 7054**

California Health and Safety Code Section 7050.5 requires, in the event human remains are discovered, that all ground disturbances must cease and the County Coroner must be contacted to determine the nature of the remains. In the event the remains are determined to be Native American in origin by the County Coroner, the County Coroner is required to contact NAHC within 24 hours to relinquish jurisdiction.



**California Public Resources Code Section 5097.98 and 15064.5(e)**

California Public Resources Code Section 5097.98, as amended by AB 2641, provides procedures in the event human remains of Native American origin are discovered during project implementation. California Public Resources Code Section 5097.98 requires that no further disturbances occur in the immediate vicinity of the discovery, that the discovery is adequately protected according to generally accepted cultural and archaeological standards, and that further activities take into account the possibility of multiple burials. California Public Resources Code Section 5097.98 further requires the NAHC, upon notification by a County Coroner, designate and notify a MLD regarding the discovery of Native American human remains. Once the MLD has been granted access to the site by the landowner and inspected the discovery, the MLD then has 48 hours to provide recommendations to the landowner for the treatment of the human remains and any associated grave goods.

In the event that no descendant is identified, or the descendant fails to make a recommendation for disposition, or if the land owner rejects the recommendation of the descendant, the landowner may, with appropriate dignity, reinter the remains and burial items on the property in a location that will not be subject to further disturbance.

**4.6.4.3 Local**

Big Bear Valley encompasses the jurisdiction of unincorporated areas of San Bernardino County, including the following unincorporated communities in the vicinity of the Program: Big Bear City, Moonridge, and Fawnskin, and the City of Big Bear Lake. The City of Big Bear Lake and San Bernardino County have their own General Plan and municipal code that identify goals and policies regarding cultural resources.

**San Bernardino Countywide Plan**

The Countywide Plan Cultural Resources Element sets forth the following goal and policies pertaining to cultural resources:

<b>Goal</b>	<b>CR-2</b>	Historic resources (buildings, structures, or archaeological resources) and paleontological resources that are protected and preserved for their cultural importance to local communities as well as their research and educational potential.
<b>Policy</b>	CR-2.1	National and state historic resources We encourage the preservation of archaeological sites and structures of state or national significance in accordance with the Secretary of Interior’s standards.
	CR-2.2	Local historic resources We encourage property owners to maintain the historic integrity of resources on their property by (listed in order of preference): preservation, adaptive reuse, or memorialization.
	CR-2.3	Paleontological and archaeological resources We strive to protect paleontological and archaeological resources from loss or destruction by requiring that new development include appropriate mitigation to preserve the quality and integrity of these resources. We require new development to avoid paleontological and archeological resources whenever possible. If avoidance is not possible, we require the salvage and preservation of paleontological and archeological resources.

- CR-2.4      Partnerships  
We encourage partnerships to champion and financially support the preservation and restoration of historic sites, structures, and districts.
- CR-2.5      Public awareness and education  
We increase public awareness and conduct education efforts about the unique historic, natural, tribal, and cultural resources in San Bernardino County through the County Museum and in collaboration with other entities.

### **Big Bear Lake General Plan**

The Big Bear Lake General Plan Environmental Resources Element sets forth the following goal and policies pertaining to cultural resources:

- |             |            |  |
|-------------|------------|--|
| <b>Goal</b> | <b>ER2</b> | Preservation, maintenance, and enhancement of the City's heritage and resources, including historic and prehistoric cultural artifacts and traditions.   |
|             | ER 2.1     | The City shall take reasonable steps to ensure that cultural resources are located, identified and evaluated, and assure that appropriate action is taken as to the disposition of these resources.  |
|             | ER 2.2     | The City shall encourage and support all reasonable efforts to ensure the protection of sensitive archaeological and historic resources from vandalism and illegal collection.   |
|             | ER 2.3     | The City shall encourage and support the listing of properties, structures or sites as potential historic landmarks and their inclusion as local or State Historic places, or National Register of Historic Places, as deemed appropriate. |

## **4.6.5      Thresholds of Significance**

### **4.6.5.1      Historic and Archaeological Resources**

CEQA establishes that a project that may cause a substantial adverse change in the significance of a "historical resource" or a "tribal cultural resource" is a project that may have a significant effect on the environment (California Public Resources Code §21084.1-2). Similarly, Appendix G to the State CEQA Guidelines (Title 14 CCR App. G, Sec. V(c)) requires that public agencies in the State of California determine whether a proposed project would "directly or indirectly destroy a unique paleontological resource" during the environmental review process.

According to California Public Resources Code §5020.1(j), "historical resource" includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California." More specifically, State CEQA Guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register, included in a local register of historical resources, or determined to be historically significant by the lead agency (Title 14 California Code of Regulations §15064.5(a)(1)-(3)).

Regarding the proper criteria of historical significance, the State CEQA Guidelines mandate that "a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register" (Title 14 California Code of Regulations §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

- (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- (2) Is associated with the lives of persons important in our past;
- (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values;  
or
- (4) Has yielded, or may be likely to yield, information important in prehistory or history.  
(California Public Resources Code §5024.1(c))

#### **4.6.5.2 Significance Thresholds**

The thresholds analyzed in this section are derived from Appendix G of the State CEQA Guidelines, and are used to determine the level of potential effect. The significance determination is based on the recommended criteria set forth in Section 15064.5 of the State CEQA Guidelines. For analysis purposes, implementation of the Program would have a significant effect on cultural resources if it is determined that the project would:

- a) Cause a substantial adverse change in the significance of a historical resource as defined in 15064.4.
- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.4.
- c) Disturb any human remains, including those interred outside of formal cemeteries.

#### **4.6.6 Potential Impacts**

Cultural resources are highly specific to location. Based on the sensitivity assessment presented in the sections above, implementation of specific projects in the planning area is not likely to encounter historical or archaeological resources and cause a significant impact on them. The locations of each of the facilities proposed under this Program have been surveyed and researched to determine whether cultural resources would be likely to be encountered as a result of Program implementation. The locations of the facilities proposed under the Program are generally well defined. However, the only facilities with locations that have not yet been identified are the monitoring wells located downstream of Sand Canyon, the general locations for which are known, but the site-specific locations are not known at this time beyond that the locations of the monitoring wells will be downstream of the Sand Canyon Recharge Area.

#### **Field Survey**

During the field survey, the BBARWA WWTP was observed as containing both historical and modern components, with the former sufficiently consistent in appearance to their late-1960s origin to warrant recordation and further study as a potential cultural resource. The entire WWTP was subsequently recorded into CHRIS under the temporary designation of Site 3969-1H, pending assignment of a permanent identification number by the SCCIC. Site 3969-1H is discussed further below, and additional information is provided in the site record forms in Appendix 4 of the Cultural Resources Report provided as **Appendix 13, Volume 2** to this DPEIR.

Site 3969-1H (the BBARWA WWTP site, which encompasses the BBARWA WWTP Upgrades and Solar Evaporation Ponds sites) occupies a peninsula jutting from the south shoreline of Baldwin Lake in the northeastern portion of the APE. As is typical for public utility facilities, the structures and other features at the WWTP are standard in design and utilitarian in character. Components original to its initial construction and still in use include two concrete balance chambers, settling ponds, an oval shaped elevated berm/perimeter, two clarifiers (No. 1 and 2),

rotors, and a clarifier splitter (Burton 2023). More recent components have been added to the facility beginning around 1974 and continuing through the 1990s and to at least 2011 (NETR Online 1969-2012; Google Earth 1995- 2009; Burton 2023). Due to the alterations and additions since 1969, the overall appearance of the facility is predominantly modern.

No evidence of Site 36-002060 was found. Site 36-002060 is located south of the BBARWA WWTP Site, in an area that would overlap with the East Neighborhoods Pipeline Alignment Option,. The previously recorded prehistoric lithic scatter, was noted in 2004 as having been impacted by road and residential development near the intersection of Shay Road and Palomino Drive, the site at that time consisted of three lithic flakes located in an open area outside the current APE (Zavala 2004). The East Neighborhoods Pipeline Alignment Option lies entirely within the public ROW along Palomino Drive, where the surface and near- surface sediments have been extensively disturbed by road construction and underground utility installation. Consequently, it is highly unlikely for any archaeological features or artifact deposits associated with the site to survive intact below the ground surface. Therefore, the portion of Site 36-002060 located within the East Neighborhoods Pipeline Alignment Option boundaries evidently no longer exists.

As noted above, many of the roadways within or across the APE trace their origins to the late historic period, and 14 of them were previously recorded into CHRIS. As infrastructure features of historical origin that remain in service, however, the current configuration and appearance of these roadways reflect the results of upgrading and maintenance during the modern period, and none of them demonstrate any distinctive historical character today. The other cultural resource in the APE, Baldwin Lake (36-015027), was observed as having a relatively robust reach at the time of the field survey, inundating the western end and part of the northeastern portions of the BBARWA WWTP.

- a) **Would the project cause a substantial adverse change in the significance of a historical resource as defined in 15064.4.?**
- b) **Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.4.?**

### **Cultural Resource Study Conclusions**

In summary, 17 historical/archaeological sites, including 1 prehistoric site, 15 historic-period sites, and 1 natural feature that acquired cultural significance in both prehistory and history, were identified as lying within or partially within in the APE. These are listed in **Table 4.6-1**, with the addition of temporary record number 3969-1H, which covers the BBARWA WWTP.

The prehistoric site, 36-002060, was first recorded in 1969 near the intersection of Shay Road and Palomino Drive, in an area that has since been developed into residential properties (NETR Online 1970-2020). As part of the Cultural Resources Report, no artifacts or features of prehistoric origin were observed in the portion of the site lying within the APE boundaries, which is confined in the public ROW of Palomino Drive. As stated above, in light of the extent of prior ground disturbance at this location, the Cultural Resources Report concludes that Site 36-002060 no longer exists within the APE.

Among 15 historic-period sites, 14 are segments of various public roadways that coincide with or cross the proposed pipeline alignments. As working components of the modern transportation infrastructure, these roadways have undergone extensive upgrading and maintenance work since the end of the historic period, and none of them demonstrate any distinctive historical character. All these roadways were built in the late historic period in accordance with standard designs and

construction practices. As such, none of them demonstrate any notable qualities in architecture, technology, or aesthetics, nor do they demonstrate the potential for any important historical/archaeological data. Furthermore, there is no evidence that any of them is closely associated with any historic figures or events of recognized significance. Therefore, none of these 14 previously recorded roadways appear to meet any of the criteria for listing in the National Register or the California Register, and none of them qualify as “historic properties” or “historical resources” under Section 106 and CEQA provisions.

Similarly, the BBARWA WWTP (3969-1H) does not appear to be eligible for listing in the National Register or the California Register. Under Criterion A/1, the original construction of the WWTP dates to a period of rapid population growth in Big Bear Valley area during the post-WWII suburban boom, which is arguably a pattern of events that substantially influenced the course of local, regional, as well as national history. However, as one of the numerous public utility projects completed at the time, the WWTP does not demonstrate a unique or particularly close association with this pattern of events or with any other historic theme. Furthermore, the WWTP is not known to be closely associated with any specific events of recognized significance in history.

Under Criterion B/2, the historical background research has not identified any important persons in association with the history of the BBARWA WWTP. Under Criterion C/3, this utilitarian facility of standard design and construction does not exhibit any significant, special, or remarkable merits in architecture, engineering, technology, or aesthetics, nor does it represent an important example of any property type, period, region, and method of construction or embody the work of a prominent architect, engineer, or builder. Under Criterion D/4, the plant holds little promise for important historical or archaeological data for the study of public utility works in the post-WWII era, a subject that is well documented in existing literature and contemporary publications.

In addition, as a result of alterations and additions made in the modern period, the WWTP’s historical components are now mixed with modern additions and replacements on prominent display. Consequently, it no longer retains sufficient historic integrity in the aspects of design, materials, workmanship, and feeling to relate to its early history. Based on these considerations, the BBARWA WWTP does not appear to meet the definition of a “historic property” or a “historical resource.”

The last cultural resource identified in the APE, Baldwin Lake (36-015027), has been designated a PHI (No. SBr-014) due to its well-known association with colorful events (i.e. gambling, brothels, and related activities) in early California history and thus inherently qualifies as a “historical resource” under CEQA. Because of the same historical association, and because of its prominent role in local Native American creation story, Baldwin Lake may be considered eligible for the National Register upon full evaluation and thereby qualify as a “historic property” under Section 106 provisions as well. However, since the APE overlaps only a small portion of the lakebed at the BBARWA WWTP and along the Palomino Drive and Baldwin Lake Trail ROW, a full evaluation of the historical significance of Baldwin Lake is beyond the scope of the Cultural Resources Report.

Given the limited involvement of the lakebed in the Program plans and the previously altered cultural landscape in this portion of the APE, the proposed undertaking has little potential to affect the existing characteristics of Baldwin Lake. Based on these considerations, the present study concludes that Baldwin Lake as a whole may be presumed to be a “historic property” for the purpose of this undertaking, with the understanding that the limited impact the undertaking may bring about to the current condition of the APE will not constitute an adverse effect on this “historic property” or “historical resource.”



In conclusion, among the 17 cultural resources identified in the APE, the 15 historic-period sites do not appear to qualify as “historic properties” or “historical resources,” and the prehistoric site (36- 002060) is no longer extant within the APE boundaries, and the undertaking will not have an adverse effect on Baldwin Lake, a “historical resource” under CEQA and a presumed “historic property” under Section 106. Meanwhile, the subsurface sediments in the vertical APE appear to be relatively low in sensitivity for potentially significant archaeological deposits of prehistoric origin. However, mitigation is required to avoid impacts on historic and archaeological resources that may be below the ground surface.

### **Program Category 1: Conveyance Pipelines**

**Construction:** An evaluation of cultural resource sensitivity of the various pipeline alignments (to Big Bear Lake, to Shay Pond, to Sand Canyon, and to convey brine at the BBARWA WWTP) is presented in the Cultural Resources Report provided as **Appendix 13, Volume 2** of this DPEIR. However, the area between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option was not surveyed, and is therefore not part of the APE because surveyal was not possible due to encroachment upon private/fenced property [refer to **Figure 4.6-1a**]. As described under Cultural Resource Study Conclusions, above, of the 17 cultural resources identified in the APE, the 15 historic-period sites do not appear to qualify as “historic properties” or “historical resources,” and the prehistoric site (36-002060) is no longer extant within the APE boundaries. Furthermore, the proposed conveyance pipeline alignment alternative to Big Bear Lake that traverses through Baldwin Lake was determined to not have an adverse effect on Baldwin Lake, a “historical resource” under CEQA and a presumed “historic property” under Section 106. This is because, as described above, given the limited involvement of the unaltered lakebed in the project plans—in that the Program would ensure that the lakebed is returned to its original condition or better once the pipeline is installed, should this alignment alternative be the preferred alternative—and the previously altered cultural landscape in this portion of the APE as a result of the installation of the BBARWA WWTP within the former Baldwin Lake lakebed, the undertaking has little potential to affect the existing characteristics of Baldwin Lake.

Furthermore, the conveyance pipeline alignments would be located within the BBARWA WWTP (3969-1H), which does not appear to be eligible for listing in the National Register or the California Register. Under Criterion A/1, the original construction of the plant dates to a period of rapid population growth in Big Bear Valley area during the post-WWII suburban boom, which is arguably a pattern of events that substantially influenced the course of local, regional, as well as national history. However, as one of the numerous public utility projects completed at the time, the WWTP does not demonstrate a unique or particularly close association with this pattern of events or with any other historic theme. Furthermore, the plant is not known to be closely associated with any specific events of recognized significance in history.

Under Criterion B/2, the historical background research has not identified any important persons in association with the history of the BBARWA WWTP. Under Criterion C/3, this utilitarian facility of standard design and construction does not exhibit any significant, special, or remarkable merits in architecture, engineering, technology, or aesthetics, nor does it represent an important example of any property type, period, region, and method of construction or embody the work of a prominent architect, engineer, or builder. Under Criterion D/4, the WWTP holds little promise for important historical or archaeological data for the study of public utility works in the post-WWII era, a subject that is well documented in existing literature and contemporary publications. As a result of alterations and additions made in the modern period, the WWTP’s historical components are now mixed with modern additions and replacements on prominent display. Consequently, it no longer retains sufficient historic integrity in the aspects of design, materials, workmanship, and

feeling to relate to its early history. Based on these considerations, the BBARWA WWTP does not appear to meet the definition of a “historic property” or a “historical resource.”

Based on these considerations, the Cultural Resources Study concludes that, due to the limited impact the undertaking may bring about to the current condition of the APE, the proposed pipeline alignment that traverses through Baldwin Lake will not constitute an adverse effect on this “historic property” or “historical resource.”

The remaining pipeline alignments (except the area between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option), while traversing through several roadways that have been recorded as historic, would not impact any historical resources, as the roadways identified within the APE do not appear to qualify as “historic properties” or “historical resources,” and furthermore, the prehistoric site (36-002060) is no longer extant within the APE boundaries. Furthermore, according to **Subsection 4.6.3.2, Geoarchaeological Sensitivity Analysis** presented herein, the likelihood of encountering intact, potentially significant prehistoric cultural remains within the vertical APE appears to be relatively low. Therefore, CRM TECH recommends a finding of No Impact regarding “historical resources.” No further cultural resources investigation is recommended for the conveyance facilities except for the area between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option, which is discussed in further detail below, unless construction plans undergo such changes as to include areas not covered by the Cultural Resources Report. However, if buried cultural materials are discovered during earth-moving operations associated with the project, and these materials are adversely impacted, a potentially significant impact on archaeological or historical resources could occur. Thus, mitigation is required to ensure that all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. Furthermore, **MM CUL-2** would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered during earthmoving activities. **MM CUL-5** would require an archaeological monitor to be present at each of the Program Component sites, at the discretion of the YSMN, at the request of the Tribe as part of the AB 52 consultation. This measure would further ensure that historical, archeological, and prehistoric resources are treated appropriately if unearthed as part of the implementation of the Program. As such, **MMs CUL-2 and CUL-5** below must be implemented to ensure impacts would be less than significant for the conveyance facilities discussed above.

Forecasting impacts to specific historical or archaeological at the area between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option (refer to **Figure 4.6-1a**) would be speculative. Previously unknown and unrecorded cultural resources may be unearthed during excavation and grading activities for the area between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option. If previously unknown potentially unique buried archaeological resources are uncovered during excavation or construction without mitigation, significant impacts could occur. Therefore, once access to the private/fenced property can be achieved for the area between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option, a site-specific study to identify potentially significant historical and archaeological resources would be required, such as a Phase I Cultural Resources Investigation. An additional study would minimize potential impacts to historical and archaeological resources.

Because the Program has been awarded Federal grants, compliance with NEPA is also necessary, and it is therefore anticipated that, where the funding is applicable to the Meadow Lane Pipeline Alignment Option, in order to obtain Federal or State funding, a Phase I Cultural

Resources Investigation that covers each site must be prepared because this is a requirement in order to be eligible for State or Federal funding. Without this additional investigation, a potentially significant impact on archaeological or historical resources could occur. Further MMs are provided below that address the potential for multiple phases of studies that may be necessary to properly identify and evaluate potential cultural resources for the area between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option. **MM CUL-3** would ensure that a follow-on Phase I Cultural Resources Investigation is required to identify potential cultural resources. This **MM** includes several phases or steps beyond the completion of a Phase I Cultural Resources Investigation that would cover the identification, evaluation, mitigation, and monitoring associated with a given project where resources may be located. This would ensure that adequate mitigation is provided in the event that significant cultural resources are located within the area between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option.

**MM CUL-4** would ensure that, after each phase of the studies required by **MM CUL-3** has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures is prepared and submitted to SCCIC, EIC, NHMLAC, and/or SBCM. This would ensure that any discoveries are properly documented for future researchers that may seek information regarding the Program Infrastructure project site. These mitigation measures would ensure that impacts to any cultural resources are fully addressed and minimized to a level of less than significant with the implementation of mitigation.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact a cultural resource exists.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: As discussed above, the majority of the locations proposed to be developed with Ancillary Facilities have been surveyed as part of the Cultural Resources Report provided as **Appendix 13, Volume 2** of this DPEIR. The locations for the three pump stations, monitoring wells near the Solar Evaporation Ponds at the BBARWA WWTP, and Sand Canyon discharge point pipe outlet and erosion control were included within the scope of the Cultural Resources Report. None of the historical sites identified in **Table 4.6-1** fall within the APE for any of the Ancillary Facilities covered under the scope of the Cultural Resources Report. Furthermore, as stated above, the prehistoric site (36-002060) is no longer extant within the APE boundaries, and therefore would not be impacted by the implementation of the Ancillary Facilities covered under the scope of the Cultural Resources Report. The BBARWA WWTP (3969-1H), within which the monitoring wells and pump stations at the BBARWA WWTP would be installed, does not appear to meet the definition of a “historic property” or a “historical resource.” Therefore, the modifications therein proposed by the Program would result in a less than significant impact to historical resources.

Furthermore, the proposed upgrades within the existing BBARWA WWTP are located within the former lake bed of Baldwin Lake, though the entire facility has been filled with material to raise the facility outside of the 100-year flood plain, and therefore, the land within which the BBARWA WWTP lies is no longer representative of the historical Baldwin Lake lakebed. Furthermore, the BBARWA WWTP was determined to not have an adverse effect on Baldwin Lake, a “historical resource” under CEQA and a presumed “historic property” under Section 106. Given the limited involvement of the unaltered lakebed in the project plans and the previously altered cultural landscape in this portion of the APE as a result of the installation of the BBARWA WWTP within

the former Baldwin Lake lakebed, the proposed installation of the Ancillary Facilities at the BBARWA WWTP has little potential to affect the existing characteristics of Baldwin Lake.

The remaining Ancillary Facilities (except the Sand Canyon Monitoring Wells) would not impact any historical resources, as none were identified within the confines of any other ancillary facility. Furthermore, according to **Subsection 4.6.3.2, Geoarchaeological Sensitivity Analysis** presented herein, the likelihood of encountering intact, potentially significant prehistoric cultural remains within the vertical APE appears to be relatively low. Therefore, CRM TECH recommends a finding of No Impact regarding “historical resources.” No further cultural resources investigation is recommended for the majority of the proposed Ancillary Facilities, with the exception of the Sand Canyon Monitoring Wells, which is discussed in greater detail below. However, if buried cultural materials are discovered during earth-moving operations associated with the project, and these materials are adversely impacted, a potentially significant impact on archaeological or historical resources could occur. Thus, mitigation is required to ensure that all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. **MM CUL-1** would exclude highly disturbed sites from requiring further cultural resource evaluation, in addition to those sites for which a cultural resource evaluation has already been prepared (all Program facilities except the Sand Canyon Monitoring Wells, unless the implementing agency is seeking additional State funding or Federal funding for the Program. Furthermore, **MM CUL-2** would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered during earthmoving activities. **MM CUL-5** would require an archaeological monitor to be present at each of the Program Component sites, at the discretion of the YSMN, at the request of the Tribe as part of the AB 52 consultation. This measure would further ensure that historical, archeological, and prehistoric resources are treated appropriately if unearthed as part of the implementation of the Program. As such, **MMs CUL-2 and CUL-5** below must be implemented to ensure impacts would be less than significant for the proposed Ancillary Facilities, with the exception of the Sand Canyon Monitoring Wells.

Forecasting impacts to specific historical or archaeological at the unknown locations within which the Sand Canyon Monitoring Wells would be installed would be speculative. Previously unknown and unrecorded cultural resources may be unearthed during excavation and grading activities for the Sand Canyon Monitoring Wells. If previously unknown potentially unique buried archaeological resources are uncovered during excavation or construction without mitigation, significant impacts could occur. Therefore, as Sand Canyon monitoring well locations are determined and finalized, site-specific studies to identify potentially significant historical and archaeological resources would be required, such as Phase I Cultural Resources Investigations. Additional studies would minimize potential impacts to historical and archaeological resources.

If the Sand Canyon Monitoring Wells are proposed within an existing facility that has been totally disturbed due to it undergoing past engineered site preparation (such as an existing well site), the implementing agency may not be required to complete a follow-on cultural resources report (Phase I Cultural Resources Investigation). However, because the Program has been awarded Federal grants, compliance with NEPA is also necessary, and it is therefore likely that, where the funding is applicable to the Sand Canyon monitoring well components, in order to obtain Federal or State funding, a Phase I Cultural Resources Investigation that covers each site must be prepared because this is a requirement in order to be eligible for State or Federal funding.

If the Sand Canyon Monitoring Wells are proposed within undisturbed areas, a follow-on Phase I Cultural Resources Investigation would be required regardless of whether funding is required. Without this additional investigation, a potentially significant impact on archaeological or historical

resources could occur. Further MMs are provided below that address the potential for multiple phases of studies that may be necessary to properly identify and evaluate potential cultural resources for the Sand Canyon monitoring well projects. **MM CUL-3** would ensure that the Sand Canyon Monitoring Wells that are located within undisturbed areas, within a site that will require substantial earthmoving activities and/or excavation, and/or where the implementing agency is seeking State funding, will require a follow-on Phase I Cultural Resources Investigation. This **MM** includes several phases or steps beyond the completion of a Phase I Cultural Resources Investigation that would cover the identification, evaluation, mitigation, and monitoring associated with a given project where resources may be located. This would ensure that adequate mitigation is provided in the event that significant cultural resources are located within the Sand Canyon Monitoring Wells sites.

**MM CUL-4** would ensure that, after each phase of the studies required by **MM CUL-3** has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures is prepared and submitted to SCCIC, EIC, NHMLAC, and/or SBCM. This would ensure that any discoveries are properly documented for future researchers that may seek information regarding the Program Infrastructure project site. These mitigation measures would ensure that impacts to any cultural resources are fully addressed and minimized to a level of less than significant with the implementation of mitigation.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact a cultural resource exists.

### **Program Category 3: Solar Evaporation Ponds**

Construction: The whole of the evaporation pond installation effort would occur within the confines of the existing BBARWA WWTP site, inclusive of the 175,000 CY of soil export anticipated to be necessary to install the Solar Evaporation Ponds. As discussed under Program Categories 1 and 2, above, the BBARWA WWTP (3969-1H), within which the Solar Evaporation Ponds would be installed, does not appear to meet the definition of a “historic property” or a “historical resource.” This is because, given the limited involvement of the unaltered lakebed in the Project plans, and the previously altered cultural landscape in this portion of the APE as a result of the installation of the BBARWA WWTP within the former Baldwin Lake lakebed, the undertaking has little potential to affect the existing characteristics of Baldwin Lake. Therefore, the modifications therein proposed by the proposed project would result in a less than significant impact to historical resources.

Furthermore, the proposed upgrades to the existing BBARWA WWTP (the AWPf) are located within the former lake bed of Baldwin Lake, though the entire facility has been filled with material to raise the facility outside of the 100-year flood plain, and therefore, the land within which the BBARWA WWTP lies is no longer representative of the historical Baldwin Lake lakebed. Furthermore, the BBARWA WWTP was determined to not have an adverse effect on Baldwin Lake, a “historical resource” under CEQA and a presumed “historic property” under Section 106. Given the limited involvement of the unaltered lakebed in the project plans and the previously altered cultural landscape in this portion of the APE as a result of the installation of the BBARWA WWTP within the former Baldwin Lake lakebed, the proposed installation of the Solar Evaporation Ponds has little potential to affect the existing characteristics of Baldwin Lake.

Furthermore, according to **Subsection 4.6.3.2, Geoarchaeological Sensitivity Analysis** presented herein, the likelihood of encountering intact, potentially significant prehistoric cultural remains within the vertical APE appears to be relatively low. Therefore, no further cultural



resources investigation is recommended for the project unless construction plans undergo such changes as to include areas not covered by the Cultural Resources Report. However, if buried cultural materials are discovered during earth-moving operations associated with the project, and these materials are adversely impacted, a potentially significant impact on archaeological or historical resources could occur. Thus, mitigation is required to ensure that all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. Furthermore, **MM CUL-2** would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered during earthmoving activities. **MM CUL-5** would require an archaeological monitor to be present at each of the Program Component sites, at the discretion of the YSMN, at the request of the Tribe as part of the AB 52 consultation. This measure would further ensure that historical, archeological, and prehistoric resources are treated appropriately if unearthed as part of the implementation of the Program. As such, **MM CUL-2 and CUL-5** below must be implemented to ensure impacts would be less than significant.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact a cultural resource exists.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: The whole of the BBARWA WWTP Upgrades effort, including the installation of solar, would occur within the confines of the BBARWA WWTP site, which falls within the scope of the Cultural Resources Report. As discussed under Program Categories 1, 2, and 3, above, the BBARWA WWTP (3969-1H), within which the Solar Evaporation Ponds would be installed, does not appear to meet the definition of a “historic property” or a “historical resource.” Therefore, the modifications therein proposed by the proposed project would result in a less than significant impact to historical resources.

Furthermore, upgrades to the BBARWA WWTP are located within the former lake bed of Baldwin Lake, though the entire facility has been filled with material to raise the facility outside of the 100-year flood plain, and therefore, the land within which the BBARWA WWTP lies is no longer representative of the historical Baldwin Lake lakebed. Furthermore, the BBARWA WWTP was determined to not have an adverse effect on Baldwin Lake, a “historical resource” under CEQA and a presumed “historic property” under Section 106. Given the limited involvement of the unaltered lakebed in the project plans and the previously altered cultural landscape in this portion of the APE as a result of the installation of the BBARWA WWTP within the former Baldwin Lake lakebed, the proposed BBARWA WWTP Upgrades have little potential to affect the existing characteristics of Baldwin Lake.

Furthermore, according to **Subsection 4.6.3.2, Geoarchaeological Sensitivity Analysis** presented herein, the likelihood of encountering intact, potentially significant prehistoric cultural remains within the vertical APE appears to be relatively low. Therefore, no further cultural resources investigation is recommended for the project unless construction plans undergo such changes as to include areas not covered by the Cultural Resources Report. However, if buried cultural materials are discovered during earth-moving operations associated with the project, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. **MM CUL-2** would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered during earthmoving activities. **MM CUL-5** would require an archaeological monitor to be present at each of the Program Component sites, at the discretion of the YSMN, at the request of the Tribe as part of the AB 52 consultation. This measure would further ensure that

historical, archeological, and prehistoric resources are treated appropriately if unearthed as part of the implementation of the Program. As such, **MM CUL-2** and **CUL-5** below must be implemented to ensure impacts would be less than significant.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact a cultural resource exists.

### **Other Physical Changes to the Environment**

The Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would occur within a defined urban area per **Figure 4.2-4**, and given that the release of water into Big Bear Lake by way of Stanfield Marsh in and of itself does not include any physical components beyond those discussed under Program Categories 1-4, above, and that the Program would not enable Big Bear Lake to become fuller than the historical shoreline resulting from the installation of the dam creating Big Bear Lake, no historical or archaeological resources would be impacted as a result of this change.

The Program would also result in up to 2,200 AFY less discharge to the LV Site. Even though less discharge may result from implementation of the Program, it is anticipated that the LV Site may continue to be farmed, although the use of the site for farming would be reduced from about 190 acres of farmland to a utilization of about 40 acres. If the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) to handle the 340 AFY of secondarily treated effluent or could make the treated effluent available to another party for an alternative use. Under any of the above scenarios, a portion or all of the LV Site would become fallow as a result of the reduction or cessation of farming operations, and would continue to be maintained by BBARWA. Given that BBARWA would continue to own the site and ensure it is maintained, it is not anticipated that the reduction in discharge to the LV Site would result in an impact to a historical or archaeological resource. No alterations to the site beyond that which presently occurs as a result of ongoing operations (farming and site maintenance), and beyond the enhanced site maintenance, which may involve planting cover crops, such as sorghum to prevent dust migration or utilizing salt bush and other native shrub species and that the site, would occur. The additional plantings would fall within the confines of the existing LV Site operations, and therefore, there would be no potential to impact historical resources. Furthermore, with no excavation proposed, no unknown archaeological resources buried beneath the surface would be impacted by implementation of the Program.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**CUL-1:** ***If the Sand Canyon Monitoring Wells are proposed within existing facilities that has been totally disturbed due to it undergoing past engineered site preparation (such as a well site), the agency implementing the project will not be required to complete a follow on cultural resources report (Phase I Cultural Resources Investigation) unless the implementing agency is seeking additional State or Federal funding, in which case the***

**implementing agency shall prepare a Phase I Cultural Resources Investigation to satisfy State CEQA-plus or Federal agency requirements.**

**CUL-2: Where a Phase I Cultural Resources Investigation is not required or has already been completed (for all Program components except the Sand Canyon Monitoring Wells), the following shall be required to minimize impacts to any accidentally exposed cultural resource materials:**

- **Should any subsurface cultural resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection shall be performed immediately by a qualified archaeologist meeting the Secretary of Interior Standards for Archaeology. Responsibility for making this determination shall be with the implementing agency's trained onsite inspector. An archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate MMs in accordance with the State CEQA Guidelines.**

**CUL-3: If the Sand Canyon Monitoring Wells are proposed within undisturbed sites and/or a site that will require substantial earthmoving activities and/or excavation, and/or the implementing agency is seeking State or Federal funding, the implementing agency shall complete a follow-on cultural resources report (Phase I Cultural Resources Investigation) regardless of whether implementing agency is seeking State or Federal funding.**

**Where a Phase I Cultural Resources Investigation is required, the following phases of identification, evaluation, mitigation, and monitoring shall be followed:**

1. **Phase I (Identification): A Phase I Investigation to identify historical, archaeological, or paleontological resources in a project site shall include the following research procedures, as appropriate:**
  - **Focused historical/archaeological resources records searches at SCCIC and/or EIC, depending on the project location, and paleontological resources records searches by NHMLAC, SBCM, and/or the Western Science Center in Hemet;**
  - **Historical background research, geoarchaeological profile analysis, and paleontological literature review;**
  - **Consultation with the NAHC, Native American tribes in the surrounding area in accordance with AB 52, pertinent local government agencies, and local historic preservation groups;**
  - **Field survey of the Program Area by qualified professionals of the pertinent discipline and at the appropriate level of intensity as determined on the basis of sensitivity assessment and site conditions;**
  - **Field recordation of any cultural resources encountered during the survey and proper documentation of the resources for incorporation into the appropriate inventories or databases.**
2. **Phase II (Evaluation): If cultural resources are encountered in a project site and cannot be avoided, a Phase II investigation shall be required to evaluate the potential significance of the resources in accordance with the statutory/regulatory framework outlined above. A typical Phase II study consists of the following research procedures:**
  - **Preparation of a research design to discuss the specific goals and objectives of the study in the context of important scientific questions that may be addressed with the findings and the significance criteria to be used for the evaluation, and to formulate the proper methodology to accomplish such goals;**
  - **In-depth exploration of historical, archaeological, or paleontological literature, archival records, as well as oral historical accounts for information pertaining to the cultural resources under evaluation;**

- *Fieldwork to ascertain the nature and extent of the archaeological/paleontological remains or resource-sensitive sediments identified during the Phase I study, such as surface collection of artifacts, controlled excavation of units, trenches, and/or shovel test pits, and collection of soil samples;*
  - *Laboratory processing and analyses of the cultural artifacts, fossil specimens, and/or soil samples for the proper recovery, identification, recordation, and cataloguing of the materials collected during the fieldwork and to prepare the assemblage for permanent curation, if warranted.*
3. ***Phase III (Mitigation/Data Recovery):*** *For resources that prove to be significant under the appropriate criteria, mitigation of potential project impact is required. The first option is avoidance by selecting and implementing the Sand Canyon Monitoring Wells at an alternative site or selecting an alternative Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option without significant cultural or paleontological resources. Depending on the characteristics of each resource type and the unique aspects of significance for each individual resource, mitigation may be accomplished through a variety of different methods, which shall be determined by a qualified archaeologist, paleontologist, historian, or other applicable professional in the “cultural resources” field. Typical mitigation for historical, archaeological, or paleontological resources, however, may focus on the following procedures, aimed mainly at the preservation of physical and/or archival data about a significant cultural resource that would be impacted by the project:*
- *Data recovery through further excavation at an archaeological site or a paleontological locality to collect a representative sample of the identified remains, followed by laboratory processing and analysis as well as preparation for permanent curation;*
  - *Comprehensive documentation of architectural and historical data about a significant building, structure, or object using methods comparable to the appropriate level of the HABS and HAER for permanent curation at a repository or repositories that provides access to the public;*
  - *Adjustments to project plans to minimize potential impact on the significance and integrity of the resource(s) in question.*
4. ***Phase IV (Monitoring):*** *At locations that are considered sensitive for subsurface deposits of undetected archaeological or paleontological remains, all earth-moving operations shall be monitored continuously or periodically, as warranted, by qualified professional practitioners. Archaeological monitoring programs shall be coordinated with the nearest Native American groups, who may wish to participate, as put forth in MMs TCR-1 through TCR-3.*

**CUL-4:** *After each phase of the studies required by MM CUL-3 has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures shall be prepared and submitted to SCCIC, EIC, NHMLAC, and/or SBCM, as appropriate and in addition to the implementing agency for the project, for permanent documentation and easy references by future researchers.*

**CUL-5:** **Archaeological Monitoring**  
*Due to the heightened cultural sensitivity of the proposed Program Area, an archaeological monitor with at least 3 years of regional experience in archaeology shall be present for ground-disturbing activities that occur within the proposed Program Area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work), for individual Replenish Big Bear Program components that are deemed by YSMN to be located within culturally sensitive areas of the Big Bear Valley. A sufficient number of archaeological monitors shall be present each work day to ensure that*

*simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation (“Cultural Resources” and “Tribal Cultural Resources”) shall be completed by the archaeological consultant and submitted to the Lead Agency for dissemination to the YSMN Cultural Resources Management Department. Once all parties review and approve the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the Program. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.*

*Level of Significance After Mitigation: Less Than Significant*

**MM CUL-1** would exclude highly disturbed sites from requiring further cultural resource evaluation, in addition to those sites for which a cultural resource evaluation has already been prepared (all Program facilities except the Sand Canyon Monitoring Wells and the area between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option), unless the implementing agency is seeking additional State funding or Federal funding for the Program. Furthermore, **MM CUL-2** would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered during earthmoving activities.

**MM CUL-3** would ensure that the Sand Canyon Monitoring Wells that are located within undisturbed areas, within a site that will require substantial earthmoving activities and/or excavation (i.e. the area between Meadow Lane and Mountain View Boulevard as part of the Meadow Lane Pipeline Alignment Option), and/or where the implementing agency is seeking State funding, will require a follow-on Phase I Cultural Resources Investigation. This **MM** includes several phases or steps beyond the completion of a Phase I Cultural Resources Investigation that would cover the identification, evaluation, mitigation, and monitoring associated with a given project where resources may be located. This would ensure that adequate mitigation is provided in the event that significant cultural resources are located within the Sand Canyon Monitoring Wells sites.

**MM CUL-4** would ensure that, after each phase of the studies required by **MM CUL-3** has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures is prepared and submitted to SCCIC, EIC, NHMLAC, and/or SBCM. This would ensure that any discoveries are properly documented for future researchers that may seek information regarding the Program Infrastructure project site.

Finally, **MM CUL-5** would require an archaeological monitor to be present at each of the Program Component sites, at the discretion of the YSMN, at the request of the Tribe as part of the AB 52 consultation. This measure would further ensure that historical, archeological, and prehistoric resources are treated appropriately if unearthed as part of the implementation of the Program.

### **Cumulative Impact Analysis**

As Big Bear Valley continues to develop with projected growth, new developments would occur. The project vicinity contains many historical and archaeological resources that, in many cases, have not been well documented or recorded. Thus, there is the potential for ongoing and future development projects in the vicinity to destroy known or unknown historical and archaeological resource sites resulting in a significant cumulative impact.

The potential construction impacts of the Program, in combination with other projects as a result of growth in the area, could contribute to a cumulatively significant impact to specific historical



and archaeological resources if encountered during project construction. However, implementation of **MMs CUL-1 through CUL-5** would minimize the contributions of Program infrastructure projects to this significant cumulative impact, and the project's contribution would not be cumulatively considerable.

*Mitigation Measures: **MMs CUL-1 through CUL-5** are necessary to minimize impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less Than Significant*

**c) Would the Project disturb any human remains, including those interred outside of formal cemeteries?**

**Program Category 1: Conveyance Pipelines**

Construction: A review of the Conveyance Pipelines APE indicates that, as much of the Program will be developed within the former Baldwin Lake lakebed or along natural drainages (roadways and the like), there is very little potential for either of these settings to have been considered suitable for permanent villages in ancient times. This would suggest that the likelihood for the known Conveyance Pipelines APE to support human remains is low. Regardless, as human remains would be located belowground, there is a potential that the Conveyance Pipelines APE could be located in an area in which human remains are buried. In the event that human remains are inadvertently discovered during project construction activities, the human remains could be inadvertently damaged, which could result in a significant impact. Implementation of the proposed project would comply with provisions of State law regarding discovery of human remains, including California Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5, and if human remains are accidentally exposed during site grading, Section 7050.5 requires a contractor to immediately stop work in the vicinity of the discovery and notify the County Coroner. The County Coroner must then determine whether the remains are human and if such remains are human, the County Coroner must determine whether the remains are or appear to be of a Native American origin. If deemed potential Native American remains, the County Coroner contacts the NAHC to identify the most likely affected tribe and/or MLD. Until the landowner has conferred with the MLD, the implementing agency shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities consider the possibility of multiple burials. Since this process is mandatory, no additional mitigation is required to ensure that the impacts to human remains will be treated with dignity and result in a less than significant impact.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact human remains exists.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: A review of the Ancillary Facilities APE indicates that, as many of the Ancillary Facilities will be developed within the former Baldwin Lake lakebed (at the BBARWA WWTP) or along natural drainages (roadways and the like), there is very little potential for either of these settings to have been considered suitable for permanent villages in ancient times. This would suggest that the likelihood for the known Ancillary Facilities APE (except for the Sand Canyon Monitoring Wells) to support human remains is low. Regardless, even for the Sand Canyon Monitoring Wells and other facilities under this Program Category, as human remains would be located belowground, there is a potential that a given Program project site could be located in an

area in which human remains are buried. In the event that human remains are inadvertently discovered during project construction activities, the human remains could be inadvertently damaged, which could result in a significant impact. Implementation of the proposed project would comply with provisions of State law regarding discovery of human remains, including California Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5, and if human remains are accidentally exposed during site grading, Section 7050.5 requires a contractor to immediately stop work in the vicinity of the discovery and notify the County Coroner. The County Coroner must then determine whether the remains are human and if such remains are human, the County Coroner must determine whether the remains are or appear to be of a Native American origin. If deemed potential Native American remains, the County Coroner contacts the NAHC to identify the most likely affected tribe and/or MLD. Until the landowner has conferred with the MLD, the implementing agency shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities consider the possibility of multiple burials. Since this process is mandatory, no additional mitigation is required to ensure that the impacts to human remains will be treated with dignity and result in a less than significant impact.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact human remains exists.

### **Program Category 3: Solar Evaporation Ponds**

Construction: A review of the Solar Evaporation Ponds APE indicates that, as much of the Solar Evaporation Ponds APE will be developed within the former Baldwin Lake lakebed, there is very little potential for either of these settings to have been considered suitable for permanent villages in ancient times. This would suggest that the likelihood for the known Solar Evaporation Ponds APE to support human remains is low. Regardless, as human remains would be located belowground, there is a potential that a given Program project site could be located in an area in which human remains are buried. In the event that human remains are inadvertently discovered during project construction activities, the human remains could be inadvertently damaged, which could result in a significant impact. Implementation of the proposed project would comply with provisions of State law regarding discovery of human remains, including California Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5, and if human remains are accidentally exposed during site grading, Section 7050.5 requires a contractor to immediately stop work in the vicinity of the discovery and notify the County Coroner. The County Coroner must then determine whether the remains are human and if such remains are human, the County Coroner must determine whether the remains are or appear to be of a Native American origin. If deemed potential Native American remains, the County Coroner contacts the NAHC to identify the most likely affected tribe and/or MLD. Until the landowner has conferred with the MLD, the implementing agency shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities consider the possibility of multiple burials. Since this process is mandatory, no additional mitigation is required to ensure that the impacts to human remains will be treated with dignity and result in a less than significant impact.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact human remains exists.

**Program Category 4: BBARWA WWTP Upgrades**

Construction: A review of the BBARWA WWTP Upgrades APE indicates that, as much of the Program will be developed within the former Baldwin Lake lakebed, there is very little potential for either of these settings to have been considered suitable for permanent villages in ancient times. This would suggest that the likelihood for the known BBARWA WWTP Upgrades APE to support human remains is low. Regardless, as human remains would be located belowground, there is a potential that a given Program project site could be located in an area in which human remains are buried. In the event that human remains are inadvertently discovered during project construction activities, the human remains could be inadvertently damaged, which could result in a significant impact. Implementation of the proposed project would comply with provisions of State law regarding discovery of human remains, including California Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5, and if human remains are accidentally exposed during site grading, Section 7050.5 requires a contractor to immediately stop work in the vicinity of the discovery and notify the County Coroner. The County Coroner must then determine whether the remains are human and if such remains are human, the County Coroner must determine whether the remains are or appear to be of a Native American origin. If deemed potential Native American remains, the County Coroner contacts the NAHC to identify the most likely affected tribe and/or MLD. Until the landowner has conferred with the MLD, the implementing agency shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities consider the possibility of multiple burials. Since this process is mandatory, no additional mitigation is required to ensure that the impacts to human remains will be treated with dignity and result in a less than significant impact.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact human remains exists.

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None Required*

*Level of Significance After Mitigation: Less Than Significant*

**Cumulative Impact Analysis**

Big Bear Valley contains urbanized and rural areas, with many areas that have not historically been disturbed at depth. As the area continues to develop, it is possible, but unlikely, that construction activities could impact unknown human remains. However, since the treatment of human resources is governed by California Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5, the cumulative potential to impact human remains would be less than significant. Therefore, the implementation of the project would not result in a considerable contribution to cumulative impacts on human remains.

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant*

#### **4.6.7 Unavoidable Adverse Impacts**

Based on the information presented above, all potential cultural resource impacts would be avoided or otherwise limited, and the preceding forecast demonstrates that impacts can be mitigated to a less than significant impact level. As a result, there will not be any unavoidable project specific or cumulative adverse impacts to cultural resources, including paleontological resources, as broadly defined in this Subchapter, from implementing the project as proposed, and the project's potential impacts on cultural resource impacts will be less than significant.

## **4.7 ENERGY**

### **4.7.1 Introduction**

This section assesses potential energy impacts from implementation of the Replenish Big Bear Program (Program). The Program AQIA dated August 2023 was prepared by Urban Crossroads to evaluate the potential energy impacts associated with construction and operation of the facilities proposed as part of the Program. A copy of the Energy Analysis (EA) is provided as **Appendix 14 of Volume 2** to this DPEIR. Much of the information provided in the following sections is abstracted directly from this technical report with minor edits.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Energy
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

One comment pertaining to energy was received in response to the NOP. No comments pertaining to noise were received at the Scoping Meeting held on behalf of the Program. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

### **4.7.2 Environmental Setting: Energy**

Note that all references provided herein can be found in the EA prepared by Urban Crossroads provided as **Appendix 14, Volume 2** to this DPEIR.

#### **4.7.2.1 Overview**

The most recent data for California's estimated total energy consumption is from 2017 and natural gas consumption is from 2020, released by the U.S. Energy Information Administration's (EIA) California State Profile and Energy Estimates in 2021 and included:<sup>2</sup>

- As of 2020, approximately 6,923 trillion British thermal units (BTUs) of energy was consumed.
- As of 2020, approximately 524 million barrels of petroleum was consumed.
- As of 2021, approximately 2,101 billion cubic feet of natural gas was consumed.
- As of 2021, approximately 1 million short tons of coal was consumed.

According to the EIA, in 2021 the U.S. petroleum consumption comprised about 77% of all transportation energy use, excluding fuel consumed for aviation and most marine vessels. In 2021, about 249,790 million gallons (or about 5.95 million barrels) of finished petroleum products were

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<sup>2</sup> US Energy Information Administration, 2023. California State Energy Profile  
<https://www.eia.gov/state/print.php?sid=CA> (Accessed 07/19/23)



consumed in the U.S., an average of about 684 million gallons per day (or about 16 million barrels per day). In 2021, California consumed approximately 12,157 million gallons in motor gasoline (33.31 million per day) and approximately 3,541 million gallons of diesel fuel (9.7 million per day). The most recent data provided by the EIA for energy use in California by demand sector is from 2020 and is reported as follows:

- Approximately 34.0% transportation
- Approximately 24.6% industrial
- Approximately 21.8% residential
- Approximately 19.6% commercial

According to the EIA, California used approximately 247,250 gigawatt hours (GWh) of electricity in 2021. By sector in 2021, residential uses utilized 36.5% of the State's electricity, followed by 43.9% for commercial uses, 19.2% for industrial uses, and 0.3% for transportation. Electricity usage in California for differing land uses varies substantially by the type of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building.

According to the EIA, California used approximately 200,871 million therms of natural gas in 2021. In 2021 (the most recent year for which data is available), by sector, industrial uses utilized 33% of the State's natural gas, followed by 30% used as fuel in the electric power sector, 21% from residential, 11% from commercial, 1% from transportation uses and the remaining 3% was utilized for the operations, processing and production of natural gas itself. While the supply of natural gas in the U.S. and production in the lower 48 states has increased greatly since 2008, California produces little, and imports 90% of its supply of natural gas.

In 2021, total system electric generation for California was 277,764GWh. California's massive electricity in-state generation system generated approximately 194,127 GWh which accounted for approximately 70% of the electricity it uses; the rest was imported from the Pacific Northwest (12%) and the U.S. Southwest (18%). Natural gas is the main source for electricity generation at 50.2% of the total in-state electric generation system power as shown in **Table 4.7-1**.

An updated summary of, and context for energy consumption and energy demands within the State is presented in "U.S. Energy Information Administration, California State Profile and Energy Estimates, Quick Facts" excerpted below:

- In 2022, California was the seventh-largest producer of crude oil among the 50 states, and, as of January 2022, the State ranked third in crude oil refining capacity.
- California is the largest consumer of jet fuel and second-largest consumer of motor gasoline among the 50 states.
- In 2020, California was the second-largest total energy consumer among the states, but its per capita energy consumption was less than in all but three other states.
- In 2022, renewable resources, including hydroelectric power and small-scale, customer-sited solar power, accounted for 49% of California's in-state electricity generation. Natural gas fueled another 42%. Nuclear power supplied almost all the rest.
- In 2022, California was the fourth-largest electricity producer in the nation. The State was also the nation's third-largest electricity consumer, and additional needed electricity supplies came from out-of-state generators.

As indicated below, California is one of the nation's leading energy producing states, and California's per capita energy use is among the nation's most efficient. Given the nature of the Program, the remainder of this discussion will focus on the three sources of energy that are most relevant to the

Program—namely, electricity, natural gas, and transportation fuel for vehicle trips associated with the uses planned for the Program.

**Table 4.7-1  
 TOTAL ELECTRICITY SYSTEM POWER (CALIFORNIA 2022)**

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	Total Imports (GWh)	Percent of Imports	Total California Energy Mix (GWh)	Total California Power Mix
Coal	273	0.13%	181	5,716	5,897	6,170	2.15%	273
Natural Gas	96,457	47.46%	44	7,994	8,038	104,495	36.38%	96,457
Oil	65	0.03%	-	-	-	65	0.2%	65
Other (Waste Heat/Petroleum Coke)	315	0.15%	-	-	-	315	0.11%	315
Unspecified	-	0.0%	12,485	7,943	20,428	20,428	7.11%	-
<b>Total Thermal and Unspecified</b>	<b>97,110</b>	<b>47.78%</b>	<b>12,710</b>	<b>21,653</b>	<b>34,363</b>	<b>121,473</b>	<b>45.77%</b>	<b>97,110</b>
Nuclear	17,627	8.67%	397	8,342	8,739	26,366	9.18%	17,627
Large Hydro	14,607	7.19%	10,803	1,118	11,921	26,528	9.24%	14,607
Biomass	5,366	2.64%	771	25	797	6,162	2.15%	5,366
Geothermal	11,110	5.47%	253	2,048	2,301	13,412	4.67%	11,110
Small Hydro	3,005	1.48%	211	13	225	3,230	1.12%	3,005
Solar	40,494	19.92%	231	8,225	8,456	48,950	17.04%	40,494
Wind	13,938	6.86%	8,804	8,357	17,161	31,099	10.83%	13,938
<b>Total Non-GHG and Renewables</b>	<b>106,147</b>	<b>52.22%</b>	<b>21,471</b>	<b>28,129</b>	<b>49,599</b>	<b>155,747</b>	<b>54.23%</b>	<b>106,147</b>
<b>SYSTEM TOTALS</b>	<b>203,257</b>	<b>100.0%</b>	<b>34,180</b>	<b>49,782</b>	<b>83,962</b>	<b>287,220</b>	<b>100.0%</b>	<b>203,257</b>

Source: CECs 2022 Total System Electric Generation

#### 4.7.2.2 Electricity

The usage associated with electricity use were calculated using CalEEMod Version 2022.1.1.12. The Southern California region’s electricity reliability has been of concern for the past several years due to the planned retirement of aging facilities that depend upon once-through cooling technologies, as well as the June 2013 retirement of the San Onofre Nuclear Generating Station. While the once-through cooling phase-out has been ongoing since the May 2010 adoption of the SWRCB’s once-through cooling policy, the retirement of the San Onofre Nuclear Generating Station complicated the situation. California Independent System Operator (ISO) studies revealed the extent to which SCAB and the San Diego Air Basin region were vulnerable to low-voltage and post-transient voltage instability concerns. A preliminary plan to address these issues was detailed in the 2013 Integrative Energy Policy Report (IEPR) after a collaborative process with other energy agencies, utilities, and air districts. Similarly, the subsequent 2022 IEPR provides information and policy recommendations on advancing a clean, reliable, and affordable energy system.

California’s electricity industry is an organization of traditional utilities, private generating companies, and State agencies, each with a variety of roles and responsibilities to ensure that electrical power

is provided to consumers. The California ISO is a nonprofit public benefit corporation and is the impartial operator of the State’s wholesale power grid and is charged with maintaining grid reliability, and to direct uninterrupted electrical energy supplies to California’s homes and communities. While utilities still own transmission assets, the ISO routes electrical power along these assets, maximizing the use of the transmission system and its power generation resources. The ISO matches buyers and sellers of electricity to ensure that enough power is available to meet demand. To these ends, every five minutes, the ISO forecasts electrical demands, accounts for operating reserves, and assigns the lowest cost power plant unit to meet demands while ensuring adequate system transmission capacities and capabilities.

Part of the ISO’s charge is to plan and coordinate grid enhancements to ensure that electrical power is provided to California consumers. To this end, utilities file annual transmission expansion/modification plans to accommodate the State’s growing electrical needs. The ISO reviews and either approves or denies the proposed additions. In addition, and perhaps most importantly, the ISO works with other areas in the western U.S. electrical grid to ensure that adequate power supplies are available to the State. In this manner, continuing reliable and affordable electrical power is assured to existing and new consumers throughout the State.

Electricity is currently provided to the Program Area by Bear Valley Electric Service, Inc. (BVES). BVES provides electric power to more than 23 thousand persons in San Bernardino County, within a service area encompassing approximately 32 square miles. Based on BVES’s 2021 Power Content Label Mix, BVES derives electricity from the following two primary energy resources: fossil fuels and purchases from independent power producers and utilities, including out-of-state suppliers. **Tables 4.7-2** identifies BVES’s specific proportional shares of electricity sources in 2021. As indicated in **Table 4.7-2**, the 2021 BVES Power Mix<sup>3</sup> has renewable energy at 0.0% of the overall energy resources.

**Table 4.7-2  
 BVES 2021 POWER CONTENT MIX**

<b>Energy Resources</b>	<b>2021 BVES Power Mix</b>
<b><i>Eligible Renewable</i></b>	<b>0.0%</b>
Biomass & waste	0.0%
Geothermal	0.0%
Small Hydroelectric	0.0%
Solar	0.0%
Wind	0.0%
<b><i>Coal</i></b>	<b>0.0%</b>
<b><i>Large Hydroelectric</i></b>	<b>0.0%</b>
<b><i>Natural Gas</i></b>	<b>1.4%</b>
<b><i>Nuclear</i></b>	<b>0.0%</b>
<b><i>Other</i></b>	<b>0.0%</b>
Unspecified Sources of power*	98.6%
<b>Total</b>	<b>100%</b>

\* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources

<sup>3</sup> BVES, 2021. BVWD Power Mix. <https://www.energy.ca.gov/filebrowser/download/4602> (accessed 10/16/23)

#### **4.7.2.3 Natural Gas**

The following summary of natural gas customers and volumes, supplies, delivery of supplies, storage, service options, and operations is excerpted from information provided by the California Public Utilities Commission (CPUC).

*“The CPUC regulates natural gas utility service for approximately 10.8 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCalGas), San Diego Gas & Electric (SDG&E), Southwest Gas, and several smaller natural gas utilities. The CPUC also regulates independent storage operators: Lodi Gas Storage, Wild Goose Storage, Central Valley Storage and Gill Ranch Storage.*

*California’s natural gas utilities provide service to over 11 million gas meters. SoCalGas and PG&E provide service to about 5.9 million and 4.3 million customers, respectively, while SDG&E provides service to over 800,000 customers. In 2018, California gas utilities forecasted that they would deliver about 4740 million cubic feet per day (MMcfd) of gas to their customers, on average, under normal weather conditions.*

*The overwhelming majority of natural gas utility customers in California are residential and small commercial customers, referred to as “core” customers. Larger volume gas customers, like electric generators and industrial customers, are called “noncore” customers. Although very small in number relative to core customers, noncore customers consume about 65% of the natural gas delivered by the State’s natural gas utilities, while core customers consume about 35%.*

*A significant amount of gas (about 19%, or 1131 MMcfd, of the total forecasted California consumption in 2018) is also directly delivered to some California large volume consumers, without being transported over the regulated utility pipeline system. Those customers, referred to as “bypass” customers, take service directly from interstate pipelines or directly from California producers.*

*SDG&E and Southwest Gas’ southern division are wholesale customers of SoCalGas, i.e., they receive deliveries of gas from SoCalGas and in turn deliver that gas to their own customers. (Southwest Gas also provides natural gas distribution service in the Lake Tahoe area). Similarly, West Coast Gas, a small gas utility, is a wholesale customer of PG&E. Some other wholesale customers are municipalities like the cities of Palo Alto, Long Beach, and Vernon, which are not regulated by the CPUC.*

*Natural gas from out-of-state production basins is delivered into California via the interstate natural gas pipeline system. The major interstate pipelines that deliver out-of-state natural gas to California gas utilities are Gas Transmission Northwest Pipeline, Kern River Pipeline, Transwestern Pipeline, El Paso Pipeline, Ruby Pipeline, Mojave Pipeline, and Tuscarora. Another pipeline, the North Baja – Baja Norte Pipeline takes gas off the El Paso Pipeline at the California/Arizona border and delivers that gas through California into Mexico. While the Federal Energy Regulatory Commission (FERC) regulates the transportation of natural gas on the interstate pipelines, and authorizes rates for that service, the CPUC may participate in FERC regulatory proceedings to represent the interests of California natural gas consumers.*

*The gas transported to California gas utilities via the interstate pipelines, as well as some of the California-produced gas, is delivered into the PG&E and SoCalGas intrastate natural gas transmission pipelines systems (commonly referred to as California’s “backbone” pipeline system). Natural gas on the utilities’ backbone pipeline systems is then delivered to the local transmission and*

*distribution pipeline systems, or to natural gas storage fields. Some large volume noncore customers take natural gas delivery directly off the high-pressure backbone and local transmission pipeline systems, while core customers and other noncore customers take delivery off the utilities' distribution pipeline systems. The State's natural gas utilities operate over 100,000 miles of transmission and distribution pipelines, and thousands more miles of service lines.*

*Bypass customers take most of their deliveries directly off the Kern/Mojave pipeline system, but they also take a significant amount of gas from California production.*

*PG&E and SoCalGas own and operate several natural gas storage fields that are located within their service territories in northern and southern California, respectively. These storage fields, and four independently owned storage utilities – Lodi Gas Storage, Wild Goose Storage, Central Valley Storage, and Gill Ranch Storage – help meet peak seasonal and daily natural gas demand and allow California natural gas customers to secure natural gas supplies more efficiently. PG&E is a 25% owner of the Gill Ranch Storage field. These storage fields provide a significant amount of infrastructure capacity to help meet California's natural gas requirements, and without these storage fields, California would need much more pipeline capacity in order to meet peak gas requirements.*

*Prior to the late 1980s, California regulated utilities provided virtually all natural gas services to all their customers. Since then, the CPUC has gradually restructured the California gas industry in order to give customers more options while assuring regulatory protections for those customers that wish to, or are required to, continue receiving utility-provided services.*

*The option to purchase natural gas from independent suppliers is one of the results of this restructuring process. Although the regulated utilities procure natural gas supplies for most core customers, core customers have the option to purchase natural gas from independent natural gas marketers, called "core transport agents" (CTA). Contact information for core transport agents can be found on the utilities' websites. Noncore customers, on the other hand, make natural gas supply arrangements directly with producers or with marketers.*

*Another option resulting from the restructuring process occurred in 1993 when the CPUC removed the utilities' storage service responsibility for noncore customers, along with the cost of this service from noncore customers' transportation rates. The CPUC also encouraged the development of independent storage fields, and in subsequent years, all the independent storage fields in California were established. Noncore customers and marketers may now take storage service from the utility or from an independent storage provider (if available), and pay for that service, or may opt to take no storage service at all. For core customers, the CPUC assures that the utility has adequate storage capacity set aside to meet core requirements, and core customers pay for that service.*

*In a 1997 decision, the CPUC adopted PG&E's "Gas Accord", which unbundled PG&E's backbone transmission costs from noncore transportation rates. This decision gave customers and marketers the opportunity to obtain pipeline capacity rights on PG&E's backbone transmission pipeline system, if desired, and pay for that service at rates authorized by the CPUC. The Gas Accord also required PG&E to set aside a certain amount of backbone transmission capacity in order to deliver gas to its core customers. Subsequent CPUC decisions modified and extended the initial terms of the Gas Accord. The "Gas Accord" framework is still in place today for PG&E's backbone and storage rates and services and is now simply referred to as PG&E Gas Transmission and Storage (GT&S).*

*In a 2006 decision, the CPUC adopted a similar gas transmission framework for Southern California, called the "firm access rights" system. SoCalGas and SDG&E implemented the firm access rights (FAR) system in 2008, and it is now referred to as the backbone transmission system (BTS)*



*framework. As under the PG&E BTS, SoCalGas backbone transmission costs are unbundled from noncore transportation rates. Noncore customers and marketers may obtain, and pay for, firm backbone transmission capacity at various receipt points on the SoCalGas system. A certain amount of backbone transmission capacity is obtained for core customers to assure meeting their requirements.*

*Many if not most noncore customers now use a marketer to provide for several of the services formerly provided by the utility. That is, a noncore customer may simply arrange for a marketer to procure its supplies, and obtain any needed storage and backbone transmission capacity, in order to assure that it will receive its needed deliveries of natural gas supplies. Core customers still mainly rely on the utilities for procurement service, but they have the option to take procurement service from a CTA. Backbone transmission and storage capacity is either set aside or obtained for core customers in amounts to assure very high levels of service.*

*In order to properly operate their natural gas transmission pipeline and storage systems, PG&E and SoCalGas must balance the amount of gas received into the pipeline system and delivered to customers or to storage fields. Some of these utilities' storage capacity is dedicated to this service, and under most circumstances, customers do not need to precisely match their deliveries with their consumption. However, when too much or too little gas is expected to be delivered into the utilities' systems, relative to the amount being consumed, the utilities require customers to more precisely match up their deliveries with their consumption. And, if customers do not meet certain delivery requirements, they could face financial penalties. The utilities do not profit from these financial penalties – the amounts are then returned to customers as a whole. If the utilities find that they are unable to deliver all the gas that is expected to be consumed, they may even call for a curtailment of some gas deliveries. These curtailments are typically required for just the largest, noncore customers. It has been many years since there has been a significant curtailment of core customers in California.”*

As indicated in the preceding discussions, natural gas is available from a variety of in-state and out-of-state sources and is provided throughout the State in response to market supply and demand. Complementing available natural gas resources, biogas may soon be available via existing delivery systems, thereby increasing the availability and reliability of resources in total. The CPUC oversees utility purchases and transmission of natural gas to ensure reliable and affordable natural gas deliveries to existing and new consumers throughout the State.

#### **4.7.2.4 Transportation Energy Resources**

The Program would generate additional vehicle trips with resulting consumption of energy resources, predominantly gasoline and diesel fuel. The California Department of Motor Vehicles (DMV) identified 36.2 million registered vehicles in California (Department of Motor Vehicles, 2021), and those vehicles consume an estimated 17.2 billion gallons of fuel each year<sup>4</sup>. Gasoline (and other vehicle fuels) are commercially provided commodities and would be available to the Program patrons and employees via commercial outlets.

California's on-road transportation system includes 396,616 lane miles, more than 26.6 million passenger vehicles and light trucks, and almost 9.0 million medium- and heavy-duty vehicles. While gasoline consumption has been declining since 2008, it is still by far the dominant fuel. California is the second-largest consumer of petroleum products, after Texas, and accounts for 8% of the nation's

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<sup>4</sup> Fuel consumptions estimated utilizing information from EMFAC2021.

total consumption. The State is the largest U.S. consumer of motor gasoline and jet fuel, and 83% of the petroleum consumed in California is used in the transportation sector.

California accounts for less than 1% of total U.S. natural gas reserves and production. As with crude oil, California's natural gas production has experienced a gradual decline since 1985. In 2021, about 33% of the natural gas delivered to consumers went to the State's industrial sector, and about 31% was delivered to the electric power sector. Natural gas fueled more than two-fifths of the State's utility-scale electricity generation in 2021. The residential sector, where three-fifths of California households use natural gas for home heating, accounted for 22% of natural gas deliveries. The commercial sector received 12% of the deliveries to end users and the transportation sector consumed the remaining 1%.

### **4.7.3 Regulatory Setting**

Federal and State agencies regulate energy use and consumption through various means and programs. On the Federal level, the U.S. Department of Transportation, the U.S. Department of Energy, and the EPA are three Federal agencies with substantial influence over energy policies and programs. On the State level, the CPUC and the California Energy Commission (CEC) are two agencies with authority over different aspects of energy. Relevant Federal and State energy-related laws and plans are summarized below.

#### **4.7.3.1 Federal**

##### **Intermodal Surface Transportation Efficiency Act of 1991**

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) promoted the development of inter-modal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that Metropolitan Planning Organizations (MPOs) were to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values guiding transportation decisions.

##### **The Transportation Equity Act for the 21st Century**

The Transportation Equity Act for the 21st Century (TEA-21) was signed into law in 1998 and builds upon the initiatives established in the ISTEA legislation, discussed above. TEA-21 authorizes highway, highway safety, transit, and other efficient surface transportation programs. TEA-21 continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of good transportation decisions. TEA-21 also provides for investment in research and its application to maximize the performance of the transportation system through, for example, deployment of Intelligent Transportation Systems, to help improve operations and management of transportation systems and vehicle safety.

#### **4.7.3.2 California Regulations**

##### **Integrated Energy Policy Report**

Senate Bill (SB) 1389 (Bowen, Chapter 568, Statutes of 2002) requires the CEC to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the State's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the State's economy; and protect public health and safety (California Public Resources Code § 25301[a]). The CEC prepares these assessments and associated policy recommendations

every two years, with updates in alternate years, as part of the Integrated Energy Policy Report (IEPR).

The 2022 IEPR was adopted February 2023, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2022 IEPR introduces a new framework for embedding equity and environmental justice at the CEC and the California Energy Planning Library which allows for easier access to energy data and analytics for a wide range of users. Additionally, energy reliability, western electricity integration, gasoline cost factors and price spikes, the role of hydrogen in California's clean energy future, fossil gas transition and distributed energy resources are topics discussed within the 2022 IEPR.

### **State of California Energy Plan**

The CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies several strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce vehicle miles traveled (VMT) and accommodate pedestrian and bicycle access.

### **California Code of Regulations Title 24, Part 6, Energy Efficiency Standards**

California Code of Regulations Title 24 (Title 24) Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2022 version of Title 24 was adopted by the CEC and will be effective on January 1, 2023. The 2022 Title 24 standards require solar photovoltaic systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, and update indoor and outdoor lighting standards for nonresidential buildings.

The CEC anticipates that the 2022 energy code will provide \$1.5 billion in consumer benefits and reduce GHG emissions by 10 million metric tons. The Program would be required to comply with the applicable standards in place at the time building permit document submittals are made. These require, among other items:

#### ***Nonresidential Mandatory Measures***

- **Short-term bicycle parking.** If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- **Long-term bicycle parking.** For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- **Designated parking for clean air vehicles.** In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).

- **EV (electric vehicle) charging stations.** New construction shall facilitate the future installation of EV supply equipment. The compliance requires empty raceways for future conduit and documentation that the electrical system has adequate capacity for the future load. The number of spaces to be provided for is contained in Table 5.106. 5.3.3 (5.106.5.3). Additionally, Table 5.106.5.4.1 specifies requirements for the installation of raceway conduit and panel power requirements for medium- and heavy-duty EV supply equipment for warehouses, grocery stores, and retail stores.
- **Outdoor light pollution reduction.** Outdoor lighting systems shall be designed to meet the backlight, uplight and glare ratings per Table 5.106.8 (5.106.8).
- **Construction waste management.** Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- **Excavated soil and land clearing debris.** 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reuse or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- **Recycling by Occupants.** Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- **Water conserving plumbing fixtures and fittings.** Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
  - Water Closets. The effective flush volume of all water closets shall not exceed
    - 1.28 gallons per flush (5.303.3.1)
    - Urinals. The effective flush volume of wall-mounted urinals shall not exceed
    - 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor- mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
    - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
    - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- **Outdoor potable water uses in landscaped areas.** Nonresidential developments shall comply with a local water efficient landscape ordinance or the current MWELo, whichever is more stringent (5.304.1).
- **Water meters.** Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gallons per day (GPD) (5.303.1.1 and 5.303.1.2).
- **Outdoor water uses in rehabilitated landscape projects equal or greater than 2,500 sf.** Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).

- **Commissioning.** For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2)

### **AB 1493 Pavley Regulations and Fuel Efficiency Standards**

AB 1493 Pavley Regulations and Federal Fuel Efficiency Standards (Pavley), enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Under this legislation, CARB adopted regulations to reduce GHG emissions from non-commercial passenger vehicles (cars and light-duty trucks). Although aimed at reducing GHG emissions, specifically, a co-benefit of the Pavley standards is an improvement in fuel efficiency and consequently a reduction in fuel consumption.

### **California's Renewable Portfolio Standard**

First established in 2002 under SB 1078, California's Renewable Portfolio Standards (RPS) requires retail sellers of electric services to increase procurement from eligible renewable resources to 33% of total retail sales by 2020.

### **Clean Energy and Pollution Reduction Act Of 2015**

In October 2015, the legislature approved, and the Governor signed the Clean Energy and Pollution Reduction Act Of 2015 (SB 350), which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Specifically, SB 350 requires the following to reduce Statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33% to 50% by 2030, with interim targets of 40% by 2024, and 25% by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the CPUC, the CEC, and local publicly owned utilities.
- Reorganize the ISO to develop more regional electrified transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western U.S. (California Leginfo 2015).

### **100 Percent Clean Energy Act of 2018**

In September 2018, the legislature approved, and the Governor signed the 100 Percent Clean Energy Act of 2018 (SB 100), which builds on the targets established in SB 1078 and SB 350. Most notably, SB 100 sets a goal of powering all retail electricity sold in California with renewable and zero-carbon resources. Additionally, SB 100 updates the interim renewables target from 50% to 60% by 2030.

### **Executive Order N-79-20 and Advanced Clean Cars II**

On August 25, 2022 CARB approved the Advanced Clean Cars II rule, which codifies the goals set out in Executive Order N-79-20 and establishes a year-by-year roadmap such that by 2035, 100% of new cars and light trucks sold in California will be zero-emission vehicles. Under this regulation, automakers are required to accelerate deliveries of zero-emission light-duty vehicles, beginning with model year 2026. CARB estimates that between 2026 and 2040, the regulation would reduce GHG emissions by a cumulative 395 million metric tons, equivalent to reducing petroleum use by 915 million barrels.



**4.7.3.3 Local**

**Big Bear Lake General Plan**

The following Big Bear Lake General Plan policies pertain to electricity and natural gas:

<b>GOAL</b>	<b>ER 7</b>	Conservation and prudent management of energy sources and mineral deposits, assuring the long-term viability of limited and nonrenewable resources.
<b>Policy</b>	ER 7.1:	Promote energy conservation in all areas of community development, including transportation, development planning, public and private sector office construction and operation, as well as in the full range of residential, commercial and industrial projects.
<b>Program</b>	ER 7.1.1:	Encourage the use of passive solar energy for natural heating through design, construction and landscaping techniques.
	ER 7.1.3:	Support and facilitate the integration of proven alternative energy systems into new development projects, where appropriate.
	ER 7.1.4:	Encourage use of alternate fuel vehicles when technology makes their widespread use readily available, by seeking funding for support infrastructure as appropriate, and by modifying city regulations to accommodate their use, as needed.
<b>GOAL</b>	<b>PS 1</b>	<b>GENERAL INFRASTRUCTURE NEEDS</b> Public services and facilities that adequately meet the immediate and long-term needs of the City, providing a high level of service for the lowest reasonable cost, while minimizing impacts on the local and regional environment.
<b>Policy</b>	PS 1.1:	Assure the provision of adequate public services and facilities for all residents, businesses and visitors within the community, now and in the future.
<b>Program</b>	PS 1.1.1:	Cooperate with all utility, infrastructure and service providers to promote coordinated master planning for these services, coordination of infrastructure planning with land use planning, and to assure minimal impacts to the environment and the community from expansion and maintenance of infrastructure systems.
	PS 1.1.2:	Adopt and annually update the City's Capital Improvement Program to prioritize funding for public works projects in accordance with this General Plan and other identified needs within the City.
	PS 1.1.3:	Evaluate the City's infrastructure capacity and needed improvements as part of the City's growth management program, and revise and update the program as needed to ensure that a nexus exists between fees collected and identified public infrastructure improvements, and that new development pays only that portion of the cost needed to mitigate impacts of that development.
	PS 1.1.4:	Seek public input regarding proposed property acquisitions for public facilities and uses when feasible without jeopardizing the negotiation process, through public notice for open City Council discussions of these matters as they arise.
<b>Policy</b>	PS 1.2:	Ensure that adequate infrastructure exists or can reasonably be extended to serve new development, that such extensions are planned in an efficient and cost-effective manner, and that new development pays its fair share of the cost of infrastructure.
<b>GOAL</b>	<b>PS 4</b>	<b>UTILITIES</b> Adequate utility systems to meet the long-term needs of the community and enhance communication systems, while minimizing visual and environmental impacts of utility poles, overhead lines, and telecommunication facilities.
<b>Policy</b>	PS 4.1:	Cooperate with all utility purveyors in the planning, designing, and siting of distribution, collection, and support facilities to ensure the timely expansion of services in a manner which minimizes environmental impacts and disturbances to existing improvements.

<b>Program</b>	PS 4.1.1:	On new development approvals, the City will require that the project applicant coordinates with utility companies to ensure provisions of adequate access to utility lines and facilities.
<b>Policy</b>	PS 4.2:	Encourage use of alternative energy sources to conserve nonrenewable resources.
<b>Program</b>	PS 4.2.1:	As technological advances for alternative energy sources make these sources available and feasible, actively participate in the long-term planning and development of the infrastructure needed to support their use, including but not limited to recharge stations.
	PS 4.2.2:	Encourage the availability and installation of individual alternative energy systems in residential, commercial and industrial uses through various means, including but not limited to streamlining the development review process for these systems.
	PS 4.2.3:	Support local, State and Federal programs and economic incentives for conservation and alternative energy programs, and consider establishing City incentives.
<b>Policy</b>	PS 4.3:	Cooperate with other agencies to ensure the provision of expanded electric power to the planning area to meet future needs.
<b>Program</b>	PS 4.3.1:	Assist the Bear Valley Electric Service as needed in that agency's plans to upgrade capacity in the distribution system for electricity to and within the community.
<b>Policy</b>	PS 4.5:	Improve the visual appearance of the community through requirements to underground utility lines on new development where appropriate, and seek funding sources to underground existing lines for City beautification in selected areas, while minimizing street cutting through coordination with utility companies.
<b>Program</b>	PS 4.5.1:	Adopt regulations requiring the undergrounding of utility lines on new development except where this requirement may be waived by the City Engineer.
	PS 4.5.3:	Coordinate with utility companies through regular meetings of the Utility Coordination Committee and by other means as appropriate, to limit the impact of utility upgrades on the City's road system, limit disruption to traffic, encourage consolidation of transmission facilities and corridors to the extent practicable, and encourage that utility work be undertaken when the roadway will be otherwise disturbed.
<b>GOAL</b>	<b>PS 5</b>	Provision of a wide variety of communication services and providers to serve businesses and citizens, while avoiding adverse impacts to health, land use, environmental resources or aesthetics which may result from unregulated proliferation of these facilities.
<b>Policy</b>	5.4:	Ensure that the general public does not bear the cost of providing telecommunication services, that cost recovery for use of public land and infrastructure is commensurate with the benefit provided, and that providers of communication services are treated equitably within the City.

### **San Bernardino Countywide Plan**

The following San Bernardino Countywide Plan policies pertain to electricity and natural gas:

<b>Policy</b>	H-1.5:	Life-cycle costs. We encourage energy-conservation techniques and upgrades in both the construction and rehabilitation of residential units that will reduce the life- cycle costs of housing.
	D/H-1.4:	Funding priorities. As funding becomes available, we prioritize the use and application of grants and loans for housing rehabilitation, energy conservation retrofits, and water conservation retrofits for housing in the Desert Region.
	IU-5.1:	Electricity and natural gas service. We partner with other public agencies and providers to improve the availability and stability of electricity and natural gas service in unincorporated communities.
	RE1.9:	Building design and upgrades. We use the CALGreen Code to meet energy efficiency standards for new buildings and encourage the upgrading of existing buildings to

- incorporate design elements, building materials, and fixtures that improve environmental sustainability and reduce emissions.
- RE-1.1: GHG Reduction Plan. We implement the energy conservation and efficiency measures identified in the County of San Bernardino Greenhouse Gas Emissions Reduction Plan.
- RE-1.2: Optimized efficiency. We optimize energy efficiency in the built environment.
- RE-1.3: Local benefits. We promote the local economic benefits of energy efficiency retrofits.
- RE-1.4: Energy conservation. We encourage residents and businesses to conserve energy.
- RE-2.1: Types of renewable energy systems. We support solar energy generation, solar water heating, wind energy and bioenergy systems that are consistent with the orientation, siting and environmental compatibility policies of the General Plan.
- RE-2.2: Energy storage. We promote use of energy storage technologies that are appropriate for the character of the proposed location.
- RE-2.4: Access to renewable energy. We identify and prioritize programs that support cost-effective and universal access to renewable energy.
- RE-2.5: Zero net energy. We support renewable energy systems that accelerate zero net energy through innovative design, construction, and operations of residences, businesses, and institutions that are grid-neutral and independent of centralized energy infrastructure.
- RE-2.6: Energy efficiency. We encourage energy efficiency through appropriate renewable energy systems.
- RE-3.1: Onsite accessory systems. We prioritize, facilitate, and encourage onsite accessory renewable energy generation to serve the unincorporated county, with a primary focus on rooftop and parking lot solar energy generation.
- RE-3.2: Locally-focused service. We encourage neighborhood- and community-serving renewable energy generation that primarily serves local uses in the county.
- RE-3.3: Adaptive and resilient energy infrastructure. We promote adaptive distributed energy infrastructure that sustains local communities and improves resiliency to grid failures and increasing energy prices.
- RE-3.4: Sphere standards. We require renewable energy facilities developed in spheres of influence of incorporated cities to be compatible and consistent with standards of the sphere cities.
- RE-3.6: Community goals. We encourage renewable energy facilities to meet community goals, including supporting community health, wellness, and recreational needs.

#### **4.7.4 Thresholds of Significance**

According to Appendix G, Section VI, of the State CEQA Guidelines, a project would have a significant effect on energy if the project would:

- a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
- b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

In addition, Appendix F of the State CEQA Guidelines states that EIRs may include a discussion of the potential energy impacts of proposed Programs and presents a list of items that may be considered in the EIR impact analysis.

**4.7.4.1 Evaluation Criteria**

Per Appendix F of the State CEQA Guidelines states that the means of achieving the goal of energy conservation includes the following:

- Decreasing overall per capita energy consumption;
- Decreasing reliance on fossil fuels such as coal, natural gas, and oil; and
- Increasing reliance on renewable energy sources.

**4.7.4.2 Methodology**

Information from the CalEEMod Version 2022.1.1.12 outputs for the Replenish Big Bear Program AQIA (**Appendix 11, Volume 2**) was utilized in this analysis, detailing Program-related construction equipment, transportation energy demands, and facility energy demands.

**Construction Duration**

Construction is anticipated to begin in January 2025 and will last through January 2027 (Urban Crossroads, Inc., 2023). The construction schedule utilized in the analysis, shown in **Table 4.7-3**, represents a “worst-case” analysis scenario. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per State CEQA Guidelines.

**Table 4.7-3  
 CONSTRUCTION DURATION**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project	Jan 2025	Jan 2027	515
Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project	May 2025	Oct 2026	370
Replenish Big Bear Component 3: Shay Pond Discharge Project	May 2025	Oct 2026	370
Replenish Big Bear Component 4: Solar Evaporation Ponds	May 2025	Oct 2026	370
Replenish Big Bear Component 5: Sand Canyon Recharge Project	May 2025	Oct 2026	370

**Construction Equipment**

**Table 4.7-4** summarizes the equipment fleets and durations modeled for each construction activity.

**Table 4.7-4  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project</b>			
Dozers	Rubber Tired Dozers	1	8
Graders	Graders	1	8
Cranes	Cranes	1	8
Backhoes	Tractors/Loaders/Backhoes	1	8
Drill Rig	Bore/Drill Rig	1	8
Cement Trucks	Off-Highway Trucks	1	8
Forklifts	Forklifts	1	4
Backhoes	Tractors/Loaders/Backhoes	1	4

<b>Equipment</b>	<b>CalEEMod Equivalent</b>	<b>Amount</b>	<b>Hours Per Day</b>
Front Loaders	Crawler Tractors	1	4
Dump/Delivery Trucks	Off-Highway Trucks	2	8
<b>Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project</b>			
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Paver	Paver	1	8
Roller	Roller	1	8
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Pavement Cutter	Concrete/Industrial Saws	1	6
Grinder	Concrete/Industrial Saws	1	6
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4
Paving Machine	Pavers	1	2
<b>Replenish Big Bear Component 3: Shay Pond Discharge Project</b>			
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Roller	Roller	1	8
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4
<b>Replenish Big Bear Component 4: Solar Evaporation Ponds</b>			
Bulldozers	Rubber Tired Dozers	2	8
Front End Loaders	Crawler Tractors	2	8
Water Truck	Off-Highway Trucks	2	8

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
Scrapers	Scraper	7	8
Excavators	Excavator	2	8
Dump Trucks	Off-Highway Trucks	4	8
<b>Replenish Big Bear Component 5: Sand Canyon Recharge Project</b>			
Drill Rig	Bore/Drill Rig	1	8
Cranes	Cranes	1	4
Forklifts	Forklifts	1	4
Backhoes	Tractors/Loaders/Backhoes	1	4
Front Loaders	Crawler Tractors	1	4
Cement Trucks	Off-Highway Trucks	1	8
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Paver	Paver	1	8
Roller	Roller	1	8
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Pavement Cutter	Concrete/Industrial Saws	1	6
Grinder	Concrete/Industrial Saws	1	6
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4
Paving Machine	Pavers	1	2
Compactor	Plate Compactor	1	2

Source: Construction equipment based on information provided by BBARWA and the Program Team. It should be noted that the Haul/Dump/Delivery trucks are modeled into the Trips & VMT section of CalEEMod

**CalEEMod**

In May 2023 CAPCOA, in conjunction with other California air districts, including SCAQMD, released the latest version of CalEEMod version 2022.1.1.12. The purpose of this model is to calculate construction-source and operational-source criteria pollutants (VOCs, NO<sub>x</sub>, SO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from **MMS**. Accordingly, the latest version of CalEEMod has been used for this Program to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity is provided in Appendix 4.1 of the EA.



### **Emissions Factors Model**

On May 2, 2022, the EPA approved the 2021 version of the Emissions Factor model (EMFAC) web database for use in SIP and transportation conformity analyses. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. This energy study utilizes the different fuel types for each vehicle class from the annual EMFAC2021 emission inventory in order to derive the average vehicle fuel economy which is then used to determine the estimated annual fuel consumption associated with vehicle usage during Program construction and operational activities. For purposes of the analysis, the 2025, 2026, 2027 analysis years were utilized to determine the average vehicle fuel economy used throughout the duration of the Program. Output from the EMFAC2021 model runs is provided in Appendix 4.2 of the EA.

#### **4.7.5 Potential Impacts**

This section evaluates the potential impacts of the proposed Program related to energy.

- a) **Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?**

##### **4.7.5.(a)1 Construction Energy Demand Analysis**

The focus within this section is the energy implications of the construction process, specifically the power cost from on-site electricity consumption during construction of the proposed Program.

This analysis focuses on the 5 Program Components that are evaluated in Subchapter 4.4, Air Quality. These Components are repeated below for ease of reference.

- Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project
  - 2 pump stations: 20 gpm and 1,520 gpm
  - 1,350 LF of brine pipeline
  - Total building area: 40,000 SF total on site
  - Installation of 2 MW of solar on existing BBARWA property
- Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project
  - 19,940 LF of pipeline (this is the maximum amount of pipeline that would be installed for any of the pipeline options, and as such, for modeling purposes, the maximum pipeline length that could be installed is utilized)
- Replenish Big Bear Component 3: Shay Pond Discharge Project
  - 6,310 LF of pipeline on unpaved area
- Replenish Big Bear Component 4: Solar Evaporation Pond
  - 57 acres of evaporation ponds
  - 2 monitoring wells
- Replenish Big Bear Component 5: Sand Canyon Recharge Project
  - 1 pump station
  - 2 monitoring wells

- 7,210 LF of conveyance pipeline
- Erosion control/rip rap at pipeline discharge

**Construction Power Cost: BBARWA WWTP Upgrades Project**

The total BBARWA WWTP Upgrades Project construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

***Program Construction Power Cost***

The *2023 National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of \$2.50, which was used to calculate the Program’s total construction power cost.

As shown on **Table 4.7-5**, the total power cost of the on-site electricity usage during the construction of the BBARWA WWTP Upgrades Project is estimated to be approximately \$10,428.28.

**Table 4.7-5  
 CONSTRUCTION POWER COST**

Land Use	Power Cost (per 1,000 SF of construction per month)	Size (1,000 SF)	Construction Duration (months)	Program Construction Power Cost
BBARWA WWTP Upgrades	\$2.50	173.805	24	\$10,428.28

**Construction Electricity Usage: BBARWA WWTP Upgrades Project**

The total BBARWA WWTP Upgrades construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-5**) estimated by the utility provider cost per kWh of electricity.

***Program Construction Electricity Usage***

BVES’s general service rate schedule was used to determine the BBARWA WWTP Upgrades Project’s electrical usage. As of March 1, 2023, BVES’s general service rate is \$0.25 per kWhs of electricity for general services. As shown on **Table 4.7-6**, the total electricity usage from on-site project construction related activities is estimated to be approximately 41,491 kWhs.

**Table 4.7-6  
 CONSTRUCTION ELECTRICITY USAGE**

Land Use	Cost per kWh	Program Construction Electricity Usage (kWh)
Proposed Program		
BBARWA WWTP Upgrades Project	\$0.25	41,491

**Construction Equipment Fuel Estimates: BBARWA WWTP Upgrades Project**

Fuel consumed by construction equipment would be the primary energy resource expended over the course of BBARWA WWTP Upgrades Project construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the

Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

**Program Construction Equipment Fuel Consumption**

BBARWA WWTP Upgrades Project construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7-7**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 horsepower hour per gallon (hp-hr-gal.), obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region<sup>5</sup>. As presented on **Table 4.7-7**, BBARWA WWTP Upgrades Project construction activities would consume an estimated 134,836 gallons of diesel fuel. BBARWA WWTP Upgrades Project construction would represent a “single-event” diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

**Table 4.7-7  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
<b>BBARWA WWTP Upgrades Project</b>								
Linear, Grading & Excavation	30	Bore/Drill Rigs	83	1	8	0.5	332	538
		Off-Highway Trucks	376	1	8	0.38	1,143	1,854
		Tractors/Loaders/Bac khoes	84	1	4	0.37	124	202
Building Construction	465	Rubber Tired Dozers	367	1	8	0.4	1,174	29,519
		Graders	148	1	8	0.41	485	12,202
		Cranes	367	1	8	0.29	851	21,401
		Tractors/Loaders/Bac khoes	84	1	8	0.37	249	6,250
		Off-Highway Trucks	376	2	8	0.38	2,286	57,461
		Crawler Tractors	87	1	4	0.43	150	3,761
		Forklifts	82	1	4	0.2	66	1,649
<b>BBARWA WWTP Upgrades Project - Construction Fuel Demand (Gallons Diesel Fuel)</b>								<b>134,836</b>

**Construction Trips and VMT: BBARWA WWTP Upgrades Project**

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips for the BBARWA WWTP Upgrades Project are presented below in **Table 4.7-8**. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.

<sup>5</sup> Based on Appendix A of the CalEEMod User’s Guide, Construction consists of several types of off-road equipment. Since the majority of the off-road construction equipment used for construction projects are diesel fueled, CalEEMod assumes all of the equipment operates on diesel fuel.

**Table 4.7-8  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	One-Way Trips per Day End Date			Trip Length		
	Worker	Vendor	Hauling	Worker	Vendor	Hauling
<b>BBARWA WWTP Upgrades Project</b>						
Demolition	50	25	46	100	100	100
Building Construction	50	7	2	100	100	100
Linear, Grading & Excavation	50	0	0	100	10.2	100

**Construction Worker Fuel Estimates: BBARWA WWTP Upgrades Project**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the BBARWA WWTP Upgrades Project, the construction worker trips would generate an estimated 2,580,000 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1<sup>6</sup>), and 25% are from light-duty-trucks (LDT2<sup>7</sup>). Data regarding the BBARWA WWTP Upgrades Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

**Tables 4.7-9 through 4.7-11** provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-9 through 4.7-11**, it is estimated that 75,781 gallons of fuel will be consumed related to construction worker trips during full construction of the BBARWA WWTP Upgrades Project. It should be noted that construction worker trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

<sup>6</sup> Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.

<sup>7</sup> Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.

**Table 4.7-9  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDA**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
BBARWA WWTP Upgrades Project	<b>2025</b>						
	Demolition	21	25	100	52,500	32.57	1,612
	Building Construction	226	25	100	565,000	32.57	17,349
	<b>2026</b>						
	Building Construction	239	25	100	597,500	33.47	17,849
	Linear, Grading & Excavation	23	25	100	57,500	33.47	1,718
	<b>2027</b>						
Linear, Grading & Excavation	7	25	100	17,500	34.38	509	
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA</b>							<b>25,191</b>

**Table 4.7-10  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT1**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
BBARWA WWTP Upgrades Project	<b>2025</b>						
	Demolition	21	12.5	100	26,250	25.11	1,045
	Building Construction	226	12.5	100	282,500	25.11	11,249
	<b>2026</b>						
	Building Construction	239	12.5	100	298,750	25.64	11,650
	Linear, Grading & Excavation	23	12.5	100	28,750	25.64	1,121
	<b>2027</b>						
Linear, Grading & Excavation	7	12.5	100	8,750	26.20	334	
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT1</b>							<b>25,399</b>

**Table 4.7-11  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT2**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
BBARWA WWTP Upgrades Project	<b>2025</b>						
	Demolition	21	12.5	100	26,250	25.24	1,040
	Building Construction	226	12.5	100	282,500	25.24	11,193
	<b>2026</b>						
	Building Construction	239	12.5	100	298,750	25.93	11,520
	Linear, Grading & Excavation	23	12.5	100	28,750	25.93	1,109
	<b>2027</b>						
Linear, Grading & Excavation	7	12.5	100	8,750	26.60	329	
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT2</b>							<b>25,191</b>
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA, LDT1 &amp; LDT2</b>							<b>75,781</b>

**Construction Vendor/Hauling Fuel Estimates: BBARWA WWTP Upgrades Project**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 1,599,340 VMT along area roadways for the BBARWA WWTP Upgrades Project over the duration of construction activity. It is assumed that 50% of all vendor trips are from medium-heavy duty trucks (MHDT), 50% of vendor trips are from heavy-heavy duty trucks (HHDT), and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Tables 4.7-12 through 4.7-14**, it is estimated that 249,410 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the BBARWA WWTP Upgrades Project.

It should be noted that construction vendor and hauling trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.



**Table 4.7-12  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

Category	Construction Activity	Duration (Days)	Vendor (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
BBARWA WWTP Upgrades Project	<b>2025</b>						
	Demolition	21	13	100	26,250	8.46	3,104
	Building Construction	226	3	100	73,450	8.46	8,684
	<b>2026</b>						
	Building Construction	239	3	100	77,675	8.59	9,046
<b>TOTAL CONSTRUCTION VENDOR FUEL CONSUMPTION – MHDT</b>							<b>20,834</b>

**Table 4.7-13  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – HHDT**

Category	Construction Activity	Duration (Days)	Vendor (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
BBARWA WWTP Upgrades Project	<b>2025</b>						
	Demolition	21	13	100	26,250	6.13	4,282
	Building Construction	226	3	100	73,450	6.13	11,982
	<b>2026</b>						
	Building Construction	239	3	100	77,675	6.24	12,447
<b>TOTAL CONSTRUCTION VENDOR FUEL CONSUMPTION – HHDT</b>							<b>28,711</b>

**Table 4.7-14  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

Category	Construction Activity	Duration (Days)	Hauling (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
BBARWA WWTP Upgrades Project	<b>2025</b>						
	Demolition	21	46	100	96,600	6.13	15,759
	Building Construction	226	2	100	48,590	6.13	7,927
	<b>2026</b>						
	Building Construction	239	46	100	1,099,400	6.24	176,179
<b>TOTAL CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION – MHDT &amp; HHDT</b>							<b>249,410</b>

## **Construction Energy Impact Conclusion: BBARWA WWTP Upgrades Project**

### ***Construction Energy Efficiency/Conservation Measures***

The equipment used for BBARWA WWTP Upgrades Project construction would conform to CARB regulations and California emissions standards. There are no unusual BBARWA WWTP Upgrades Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the BBARWA WWTP Upgrades Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The BBARWA WWTP Upgrades Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, "grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling." In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Project, which is typical for Projects and Programs that are in the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the BBARWA WWTP Upgrades Project because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

### ***Construction Energy Demand Impact Summary***

The estimated power cost of on-site electricity usage during the construction of the BBARWA WWTP Upgrades Project is assumed to be approximately \$10,428.28. Additionally, based on the assumed

power cost, it is estimated that the total electricity usage during construction, after full Program build-out, is calculated to be approximately 41,491 kWhs.

Construction equipment used by the BBARWA WWTP Upgrades Project would result in single event consumption of approximately 134,836 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Program’s proposed construction process that are unusual or energy-intensive, and Program construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the BBARWA WWTP Upgrades Project would result in the estimated fuel consumption of 75,781 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 249,410 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements. As supported by the preceding discussions, BBARWA WWTP Upgrades Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

**Construction Power Cost: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment**

The total Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

***Program Construction Power Cost***

The 2023 *National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of \$2.50, which was used to calculate the Program’s total construction power cost.

As shown on **Table 4.7-15**, the total power cost of the on-site electricity usage during the construction of the Stanfield Marsh/Big Bear Lake Discharge Project is estimated to be approximately \$3,813.68.

**Table 4.7-15  
 CONSTRUCTION POWER COST**

<b>Land Use</b>	<b>Power Cost (per 1,000 SF of construction per month)</b>	<b>Size (1,000 SF)</b>	<b>Construction Duration (months)</b>	<b>Program Construction Power Cost</b>
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	\$2.50	3,092.766	17	\$3,813.68

**Construction Electricity Usage: Stanfield Marsh/Big Bear Lake Discharge Pipeline**

**Alignment**

The total Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-16**) estimated by the utility provider cost per kWh of electricity.

***Program Construction Electricity Usage***

BVES's general service rate schedule was used to determine the Stanfield Marsh/Big Bear Lake Discharge Project's electrical usage. As of March 1, 2023, BVES's general service rate is \$0.25 per kWhs of electricity for general services. As shown on **Table 4.7-16**, the total electricity usage from on-site project construction related activities is estimated to be approximately 15,173 kWhs.

**Table 4.7-16  
 CONSTRUCTION ELECTRICITY USAGE**

Land Use	Cost per kWh	Program Construction Electricity Usage (kWh)
Proposed Program		
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	\$0.25	15,173

**Construction Equipment Fuel Estimates: Stanfield Marsh/Big Bear Lake Discharge Pipeline**

**Alignment**

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

***Program Construction Equipment Fuel Consumption***

Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7-17**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region. As presented on **Table 4.7-17**, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction activities would consume an estimated 27,369 gallons of diesel fuel. Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

**Table 4.7-17  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
<b>Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment</b>								
Linear, Grading & Excavation	190	Excavators	36	1	8	0.38	109	1,124
		Tractors/Loaders/Bac khoes	84	1	8	0.37	249	2,554
		Plate Compactors	8	1	8	0.43	28	283
		Signal Boards	6	1	8	0.82	39	404
		Off-Highway Trucks	376	1	8	0.38	1,143	11,739
Linear, Drainage, Utilities, & Sub-Grade	190	Tractors/Loaders/Bac khoes	84	1	6	0.37	186	1,915
		Plate Compactors	8	1	6	0.43	21	212
		Rollers	36	1	6	0.38	82	843
		Off-Highway Trucks	376	1	4	0.38	572	5,870
		Excavators	36	1	4	0.38	55	562
		Pavers	81	1	2	0.42	68	699
		Plate Compactors	8	1	2	0.43	7	71
Demolition	70	Concrete/Industrial Saws	33	2	6	0.73	289	1,094
<b>Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment - Construction Fuel Demand (Gallons Diesel Fuel)</b>								<b>27,369</b>

**Construction Trips and VMT: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment**

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips for the Stanfield Marsh/Big Bear Lake Discharge Project are presented below in **Table 4.7-18**. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.

**Table 4.7-18  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	One-Way Trips per Day End Date			Trip Length		
	Worker	Vendor	Hauling	Worker	Vendor	Hauling
<b>Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment</b>						
Demolition	5	0	21	100	10.2	100
Linear, Grading & Excavation	15	0	36	100	10.2	100
Linear, Drainage, Utilities, & Sub-Grade	18	0	0	100	10.2	20

**Construction Worker Fuel Estimates: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the Stanfield Marsh/Big Bear

Lake Discharge Project, the construction worker trips would generate an estimated 653,000 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1<sup>8</sup>), and 25% are from light-duty-trucks (LDT2<sup>9</sup>). Data regarding the Stanfield Marsh/Big Bear Lake Discharge Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

**Tables 4.7-19 through 4.7-21** provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-19 through 4.7-21**, it is estimated that 22,677 gallons of fuel will be consumed related to construction worker trips during full construction of the Stanfield Marsh/Big Bear Lake Discharge Project. It should be noted that construction worker trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

**Table 4.7-19  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDA**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	<b>2025</b>						
	Demolition	71	3	100	17,750	32.57	545
	Linear, Grading & Excavation	175	8	100	131,250	32.57	4,030
	<b>2026</b>						
	Linear, Grading & Excavation	15	8	100	11,250	33.47	336
	Linear, Drainage, Utilities, & Sub-Grade	190	9	100	166,250	33.47	4,966
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA</b>							<b>9,877</b>

<sup>8</sup> Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.

<sup>9</sup> Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.



**Table 4.7-20  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT1**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	<b>2025</b>						
	Demolition	71	1	100	8,875	25.11	353
	Linear, Grading & Excavation	175	4	100	65,625	25.11	2,613
	<b>2026</b>						
	Linear, Grading & Excavation	15	4	100	5,625	25.64	219
	Linear, Drainage, Utilities, & Sub-Grade	190	4	100	83,125	25.64	3,241
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT1</b>							<b>6,426</b>

**Table 4.7-21  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT2**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	<b>2025</b>						
	Demolition	71	1	100	8,875	25.24	352
	Linear, Grading & Excavation	175	4	100	65,625	25.24	2,600
	<b>2026</b>						
	Linear, Grading & Excavation	15	4	100	5,625	25.93	217
	Linear, Drainage, Utilities, & Sub-Grade	190	4	100	83,125	25.93	3,205
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT2</b>							<b>6,374</b>
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA, LDT1 &amp; LDT2</b>							<b>22,677</b>

**Construction Vendor/Hauling Fuel Estimates: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 833,100 VMT along area roadways for the Stanfield Marsh/Big Bear Lake Discharge Project over the duration of construction activity. It is assumed that 50% of all vendor trips are from MHDT, 50% of vendor trips are from HHDT, and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Table 4.7-22**, it is estimated that 135,752 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the Stanfield Marsh/Big Bear Lake Discharge Project. It should be noted that construction vendor and hauling trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

**Table 4.7-22  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

Category	Construction Activity	Duration (Days)	Hauling (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	<b>2025</b>						
	Demolition	71	21	100	149,100	6.13	24,323
	Linear, Grading & Excavation	175	36	100	630,000	6.13	102,775
	<b>2026</b>						
	Linear, Grading & Excavation	15	36	100	54,000	6.24	8,654
<b>TOTAL CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION – MHDT &amp; HHDT</b>							<b>135,752</b>

**Construction Energy Impact Conclusion: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment**

***Construction Energy Efficiency/Conservation Measures***

The equipment used for Stanfield Marsh/Big Bear Lake Discharge Project construction would conform to CARB regulations and California emissions standards. There are no unusual Stanfield Marsh/Big Bear Lake Discharge Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Stanfield Marsh/Big Bear Lake Discharge Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The Stanfield Marsh/Big Bear Lake Discharge Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, “grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling.” In this manner, construction equipment operators are

informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Project, which is typical for Projects and Programs that are in the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the Stanfield Marsh/Big Bear Lake Discharge Project because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

#### ***Construction Energy Demand Impact Summary***

The estimated power cost of on-site electricity usage during the construction of the Stanfield Marsh/Big Bear Lake Discharge Project is assumed to be approximately \$3,813.68. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Program build-out, is calculated to be approximately 15,173 kWhs.

Construction equipment used by the Stanfield Marsh/Big Bear Lake Discharge Project would result in single event consumption of approximately 27,369 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Stanfield Marsh/Big Bear Lake Discharge Project's proposed construction process that are unusual or energy-intensive, and Stanfield Marsh/Big Bear Lake Discharge Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Stanfield Marsh/Big Bear Lake Discharge Project would result in the estimated fuel consumption of 22,677 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 135,752 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements. As supported by the preceding discussions, Stanfield

Marsh/Big Bear Lake Discharge Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

**Construction Power Cost: Shay Pond Discharge Project**

The total Shay Pond Discharge Project construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

***Program Construction Power Cost***

The *2023 National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of \$2.50, which was used to calculate the Program’s total construction power cost.

As shown on **Table 4.7-23**, the total power cost of the on-site electricity usage during the construction of the Shay Pond Discharge Project is estimated to be approximately \$1,203.35.

**Table 4.7-23  
 CONSTRUCTION POWER COST**

Land Use	Power Cost (per 1,000 SF of construction per month)	Size (1,000 SF)	Construction Duration (months)	Program Construction Power Cost
Shay Pond Discharge Project	\$2.50	28.314	17	\$1,203.35

**Construction Electricity Usage: Shay Pond Discharge Project**

The total Shay Pond Discharge Project construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-24**) estimated by the utility provider cost per kWh of electricity.

***Program Construction Electricity Usage***

BVES’s general service rate schedule was used to determine the Shay Pond Discharge Project’s electrical usage. As of March 1, 2023, BVES’s general service rate is \$0.25 per kWhs of electricity for general services. As shown on **Table 4.7-24**, the total electricity usage from on-site project construction related activities is estimated to be approximately 4,788 kWhs.

**Table 4.7-24  
 CONSTRUCTION ELECTRICITY USAGE**

Land Use	Cost per kWh	Program Construction Electricity Usage (kWh)
Proposed Program		
Shay Pond Discharge Project	\$0.25	4,788

**Construction Equipment Fuel Estimates: Shay Pond Discharge Project**

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Shay Pond Discharge Project construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

**Program Construction Equipment Fuel Consumption**

Shay Pond Discharge Project construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7-25**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region. As presented on **Table 4.7-25**, Shay Pond Discharge Project construction activities would consume an estimated 26,630 gallons of diesel fuel. Shay Pond Discharge Project construction would represent a “single-event” diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

**Table 4.7-25  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
<b>Shay Pond Discharge Project</b>								
Linear, Grading & Excavation	190	Signal Boards	6	1	8	0.82	39	404
		Excavators	36	1	8	0.38	109	1,124
		Tractors/Loaders/Bac khoes	84	1	8	0.37	249	2,554
		Plate Compactors	8	1	8	0.43	28	283
		Rollers	36	1	8	0.38	109	1,124
		Off-Highway Trucks	376	1	8	0.38	1,143	11,739
Linear, Drainage, Utilities, & Sub-Grade	190	Tractors/Loaders/Bac khoes	84	1	6	0.37	186	1,915
		Plate Compactors	8	1	6	0.43	21	212
		Rollers	36	1	6	0.38	82	843
		Excavators	36	1	4	0.38	55	562
		Off-Highway Trucks	376	1	4	0.38	572	5,870
<b>Shay Pond Discharge Project - Construction Fuel Demand (Gallons Diesel Fuel)</b>								<b>26,630</b>

**Construction Trips and VMT: Shay Pond Discharge Project**

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips for the Shay Pond Discharge Project are presented below in **Table 4.7-26**. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.

**Table 4.7-26  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	One-Way Trips per Day End Date			Trip Length		
	Worker	Vendor	Hauling	Worker	Vendor	Hauling
<b>Shay Pond Discharge Project</b>						
Linear, Grading & Excavation	2	13	5	100	100	20
Linear, Drainage, Utilities, & Sub-Grade	0	0	0	18.5	10.2	20

**Construction Worker Fuel Estimates: Shay Pond Discharge Project**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the Shay Pond Discharge Project, the construction worker trips would generate an estimated 29,250 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1<sup>10</sup>), and 25% are from light-duty-trucks (LDT2<sup>11</sup>). Data regarding the Shay Pond Discharge Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

**Tables 4.7-27 through 4.7-29** provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-27 through 4.7-29**, it is estimated that 1,335 gallons of fuel will be consumed related to construction worker trips during full construction of the Shay Pond Discharge Project. It should be noted that construction worker trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

<sup>10</sup> Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.

<sup>11</sup> Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.



**Table 4.7-27  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDA**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Shay Pond Discharge Project	<b>2025</b>						
	Linear, Grading & Excavation	175	1	100	17,500	32.57	537
	<b>2026</b>						
	Linear, Grading & Excavation	15	1	100	1,500	33.47	45
	Linear, Drainage, Utilities, & Sub-Grade	190	0	18.5	0	33.47	0
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA</b>							<b>582</b>

**Table 4.7-28  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT1**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Shay Pond Discharge Project	<b>2025</b>						
	Linear, Grading & Excavation	175	0.5	100	8,750	25.11	348
	<b>2026</b>						
	Linear, Grading & Excavation	15	0.5	100	750	25.64	29
	Linear, Drainage, Utilities, & Sub-Grade	190	0	18.5	0	25.64	0
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT1</b>							<b>377</b>

**Table 4.7-29  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT2**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Shay Pond Discharge Project	<b>2025</b>						
	Linear, Grading & Excavation	175	0.5	100	8,750	25.24	347
	<b>2026</b>						
	Linear, Grading & Excavation	15	0.5	100	750	25.93	29
	Linear, Drainage, Utilities, & Sub-Grade	190	0	18.5	0	25.93	0
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT2</b>							<b>376</b>
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA, LDT1 &amp; LDT2</b>							<b>1,335</b>

**Construction Vendor/Hauling Fuel Estimates: Shay Pond Discharge Project**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary

consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 342,000 VMT along area roadways for the Shay Pond Discharge Project over the duration of construction activity. It is assumed that 50% of all vendor trips are from MHDT, 50% of vendor trips are from HHDT, and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Tables 4.7-30 through 4.7-32**, it is estimated that 89,640 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the Shay Pond Discharge Project.

It should be noted that construction vendor and hauling trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

**Table 4.7-30  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

Category	Construction Activity	Duration (Days)	Vendor (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Shay Pond Discharge Project	<b>2025</b>						
	Linear, Grading & Excavation	175	7	100	113,750	8.46	13,449
	<b>2026</b>						
	Linear, Grading & Excavation	15	7	100	9,750	8.59	1,135
<b>TOTAL CONSTRUCTION VENDOR FUEL CONSUMPTION – MHDT</b>							<b>14,584</b>

**Table 4.7-31  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – HHDT**

Category	Construction Activity	Duration (Days)	Vendor (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Shay Pond Discharge Project	<b>2025</b>						
	Linear, Grading & Excavation	175	7	100	113,750	6.13	18,557
	<b>2026</b>						
	20,119	15	7	100	9,750	6.24	1,562
<b>TOTAL CONSTRUCTION VENDOR FUEL CONSUMPTION – HHDT</b>							<b>59,580</b>

**Table 4.7-32  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

Category	Construction Activity	Duration (Days)	Vendor (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Shay Pond Discharge Project	<b>2025</b>						
	Linear, Grading & Excavation	175	5	100	87,500	6.13	14,274
	<b>2026</b>						
	Linear, Grading & Excavation	15	5	100	7,500	6.24	1,202
<b>TOTAL CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION – MHDT &amp; HHDT</b>							<b>89,640</b>

**Construction Energy Impact Conclusion: Shay Pond Discharge Project**

***Construction Energy Efficiency/Conservation Measures***

The equipment used for Shay Pond Discharge Project construction would conform to CARB regulations and California emissions standards. There are no unusual Shay Pond Discharge Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Shay Pond Discharge Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The Shay Pond Discharge Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, “grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling.” In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Project, which is typical for Projects and Programs that are in the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the Shay Pond Discharge Project because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

### ***Construction Energy Demand Impact Summary***

The estimated power cost of on-site electricity usage during the construction of the Shay Pond Discharge Project is assumed to be approximately \$1,203.35. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Shay Pond Discharge Project build-out, is calculated to be approximately 4,788 kWhs.

Construction equipment used by the Shay Pond Discharge Project would result in single event consumption of approximately 26,630 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Shay Pond Discharge Project's proposed construction process that are unusual or energy-intensive, and Shay Pond Discharge Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Shay Pond Discharge Project would result in the estimated fuel consumption of 1,335 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 89,640 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements. As supported by the preceding discussions, Program construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

### **Construction Power Cost: Solar Evaporation Ponds**

The total Solar Evaporation Ponds construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

**Program Construction Power Cost**

The 2023 National Construction Estimator identifies a typical power cost per 1,000 sf of construction per month of \$2.50, which was used to calculate the Program’s total construction power cost.

As shown on **Table 4.7-33**, the total power cost of the on-site electricity usage during the construction of the Solar Evaporation Ponds Project is estimated to be approximately \$105,524.29.

**Table 4.7-33  
 CONSTRUCTION POWER COST**

Land Use	Power Cost (per 1,000 SF of construction per month)	Size (1,000 SF)	Construction Duration (months)	Program Construction Power Cost
Solar Evaporation Ponds	\$2.50	141.135	17	\$105,524.29

**Construction Electricity Usage: Solar Evaporation Ponds**

The total Solar Evaporation Ponds Project construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-33**) estimated by the utility provider cost per kWh of electricity.

**Program Construction Electricity Usage**

BVES’s general service rate schedule was used to determine the Solar Evaporation Ponds Project’s electrical usage. As of March 1, 2023, BVES’s general service rate is \$0.25 per kWhs of electricity for general services. As shown on **Table 4.7-34**, the total electricity usage from on-site project construction related activities is estimated to be approximately 419,847 kWhs.

**Table 4.7-14  
 CONSTRUCTION ELECTRICITY USAGE**

Land Use	Cost per kWh	Program Construction Electricity Usage (kWh)
Proposed Program		
Solar Evaporation Pond	\$0.25	419,847

**Construction Equipment Fuel Estimates: Solar Evaporation Ponds**

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Solar Evaporation Ponds construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

**Program Construction Equipment Fuel Consumption**

Solar Evaporation Ponds construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7-35**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards.

Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region. As presented on **Table 4.7-35**, Solar Evaporation Ponds construction activities would consume an estimated 334,088 gallons of diesel fuel. Solar Evaporation Ponds construction would represent a “single-event” diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

**Table 4.7-35  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
<b>Evaporations Ponds</b>								
Site Preparation	380	Rubber Tired Dozers	367	2	8	0.4	2,349	48,246
		Crushing/Proc. Equipment	12	2	2	0.85	41	838
		Off-Highway Trucks	376	2	8	0.38	2,286	46,957
		Scrapers	423	7	8	0.48	11,370	233,551
		Excavators	36	2	8	0.38	219	4,496
<b>Evaporations Ponds - Construction Fuel Demand (Gallons Diesel Fuel)</b>								<b>334,088</b>

**Construction Trips and VMT: Solar Evaporation Ponds**

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips are presented below in **Table 4.7-36**. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.

**Table 4.7-36  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	One-Way Trips per Day End Date			Trip Length		
	Worker	Vendor	Hauling	Worker	Vendor	Hauling
<b>Solar Evaporation Ponds</b>						
Site Preparation	10	0	11	100	10.2	100

**Construction Worker Fuel Estimates: Solar Evaporation Ponds**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the Solar Evaporation Ponds Project, the construction worker trips would generate an estimated 380,000 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1<sup>12</sup>), and 25% are from light-duty-trucks

<sup>12</sup> Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.



(LDT2<sup>13</sup>). Data regarding the Solar Evaporation Ponds Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

**Tables 4.7-37 through 4.7-39** provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-37 through 4.7-39**, it is estimated that 13,198 gallons of fuel will be consumed related to construction worker trips during full construction of the Solar Evaporation Ponds Project. It should be noted that construction worker trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

**Table 4.7-37  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDA**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Solar Evaporation Ponds	<b>2025</b>						
	Site Preparation	175	5	100	87,500	32.57	2,687
	<b>2026</b>						
	Site Preparation	205	5	100	102,500	33.47	3,062
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA</b>							<b>5,749</b>

**Table 4.7-38  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT1**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Solar Evaporation Ponds	<b>2025</b>						
	Site Preparation	175	2.5	100	43,750	25.11	1,742
	<b>2026</b>						
	Site Preparation	205	2.5	100	51,250	25.64	1,998
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT1</b>							<b>3,740</b>

<sup>13</sup> Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.

**Table 4.7-39  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT2**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
<b>2025</b>							
Solar Evaporation Ponds	Site Preparation	175	2.5	100	43,750	25.24	1,733
	<b>2026</b>						
	Site Preparation	205	2.5	100	51,250	25.93	1,976
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT2</b>							<b>3,709</b>
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA, LDT1 &amp; LDT2</b>							<b>13,198</b>

**Construction Vendor/Hauling Fuel Estimates: Solar Evaporation Ponds**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 418,000 VMT along area roadways for the Solar Evaporation Ponds Project over the duration of construction activity. It is assumed that 50% of all vendor trips are from MHDT, 50% of vendor trips are from HHDT, and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Table 4.7-40**, it is estimated that 67,539 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the Solar Evaporation Ponds Project.

It should be noted that construction vendor and hauling trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

**Table 4.7-40  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

Category	Construction Activity	Duration (Days)	Vendor (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
<b>2025</b>							
Solar Evaporation Ponds	Linear, Grading & Excavation	175	11	100	192,500	6.13	31,403
	<b>2026</b>						
	Linear, Grading & Excavation	205	11	100	225,500	6.24	36,136
<b>TOTAL CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION – MHDT &amp; HHDT</b>							<b>67,539</b>

## **Construction Energy Impact Conclusion: Solar Evaporation Ponds**

### ***Construction Energy Efficiency/Conservation Measures***

The equipment used for Solar Evaporation Ponds Project construction would conform to CARB regulations and California emissions standards. There are no unusual Solar Evaporation Ponds Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Solar Evaporation Ponds Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The Solar Evaporation Ponds Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, "grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling." In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Project, which is typical for Projects and Programs that are in the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the Solar Evaporation Ponds Project because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

### ***Construction Energy Demand Impact Summary***

The estimated power cost of on-site electricity usage during the construction of the Solar Evaporation Ponds Project is assumed to be approximately \$105,524.29. Additionally, based on the assumed

power cost, it is estimated that the total electricity usage during construction, after full Solar Evaporation Ponds Project build-out, is calculated to be approximately 419,847 kWhs.

Construction equipment used by the Solar Evaporation Ponds Project would result in single event consumption of approximately 13,198 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Solar Evaporation Ponds Project’s proposed construction process that are unusual or energy-intensive, and Solar Evaporation Ponds Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Solar Evaporation Ponds Project would result in the estimated fuel consumption of 157,463 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 67,539 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements. As supported by the preceding discussions, Solar Evaporation Ponds Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

**Construction Power Cost: Sand Canyon Recharge Project**

The total Program construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

***Program Construction Power Cost***

The 2023 *National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of \$2.50, which was used to calculate the Program’s total construction power cost.

As shown on **Table 4.7-41**, the total power cost of the on-site electricity usage during the construction of the Program is estimated to be approximately \$5,998.22.

**Table 4.7-41  
 CONSTRUCTION POWER COST**

<b>Land Use</b>	<b>Power Cost (per 1,000 SF of construction per month)</b>	<b>Size (1,000 SF)</b>	<b>Construction Duration (months)</b>	<b>Program Construction Power Cost</b>
Sand Canyon Recharge Project	\$2.50	2,482.924	17	\$5,998.22

**Construction Electricity Usage: Sand Canyon Recharge Project**

The total Sand Canyon Recharge Project construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-42**) estimated by the utility provider cost per kWh of electricity.

***Program Construction Electricity Usage***

BVES's general service rate schedule was used to determine the Sand Canyon Recharge Project's electrical usage. As of March 1, 2023, BVES's general service rate is \$0.25 per kWhs of electricity for general services. As shown on **Table 4.7-42**, the total electricity usage from on-site project construction related activities is estimated to be approximately 23,865 kWhs.

**Table 4.7-42  
 CONSTRUCTION ELECTRICITY USAGE**

Land Use	Cost per kWh	Program Construction Electricity Usage (kWh)
Proposed Program		
Sand Canyon Recharge Project	\$0.25	23,865

**Construction Equipment Fuel Estimates: Sand Canyon Recharge Project**

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Sand Canyon Recharge Project construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

***Program Construction Equipment Fuel Consumption***

Sand Canyon Recharge Project construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7-43**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region. As presented on **Table 4.7-43**, Sand Canyon Recharge Project construction activities would consume an estimated 42,628 gallons of diesel fuel. Sand Canyon Recharge Project construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

**Table 4.7-43  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
<b>Sand Canyon Recharge Project</b>								
Linear, Grading & Excavation	190	Tractors/Loaders/Bac khoes	84	1	4	0.37	124	1,277
		Crawler Tractors	87	1	4	0.43	150	1,537
		Excavators	36	1	8	0.38	109	1,124
		Plate Compactors	8	1	8	0.43	28	283
		Pavers	81	1	8	0.42	272	2,795
		Rollers	36	1	8	0.38	109	1,124
		Off-Highway Trucks	376	1	8	0.38	1,143	11,739
		Signal Boards	6	1	8	0.82	39	404
Linear, Drainage, Utilities, & Sub-Grade	190	Cranes	367	1	4	0.29	426	4,372
		Forklifts	82	1	4	0.2	66	674
		Tractors/Loaders/Bac khoes	84	1	8	0.37	249	2,554
		Plate Compactors	8	1	6	0.43	21	212
		Rollers	36	1	6	0.38	82	843
		Excavators	36	1	4	0.38	55	562
Linear, Drainage, Utilities, & Sub-Grade	190	Off-Highway Trucks	376	1	4	0.38	572	5,870
		Pavers	81	1	2	0.42	68	699
Demolition	20	Concrete/Industrial Saws	33	2	6	0.73	289	313
Building Construction	220	Bore/Drill Rigs	83	1	8	0.5	332	3,948
		Plate Compactors	8	1	2	0.43	7	82
		Tractors/Loaders/Bac khoes	84	1	6	0.37	186	2,218
<b>Sand Canyon Recharge Project - Construction Fuel Demand (Gallons Diesel Fuel)</b>								<b>42,628</b>

**Construction Trips and VMT: Sand Canyon Recharge Project**

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips for the Sand Canyon Recharge Project are presented below in **Table 4.7-44**. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.



**Table 4.7-44  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	One-Way Trips per Day End Date			Trip Length		
	Worker	Vendor	Hauling	Worker	Vendor	Hauling
<b>Sand Canyon Recharge Project</b>						
Demolition	5	0	19	100	10.2	100
Linear, Grading & Excavation	20	0	18	100	10.2	100
Building Construction	5	6	0	100	100	20
Linear, Drainage, Utilities, & Sub-Grade	20	0	0	100	10.2	20

**Construction Worker Fuel Estimates: Sand Canyon Recharge Project**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the Sand Canyon Recharge Project, the construction worker trips would generate an estimated 881,000 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1<sup>14</sup>), and 25% are from light-duty-trucks (LDT2<sup>15</sup>). Data regarding the Sand Canyon Recharge Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

**Tables 4.7-45 through 4.7-47** provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-45 through 4.7-47**, it is estimated that 30,621 gallons of fuel will be consumed related to construction worker trips during full construction of the Sand Canyon Recharge Project. It should be noted that construction worker trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

<sup>14</sup> Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.

<sup>15</sup> Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.

**Table 4.7-45  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDA**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Sand Canyon Recharge Project	<b>2025</b>						
	Demolition	21	2.5	100	5,250	32.57	161
	Linear, Grading & Excavation	174	10	100	174,000	32.57	5,343
	Building Construction	144	2.5	100	36,000	32.57	1,105
	<b>2026</b>						
	Linear, Grading & Excavation	16	10	100	16,000	33.47	478
	Building Construction	77	2.5	100	19,250	33.47	575
	Linear, Drainage, Utilities, & Sub-Grade	190	10	100	190,000	33.47	5,676
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA</b>							<b>13,338</b>

**Table 4.7-46  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT1**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Sand Canyon Recharge Project	<b>2025</b>						
	Demolition	21	1.25	100	2,625	25.11	105
	Linear, Grading & Excavation	174	5	100	87,000	25.11	3,464
	Building Construction	144	1.25	100	18,000	25.11	717
	<b>2026</b>						
	Linear, Grading & Excavation	16	5	100	8,000	25.64	312
	Building Construction	77	1.25	100	9,625	25.64	375
	Linear, Drainage, Utilities, & Sub-Grade	190	5	100	95,000	25.64	3,704
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT1</b>							<b>8,677</b>

**Table 4.7-47  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT2**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Sand Canyon Recharge Project	<b>2025</b>						
	Demolition	21	1.25	100	2,625	25.24	104
	Linear, Grading & Excavation	174	5	100	87,000	25.24	3,447
	Building Construction	144	1.25	100	18,000	25.24	713
	<b>2026</b>						
	Linear, Grading & Excavation	16	5	100	8,000	25.93	308
	Building Construction	77	1.25	100	9,625	25.93	371
	Linear, Drainage, Utilities, & Sub-Grade	190	5	100	95,000	25.93	3,663
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT2</b>							<b>8,606</b>
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA, LDT1 &amp; LDT2</b>							<b>30,621</b>

**Construction Vendor/Hauling Fuel Estimates: Sand Canyon Recharge Project**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 3,706,415 VMT along area roadways for the Sand Canyon Recharge Project over the duration of construction activity. It is assumed that 50% of all vendor trips are from MHDT, 50% of vendor trips are from HHDT, and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Table 4.7-48**, it is estimated that 62,132 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the Sand Canyon Recharge Project.

It should be noted that construction vendor and hauling trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

**Table 4.7-48  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

Category	Construction Activity	Duration (Days)	Vendor (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Sand Canyon Recharge Project	<b>2025</b>						
	Demolition	21	19	100	39,375	6.13	6,423
	Linear, Grading & Excavation	174	18	100	313,200	6.13	51,094
	<b>2026</b>						
	Linear, Grading & Excavation	16	18	100	28,800	6.24	4,615
<b>TOTAL CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION – MHDT &amp; HHDT</b>							<b>62,132</b>

**Construction Energy Impact Conclusion: Sand Canyon Recharge Project**

***Construction Energy Efficiency/Conservation Measures***

The equipment used for Sand Canyon Recharge Project construction would conform to CARB regulations and California emissions standards. There are no unusual Sand Canyon Recharge Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Sand Canyon Recharge Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The Sand Canyon Recharge Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, “grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling.” In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Project, which is typical for Projects and Programs that are in the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the Sand Canyon Recharge Project because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

### ***Construction Energy Demand Impact Summary***

The estimated power cost of on-site electricity usage during the construction of the Sand Canyon Recharge Project is assumed to be approximately \$5,998.22. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Sand Canyon Recharge Project build-out, is calculated to be approximately 23,865 kWhs.

Construction equipment used by the Sand Canyon Recharge Project would result in single event consumption of approximately 42,628 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Sand Canyon Recharge Project's proposed construction process that are unusual or energy-intensive, and Sand Canyon Recharge Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Sand Canyon Recharge Project would result in the estimated fuel consumption of 30,621 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 62,132 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements. As supported by the preceding discussions, Sand Canyon Recharge Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

### **Construction Power Cost: Whole Program**

The total Program construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

**Program Construction Power Cost**

The 2023 National Construction Estimator identifies a typical power cost per 1,000 sf of construction per month of \$2.50, which was used to calculate the Program’s total construction power cost.

As shown on **Table 4.7-49**, the total power cost of the on-site electricity usage during the construction of the Program is estimated to be approximately \$126,967.83.

**Table 4.7-49  
 CONSTRUCTION POWER COST**

<b>Land Use</b>	<b>Power Cost (per 1,000 SF of construction per month)</b>	<b>Size (1,000 SF)</b>	<b>Construction Duration (months)</b>	<b>Program Construction Power Cost</b>
BBARWA WWTP Upgrades Project	\$2.50	173.805	24	\$10,428.28
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	\$2.50	3,092.766	17	\$3,813.68
Shay Pond Discharge Project	\$2.50	28.314	17	\$1,203.35
Solar Evaporation Ponds	\$2.50	141.135	17	\$105,524.29
Sand Canyon Recharge Project	\$2.50	2,482.924	17	\$5,998.22
<b>TOTAL CONSTRUCTION POWER COST</b>				<b>\$126,967.83</b>

**Construction Electricity Usage: Whole Program**

The total Program construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-50**) estimated by the utility provider cost per kWh of electricity.

**Program Construction Electricity Usage**

BVES’s general service rate schedule was used to determine the Program’s electrical usage. As of March 1, 2023, BVES’s general service rate is \$0.25 per kWhs of electricity for general services. As shown on **Table 4.7-50**, the total electricity usage from on-site project construction related activities is estimated to be approximately 505,164 kWhs.



**Table 4.7-50  
 CONSTRUCTION ELECTRICITY USAGE**

Land Use	Cost per kWh	Program Construction Electricity Usage (kWh)
Proposed Program		
BBARWA WWTP Upgrades Project	\$0.25	41,491
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	\$0.25	15,173
Shay Pond Discharge Project	\$0.25	4,788
Evaporation Pond	\$0.25	419,847
Sand Canyon Recharge Project	\$0.25	23,865
<b>TOTAL CONSTRUCTION ELECTRICITY USAGE</b>		<b>505,164</b>

**Construction Equipment Fuel Estimates: Whole Program**

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Program construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

**Program Construction Equipment Fuel Consumption**

Program construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7-51**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region. As presented on **Table 4.7-51**, Program construction activities would consume an estimated 565,550 gallons of diesel fuel. Program construction would represent a “single-event” diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

**Table 4.7-51  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
<b>BBARWA WWTP Upgrades Project</b>								
Linear, Grading & Excavation	30	Bore/Drill Rigs	83	1	8	0.5	332	538
		Off-Highway Trucks	376	1	8	0.38	1,143	1,854
		Tractors/Loaders/Bac khoes	84	1	4	0.37	124	202
Building Construction	465	Rubber Tired Dozers	367	1	8	0.4	1,174	29,519
		Graders	148	1	8	0.41	485	12,202
		Cranes	367	1	8	0.29	851	21,401

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
		Tractors/Loaders/Bac khoes	84	1	8	0.37	249	6,250
		Off-Highway Trucks	376	2	8	0.38	2,286	57,461
		Crawler Tractors	87	1	4	0.43	150	3,761
		Forklifts	82	1	4	0.2	66	1,649
<b>BBARWA WWTP Upgrades Project - Construction Fuel Demand (Gallons Diesel Fuel)</b>								<b>134,836</b>
<b>Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment</b>								
Linear, Grading & Excavation	190	Excavators	36	1	8	0.38	109	1,124
		Tractors/Loaders/Bac khoes	84	1	8	0.37	249	2,554
		Plate Compactors	8	1	8	0.43	28	283
		Signal Boards	6	1	8	0.82	39	404
		Off-Highway Trucks	376	1	8	0.38	1,143	11,739
Linear, Drainage, Utilities, & Sub-Grade	190	Tractors/Loaders/Bac khoes	84	1	6	0.37	186	1,915
		Plate Compactors	8	1	6	0.43	21	212
		Rollers	36	1	6	0.38	82	843
		Off-Highway Trucks	376	1	4	0.38	572	5,870
		Excavators	36	1	4	0.38	55	562
		Pavers	81	1	2	0.42	68	699
		Plate Compactors	8	1	2	0.43	7	71
Demolition	70	Concrete/Industrial Saws	33	2	6	0.73	289	1,094
<b>Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment - Construction Fuel Demand (Gallons Diesel Fuel)</b>								<b>27,369</b>
<b>Shay Pond Discharge Project</b>								
Linear, Grading & Excavation	190	Signal Boards	6	1	8	0.82	39	404
		Excavators	36	1	8	0.38	109	1,124
		Tractors/Loaders/Bac khoes	84	1	8	0.37	249	2,554
		Plate Compactors	8	1	8	0.43	28	283
		Rollers	36	1	8	0.38	109	1,124
		Off-Highway Trucks	376	1	8	0.38	1,143	11,739
Linear, Drainage, Utilities, & Sub-Grade	190	Tractors/Loaders/Bac khoes	84	1	6	0.37	186	1,915
		Plate Compactors	8	1	6	0.43	21	212
		Rollers	36	1	6	0.38	82	843
		Excavators	36	1	4	0.38	55	562
		Off-Highway Trucks	376	1	4	0.38	572	5,870
<b>Shay Pond Discharge Project - Construction Fuel Demand (Gallons Diesel Fuel)</b>								<b>26,630</b>
<b>Solar Evaporations Ponds</b>								
Site Preparation	380	Rubber Tired Dozers	367	2	8	0.4	2,349	48,246
		Crushing/Proc. Equipment	12	2	2	0.85	41	838
		Off-Highway Trucks	376	2	8	0.38	2,286	46,957
		Scrapers	423	7	8	0.48	11,370	233,551
		Excavators	36	2	8	0.38	219	4,496

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
<b>Solar Evaporations Ponds - Construction Fuel Demand (Gallons Diesel Fuel)</b>								<b>334,088</b>
<b>Sand Canyon Recharge Project</b>								
Linear, Grading & Excavation	190	Tractors/Loaders/Bac khes	84	1	4	0.37	124	1,277
		Crawler Tractors	87	1	4	0.43	150	1,537
		Excavators	36	1	8	0.38	109	1,124
		Plate Compactors	8	1	8	0.43	28	283
		Pavers	81	1	8	0.42	272	2,795
		Rollers	36	1	8	0.38	109	1,124
		Off-Highway Trucks	376	1	8	0.38	1,143	11,739
		Signal Boards	6	1	8	0.82	39	404
Linear, Drainage, Utilities, & Sub-Grade	190	Cranes	367	1	4	0.29	426	4,372
		Forklifts	82	1	4	0.2	66	674
		Tractors/Loaders/Bac khes	84	1	8	0.37	249	2,554
		Plate Compactors	8	1	6	0.43	21	212
		Rollers	36	1	6	0.38	82	843
		Excavators	36	1	4	0.38	55	562
Linear, Drainage, Utilities, & Sub-Grade	190	Off-Highway Trucks	376	1	4	0.38	572	5,870
		Pavers	81	1	2	0.42	68	699
Demolition	20	Concrete/Industrial Saws	33	2	6	0.73	289	313
Building Construction	220	Bore/Drill Rigs	83	1	8	0.5	332	3,948
		Plate Compactors	8	1	2	0.43	7	82
		Tractors/Loaders/Bac khes	84	1	6	0.37	186	2,218
<b>Sand Canyon Recharge Project - Construction Fuel Demand (Gallons Diesel Fuel)</b>								<b>42,628</b>
<b>TOTAL CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)</b>								<b>565,550</b>

**Construction Trips and VMT: Whole Program**

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips are presented below in **Table 4.7-52**. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.

**Table 4.7-52  
 CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Construction Activity	One-Way Trips per Day End Date			Trip Length		
	Worker	Vendor	Hauling	Worker	Vendor	Hauling
<b>BBARWA WWTP Upgrades Project</b>						
Demolition	50	25	46	100	100	100
Building Construction	50	7	2	100	100	100
Linear, Grading & Excavation	50	0	0	100	10.2	100
<b>Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment</b>						
Demolition	5	0	21	100	10.2	100
Linear, Grading & Excavation	15	0	36	100	10.2	100
Linear, Drainage, Utilities, & Sub-Grade	18	0	0	100	10.2	20
<b>Shay Pond Discharge Project</b>						
Linear, Grading & Excavation	2	13	5	100	100	20
Linear, Drainage, Utilities, & Sub-Grade	0	0	0	18.5	10.2	20
<b>Solar Evaporation Ponds</b>						
Site Preparation	10	0	11	100	10.2	100
<b>Sand Canyon Recharge Project</b>						
Demolition	5	0	19	100	10.2	100
Linear, Grading & Excavation	20	0	18	100	10.2	100
Building Construction	5	6	0	100	100	20
Linear, Drainage, Utilities, & Sub-Grade	20	0	0	100	10.2	20

**Construction Worker Fuel Estimates: Whole Program**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the Program, the construction worker trips would generate an estimated 4,532,000 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1<sup>16</sup>), and 25% are from light-duty-trucks (LDT2<sup>17</sup>). Data regarding Program related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

<sup>16</sup> Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.

<sup>17</sup> Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.

**Tables 4.7-53 through 4.7-55** provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-53 through 4.7-55**, it is estimated that 157,463 gallons of fuel will be consumed related to construction worker trips during full construction of the Program. It should be noted that construction worker trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

**Table 4.7-53  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDA**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
BBARWA WWTP Upgrades Project	<b>2025</b>						
	Demolition	21	25	100	52,500	32.57	1,612
	Building Construction	226	25	100	565,000	32.57	17,349
	<b>2026</b>						
	Building Construction	239	25	100	597,500	33.47	17,849
	Linear, Grading & Excavation	23	25	100	57,500	33.47	1,718
	<b>2027</b>						
Linear, Grading & Excavation	7	25	100	17,500	34.38	509	
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	<b>2025</b>						
	Demolition	71	3	100	17,750	32.57	545
	Linear, Grading & Excavation	175	8	100	131,250	32.57	4,030
	<b>2026</b>						
	Linear, Grading & Excavation	15	8	100	11,250	33.47	336
Linear, Drainage, Utilities, & Sub-Grade	190	9	100	166,250	33.47	4,966	
Shay Pond Discharge Project	<b>2025</b>						
	Linear, Grading & Excavation	175	1	100	17,500	32.57	537
	<b>2026</b>						
	Linear, Grading & Excavation	15	1	100	1,500	33.47	45
Linear, Drainage, Utilities, & Sub-Grade	190	0	18.5	0	33.47	0	
Solar Evaporation Ponds	<b>2025</b>						
	Site Preparation	175	5	100	87,500	32.57	2,687
	<b>2026</b>						
Site Preparation	205	5	100	102,500	33.47	3,062	
Sand Canyon Recharge Project	<b>2025</b>						
	Demolition	21	2.5	100	5,250	32.57	161
	Linear, Grading & Excavation	174	10	100	174,000	32.57	5,343
	Building Construction	144	2.5	100	36,000	32.57	1,105
	<b>2026</b>						
	Linear, Grading & Excavation	16	10	100	16,000	33.47	478
	Building Construction	77	2.5	100	19,250	33.47	575
Linear, Drainage, Utilities, & Sub-Grade	190	10	100	190,000	33.47	5,676	

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA</b>							<b>68,584</b>

**Table 4.7-54  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT1**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
BBARWA WWTP Upgrades Project	<b>2025</b>						
	Demolition	21	12.5	100	26,250	25.11	1,045
	Building Construction	226	12.5	100	282,500	25.11	11,249
	<b>2026</b>						
	Building Construction	239	12.5	100	298,750	25.64	11,650
	Linear, Grading & Excavation	23	12.5	100	28,750	25.64	1,121
	<b>2027</b>						
Linear, Grading & Excavation	7	12.5	100	8,750	26.20	334	
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	<b>2025</b>						
	Demolition	71	1	100	8,875	25.11	353
	Linear, Grading & Excavation	175	4	100	65,625	25.11	2,613
	<b>2026</b>						
	Linear, Grading & Excavation	15	4	100	5,625	25.64	219
Linear, Drainage, Utilities, & Sub-Grade	190	4	100	83,125	25.64	3,241	
Shay Pond Discharge Project	<b>2025</b>						
	Linear, Grading & Excavation	175	0.5	100	8,750	25.11	348
	<b>2026</b>						
	Linear, Grading & Excavation	15	0.5	100	750	25.64	29
Linear, Drainage, Utilities, & Sub-Grade	190	0	18.5	0	25.64	0	
Solar Evaporation Ponds	<b>2025</b>						
	Site Preparation	175	2.5	100	43,750	25.11	1,742
	<b>2026</b>						
Site Preparation	205	2.5	100	51,250	25.64	1,998	
Sand Canyon Recharge Project	<b>2025</b>						
	Demolition	21	1.25	100	2,625	25.11	105
	Linear, Grading & Excavation	174	5	100	87,000	25.11	3,464
	Building Construction	144	1.25	100	18,000	25.11	717
	<b>2026</b>						
	Linear, Grading & Excavation	16	5	100	8,000	25.64	312
Building Construction	77	1.25	100	9,625	25.64	375	



Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
	Linear, Drainage, Utilities, & Sub-Grade	190	5	100	95,000	25.64	3,704
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT1</b>							<b>44,621</b>

**Table 4.7-55  
 CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT2**

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
BBARWA WWTP Upgrades Project	<b>2025</b>						
	Demolition	21	12.5	100	26,250	25.24	1,040
	Building Construction	226	12.5	100	282,500	25.24	11,193
	<b>2026</b>						
	Building Construction	239	12.5	100	298,750	25.93	11,520
	Linear, Grading & Excavation	23	12.5	100	28,750	25.93	1,109
	<b>2027</b>						
Linear, Grading & Excavation	7	12.5	100	8,750	26.60	329	
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	<b>2025</b>						
	Demolition	71	1	100	8,875	25.24	352
	Linear, Grading & Excavation	175	4	100	65,625	25.24	2,600
	<b>2026</b>						
	Linear, Grading & Excavation	15	4	100	5,625	25.93	217
Linear, Drainage, Utilities, & Sub-Grade	190	4	100	83,125	25.93	3,205	
Shay Pond Discharge Project	<b>2025</b>						
	Linear, Grading & Excavation	175	0.5	100	8,750	25.24	347
	<b>2026</b>						
	Linear, Grading & Excavation	15	0.5	100	750	25.93	29
Linear, Drainage, Utilities, & Sub-Grade	190	0	18.5	0	25.93	0	
Solar Evaporation Ponds	<b>2025</b>						
	Site Preparation	175	2.5	100	43,750	25.24	1,733
	<b>2026</b>						
Site Preparation	205	2.5	100	51,250	25.93	1,976	
Sand Canyon Recharge Project	<b>2025</b>						
	Demolition	21	1.25	100	2,625	25.24	104
	Linear, Grading & Excavation	174	5	100	87,000	25.24	3,447
	Building Construction	144	1.25	100	18,000	25.24	713
	<b>2026</b>						
Linear, Grading & Excavation	16	5	100	8,000	25.93	308	

Category	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
	Building Construction	77	1.25	100	9,625	25.93	371
	Linear, Drainage, Utilities, & Sub-Grade	190	5	100	95,000	25.93	3,663
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDT2</b>							<b>44,258</b>
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION – LDA, LDT1 &amp; LDT2</b>							<b>157,463</b>

**Construction Vendor/Hauling Fuel Estimates: Whole Program**

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 3,706,415 VMT along area roadways for the Program over the duration of construction activity. It is assumed that 50% of all vendor trips are from MHDT, 50% of vendor trips are from HHDT, and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Tables 4.7-56 through 4.7-58**, it is estimated that 583,562 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the Program.

It should be noted that construction vendor and hauling trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

**Table 4.7-56  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

Category	Construction Activity	Duration (Days)	Vendor (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
BBARWA WWTP Upgrades Project	<b>2025</b>						
	Demolition	21	13	100	26,250	8.46	3,104
	Building Construction	226	3	100	73,450	8.46	8,684
	<b>2026</b>						
	Building Construction	239	3	100	77,675	8.59	9,046
Shay Pond Discharge Project	<b>2025</b>						
	Linear, Grading & Excavation	175	7	100	113,750	8.46	13,449
	<b>2026</b>						
	Linear, Grading & Excavation	15	7	100	9,750	8.59	1,135
Sand Canyon Recharge Project	<b>2025</b>						
	Building Construction	144	3	100	43,200	8.46	5,108

Category	Construction Activity	Duration (Days)	Vendor (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
	<b>2026</b>						
	Building Construction	77	3	100	23,100	8.59	2,690
<b>TOTAL CONSTRUCTION VENDOR FUEL CONSUMPTION – MHDT</b>							<b>43,216</b>

**Table 4.7-57  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – HHDT**

Category	Construction Activity	Duration (Days)	Vendor (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
	<b>2025</b>						
BBARWA WWTP Upgrades Project	Demolition	21	13	100	26,250	6.13	4,282
	Building Construction	226	3	100	73,450	6.13	11,982
	<b>2026</b>						
	Building Construction	239	3	100	77,675	6.24	12,447
	<b>2025</b>						
Shay Pond Discharge Project	Linear, Grading & Excavation	175	7	100	113,750	6.13	18,557
	<b>2026</b>						
	Linear, Grading & Excavation	15	7	100	9,750	6.24	1,562
	<b>2025</b>						
Sand Canyon Recharge Project	Building Construction	144	3	100	43,200	6.13	7,047
	<b>2026</b>						
	Building Construction	77	3	100	23,100	6.24	3,702
<b>TOTAL CONSTRUCTION VENDOR FUEL CONSUMPTION – HHDT</b>							<b>59,580</b>

**Table 4.7-58  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

Category	Construction Activity	Duration (Days)	Hauling (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
BBARWA WWTP Upgrades Project	<b>2025</b>						
	Demolition	21	46	100	96,600	6.13	15,759
	Building Construction	226	2	100	48,590	6.13	7,927
	<b>2026</b>						
	Building Construction	239	46	100	1,099,400	6.24	176,179
Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment	<b>2025</b>						
	Demolition	71	21	100	149,100	6.13	24,323
	Linear, Grading & Excavation	175	36	100	630,000	6.13	102,775
	<b>2026</b>						
	Linear, Grading & Excavation	15	36	100	54,000	6.24	8,654
Shay Pond Discharge Project	<b>2025</b>						
	Linear, Grading & Excavation	175	5	100	87,500	6.13	14,274
	<b>2026</b>						
	Linear, Grading & Excavation	15	5	100	7,500	6.24	1,202
Solar Evaporation Ponds	<b>2025</b>						
	Linear, Grading & Excavation	175	11	100	192,500	6.13	31,403
	<b>2026</b>						
	Linear, Grading & Excavation	205	11	100	225,500	6.24	36,136
Sand Canyon Recharge Project	<b>2025</b>						
	Demolition	21	19	100	39,375	6.13	6,423
	Linear, Grading & Excavation	174	18	100	313,200	6.13	51,094
	<b>2026</b>						
	Linear, Grading & Excavation	16	18	100	28,800	6.24	4,615
<b>TOTAL CONSTRUCTION HAULING FUEL CONSUMPTION – HHDT</b>							<b>480,765</b>
<b>TOTAL CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION – MHDT &amp; HHDT</b>							<b>583,562</b>

**Construction Energy Impact Conclusion: Whole Program**

***Construction Energy Efficiency/Conservation Measures***

The equipment used for Program construction would conform to CARB regulations and California emissions standards. There are no unusual Program characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Program would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The Program would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, "grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling." In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Program, which is typical for Projects and Programs that are in the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the Program because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

#### ***Construction Energy Demand Impact Summary***

The estimated power cost of on-site electricity usage during the construction of the Program is assumed to be approximately \$126,967.83. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Program build-out, is calculated to be approximately 505,164 kWhs.

Construction equipment used by the Program would result in single event consumption of approximately 565,550 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Program's proposed construction process that are unusual or energy-intensive, and Program construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Program would result in the estimated fuel consumption of 157,463 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 583,562 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements. As supported by the preceding discussions, Program construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

**4.7.5.(a)2 Operational Energy Demand Analysis**

Energy consumption in support of or related to Program operations would include minimal transportation fuel demands (fuel consumed by maintenance vehicles accessing the Program sites), fuel demands from operational equipment, and facilities energy demands (energy consumed by building operations and site maintenance activities).

**Operational Energy Demands: BBARWA WWTP Upgrades Project**

BBARWA WWTP Upgrades Project operational activities would result in the consumption of natural gas and electricity, which would be supplied to the Program by Southwest Gas and BVES. As summarized on **Table 4.7-59** the Program would result in 760,427 kBTU/year of natural gas and a net electricity demand of 147,883 kWhs/year of electricity after netting out the 3,652,117 kWhs/year of electricity generated by the Program’s photovoltaic solar design feature.

**Table 4.7-59  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

Land Use	Natural Gas Demand (kBtu/year)	Electricity Demand (kWhs/year)
Warehouse	760,427	3,800,000
Parking Lot	0	0
<b>TOTAL PROJECT ENERGY DEMAND</b>	<b>760,427</b>	<b>3,800,000</b>
<b>Solar Generation (kWh/year)</b>	<b>N/A</b>	<b>3,652,117</b>
<b>NET ENERGY DEMANDS</b>	<b>760,427</b>	<b>147,883</b>

***Transportation Fuel Demands***

In terms of operational energy demands, the proposed BBARWA WWTP Upgrades Project does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate substantive amounts of energy demand from BBARWA WWTP Upgrades Project operations. The BBARWA WWTP Upgrades Project does not propose a trip-generating land use and while it is anticipated that the BBARWA WWTP Upgrades Project would some new employee trips from the five new employment positions at BBARWA, but given the low number of



new employees, such trips would be minimal requiring a negligible amount of traffic trips on an annual basis.

***Operational Energy Demand Impact Summary***

BBARWA WWTP Upgrades Project facility operational energy demands are estimated at: 760,427 kBTU/year of natural gas and 147,883 kWh/year of electricity. Natural gas would be supplied to the BBARWA WWTP Upgrades Project by Southwest Gas; electricity would be supplied by BVES. The Program does not propose uses that are inherently energy intensive and the energy demands in total would be comparable to other land uses of similar scale and configuration.

Lastly, the BBARWA WWTP Upgrades Project will comply with the applicable Title 24 standards. Compliance itself with applicable Title 24 standards will ensure that the Program energy demands would not be inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

**Operational Energy Demands: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment**

The operational energy demands associated with conveying the Program Water to Stanfield Marsh/Big Bear Lake under the Stanfield Marsh/Big Bear Lake Discharge Project is accounted for as part of the BBARWA WWTP Upgrades Project, as the pump stations and facilities need to facilitate the Program Water conveyance would be installed therein. Thus, no electricity would be demanded by the Stanfield Marsh/Big Bear Lake Discharge Project.

***Transportation Fuel Demands***

In terms of operational energy demands, the proposed Stanfield Marsh/Big Bear Lake Discharge Project does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate substantive amounts of energy demand from Stanfield Marsh/Big Bear Lake Discharge Project operations. The Stanfield Marsh/Big Bear Lake Discharge Project does not propose a trip-generating land use and while it is anticipated that the Stanfield Marsh/Big Bear Lake Discharge Project would require intermittent maintenance, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis.

***Operational Energy Demand Impact Summary***

As stated above, electricity would not be demanded by the Stanfield Marsh/Big Bear Lake Discharge Project. Thus, no impacts would be anticipated.

**Operational Energy Demands: Shay Pond Discharge Project**

The operational energy demands associated with conveying the Program Water to Shay Pond under the Shay Pond Discharge Project is accounted for as part of the BBARWA WWTP Upgrades Project, as the pump stations and facilities need to facilitate the Program Water conveyance would be installed therein. Thus, no electricity would be demanded by the Shay Pond Discharge Project.

***Transportation Fuel Demands***

In terms of operational energy demands, the proposed Shay Pond Discharge Project does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate substantive amounts of energy demand from Shay Pond Discharge Project operations. The Shay Pond Discharge Project does not propose a trip-generating land use and while it is anticipated that the Shay Pond Discharge Project would require intermittent maintenance, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis.

***Operational Energy Demand Impact Summary***

As stated above, electricity would not be demanded by the Shay Pond Discharge Project. Thus, no impacts would be anticipated.

**Operational Energy Demands: Solar Evaporation Ponds**

The operational energy demands associated with conveying the brine to Solar Evaporation Ponds under the Solar Evaporation Ponds Project is accounted for as part of the BBARWA WWTP Upgrades Project, as the pump stations and facilities need to facilitate the brine conveyance would be installed therein. Thus, no electricity would be demanded by the Solar Evaporation Ponds Project.

***Transportation Fuel Demands***

In terms of operational energy demands, the proposed Solar Evaporation Ponds Project does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate substantive amounts of energy demand from Solar Evaporation Ponds Project operations. The Solar Evaporation Ponds Project does not propose a trip-generating land use and while it is anticipated that the Solar Evaporation Ponds Project would include some new employee trips from the five new employment positions at BBARWA, but given the low number of new employees, such trips would be minimal requiring a negligible amount of traffic trips on an annual basis.

***Operational Energy Demand Impact Summary***

As stated above, electricity would not be demanded by the Solar Evaporation Ponds Project. Thus, no impacts would be anticipated.

**Operational Energy Demands: Sand Canyon Recharge Project**

The Sand Canyon Recharge Project would result in energy consumption of electricity in support of the Sand Canyon Booster Station, which would be supplied to the Program by BVES. As summarized on **Table 4.7-60** the Program would result in a net electricity demand of 19,079 kWh/year of electricity.

**Table 4.7-60  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

<b>Land Use</b>	<b>Natural Gas Demand (kBTU/year)</b>	<b>Electricity Demand (kWhs/year)</b>
Warehouse	0	0
Parking Lot	0	19,079
<b>TOTAL PROJECT ENERGY DEMAND</b>	<b>0</b>	<b>19,079</b>
<b><i>Solar Generation (kWh/year)</i></b>	<b><i>N/A</i></b>	<b><i>19,079</i></b>
<b>NET ENERGY DEMANDS</b>	<b>0</b>	<b>19,079</b>

***Transportation Fuel Demands***

In terms of operational energy demands, the proposed Sand Canyon Recharge Project does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate substantive amounts of energy demand from Sand Canyon Recharge Project operations. The Sand Canyon Recharge Project does not propose a trip-generating land use and while it is anticipated that the Sand Canyon Recharge Project would require intermittent maintenance, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis.

***Operational Energy Demand Impact Summary***

Sand Canyon Recharge Project facility operational energy demands are estimated at: 19,079 kWh/year of electricity. Electricity would be supplied by BVES. The Sand Canyon Recharge Project

does not propose uses that are inherently energy intensive and the energy demands in total would be comparable to other land uses of similar scale and configuration.

Lastly, the Sand Canyon Recharge Project will comply with the applicable Title 24 standards. Compliance itself with applicable Title 24 standards will ensure that the Sand Canyon Recharge Project energy demands would not be inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

**Operational Energy Demands: Whole Program**

Program building operations activities would result in the consumption of natural gas and electricity, which would be supplied to the Program by Southwest Gas and BVES. As summarized on **Table 4.7-61** the Program would result in 760,427 kBTU/year of natural gas and a net electricity demand of 166,962 kWhs/year of electricity after netting out the 3,652,117 kWhs/year of electricity generated by the Program’s photovoltaic solar design feature.

**Table 4.7-61  
 CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT**

Land Use	Natural Gas Demand (kBTU/year)	Electricity Demand (kWhs/year)
Warehouse	760,427	3,800,000
Parking Lot	0	19,079
<b>TOTAL PROJECT ENERGY DEMAND</b>	<b>760,427</b>	<b>3,819,079</b>
<i>Solar Generation (kWh/year)</i>	<i>N/A</i>	<i>3,652,117</i>
<b>NET ENERGY DEMANDS</b>	<b>760,427</b>	<b>166,962</b>

**Operational Energy Demand Impact Summary: Whole Program**

Program facility operational energy demands are estimated at: 760,427 kBTU/year of natural gas and 166,962 kWh/year of electricity. Natural gas would be supplied to the Program by Southwest Gas; electricity would be supplied by BVES. The Program does not propose uses that are inherently energy intensive and the energy demands in total would be comparable to other land uses of similar scale and configuration.

Lastly, the Program will comply with the applicable Title 24 standards. Compliance itself with applicable Title 24 standards will ensure that the Program energy demands would not be inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

**4.7.5.(a)3 Energy Demand Impact Conclusion: Whole Program**

A significant impact would occur if the proposed Program would result in the inefficient, wasteful, or unnecessary use of energy.

**Construction**

Based on CalEEMod estimations within the modeling output files used to estimate GHG emissions, construction-related vehicle trips would result in approximately 4,532,000 VMT during construction and consume an estimated 741,025 gallons of gasoline and diesel combined during future development projects construction phases. Additionally, on-site construction equipment would consume an estimated 565,550 gallons of diesel fuel. Limitations on idling of vehicles and equipment and requirements that equipment be properly maintained would result in fuel savings. California Code of Regulations, Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road

diesel- powered equipment and are enforced by the CARB. Additionally, given the cost of fuel, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

Due to the temporary nature of construction and the financial incentives for developers and contractors to use energy-consuming resources in an efficient manner, the construction phase of the proposed Program would not result in wasteful, inefficient, and unnecessary consumption of energy. Therefore, the construction-related impacts related to electricity and fuel consumption would be less than significant.

## **Operation**

### ***Electricity and Natural Gas***

Operation of the proposed Program would consume energy as part of building operations and transportation activities. Building operations would involve energy consumption for multiple purposes and based on CalEEMod energy use estimations, operations for the Program would result in approximately 166,962 kWh of electricity and 760,427 kBTU/year of natural gas annually.

The Program would be designed and constructed in accordance with the City of Big Bear Lake or the San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation. As supported by the preceding discussions, Program operational energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

### ***Fuel***

As mentioned previously, the proposed Program does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate substantive amounts of energy demand from Program operations. The Program does not propose trip-generating land use and while it is anticipated that the Program would require intermittent maintenance, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. For these reasons, operational-related transportation fuel consumption would not result in a significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, the operational impact related to vehicle fuel consumption would be less than significant.

## **Combined Program Categories**

*Level of Significance Before Mitigation: Less than Significant.*

*Mitigation Measures: No mitigation is required as impacts would be less than significant.*

*Level of Significance After Mitigation: Less Than Significant.*

## **Cumulative Impact Analysis**

Cumulative development in the Big Bear Valley would increase demand for energy resources. However, new iterations of the California Building Energy Efficiency Standards and the CALGreen

Code would require increasingly more efficient appliances and building materials that reduce energy consumption in new development. In addition, vehicle fuel efficiency is anticipated to continue improving through implementation of the existing Pavley regulations under AB 1493, and implementation of SCAGs' RTP/SCS would reduce per capita VMT in the Big Bear Valley. Cumulative development in the Big Bear Valley will also be required to be consistent with applicable provisions of local General Plans related to energy efficiency and renewable energy as well as the SCAGs' RTP/SCS. Furthermore, as shown in the tables below, the percentage of statewide electricity and natural gas consumption attributed to San Bernardino County (approximately 5.76 [electricity] and 4.71 percent [natural gas], respectively) is on par with or lower than the counties' proportion of the statewide population (approximately 5.59 percent<sup>18</sup>). Therefore, because the overall electricity and natural gas (energy) usage is on average the same as the statewide average, the Program's energy demand is not anticipated to contribute to a significant cumulative impact related to the wasteful, inefficient, and unnecessary consumption of energy would not occur. As supported by the preceding discussions, cumulative energy impacts would be less than significant.

**Table 4.7-62  
 2021 ELECTRICITY CONSUMPTION**

Energy Type	San Bernardino County (GWh)	California (GWh)	Proportion of Statewide Consumption
Electricity	16,180	280,738	5.76

GWH = gigawatt-hours

Source: CEC, 2023. "California Energy Consumption Database." <http://ecdms.energy.ca.gov/> (accessed 09/06/23).

**Table 4.7-63  
 2021 NATURAL GAS CONSUMPTION**

Energy Type	San Bernardino County (millions of US therms)	California (millions of US therms)	Proportion of Statewide Consumption
Natural Gas	992	11,922	4.71

Source: CEC, 2023. "California Energy Consumption Database." <http://ecdms.energy.ca.gov/> (accessed 09/06/23).

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant*

**b) Would the project conflict with or obstruct existing energy standards or a State or local plan for renewable energy or energy efficiency?**

A significant impact would occur if the proposed Program would conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

**BBARWA WWTP Upgrades**

Construction: As discussed above, the proposed BBARWA WWTP Upgrades Project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings,

<sup>18</sup> According to the US Census Bureau for 2021, the population of San Bernardino County is 2,194,710 persons. According to the US Census Bureau for 2021, the California population was about 39,237,836 persons.

lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed BBARWA WWTP Upgrades Project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed BBARWA WWTP Upgrades Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation: RPS establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. As discussed in above, the BBARWA WWTP Upgrades Project would result in approximately 760,427 kBTU/year of natural gas and a net electricity demand of 147,883 kWhs/year of electricity after netting out the 3,652,117 kWhs/year of electricity generated by the Program's photovoltaic solar design feature. The electricity demand is substantially reduced to a net electricity demand of 147,883 kWhs/year of electricity after netting out the 3,652,117 kWhs/year of electricity generated by the project's photovoltaic solar design feature.

The BBARWA WWTP Upgrades Project would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

#### **Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment**

Construction: As discussed above, the proposed Stanfield Marsh/Big Bear Lake Discharge Project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed Stanfield Marsh/Big Bear Lake Discharge Project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed Stanfield Marsh/Big Bear Lake Discharge Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation: RPS establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. As discussed in above, the Stanfield Marsh/Big Bear Lake Discharge Project



would not result in any electricity and or natural gas use, as energy demands are accounted for as part of the facilities being installed as part of the BBARWA WWTP Upgrades.

The Stanfield Marsh/Big Bear Lake Discharge Project would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

### **Shay Pond Discharge Project**

Construction: As discussed above, the proposed Shay Pond Discharge Project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed Shay Pond Discharge Project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed Shay Pond Discharge Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation: RPS establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. As discussed in above, the Shay Pond Discharge Project would not result in any electricity and or natural gas use, as energy demands are accounted for as part of the facilities being installed as part of the BBARWA WWTP Upgrades.

The Shay Pond Discharge Project would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

### **Solar Evaporation Ponds**

**Construction:** As discussed above, the proposed Solar Evaporation Ponds Project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed Solar Evaporation Ponds Project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed Solar Evaporation Ponds Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

**Operation:** RPS establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. As discussed in above, the Solar Evaporation Ponds Project would not result in any electricity and or natural gas use, as energy demands are accounted for as part of the facilities being installed as part of the BBARWA WWTP Upgrades.

The Solar Evaporation Ponds Project would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

### **Sand Canyon Recharge Project**

**Construction:** As discussed above, the proposed Sand Canyon Recharge Project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed Sand Canyon Recharge Project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed Sand Canyon Recharge Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

**Operation:** RPS establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. As discussed in above, the Sand Canyon Recharge Project would result in

approximately 19,079 kWh/year of electricity and no natural gas annually. The program's overall electricity demand is substantially reduced by the project's photovoltaic solar design feature.

The Sand Canyon Recharge Project would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

### **Whole Program**

Construction: As discussed above, the proposed Program would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed Program would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed Program would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation: RPS establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. As discussed in above, the Program would result in approximately 147,883 kWh of electricity and 760,427 kBTU/year of natural gas annually. The electricity demand is substantially reduced to a net electricity demand of 147,883 kWh/year of electricity after netting out the 3,652,117 kWh/year of electricity generated by the project's photovoltaic solar design feature.

The Program would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Less Than Significant.*

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant*

### **Cumulative Impact Analysis**

Cumulative growth in the BVES service area would affect regional energy demand. BVES energy demand planning is based on future growth predictions from the General Plans of local jurisdictions. For this reason, development consistent with the applicable General Plan would also be consistent with BVES demand planning. Cumulative development within the BVES service area is not anticipated to result in a significant impact in terms of impacting energy supplies because the majority of cumulative projects would be consistent with their respective General Plans and the growth anticipated by BVES. The Program would ensure the management of the Bear Valley Basin water supply, and implementing agencies would serve water supply needs for existing and planned water demand and would not result in or accommodate unplanned growth. Therefore, as the Program would not result in or accommodate unplanned growth outside of the limits of applicable General Plans and regional plans, the Program would not result in significant cumulative energy impacts, and therefore, would be less than cumulatively considerable. Cumulative impacts are less than significant.

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant.*

### **4.7.6 Cumulative Impacts**

The cumulative analysis of each Energy issue evaluated herein determined that the proposed Program would not result in a cumulatively considerable contribution to cumulative energy impacts within the Big Bear Valley without the need for mitigation. While cumulative development within the region may result in significant cumulative impacts related to area energy consumption, the potential for the proposed Program to contribute to a cumulatively considerable contribution to such impacts has been minimized through the offset in energy consumption due to incorporation of solar facilities as a Program Component. Since this is an essential component of the Program, no mitigation is required.

### **4.7.7 Unavoidable Significant Impacts**

The programmatic evaluation of energy presented in the preceding analysis demonstrates that neither construction nor operation of individual projects under the proposed Program would result in the wasteful, inefficient, or unnecessary consumption of energy resources; affect local and regional energy supplies; or conflict with or obstruct existing energy standards or a State or local plan for renewable energy or energy efficiency. Therefore, no unavoidable significant impact to energy would result from implementing the proposed Program.

## **4.8 GEOLOGY AND SOILS**

### **4.8.1 Introduction**

This subchapter evaluates the potential environmental impacts to geology and soils from the implementation of the Replenish Big Bear Program (Program). The following section discusses the geology of the Program Area including: Faults, Seismic-Related Ground Failure, Liquefaction, and Landslides. Additionally, the following section discusses the soils that underlie the Program Area, including the potential for erosion, the stability of the soils, loss of topsoil, and the potential for expansive soils, etc.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at the Sand Canyon Recharge Area. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues are discussed below as set in the following framework:

- Introduction
- Environmental Setting: Geology and Soils
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to geology and soils were received in response to the NOP and no comments pertaining to geology and soils were received at the Scoping Meeting held on behalf of the Program.

### **4.8.2 Environmental Setting: Geology and Soils**

#### **4.8.2.1 Regional Geology**

The following geology information has been abstracted from the “Bear Valley Basin Groundwater Sustainability Plan” with minor edits as it contains a thorough summary of the Big Bear Valley’s geology.

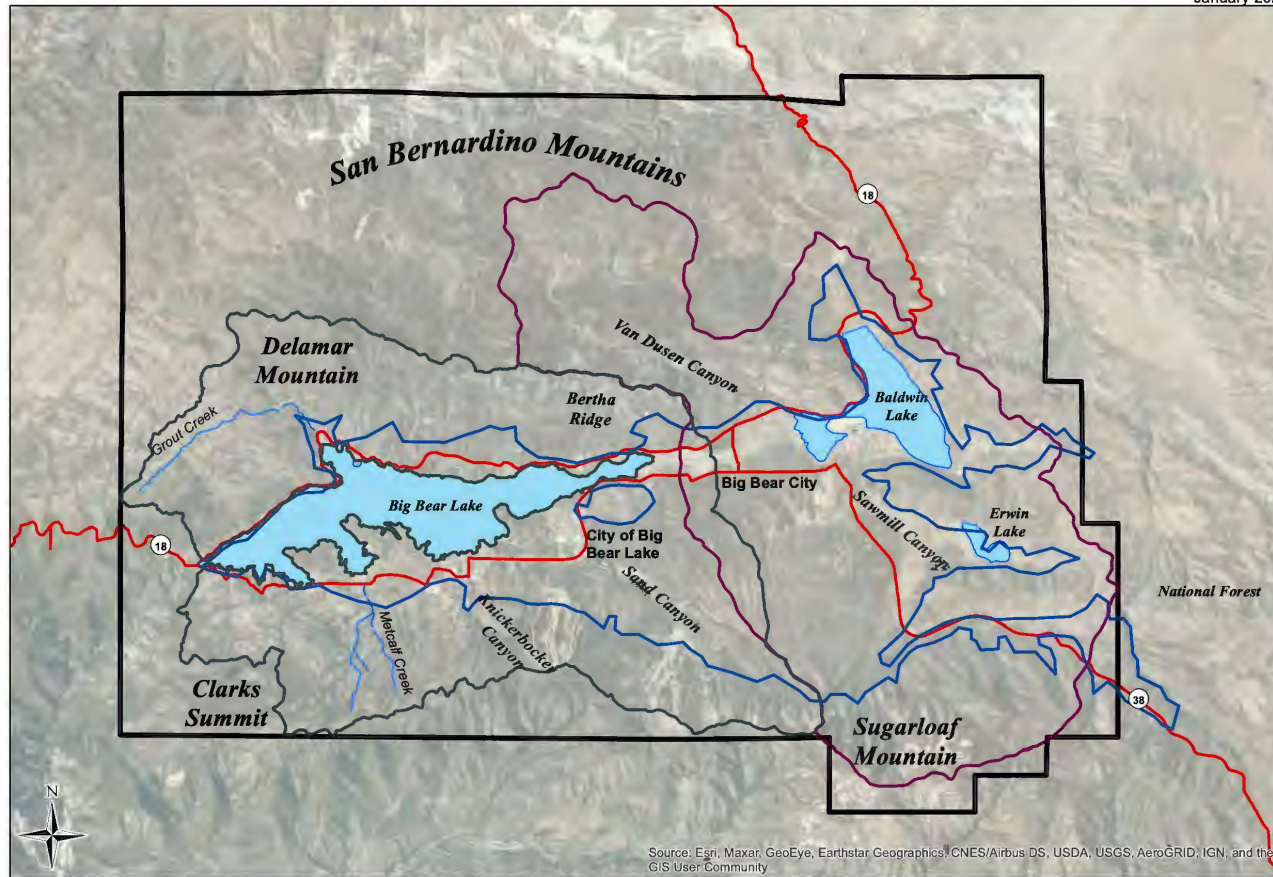
The Bear Valley Basin underlies the Big Bear Valley and covers approximately 30 square miles within the San Bernardino Mountains in southern San Bernardino County, California. Big Bear Valley is an east-west trending valley that extends from the Big Bear Lake Dam on the west to the eastern portion of Baldwin Lake on the east. Big Bear Valley is surrounded by a series of local mountain ranges which rise to approximately 6,000 to 9,900 feet above sea level. The Bear Valley Basin is generally composed of alluvial deposits which are bound by pre-Tertiary crystalline (basement) rocks of the San Bernardino Mountains. Refer to **Figure 4.8-1** for a depiction of the Program Area.

The Bear Valley Basin is situated at an elevation of approximately 6,740 feet amsl in the San Bernardino Mountains in the Transverse Ranges province of Southern California. The surrounding mountain slopes are relatively steep (as much as 70 degrees) and rugged. Prominent mountain peaks and ridges surrounding Big Bear Lake include Delamar Mountain to the north (8,398 feet amsl), Bertha Ridge and Gold Mountain to the northeast (8,201 and 8,235 feet amsl,



January 2022

## Bear Valley Basin Groundwater Sustainability Plan



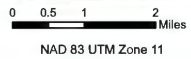
**Map Features**

- Bear Valley Basin Groundwater Sustainability Agency Boundary
- Bear Valley Groundwater Basin (DWR Bulletin 118, Rev. 2018)
- Baldwin Lake Watershed
- Big Bear Lake Watershed
- Drainage Creek
- Highway

### Regional Map



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



### Bear Valley Basin

FIGURE 4.8-1



respectively), Moonridge to the southeast (7,583 to 7,866 feet amsl), Sugarloaf Mountain to the southeast (9,952 feet amsl), and Snow Summit and Clark's Summit to the south (8,182 and 7,816 feet amsl).

The San Bernardino Mountains formed because of uplift along a complex system of faults, including the San Andreas Fault System, which separates the San Bernardino Mountains from the neighboring San Gabriel Mountains to the west. Most of the tectonic activity that created the mountains occurred during Late Pliocene and Pleistocene times (2.6 million years ago to 12,000 years ago). However, uplift continues to occur at a rate of approximately 30 inches every 100 years. The June 28, 1992 Big Bear earthquake is evidence of the continued tectonic activity in the area.

In the Bear Valley Basin area, the San Bernardino Mountains consist primarily of Mesozoic granitic intrusive rocks, with lesser outcrops of Precambrian and Late Paleozoic metamorphic rock (see **Figure 4.8-2**). Geologic formations observed at the land surface and in the subsurface beneath the Bear Valley Basin can be grouped into three primary geologic formations, described below in order of increasing age:

**Quaternary Alluvial Deposits** – This unit consists primarily of Quaternary age (approximately 2.5 million years ago to present) clay and sandy clay with interbedded sand and gravel layers of silt and clay towards Baldwin Lake. Beneath Baldwin Lake, alluvial deposits consist of lacustrine (historical lake) deposits mostly consisting of clay, silt and interbedded sand. The coarse-grained layers make up the water-bearing aquifer in which wells pump from.

Recent alluvial is comprised of permeable sand and gravel with lesser interbedded layers of silt and clay. Most recent alluvium is located above the water table, but where it is present, this permeable layer allows for infiltration of rainfall and runoff into the subsurface (Geoscience, 2004; Flint and Martin, 2012).

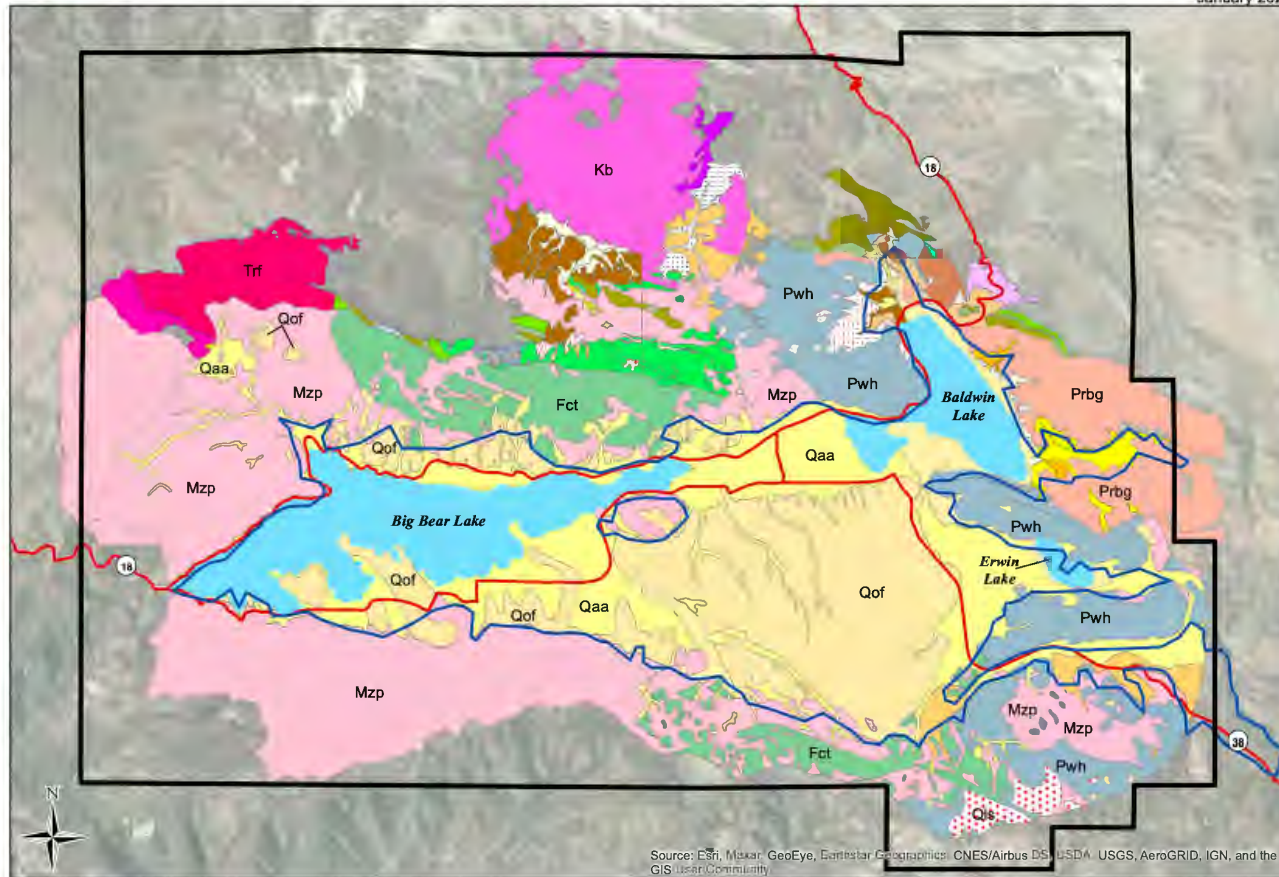
**Tertiary Sedimentary Deposits** – The sediments overlie the basement rocks throughout most of the Bear Valley Basin and are Tertiary age (approximately 65 million years ago to 2.6 million years ago). This unit consists primarily of consolidated to semi-consolidated alluvial fan deposits of gravel, sand and clay. Some municipal wells have been constructed in these Tertiary deposits, but they are less permeable than overlying Quaternary sediments and do not yield significant water. Tertiary sedimentary deposits are exposed at the land surface southeast of Big Bear Lake in the Sugarloaf area, along the base of the hills on the north side of Big Bear Lake, and in Big Bear Lake Williams area. This unit is greater than 1,000 feet thick in the Sugarloaf area (Geoscience, 2005).

**Pre-Tertiary Bedrock** – Basement rocks underlying the Tertiary and Quaternary sediments consist of Cretaceous (65 to 145 million years ago), granitic rocks, Paleozoic (252 to 541 million years ago), sedimentary rocks consisting of limestone, and Proterozoic (older than 541 million years), metamorphosed sedimentary rocks consisting of quartzite and gneiss (Miller, 2004). The permeability of the geologic formations making up the basement rocks is generally very low, and they are not considered major water-bearing units in the Bear Valley Basin. However, localized fractures in this bedrock allow for some groundwater production via springs and bedrock wells.



January 2022

## Bear Valley Basin Groundwater Sustainability Plan



### Map Features

#### Geologic Units

- Qaa Quaternary Alluvium
- Qls Land Slide Deposits
- Qof Old Deposits of Alluvial Fans
- Kb Monzogranite of John Bull Flat
- Mzp Undifferentiated Mesozoic Granitic Rocks
- Trf Monzonite of Fawnskin
- Fct Undifferentiated Carbonate Rocks of Sadler, 1981
- Pwh Quartzite of Wildhorse Meadows
- Prbg Baldwin Gneiss
- Bear Valley Basin Groundwater Sustainability Agency Boundary
- Bear Valley Groundwater Basin (DWR Bulletin 118, Rev. 2018)
- Big Bear Municipal Water District
- Highway

Sources: Esri, Mapbox, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 0.5 1 2 Miles

NAD 83 UTM Zone 11

**Thomas Harder & Co.**  
Groundwater Consulting

### Bear Valley Basin Geology Map

FIGURE 4.8-2

**Tom Dodson & Associates**  
Environmental Consultants

### Big Bear Valley Geology Map

### **Seismic Hazards**

The most significant fault near the Bear Valley Basin is the San Andreas Fault zone. The San Andreas Fault is a strike-slip fault that bounds the south side of the San Bernardino Mountains. A significant zone of frontal reverse faults exists on the north side of the mountains. These faults account for the uplift in the San Bernardino Mountains (Miller, 1987). Refer to **Figure 4.8-3** which illustrates the Alquist-Priolo Fault Zones in the region, including the San Andreas and North Frontal Thrust zone along the north boundary of the San Bernardino Mountains in Lucerne Valley.

In addition to strong ground shaking from earthquakes on faults located within the region, large earthquakes on faults near the county boundaries also have and will continue to impact property within the region. Many of the other potential geologic hazards in the region are associated with earthquake activity including surface fault rupture, flooding due to potential dam failure, soil liquefaction, and seismically induced landslides. Surface fault rupture can directly impact properties traversed by or adjacent to an active fault. The other seismic hazards may be triggered by earthquakes up to several tens of kilometers from a site (San Bernardino County, 2021).

### **Surface Fault Rupture**

Seismically-induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude and nature of fault rupture can vary for different faults, or even along different strands of the same fault. Ground rupture is considered more likely along active faults. Active faults within the Big Bear Valley are shown on **Figure 4.8-4**. According to this more detailed representation of faults in the Big Bear Valley, there are no active faults in the Big Bear Valley.

### **Ground Shaking**

According to the DOC's Earthquake Shaking Potential Assessment tool—the Ground Motion Interpolator<sup>19</sup>—Big Bear Valley is within an area subject to high frequency shaking potential. High frequency shaking areas are in regions near major, active faults and on average experience stronger earthquake ground shaking more frequently. This intense shaking can damage strong, modern buildings. Ground shaking intensity varies depending on the overall earthquake magnitude, distance to the fault, focus of earthquake energy, and type of geologic materials underlying an area. The Modified Mercalli Intensity (mml) scale is commonly used to express earthquake effects due to ground shaking because it expresses ground shaking relative to actual physical effects observed by people during a seismic event. mml values range from I (earthquake not felt) through a scale of increasing intensities to XII (nearly total damage). Earthquakes on the various active and potentially active fault systems within and near Big Bear Valley can produce a wide range of ground shaking intensities. Refer to **Figure 4.8-5** for a depiction of ground shaking potential in Big Bear Valley.

### **Liquefaction and Landslide Hazards**

Soil liquefaction is a phenomenon whereby unconsolidated and/or near saturated soils lose cohesion and are converted to a fluid state as a result of severe vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in the temporary fluid-like behavior of the soil. During liquefaction, soils lose strength, and ground failure may occur. Secondary ground failures associated with liquefaction include lateral spreading or flowing of stream banks or fills, sand boils, and subsidence. Areas characterized by water-saturated, cohesionless, and granular soils are most susceptible to liquefaction and usually at depths of less

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<sup>19</sup> DOC, 2023. DOC Ground Motion Interpolator. <https://www.conservation.ca.gov/cgs/Pages/PSHA/ground-motion-interpolator.aspx> (Accessed 08/30/23)



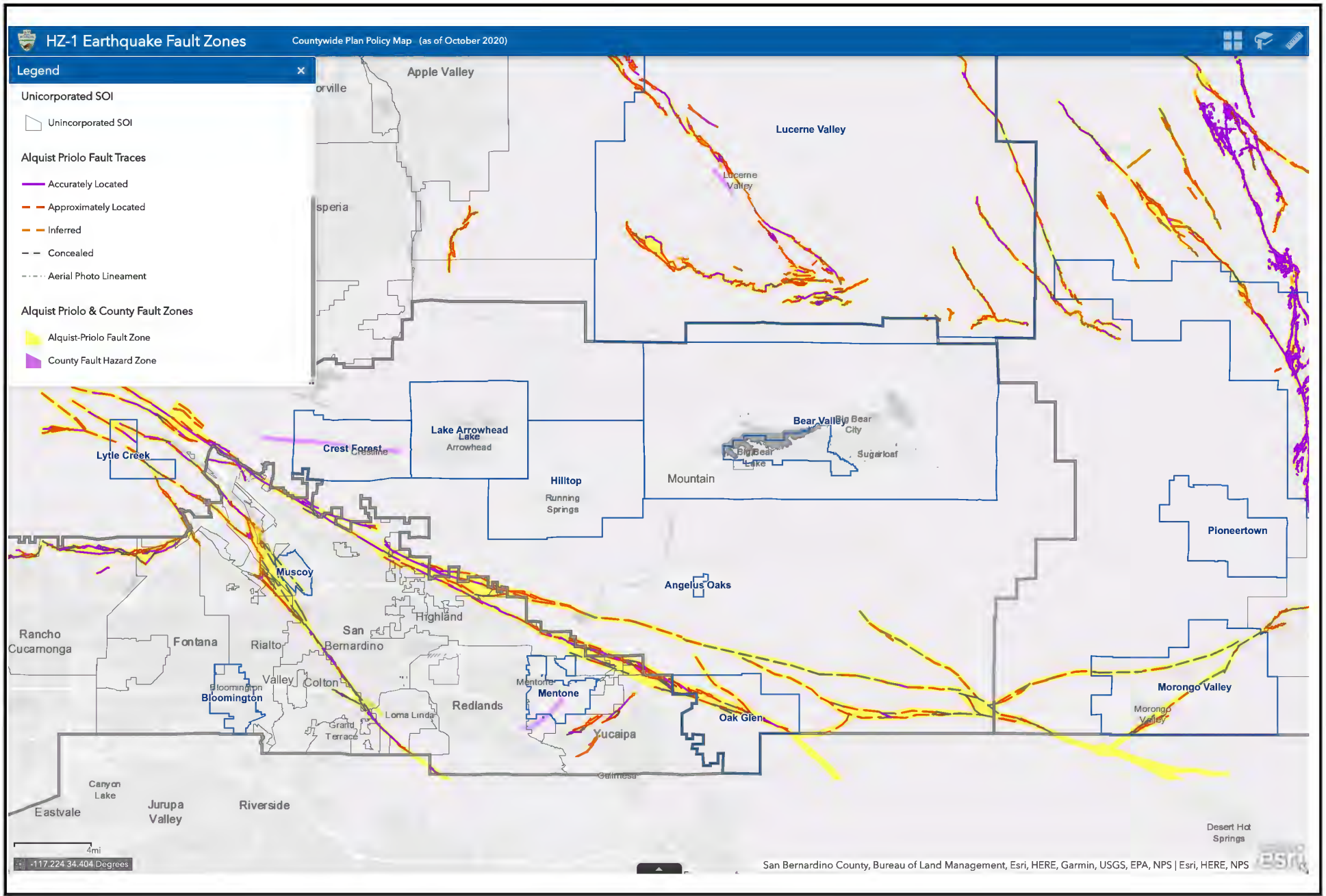


FIGURE 4.8-3



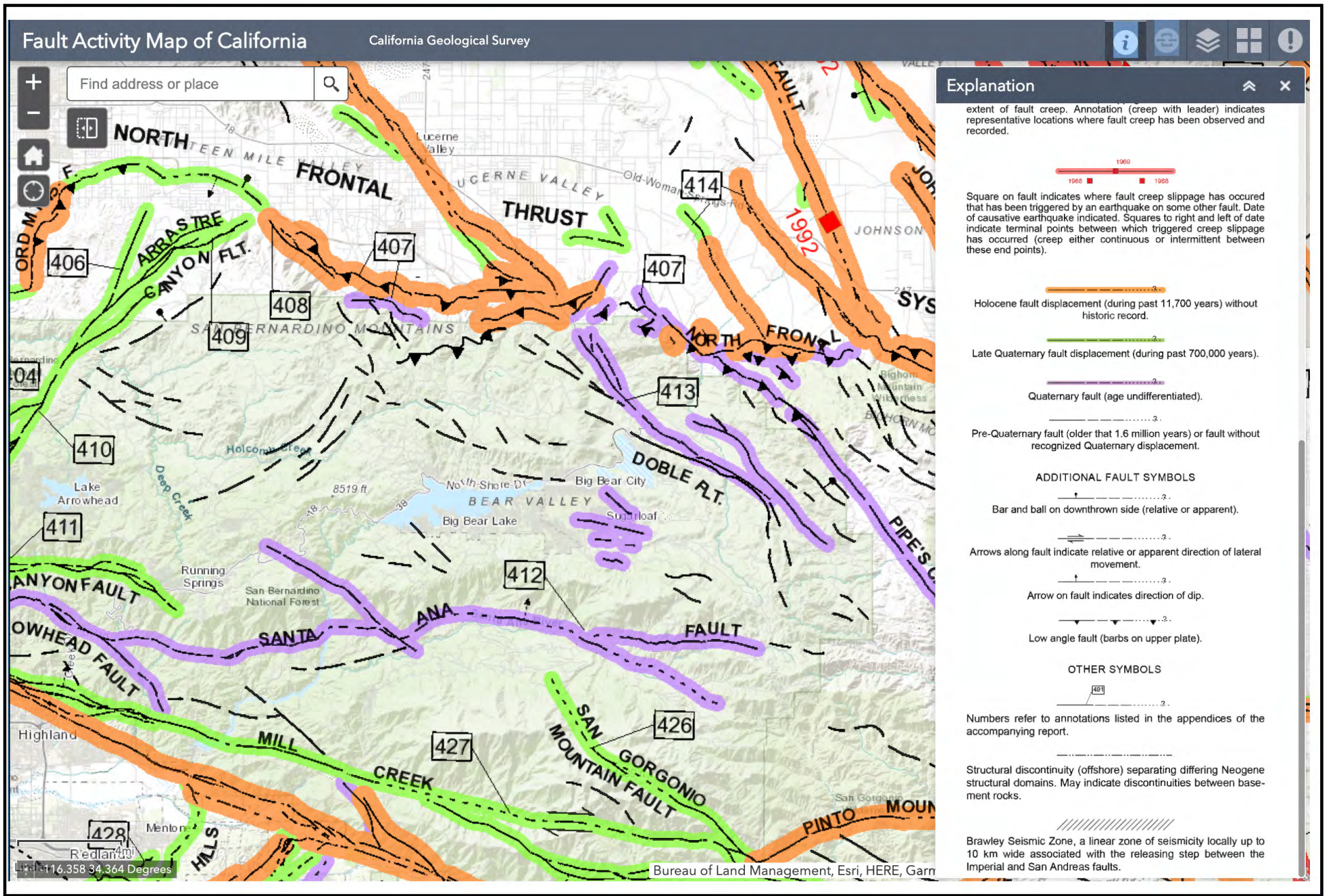


FIGURE 4.8-4



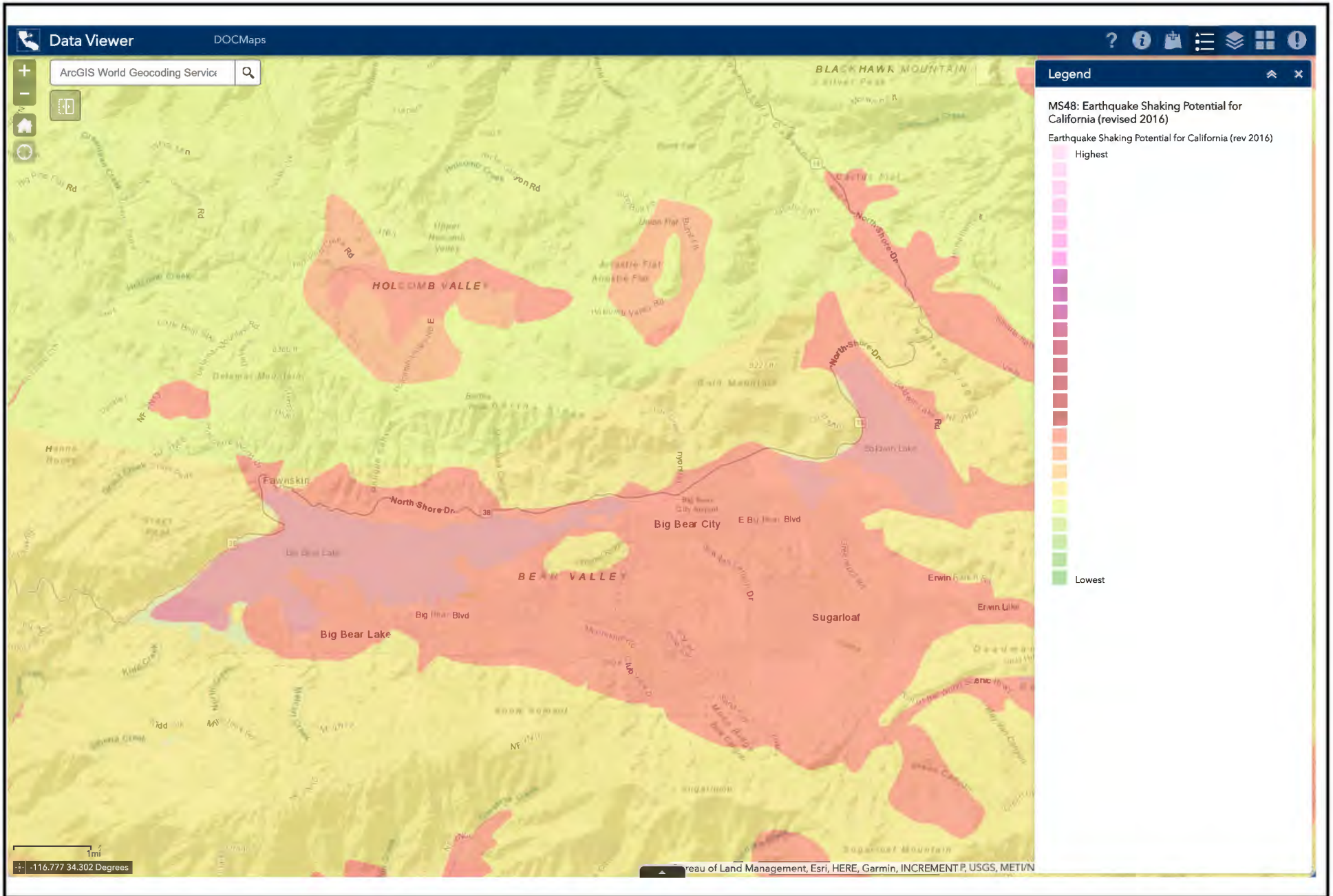


FIGURE 4.8-5



than 50 ft, especially in areas with a shallow water table. The groundwater table can fluctuate greatly in association with groundwater recharge activities, both natural and artificial in the Big Bear Valley. Refer to **Figure 4.8-6** which shows areas of potential liquefaction and landslides. During years of high groundwater recharge, the groundwater table could potentially be shallow enough to present a liquefaction hazard in the areas of the existing recharge basins. Portions of Big Bear Valley are within liquefiable zones, as discussed in the San Bernardino Countywide Plan.

Landslides are the down-slope displacement of rock, soils, and debris. The susceptibility of land (slope) failure is dependent on slope and geological formations and influenced by levels of rainfall, excavation, or seismic activities. Steep slopes and downslope creep of surface materials characterize landslide-susceptible areas. Limited areas within the Big Bear Valley are located within landslide hazard zones, as defined in the Seismic Hazard Zones map for San Bernardino County. Landslides and mudflow hazards exist throughout Big Bear Valley on the steep hillsides and in creek and streambed areas. These can be triggered by earthquakes, heavy rain events, and other causes. (San Bernardino County, 2020).

#### **Land Subsidence**

Analyses of land subsidence in Big Bear Valley using satellite data shows very low amounts of land deformation. The USGS analyzed Interferometric Aperture Radar (InSAR) data for the time periods between 1995 to 1997 and 2004 to 2005. Land deformation was observed in the Village and Rathbone subunit areas, the Sugarloaf area of the Erwin Subunit, and in the area between Big Bear and Baldwin Lakes (Flint and Martin, 2012). As much as 1.2 inches of land subsidence was observed in the area between Big Bear and Baldwin Lakes between 1995 and 1997. In contrast, as much as 1.2 inches of uplift was observed in the same area between 2004 and 2005. As these time periods include extremes in groundwater level fluctuations in the Bear Valley Basin, it is likely that the subsidence and later uplift is elastic and recoverable. Analysis of the InSAR data for the period from 2015 through 2018, a period of declining groundwater levels in Big Bear Valley, did not result in land subsidence greater than three inches in any parts of the Bear Valley Basin (the limit of resolution of the data).

#### **4.8.2.2 Soils**

Soils within Big Bear Valley generally include deep well-drained sands, sandy loams, silty loams on level alluvial basins and fans; and shallow to deep, well to excessively drained, sandy loams on Big Bear Valley floor and on upland ridge areas (NRCS, 2022). The soils present within the service area vary slightly in physical properties but share similar characteristics. Soils within the eastern portion of Big Bear Valley are presented in **Figure 4.8-7** and summarized in **Table 4.8-1**.

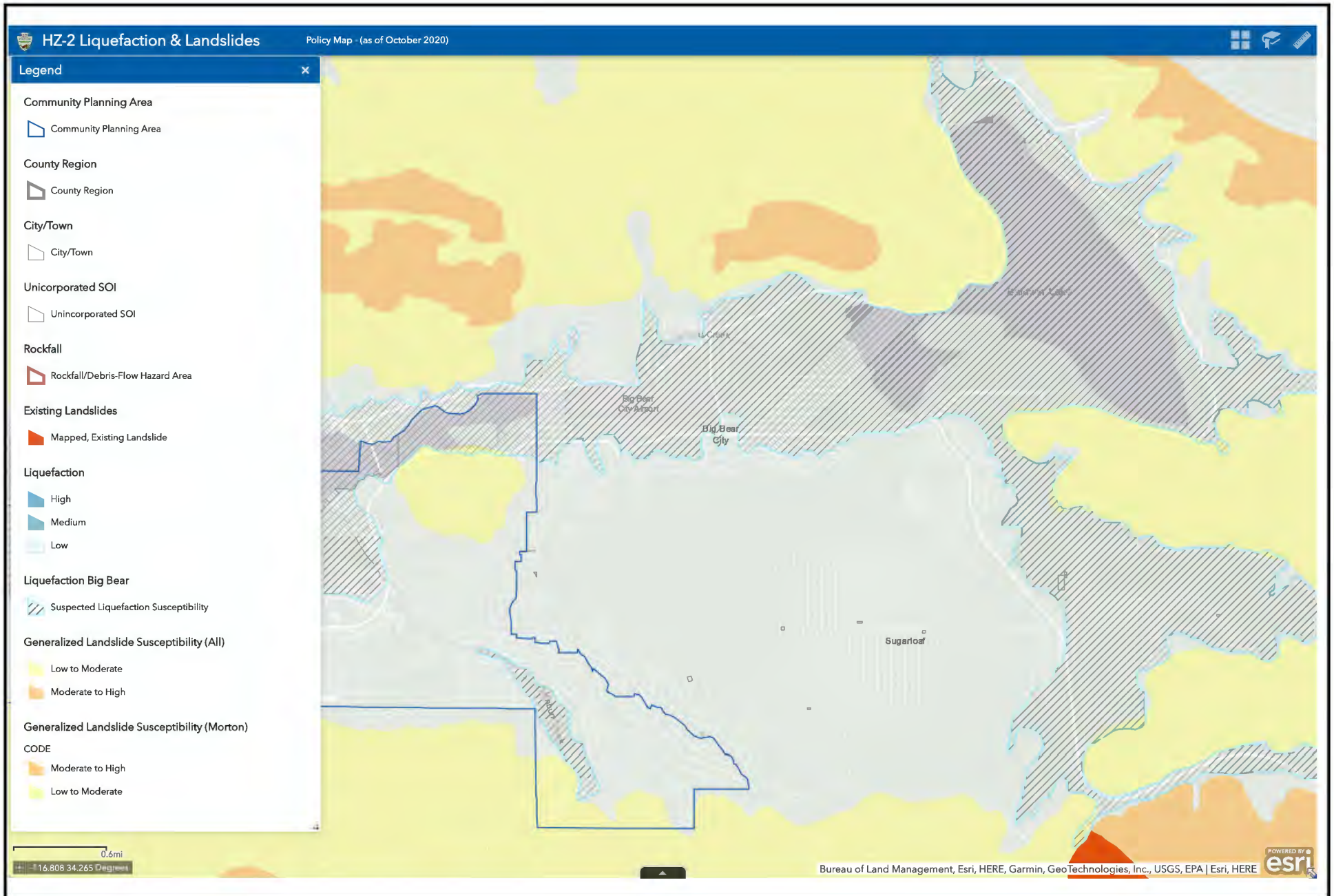


FIGURE 4.8-6



Soil Map—San Bernardino National Forest Area, California



Map Scale: 1:18,600 if printed on B landscape (17" x 11") sheet.  
0 250 500 1000 1500 Meters  
0 500 1000 2000 3000 Feet  
Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 11N WGS84



Natural Resources Conservation Service

Web Soil Survey National Cooperative Soil Survey

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FIGURE 4.8-7





FIGURE 4.8-8

**Table 4.8-1  
 EASTERN BIG BEAR VALLEY SOILS**

Map Unit Symbol	Map Unit Name	Acres in Area of Interest	Percent of Area of Interest
132	Aquents-Grunney complex, 0 to 4 percent slopes	218.4	20.5%
301	Garloaf-Cariboucreek complex, 15 to 30 percent slopes	1.2	0.1%
302	Garloaf-Cariboucreek-Urban land complex, 9 to 15 percent slopes	9.2	0.9%
305	Moonridge-Shayroad-Cariboucreek complex, 0 to 4 percent slopes	197.4	18.5%
306	Moonridge-Cariboucreek-Urban land complex, 0 to 4 percent slopes	598.0	56.1%
309	Goldmountain-Deadmansridge-Deadpan complex, 15 to 30 percent slopes	0.6	0.1%
310	Goldmountain-Deadmansridge-Deadpan complex, 30 to 50 percent slopes	30.5	2.9%
315	Minnelusa-Cariboucreek complex, 9 to 15 percent slopes	10.1	1.0%
<b>Totals for Area of Interest</b>		<b>1,065.4</b>	<b>100%</b>

The soils in the vicinity of the Sand Canyon are shown on **Figure 4.8-8** and are summarized in **Table 4.8-2**. The most unusual soil complex occurs at the existing WWTP that will function as a full AWPf in the future when the new treatment facilities have been installed. The soil on the Baldwin Lake lakebed has a higher concentration of clay materials than the other soils that underlay the remaining Program Areas.

**Table 4.8-2  
 SAND CANYON SOILS**

Map Unit Symbol	Map Unit Name	Acres in Area of Interest	Percent of Area of Interest
401	Garloaf-Cariboucreek-Urban land complex, 15 to 30 percent slopes	48.4	44.4%
413	Aquents-Riverwash complex, 0 to 4 percent slopes	46.9	43%
414	Moonridge-Urban land complex, 4 to 9 percent slopes	9.9	9.1%
BoD	Morical, very deep-Hecker families complex, 2 to 15 percent slopes	1.7	1.5%

Map Unit Symbol	Map Unit Name	Acres in Area of Interest	Percent of Area of Interest
BoE	Morical, very deep-Hecker families complex, 15 to 30 percent slopes	0.4	0.3%
DaF	Pacifico-Wapi families complex, 30 to 50 percent slopes	1.8	1.6%
<b>Totals for Area of Interest</b>		<b>109</b>	<b>100%</b>

**Erosion**

Soil erosion is the detachment and movement of soil materials through natural processes or human activities. Natural processes contributing to erosion include water, landslide, fire, flood, and wind. Human-made causes could include irresponsible grading and other construction practices, use of off-road vehicles, and other indiscriminate disruptions of soil. Wind is the primary cause of erosion in San Bernardino County. According to the San Bernardino Countywide Plan, severe erosion can be a problem anywhere in San Bernardino County, especially when precipitation and/or wind combine with unprotected soil (San Bernardino County, 2020).

**Expansive Soils**

Expansive soils contain significant amounts of clay particles that have the ability to give up water (shrink) or take on water (swell). When these soils swell, the change in volume can exert substantial pressures on loads that are placed on them, such as loads resulting from building and structure foundations or underground utilities, and can result in structural distress and/or damage. Often, grading, site preparations, and backfill operations associated with subsurface structures can eliminate the potential for expansion. Linear extensibility and plasticity are used to describe the shrink-swell potential of soils. If linear extensibility is greater than 3 percent (classified as Moderate potential), shrinking and swelling can cause damage to buildings, roads, and other structures. Most of Big Bear Valley is comprised of old alluvial fans and valley deposits, which vary in consistency but are not typically expansive. However, soils within clay-rich units with moderate to high shrink-swell potential are located in the east end of Big Bear Valley and elsewhere throughout Big Bear Valley.

**4.8.3 Regulatory Setting**

Federal, State, and local laws, regulations, plans, or guidelines that are applicable to the proposed Program are summarized below.

**4.8.3.1 Federal**

**Earthquake Hazards Reduction Act**

The Earthquake Hazards Reduction Act was enacted in 1997 to “reduce the risks to life and property from future earthquakes in the U.S. through the establishment and maintenance of an effective earthquake hazards and reduction program.” To accomplish this, the act established the National Earthquake Hazard Reduction Program (NEHRP), which refined the description of agency responsibilities, program goals, and objectives. NEHRP’s mission includes improvement of understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results. NEHRP designates FEMA as the Lead Agency of the program and assigns it several planning, coordinating, and reporting



responsibilities. Programs under NEHRP help inform and guide planning and building code requirements such as emergency evacuation responsibilities and seismic code standards.

#### **4.8.3.2 State**

##### **Alquist-Priolo Earthquake Fault Zoning Act**

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) became law in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The purpose of the Alquist-Priolo Act is to regulate development on or near active fault traces to reduce the hazard of fault rupture and to prohibit the location of most structures for human occupancy across these traces. Cities and counties must regulate certain development projects within the zones, which includes withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement. Surface fault rupture is not necessarily restricted to an Alquist-Priolo Zone, but the probability is higher. Each earthquake fault zone extends approximately 200 to 500 ft on either side of the mapped fault trace, because many active faults are complex and consist of more than one branch. There is the potential for ground surface rupture along any of the branches.

##### **Seismic Hazards Mapping Act**

The Seismic Hazards Mapping Act of 1990 (California Public Resources Code, Chapter 7.8, Sections 2690-2699.6) was adopted to reduce the threat to public safety and to minimize the loss of life and property by identifying and mitigating ground failure caused by strong earthquakes, namely liquefaction and slope failure. The Seismic Hazards Mapping Act requires the State Geologist to delineate seismic hazard zones, also known as “zones of required investigation,” where regional (that is, not site-specific) information suggests that the probability of a hazard requiring mitigation is adequate to warrant a site-specific investigation. The fact that a site lies outside a zone of required investigation does not necessarily mean that the site is free from seismic or other geologic hazards. Where a project—defined by the act as any structures for human occupancy or any subdivision of land that contemplates the eventual construction of structures for human occupancy—is within a zone of required investigation, lead agencies must apply minimum criteria for project approval. The most basic criteria for project approval are that the owner/developer adequately demonstrates seismic hazards at the site have been evaluated in a geotechnical investigation, that appropriate MMs have been proposed, and that the lead agency has independently reviewed the adequacy of the hazard evaluation and proposed MMs. Both the geotechnical report and the independent review must be performed by a certified engineering geologist or registered civil engineer. These criteria, along with seismic hazard evaluation and mitigation standards, are outlined in California Geological Survey (CGS) Special Publication 117A, revised and re-adopted in September of 2008 by the State Mining and Geology Board (CGS, 2008). The Bear Valley Basin includes seismic hazard zones susceptible to liquefaction and landslides.

##### **California Building Code**

The California Building Code (CBC) has been codified in the California Code of Regulations as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under State law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures within its jurisdiction. The current CBC is based on the 2018 International Building Code published by the International Code Conference. In addition,

the CBC contains necessary California amendments which are based on reference standards obtained from various technical committees and organizations such as the American Society of Civil Engineers (ASCE), the American Institute of Steel Construction, and the American Concrete Institute. ASCE Minimum Design Standards 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California. The building department of every city and county is required to enforce all the provisions of the CBC, and is authorized to issue a construction permit for the erection, construction, reconstruction, installation, moving, or alteration of any building or structure.

Chapter 18 of the CBC covers the requirements of geotechnical investigations (Section 1803), including excavation, grading, and fills (Section 1804). The CBC requires geotechnical investigations to be conducted prior to construction unless waived by the designated building official (which could occur when satisfactory data from adjacent areas demonstrates an investigation is not necessary). Chapter 18 also describes the analysis for expansive soils and the determination of the depth of the groundwater table. Appendix G, Section VII, of the State CEQA Guidelines states that expansive soil would be characterized as defined in Table 18-1-B of the 1994 Uniform Building Code. However, that table is no longer used<sup>20</sup> and the CBC's current definition of expansive soils is as follows:

1803.5.3, Expansive Soil. In areas likely to have expansive soil, the building official shall require soil tests to determine where such soils do exist. Soils meeting all four of the following provisions shall be considered expansive, except that tests to show compliance with Items 1, 2 and 3 shall not be required if the test prescribed in Item 4 is conducted:

1. Plasticity index (PI) of 15 or greater, determined in accordance with ASTM D 4318;
2. More than 10 percent of the soil particles pass a No. 200 sieve (75 micrometers), determined in accordance with ASTM D 422;
3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D 422; and/or
4. Expansion index greater than 20, determined in accordance with ASTM D 4829.

The CBC also includes earthquake design requirements that take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E (very high seismic vulnerability and near a major fault). Design specifications for individual projects are then determined according to the SDC.

### **Surface Mining and Reclamation Act of 1975**

The Surface Mining and Reclamation Act (SMARA) of 1975 (Chapter 9, Division 2, Section 2710 et seq. of the California Public Resources Code) requires the State Mining and Geology Board to adopt State policies for reclaiming mined lands and conserving mineral resources. Title 24 of the California Code of Regulations, Division 2, Chapter 8, Subchapter 1 contains these policies.

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<sup>20</sup> The Uniform Building Code is no longer the basis for the CBC, which is now based on the 2018 International Building Code. Because the considerations in State CEQA Guidelines Appendix G are advisory rather than compulsory, and Section VII thereof has not yet been revised to reflect this change, this EIR relies on the 2018 International Building Code, which provides the basis for the CBC.

In accordance with SMARA, the State has established the California Mineral Land Classification System to help identify and protect mineral resources in areas that are subject to urban expansion or other irreversible land uses that would preclude mineral extraction. Protected mineral resources include construction materials, industrial and chemical mineral materials, metallic and rare minerals, and nonfluid mineral fuels.

### **The California Professional Engineers Act**

California currently regulates the use of the practice and the use of the title of Civil, Electrical, and Mechanical Engineer through the California Professional Engineers Act (Building and Professions Code Sections 6700-6799). These three are known as Practice Acts. Only those registered are authorized to use the title, practice, or offer to practice in that discipline.<sup>21</sup>

### **Code of Professional Conduct, as administered by the California Board of Professional Engineers, Land Surveyors, and Geologists**

The Board for Professional Engineers, Land Surveyors, and Geologists (BPELS) regulates the practices of engineering, land surveying, geology, and geophysics in the State of California in order to safeguard the life, health, property, and welfare of the public.

The main purpose and duties of BPELS include:<sup>22</sup>

- Licensing qualified individuals (not companies) as professional engineer, land surveyors, geologist, and geophysicists, based on experience and successfully passing examinations.
- Establishing regulations and promoting professional conduct.
- Enforcing laws and regulations.
- Providing information to the public on using professional engineering and land surveying services.

To protect and safeguard the health, safety, welfare, and property of the public, every person who is licensed by the BPELS as a professional engineer, including licensees employed in any manner by a governmental entity or in private practice, shall comply with this Code of Professional Conduct. A violation of this Code of Professional Conduct in the practice of professional engineering constitutes unprofessional conduct and is grounds for disciplinary action.

#### **4.8.3.3 Local**

California Government Code Section 53091(d) specifies that “Building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Consequently, many of the facilities included in the Program are exempt from certain local ordinances. However, the local building agencies of the City of Big Bear Lake and San Bernardino County retain the authority to issue construction permits in compliance with the CBC. Both the City of Big Bear Lake and San Bernardino County have their own General Plan elements that pertain to geology, soils, and mineral resources.

### **San Bernardino Countywide Plan**

The San Bernardino Countywide Plan Hazards Element of the San Bernardino Countywide Plan includes the following goal and policies regarding geology and soils that may be applicable to Program activities within the unincorporated areas of Big Bear Valley.

<sup>21</sup> <https://www.nspe-ca.org/licensure/inception-of-the-ca-pe-act>

<sup>22</sup> <https://simasgovlaw.com/what-is-the-board-for-professional-engineers-land-surveyors-and-geologists/>

The Countywide Plan Hazards Element sets forth the following goal and policies pertaining to geology and soils:

<b>Goal</b>	<b>HZ-1</b>	Minimized risk of injury, loss of life, property damage, and economic and social disruption caused by natural environmental hazards and adaptation to potential changes in climate.
	HZ-1.1	New subdivisions in environmental hazard areas. We require all lots and parcels created through new subdivisions to have sufficient buildable area outside of the following environmental hazard areas: Flood: 100-year flood zone, dam/basin inundation area, and Geologic: Alquist Priolo earthquake fault zone; County-identified fault zone; rockfall/debris-flow hazard area, existing and County-identified landslide area.
	HZ-1.2	New development in environmental hazard areas. We require all new development to be located outside of the environmental hazard areas listed below. For any lot or parcel that does not have sufficient buildable area outside of such hazard areas, we require adequate mitigation, including designs that allow occupants to shelter in place and to have sufficient time to evacuate during times of extreme weather and natural disasters. Flood: 100-year flood zone, dam/basin inundation area; Geologic: Alquist Priolo earthquake fault zone; County-identified fault zone; rockfall/debris-flow hazard area, medium or high liquefaction area (low to high and localized), existing and County-identified landslide area, moderate to high landslide susceptibility area); and Fire: high or very high fire hazard severity zone.
	HZ-1.5	Existing properties in environmental hazard areas. We encourage owners of existing properties in hazard areas to add design features that allow occupants to shelter in place and to have sufficient time to evacuate during times of extreme weather and natural disasters.
	HZ-1.6	Critical and essential facility location. We require new critical and essential facilities to be located outside of hazard areas, whenever feasible.
	HZ-1.7	Underground utilities. We require that underground utilities be designed to withstand seismic forces, accommodate ground settlement, and hardened to fire risk.
	HZ-1.9	Hazard areas maintained as open space. We minimize risk associated with flood, geologic, and fire hazard zones or areas by encouraging such areas to be preserved and maintained as open space.

The Natural Resources Element of the proposed Countywide Plan contains the following goals and policies intended in part to minimize soil erosion:

<b>Goal</b>	<b>NR-2</b>	Water Quality. Clean and safe water for human consumption and the natural environment.
<b>Policy</b>	NR-2.5	Stormwater discharge. We ensure compliance with the County's Municipal Stormwater NPDES (National Pollutant Discharge Elimination System) Permit by requiring new development and significant redevelopment to protect the quality of water and drainage systems through site design, source controls, stormwater

treatment, runoff reduction measures, best management practices, low impact development strategies, and technological advances. For existing development, we monitor businesses and coordinate with municipalities.

<b>Goal</b>	<b>NR-7</b>	Agriculture and Soils. An ability of property and farm owners to conduct sustainable and economically viable farm operations.
<b>Policy</b>	NR-7.1	Protection of agricultural land. We protect economically viable and productive agricultural lands from the adverse effects of urban encroachment, particularly increased erosion and sedimentation, trespass, and non-agricultural land development.

### **City of Big Bear Lake General Plan**

The City of Big Bear Lake General Plan Hazards Element includes the following goal and policies regarding geology and soils that may be applicable to Program activities within the City of Big Bear Lake.

The Hazards Element sets forth the following goal and policies pertaining to geology and soils:

<b>Goal</b>	<b>EH 1</b>	Minimized vulnerability to, and optimized protection of, the general health, safety and welfare of the community from the effects of geotechnical hazards that may impact lives, property and the economic well-being of the community.
<b>Policy</b>	EH 1.1	Ensure that new development proposals are evaluated for potential geotechnical impacts and that these impacts are mitigated to an acceptable level.
	EH 1.2	Pursuant to applicable state laws, address the issue of non-single family unreinforced masonry structures which may be hazardous due to inadequate design or construction, while providing reasonable alternatives for property owners to consider, that are in compliance with seismic upgrade requirements.
	EH 1.3	Encourage the rehabilitation of older (pre-dating 1991) commercial, industrial and institutional structures and public infrastructure and utility systems which are not constructed to withstand major seismic events.
	EH 1.4	Cooperate and coordinate with other agencies to ensure that public infrastructure and utility systems are designed and maintained to reduce damage from seismic events, and to plan for response in the event of a failure of these systems.

### **4.8.4 Thresholds of Significance**

According to Appendix G, Section VII, of the State CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

- a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - (i) Rupture of a known earthquake fault, as delineated on the most recent Alquist Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
  - (ii) Strong seismic ground shaking.
  - (iii) Seismic related ground failure, including liquefaction.
  - (iv) Landslides.
- b) Result in substantial soil erosion or the loss of topsoil.

- c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse.
- d) Be located on expansive soil, as defined in [California] Building Code [Section 1803.5.3], creating substantial direct or indirect risks to life or property.<sup>23</sup>
- e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
- f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

#### **4.8.5 Potential Impacts**

- a. **Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:**
  - (i) **Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.**

The Program includes four Program Categories that would result in the construction of new facilities. These are shown on **Figure 3-29**: pipelines, pump stations, monitoring wells, and upgrades to BBARWA's WWTP to an AWWP, recharge facilities, and Solar Evaporation Ponds. Additionally, there are other physical changes to the environment that may occur as a result of Program implementation, including the future release of Program Water into Big Bear Lake by way of Stanfield Marsh, and possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback at Shay Pond, the use of Program Water in place of groundwater at Shay Pond, and reduced discharge from the BBARWA WWTP to the LV Site.

##### **Program Category 1: Conveyance Pipelines**

**Construction:** **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage during construction from ground rupture is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

**Operation:** **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage to Conveyance Pipelines from ground rupture during operation is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

##### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

**Construction:** **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage during construction from ground rupture is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

**Operation:** Monitoring wells will be located in the Sand Canyon Recharge Area and but specific locations have not yet been selected. **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage to any Ancillary Facilities from ground rupture during operation

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<sup>23</sup> See footnote 2, above.



is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

**Program Category 3: Solar Evaporation Ponds Project**

Construction: **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage during construction from ground rupture is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Operation: Regardless, as **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage to any Solar Evaporation Ponds from ground rupture during operation is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

**Program Category 4: BBARWA WWTP Upgrades Project**

Construction: **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage during construction from ground rupture is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Operation: **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage to the BBARWA WWTP Upgrades facilities from ground rupture during operation is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

**Combined Program Categories**

Construction: **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage during construction from ground rupture is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Operation: **Figure 3-29** shows the locations of the facilities described above, except for the monitoring wells and the current LV Site. Monitoring wells will be located in the Sand Canyon Recharge Area and at the new AWP at BBARWA's WWTP, but specific locations have not yet been selected. Regardless, as **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage to any Program facilities from ground rupture during operation is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

**Other Physical Changes to the Environment**

In the future, undisinfected secondary treated effluent will likely continue being delivered to the LV Site during winter months, but the reduction in discharge of effluent to this site has no known potential to cause new or different fault rupture hazards. The additional discharge of Program Water to Big Bear Lake, and the potential change in water supply at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore, would have no known potential to cause new or different fault rupture hazards. No mitigation is required at these sites due to implementing the Program.

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measure: None Required*

- a. **Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:**  
(ii) **Strong seismic ground shaking?**

**Program Category 1: Conveyance Pipelines**

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed underground and outdoors. Construction workers would generally only be at risk when working indoors. This is because seismic ground shaking may cause structural damage that would could affect persons inside structures to be exposed to risk associated with strong seismic ground shaking when indoors or when installing solar atop a habitable structure. Overall, construction would be temporary in nature and the probability of seismic ground shaking during construction is low. Thus, impacts would be less than significant.

Operation: During operation, ground shaking could result in structural damage and hazards to new and existing facilities, which in turn could affect the operation of the Program infrastructure. Underground pipelines are not typically susceptible to severe damage from seismic ground shaking, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. The primary and secondary effects of ground shaking could distort or break pipelines and other water conveyance structures, and cause structural failure. The California Professional Engineers Act (Building and Professions Code Sections 6700-6799) and the Codes of Professional Conduct, as administered by BPELS, provide the basis for regulating and enforcing engineering practice in California. Compliance with these construction requirements would reduce potential impacts associated with ground shaking to a level of less than significant. Thus, impacts would be less than significant.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Sand Canyon Recharge Pipeline Discharge Outlet). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because seismic ground shaking may cause structural damage that would could affect persons inside structures to be exposed to risk associated with strong seismic ground shaking when indoors or when installing solar atop a habitable structure. The structures within which the pump station and monitoring wells would be installed, would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to seismic ground shaking. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater seismic ground shaking risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of seismic ground shaking during construction is low. Thus, impacts would be less than significant.

Operation: During operation, ground shaking could result in structural damage and hazards to new and existing facilities, which in turn could affect the operation of the Program infrastructure. Pipe outlets are not typically susceptible to severe damage from seismic ground shaking, and

furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. However, this Program Category includes several aboveground structures. The primary and secondary effects of ground shaking could damage structural foundations, distort or break pipelines and other water conveyance structures, and cause structural failure. Therefore, structural and mechanical failure of facilities caused by strong seismic ground shaking could potentially threaten the safety of any on-site workers performing site maintenance, as the facilities proposed under this Program Category would not support any employees onsite. Note that none of the proposed facilities envisions hosting human residents.

It is anticipated that the structural elements of facilities proposed under this Program Category would undergo appropriate design-level geotechnical evaluations prior to final design and construction as required to comply with the CBC. A licensed geotechnical engineer, a registered professional with the State of California, is required to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. The California Professional Engineers Act (Building and Professions Code Sections 6700-6799) and the Codes of Professional Conduct, as administered by BPELS, provide the basis for regulating and enforcing engineering practice in California. Compliance with these construction requirements and site-specific building and facility safety design standards as required in **MM GEO-1** would reduce potential impacts associated with ground shaking to a level of less than significant. Thus, impacts would be less than significant through the implementation of mitigation.

### **Program Category 3: Solar Evaporation Ponds Project**

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds). Construction workers would generally only be at risk when working indoors. This is because seismic ground shaking may cause structural damage that would could affect persons inside structures to be exposed to risk associated with strong seismic ground shaking when indoors or when installing solar atop a habitable structure. Overall, construction would be temporary in nature and the probability of seismic ground shaking during construction is low. Thus, impacts would be less than significant.

Operation: During operation, ground shaking could result in structural damage and hazards to new and existing facilities, which in turn could affect the operation of the Solar Evaporation Ponds Project infrastructure. As these facilities would be outdoors, it is not anticipated that the Solar Evaporation Ponds Project would be susceptible to severe damage from seismic ground shaking, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. The primary and secondary effects of ground shaking could damage structural foundations and cause structural failure. Therefore, structural and mechanical failure of facilities caused by strong seismic ground shaking could potentially threaten the safety of any on-site workers.

It is anticipated that the structural elements of facilities proposed under this Program Category would undergo appropriate design-level geotechnical evaluations prior to final design and construction as required to comply with the CBC. A licensed geotechnical engineer, a registered professional with the State of California, is required to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. The California Professional Engineers Act (Building and Professions Code Sections 6700-6799) and the Codes of Professional Conduct, as administered by BPELS, provide the basis for regulating and enforcing engineering practice in California. Compliance with these construction requirements and site-

specific building and facility safety design standards as required in **MM GEO-1** would reduce potential impacts associated with ground shaking to a level of less than significant. **MM GEO-1** would reduce the potential impacts from ground shaking hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Thus, impacts would be less than significant through the implementation of mitigation.

**Program Category 4: BBARWA WWTP Upgrades Project**

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because seismic ground shaking may cause structural damage that would could affect persons inside structures to be exposed to risk associated with strong seismic ground shaking when indoors or when installing solar atop a habitable structure. The structures within which the AWPf at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to seismic ground shaking. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater seismic ground shaking risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of seismic ground shaking during construction is low. Thus, impacts would be less than significant.

Operation: During operation, ground shaking could result in structural damage and hazards to new and existing facilities, which in turn could affect the operation of the Program infrastructure. This Program Category includes several aboveground structures. The primary and secondary effects of ground shaking could damage structural foundations, distort or break pipelines and other water conveyance structures, and cause structural failure. Therefore, structural and mechanical failure of facilities caused by strong seismic ground shaking could potentially threaten the safety of any on-site workers at the BBARWA upgraded WWTP (i.e., AWPf).

It is anticipated that the structural elements of facilities proposed under this Program Category would undergo appropriate design-level geotechnical evaluations prior to final design and construction as required to comply with the CBC. A licensed geotechnical engineer, a registered professional with the State of California, is required to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. The California Professional Engineers Act (Building and Professions Code Sections 6700-6799) and the Codes of Professional Conduct, as administered by BPELS, provide the basis for regulating and enforcing engineering practice in California. Compliance with these construction requirements and site-specific building and facility safety design standards as required in **MM GEO-1** would reduce potential impacts associated with ground shaking to a level of less than significant. **MM GEO-1** would reduce the potential impacts from ground shaking hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Thus, impacts would be less than significant through the implementation of mitigation.

**Combined Program Categories**

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds, pipelines, solar,

and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because seismic ground shaking may cause structural damage that would could affect persons inside structures to be exposed to risk associated with strong seismic ground shaking when indoors or when installing solar atop a habitable structure. The structures within which the AWPf at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to seismic ground shaking. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater seismic ground shaking risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of seismic ground shaking during construction is low. Thus, impacts would be less than significant.

Operation: Operations consist of full advanced water treatment processes; delivery of Program Water to Stanfield Marsh/Big Bear Lake, Shay Pond; delivery of Program Water to Big Bear Lake and to the Sand Canyon Recharge Area, Bear Mountain Golf Course, and Snow Summit Bike Park, operation of the Solar Evaporation Ponds, and delivery of peak flows to LV Site. Ground shaking could result in structural damage and hazards to new and existing facilities, which in turn could affect the operation of the Program infrastructure. Underground pipelines are not typically susceptible to severe damage from seismic ground shaking, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. However, the Program includes several aboveground structures. The primary and secondary effects of ground shaking could damage structural foundations, distort or break pipelines and other water conveyance structures, and cause structural failure. Therefore, structural and mechanical failure of facilities caused by strong seismic ground shaking could potentially threaten the safety of any on-site workers at the BBARWA upgraded WWTP (i.e., AWPf). Note that none of the proposed facilities envisions hosting human residents.

It is anticipated that the structural elements of facilities proposed under this Program Category would undergo appropriate design-level geotechnical evaluations prior to final design and construction as required to comply with the CBC. A licensed geotechnical engineer, a registered professional with the State of California, is required to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. The California Professional Engineers Act (Building and Professions Code Sections 6700-6799) and the Codes of Professional Conduct, as administered by BPELS, provide the basis for regulating and enforcing engineering practice in California. Compliance with these construction requirements and site-specific building and facility safety design standards as required in **MM GEO-1** would reduce potential impacts associated with ground shaking to a level of less than significant. **MM GEO-1** would reduce the potential impacts from ground shaking hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Thus, impacts would be less than significant through the implementation of mitigation.

#### **Other Physical Changes to the Environment**

In the future, peak flows exceeding the AWPf's 2.2 MGD treatment capacity 2.2 MGD will be delivered to the LV Site during winter months. The reduction in undisinfected secondary effluent discharge to this site has no known potential to cause new or different ground shaking potential.

The Stanfield Marsh/Big Bear Lake Discharge, and the potential change in water source at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore, would have no known potential to cause new or different ground shaking potential. No mitigation is required at these sites due to implementation of the Program and no impacts would occur.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measure:*

**GEO-1:** *Prior to the construction of each Program-related improvement, a design-level geotechnical investigation, including the collection of site-specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including ground shaking hazard, and characterize the soil profiles, including liquefaction potential, expansive soil potential, subsidence, and landslide potential as appropriate relative to the type of facility and risk to human life. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and non-seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual projects. If the project specific geotechnical study cannot mitigate potential seismic related impacts, then the facility shall be relocated. If relocation is not possible, a second tier CEQA evaluation shall be completed.*

*Level of Significance After Mitigation: Less Than Significant*

The implementation of **MM GEO-1** would reduce the potential impacts from ground shaking hazards through a design level geotechnical investigation with the implementation of specific design recommendations.

- a. **Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:**
  - (iii) **Seismic related ground failure, including liquefaction?**

### **Program Category 1: Conveyance Pipelines**

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed underground and outdoors. Construction workers would generally only be at risk when working indoors. This is because liquefaction may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors, which is not anticipated to occur during Conveyance Facility construction. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

Operation: The only Program Areas with seismic-related liquefaction hazard potential are areas with high groundwater table, typically higher than 50 ft below the ground surface. The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area. Refer to **Figure 4.8-6**. There are pipeline locations where potential seismic-related ground failure could cause damage, but would not result in a substantial adverse impact, such that the pipeline could not be repaired. This is because, as discussed above, underground pipelines are not typically susceptible to severe damage from liquefaction, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. Thus, liquefaction impacts would be less than significant.



**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Sand Canyon Recharge Pipeline Discharge Outlet). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because liquefaction may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors. The structures within which the pump station and monitoring wells would be installed, would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to liquefaction. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater liquefaction risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

Operation: The only Program Areas with seismic-related liquefaction hazard potential are areas with high groundwater table, typically higher than 50 ft below the ground surface. The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area. Refer to **Figure 4.8-6**. A significant impact could occur if the projects under this Program Category cannot be designed to accommodate the site-specific potential for liquefaction when constructed. The implementation of **MM GEO-1** would reduce the potential impacts from liquefaction hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Through the implementation of **MM GEO-1**, the Ancillary Facilities can be designed with measures to reduce the potential for significant damage to the facilities and any human occupants. If mitigation is insufficient to protect the Ancillary Facilities from significant liquefaction-ground failure impacts, a follow-on environmental document will be prepared to address this situation and alternative locations.

**Figure 4.8-6** identified the Sand Canyon Recharge Area as a potential area for liquefaction or ground failure impacts. Using the Sand Canyon Recharge Area to recharge the groundwater basin using Program Water stored in Big Bear Lake could increase the potential for liquefaction within this residential area of Big Bear Valley. This will require a robust monitoring and recharge management system to ensure that recharged water does not mound beneath the recharge area and create new potential for ground failure, thereby resulting in a potentially significant impact. To ensure that this does not occur, the Program will implement **MM GEO-2**. Thus, impacts would be less than significant through the implementation of mitigation.

**Program Category 3: Solar Evaporation Ponds Project**

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds). Construction workers would generally only be at risk when working indoors. This is because liquefaction may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

Operation: The only Program Areas with seismic-related liquefaction hazard potential are areas with high groundwater table, typically higher than 50 ft below the ground surface. The areas with

the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area. Refer to **Figure 4.8-6**. A significant impact could occur if the projects under this Program Category cannot be designed to accommodate the site-specific potential for liquefaction when constructed. The implementation of **MM GEO-1** would reduce the potential impacts from liquefaction hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Through the implementation of **MM GEO-1**, the Solar Evaporation Ponds can be designed with measures to reduce the potential for significant damage to the facilities. If mitigation is insufficient to protect the Solar Evaporation Ponds from significant liquefaction-ground failure impacts, a follow-on environmental document will be prepared to address this situation and alternative locations. Thus, impacts would be less than significant through the implementation of mitigation.

#### **Program Category 4: BBARWA WWTP Upgrades Project**

**Construction:** Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because liquefaction may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors or when installing solar atop a habitable structure. The structures within which the AWP at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to liquefaction. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater liquefaction risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

**Operation:** The only Program Areas with seismic-related liquefaction hazard potential are areas with high groundwater table, typically higher than 50 ft below the ground surface. The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area. Refer to **Figure 4.8-6**. A significant impact could occur if the projects under this Program Category cannot be designed to accommodate the site-specific potential for liquefaction when constructed. The implementation of **MM GEO-1** would reduce the potential impacts from liquefaction hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Through the implementation of **MM GEO-1**, the BBARWA WWTP Upgrades Project can be designed with measures to reduce the potential for significant damage to the facilities. If mitigation is insufficient to protect the BBARWA WWTP Upgrades Project from significant liquefaction-ground failure impacts, a follow-on environmental document will be prepared to address this situation and alternative locations. Thus, impacts would be less than significant through the implementation of mitigation.

#### **Combined Program Categories**

**Construction:** Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds, pipelines, solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because

liquefaction may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors or when installing solar atop a habitable structure. The structures within which the AWPf at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to liquefaction. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater liquefaction risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

Operation: The only Program Areas with seismic-related liquefaction hazard potential are areas with high groundwater table, typically higher than 50 ft below the ground surface. The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area. Refer to **Figure 4.8-6**. Except for BBARWA's WWTP site, there are pipeline locations where potential seismic-related ground failure could cause damage, but would not result in a substantial adverse impact, such that the pipeline could not be repaired. This is because, as discussed above, underground pipelines are not typically susceptible to severe damage from liquefaction, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. A significant impact could occur if the projects under this Program Category cannot be designed to accommodate the site-specific potential for liquefaction when constructed. The implementation of **MM GEO-1** would reduce the potential impacts from liquefaction hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Based on the findings and design recommendations developed in response to **MM GEO-1**, the Program facilities can be designed with measures to reduce the potential for significant damage to the facilities and any human occupants. If mitigation is insufficient to protect the BBARWA WWTP upgrades (i.e., AWPf) or other Program facilities from significant liquefaction-ground failure impacts, a follow-on environmental document will be prepared to address this situation and alternative locations.

**Figure 4.8-6** identified the Sand Canyon Recharge Area as a potential area for liquefaction or ground failure impacts. Using the Sand Canyon Recharge Area to recharge the groundwater basin using Program Water stored in Big Bear Lake could increase the potential for liquefaction within this residential area of Big Bear Valley. This will require a robust monitoring and recharge management system to ensure that recharged water does not mound beneath the recharge area and create new potential for ground failure, thereby resulting in a potentially significant impact. To ensure that this does not occur, the Program will implement **MM GEO-2**. Thus, impacts would be less than significant through the implementation of mitigation.

#### **Other Physical Changes to the Environment**

In the future, treated effluent is likely to continue being delivered to the LV Site during winter months, but the reduction in discharge of treated effluent to this site has no known potential to cause new or different liquefaction hazards. The additional discharge of water to Big Bear Lake, and the potential change in water source at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore, would have no known potential to cause new or different liquefaction hazards. No mitigation is required at these sites due to implementing the Program.

*Level of Significance Before Mitigation: Potentially Significant  
Mitigation Measure:*

- GEO-1:** *Prior to the construction of each Program-related improvement, a design-level geotechnical investigation, including the collection of site-specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including ground shaking hazard, and characterize the soil profiles, including liquefaction potential, expansive soil potential, subsidence, and landslide potential as appropriate relative to the type of facility and risk to human life. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and non-seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual projects. If the project specific geotechnical study cannot mitigate potential seismic related impacts, then the facility shall be relocated. If relocation is not possible, a second tier CEQA evaluation shall be completed.*
- GEO-2:** *For the Sand Canyon Recharge Area, the Program will develop and implement a recharge monitoring and management plan that will control recharge to ensure that potential liquefaction-ground failure hazards will be controlled to prevent/eliminate the potential for this type of hazard to be created at the recharge location. This may include pumping groundwater to lower the groundwater table within the recharge impact area. This plan shall be reviewed and approved by the Program managers based on its ability to meet this criterion.*

*Level of Significance After Mitigation: Less Than Significant*

The implementation of **MM GEO-1** would reduce the potential impacts from liquefaction hazards through a design level geotechnical investigation with the implementation of specific design recommendations. **MM GEO-2** would further ensure that monitoring and recharge management occurs at the Sand Canyon Recharge Area to ensure the recharge efforts do not cause liquefaction.

- a. **Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:**  
(iv) **Landslides?**

**Program Category 1: Conveyance Pipelines**

**Construction:** Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed underground and outdoors. Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. The Conveyance Pipelines would be installed in locations that are generally flat or are within flat areas of roadways in residential areas and therefore the risk associated with landslide occurring and significantly impacting construction activities would be low. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

**Operation:** Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. The Conveyance Pipelines would be installed in locations that are generally flat or are within flat areas of roadways in residential areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. Therefore, adverse effects involving landslides would be less than significant without the need for added mitigation.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to high landslide or mudflow/mudslide hazards. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Furthermore, the Sand Canyon Monitoring Wells, while specific site locations are not yet known, would be located downstream of the Sand Canyon Recharge Area. This area is not located within an area exposed to landslide or mudflow. The Sand Canyon Booster Station is located in an area with low to moderate landslide susceptibility. However, this site has been entirely developed, and has not experienced landslide in recent history. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Sand Canyon Recharge Pipeline Discharge Outlet). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. The structures within which the pump station and monitoring wells would be installed, would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to landslide. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater landslide risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

Operation: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to high landslide or mudflow/mudslide hazards. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Furthermore, the Sand Canyon Monitoring Wells, while specific site locations are not yet known, would be located downstream of the Sand Canyon Recharge Area. This area is not located within an area exposed to landslide or mudflow. The Sand Canyon Booster Station is located in an area with low to moderate landslide susceptibility. However, this site has been entirely developed, and has not experienced landslide in recent history. Thus, given that the Sand Canyon Booster Station site has been developed, it is not anticipated to be exposed to landslide or mudflow. Therefore, adverse effects involving landslides would be less than significant without the need for added mitigation.

**Program Category 3: Solar Evaporation Ponds Project**

Construction: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds). The risk associated with landslide occurring and significantly impacting construction activities would be low. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

Operation: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. As the Solar Evaporation Ponds would be installed within the BBARWA WWTP site, adverse effects involving landslides would be less than significant without the need for added mitigation.

**Program Category 4: BBARWA WWTP Upgrades Project**

Construction: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to landslide. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater seismic ground shaking risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

Operation: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. As the BBARWA WWTP Upgrades Project would be installed within the BBARWA WWTP site, adverse effects involving landslides would be less than significant without the need for added mitigation.

**Combined Program Categories**

Construction: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslide susceptibility at a high level. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds, pipelines, solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential



impacts related to landslide. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater landslide risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

Operation: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslide susceptibility at a high level. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Therefore, adverse effects involving landslides would be less than significant without the need for added mitigation.

### **Other Physical Changes to the Environment**

In the future, treated effluent is likely to continue being delivered to the LV Site during winter months, but the reduction in discharge of treated effluent to this site has no known potential to cause new or different landslide hazards. The additional discharge of Program Water to Big Bear Lake, and the potential change in water source at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore, would have no known potential to cause new or different landslide hazards. No mitigation is required at these sites due to implementing the Program.

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measure: None Required*

#### **b. Would the project result in substantial soil erosion or the loss of topsoil?**

### **Program Category 1: Conveyance Pipelines**

Construction: The Program facilities are shown on **Figure 3-29**. Construction activities for these proposed facilities are all located on essentially flat topography, except the pipeline alignment within Sand Canyon and the Sand Canyon Recharge Project facilities. Soils on the floor of Baldwin Lake and near Big Bear Lake consist of Grunney Series and Moonridge-Shay Road and Caribou Creek Series soils (Refer to **Figure 4.8-7**, Tables 1 and 2 of **Appendix 15 of Volume 2** to this DPEIR for the location of these soils and their description). Only the Grunney soils are poorly drained (dry lakebed) such that excavation and grading could result in soil erosion during rain or high wind events. Otherwise, the soils in the Program APE are deep, well-drained soils that formed in alluvium. Compliance with SCAQMD Rule 403 would ensure that construction activities that generate wind-induced soil erosion are below significance thresholds as this requirement is intended to prevent significant wind-induced soil erosion. As a mandatory requirement, mitigation is not required to ensure compliance with the above Rule.

The Shay Pond Replacement Pipeline, Sand Canyon Recharge Conveyance Pipeline, and Stanfield Marsh/Big Bear Lake Discharge Projects are each project proposed under this Program that are greater than one acre. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction and WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. To prevent erosion associated with runoff from construction sites for each proposed site-specific project, the implementing agencies would implement BMPs to ensure that the

discharge of storm runoff from construction sites does not cause erosion downstream from the discharge point. Without the implementation of BMPs, a significant erosion impact could occur. However, for the new Shay Pond Conveyance Pipeline, mitigation is necessary to minimize impacts as SWPPP and WQMPs would not be required. The implementation of **MM GEO-3** is necessary to prevent a significant construction related erosion impact, as it would ensure that the proposed facilities associated with the Shay Pond Discharge Project that are less than one acre in size would not exacerbate conditions related to erosion associated with runoff from construction sites through the implementation of BMPs. Thus, through the implementation of mitigation, impacts related to implementation of the new Shay Pond Conveyance Pipeline would be less than significant.

Operation: Operational erosion impacts are not anticipated to occur, as once the pipelines are installed belowground, the roadways and compacted dirt throughways will be returned to their original condition. Thus, no new potential for erosion would occur and operational impacts would be less than significant.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The Program facilities are shown on **Figure 3-29**. Construction activities for these proposed facilities are all located on essentially flat topography, except the Sand Canyon Recharge facilities. Soils on the floor of Baldwin Lake and near Big Bear Lake consist of Grunney Series and Moonridge-Shay Road and Caribou Creek Series soils (Refer to **Figure 4.8-7**, Tables 1 and 2 of **Appendix 15 of Volume 2** to this DPEIR for the location of these soils and their description). Only the Grunney soils are poorly drained (dry lakebed) such that excavation and grading could result in soil erosion during rain or high wind events. Otherwise, the soils in the Program APE are deep, well-drained soils that formed in alluvium. Compliance with SCAQMD Rule 403 would ensure that construction activities that generate wind-induced soil erosion are below significance thresholds as this requirement is intended to prevent significant wind-induced soil erosion. As a mandatory requirement, mitigation is not required to ensure compliance with the above Rule.

The facilities that would be installed within the overall BBARWA WWTP would be a part of a project that would be greater than one acre. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction. The project areas for the Sand Canyon Monitoring Wells, Sand Canyon Booster Station, and Sand Canyon Conveyance Pipeline Discharge Outlet are each project proposed under this Program that are less than one acre, so a SWPPP would be not be required. Without the implementation of BMPs, a significant erosion impact could occur. For projects larger than one acre the SWPPP would specify BMPs that would minimize erosion impacts to a level of less than significant. However, for the Sand Canyon Monitoring Wells, Sand Canyon Booster Station, and Sand Canyon Conveyance Pipeline Discharge Outlet, mitigation is necessary to minimize impacts as SWPPP would not be required. The implementation of **MM GEO-3** would ensure that the proposed facilities associated with the Program that are less than one acre in size would not exacerbate conditions related to erosion associated with runoff from construction sites through the implementation of BMPs. Thus, through the implementation of mitigation, impacts related to implementation of the Sand Canyon Monitoring Wells, Sand Canyon Booster Station, and Sand Canyon Conveyance Pipeline Discharge Outlet would be less than significant.

Operation: Operational erosion impacts are not anticipated to occur, as once the Ancillary Facilities are installed, the sites will manage drainage and runoff internally. With no ground disturbing activities anticipated as part of operation, internal drainage mechanisms would prevent

erosion from occurring offsite. Thus, no new potential for erosion would occur and operational impacts would be less than significant.

**Program Category 3: Solar Evaporation Ponds Project**

Construction: The Program facilities are shown on **Figure 3-29**. Construction activities for these proposed facilities are all located on essentially flat topography. Soils on the floor of Baldwin Lake and near Big Bear Lake consist of Grunney Series and Moonridge-Shay Road and Caribou Creek Series soils (Refer to **Figure 4.8-7**, Tables 1 and 2 of **Appendix 15 of Volume 2** to this DPEIR for the location of these soils and their description). Only the Grunney soils are poorly drained (dry lakebed) such that excavation and grading could result in soil erosion during rain or high wind events. Compliance with SCAQMD Rule 403 would ensure that construction activities that generate wind-induced soil erosion are below significance thresholds as this requirement is intended to prevent significant wind-induced soil erosion. As a mandatory requirement, mitigation is not required to ensure compliance with the above Rule.

The Solar Evaporation Ponds would be greater than one acre. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction and

Operation: Operational erosion impacts are not anticipated to occur, as once the Solar Evaporation Ponds are installed, the sites will manage drainage and runoff internally. WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. WQMP would specify BMPs that would minimize erosion impacts to a level of less than significant.

**Program Category 4: BBARWA WWTP Upgrades Project**

Construction: The Program facilities are shown on **Figure 3-29**. Construction activities for these proposed facilities are all located on essentially flat topography, except the pipeline alignment within Sand Canyon and the Sand Canyon Recharge facilities. Soils on the floor of Baldwin Lake and near Big Bear Lake consist of Grunney Series and Moonridge-Shay Road and Caribou Creek Series soils (Refer to **Figure 4.8-7**, Tables 1 and 2 of **Appendix 15 of Volume 2** to this DPEIR for the location of these soils and their description). Only the Grunney soils are poorly drained (dry lakebed) such that excavation and grading could result in soil erosion during rain or high wind events. Compliance with SCAQMD Rule 403 would ensure that construction activities that generate wind-induced soil erosion are below significance thresholds as this requirement is intended to prevent significant wind-induced soil erosion. As a mandatory requirement, mitigation is not required to ensure compliance with the above Rule.

The BBARWA WWTP Upgrades would be greater than one acre. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction and WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. Without the implementation of BMPs, a significant erosion impact could occur. For projects larger than one acre (the BBARWA WWTP Upgrades) the SWPPP and WQMP would specify BMPs that would minimize erosion impacts to a level of less than significant.

Operation: Operational erosion impacts are not anticipated to occur, as once the BBARWA WWTP Upgrades are installed, the site will manage drainage and runoff internally. WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. WQMP would specify BMPs that would minimize erosion impacts to a level of less than significant.

### **Combined Program Categories**

**Construction:** The Program facilities are shown on **Figure 3-29**, which include pipelines, pump stations, monitoring wells, upgrades to BBARWA's WWTP to achieve full advanced treatment, water recharge facilities, and Solar Evaporation Ponds. Construction activities for these proposed facilities are all located on essentially flat topography, except the pipeline alignment within Sand Canyon and the Sand Canyon Recharge facilities. Soils on the floor of Baldwin Lake and near Big Bear Lake consist of Grunney Series and Moonridge-Shay Road and Caribou Creek Series soils (Refer to **Figure 4.8-7**, Tables 1 and 2 of **Appendix 15 of Volume 2** to this DPEIR for the location of these soils and their description). Only the Grunney soils are poorly drained (dry lakebed) such that excavation and grading could result in soil erosion during rain or high wind events. Otherwise, the soils in the Program APE are deep, well-drained soils that formed in alluvium. Compliance with SCAQMD Rule 403 would ensure that construction activities that generate wind-induced soil erosion are below significance thresholds as this requirement is intended to prevent significant wind-induced soil erosion. As a mandatory requirement, mitigation is not required to ensure compliance with the above Rule.

The BBARWA WWTP Upgrades and Solar Evaporation Ponds are each project proposed under this Program that are greater than one acre. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction and WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. The project areas for the monitoring wells, pump stations, Sand Canyon Recharge pipe outlet and erosion control are each project proposed under this Program that are less than one acre, so a SWPPP would be required. To prevent erosion associated with runoff from construction sites for each proposed site-specific project, the implementing agencies would implement BMPs to ensure that the discharge of storm runoff from construction sites does not cause erosion downstream from the discharge point. Without the implementation of BMPs, a significant erosion impact could occur. The implementation of BMPs would be enforced through mitigation identified below. The implementation of **MM GEO-3** would ensure that the proposed facilities associated with the Program that are less than one acre in size would not exacerbate conditions related to erosion associated with runoff from construction sites through the implementation of BMPs. Adherence to these conditions and the mitigation provided below would ensure that potential soil erosion and loss of topsoil impacts would be minimized to less than significant.

**Operation:** Operational erosion impacts are not anticipated to occur, as once the pipelines are installed belowground, the roadways and compacted dirt throughways will be returned to their original condition. Operational erosion impacts are not anticipated to occur, as once the Ancillary Facilities are installed, the sites will manage drainage and runoff internally. With no ground disturbing activities anticipated as part of operation, internal drainage mechanisms would prevent erosion from occurring offsite. Thus, no new potential for erosion would occur and operational impacts would be less than significant.

Operational erosion impacts are not anticipated to occur, as once the BBARWA WWTP Upgrades and Solar Evaporation Ponds are installed, the sites will manage drainage and runoff internally. WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. WQMP would specify BMPs that would minimize erosion impacts to a level of less than significant.

### **Other Physical Changes to the Environment**

In the future, treated effluent is likely to continue being delivered to the LV Site during winter months, and at present, the discharge is planned to continue to be utilized by the farmer who

leases the LV Site from BBARWA. If the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) or could make the treated effluent available to another party for an alternative use. Under any of the above scenarios, a portion or all of the LV Site would become fallow as a result of the reduction or cessation of farming operations, and would continue to be maintained by BBARWA. This reduction in discharge could result in soil erosion greater than that which could occur at present due to the reduced vegetation present on the site from the reduced farming operations. At present, BBARWA and the farmer who leases the LV Site are responsible for maintaining the site. Under the Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the Site. Enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and eco-conscious weed killing applications;
- Planting cover crops, such as sorghum to prevent dust migration; and/or
- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

It is anticipated that by implementing any of the above maintenance practices to maintain the LV Site, which are incorporated into the operation of the Program, soil erosion or loss of top soil would be minimized below significance thresholds. The additional discharge of Program Water to Big Bear Lake, and the potential change in water source at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore, would have no new potential to cause soil erosion or loss of top soil. No mitigation is required at these sites due to implementing the Program.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measure:*

**GEO-3:** *For each site-specific project that is less than one acre in size requiring ground disturbing activities such as grading, the implementing agencies shall identify and implement BMPs to minimize soil erosion and loss of topsoil comparable to that which would be required under a SWPPP (BMPs may include, but are not limited to hay bales, wattles, detention basins, silt fences, coir rolls, etc.) to ensure that the discharge of the storm runoff from the construction site does not cause erosion downstream of the discharge point. If any substantial erosion or sedimentation occurs as a result of discharging storm water from a project construction site, any erosion or sedimentation damage shall be restored to pre-discharge conditions.*

*Level of Significance After Mitigation: Less Than Significant*

The implementation of **MM GEO-3** would ensure that the proposed facilities associated with the Program that are less than one acre in size would not exacerbate conditions related to erosion associated with runoff from construction sites through the implementation of BMPs. Furthermore, the maintenance at the LV Site that has been incorporated into Program operations would ensure that erosion control is implemented and maintained at the LV Site. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction and WQMPs must be implemented to control runoff and erosion from specific

facility sites once the construction is completed. Again, this is a mandatory requirement that the implementing agencies will implement and ensure that post-development runoff and erosion potential is controlled.

- c. **Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-site or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?**

**Program Category 1: Conveyance Pipelines**

Construction: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Given that the general locations of the Conveyance Pipeline Alignments are known, it is possible to review the potential for soil instability at a project level. The Conveyance Pipelines would be installed in locations that are generally flat or are within flat areas of roadways in residential areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed underground and outdoors. Construction workers would generally only be at risk when working indoors. This is because on-site or off-site landslide, lateral spreading, subsidence, liquefaction or collapse may cause structural damage that would could affect persons inside structures to be exposed to risk associated with lateral spreading, subsidence, liquefaction or collapse when indoors, which is not anticipated to occur during Conveyance Facility construction. The Conveyance Pipelines would be installed in locations that are generally flat or are within flat areas of roadways in residential areas and therefore the risk associated with landslide occurring and significantly impacting construction activities would be low. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

Operation: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Given that the general locations of the Conveyance Pipeline Alignments are known, it is possible to review the potential for soil instability at a project level. The Conveyance Pipelines would be installed in locations that are generally flat or are within flat areas of roadways in residential areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. Therefore, adverse effects involving landslides would be less than significant without the need for added mitigation. The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area, and these areas could be susceptible to lateral spreading, subsidence, liquefaction, or collapse. Refer to **Figure 4.8-6**. Based on the above location data, there are pipeline locations where potential soil instability could cause damage, but would not result in a substantial adverse impact, such that the pipeline could not be repaired. This is because, as discussed above, underground pipelines are not typically susceptible to severe damage from soil instability, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. Thus, soil instability impacts would be less than significant.



**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. As previously discussed, landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslide or mudflow/mudslide hazards. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Sand Canyon Recharge Pipeline Discharge Outlet). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because lateral spreading, subsidence, liquefaction or collapse may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors. The structures within which the pump station and monitoring wells would be installed, would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to lateral spreading, subsidence, liquefaction or collapse, as well as landslide. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater lateral spreading, subsidence, liquefaction or collapse and landslide risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of lateral spreading, subsidence, liquefaction or collapse during construction is low. Thus, impacts would be less than significant.

Operation: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. As previously discussed, landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslide or mudflow/mudslide hazards. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Furthermore, the Sand Canyon Monitoring Wells, while specific site locations are not yet known, would be located downstream of the Sand Canyon Recharge Area. This area is not located within an area exposed to landslide or mudflow. The Sand Canyon Booster Station is located in an area with low to moderate landslide susceptibility. However, this site has been entirely developed, and has not experienced landslide in recent history. Thus, given that the Sand Canyon Booster Station site has been developed, it is not anticipated to be exposed to landslide or mudflow.

The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area, and these areas could be susceptible to lateral spreading, subsidence, liquefaction, or collapse. Refer to **Figure 4.8-6**. Based on the above location data, there are Ancillary Facilities locations where potential soil instability could cause damage to structures or facilities, and therefore implementation of the proposed Ancillary Facilities may cause a significant and unavoidable impact related to soil instability. As a result, **MM GEO-1**, is required to minimize lateral spreading, subsidence, liquefaction, collapse and other soil instability impacts as a result of Program implementation. With the implementation of **MM**

**GEO-1** for the major site facilities, adverse effects involving unstable soils would be less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

**Program Category 3: Solar Evaporation Ponds Project**

Construction: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds). Construction workers would generally be at risk when working indoors. This is because lateral spreading, subsidence, liquefaction or collapse may cause structural damage that would could affect persons inside structures to be exposed to risk associated with lateral spreading, subsidence, liquefaction or collapse when indoors. Overall, construction would be temporary in nature and the probability of lateral spreading, subsidence, liquefaction or collapse during construction is low. Furthermore, in particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds). The risk associated with landslide occurring and significantly impacting construction activities would be low. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

Operation: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. As the Solar Evaporation Ponds would be installed within the BBARWA WWTP site, adverse effects involving landslides would be less than significant without the need for added mitigation.

The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, which could be susceptible to lateral spreading, subsidence, liquefaction, or collapse. Refer to **Figure 4.8-6**. Based on the above location data, the Solar Evaporation Ponds may be located where potential soil instability could cause damage to these facilities, and therefore implementation of the proposed Solar Evaporation Ponds may cause a significant and unavoidable impact related to soil instability. As a result, **MM GEO-1**, is required to minimize lateral spreading, subsidence, liquefaction, collapse and other soil instability impacts as a result of Program implementation. With the implementation of **MM GEO-1** for the major site facilities, adverse effects involving unstable soils would be less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

#### **Program Category 4: BBARWA WWTP Upgrades Project**

Construction: Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally be at risk when working indoors. This is because landslide, lateral spreading, subsidence, liquefaction or collapse may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors or when installing solar atop a habitable structure. The structures within which the AWPf at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to landslide, lateral spreading, subsidence, liquefaction or collapse. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater landslide, lateral spreading, subsidence, liquefaction or collapse risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of landslide, lateral spreading, subsidence, liquefaction or collapse during construction is low. Thus, impacts would be less than significant.

Operation: Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. As the BBARWA WWTP Upgrades Project would be installed within the BBARWA WWTP site, adverse effects involving landslides would be less than significant without the need for added mitigation.

The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, which could be susceptible to lateral spreading, subsidence, liquefaction, or collapse. Refer to **Figure 4.8-6**. Based on the above location data, the BBARWA WWTP Upgrades may be located where potential soil instability could cause damage to these facilities, and therefore implementation of the proposed BBARWA WWTP Upgrades may cause a significant and unavoidable impact related to soil instability. As a result, **MM GEO-1**, is required to minimize lateral spreading, subsidence, liquefaction, collapse and other soil instability impacts as a result of Program implementation. With the implementation of **MM GEO-1** for the major site facilities, adverse effects involving unstable soils would be less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

#### **Combined Program Categories**

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds, pipelines, solar,

and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally be at risk when working indoors. This is because landslide, lateral spreading, subsidence, liquefaction or collapse may cause structural damage that would could affect persons inside structures to be exposed to risk associated with landslide, lateral spreading, subsidence, liquefaction or collapse when indoors or when installing solar atop a habitable structure. The structures within which the AWPf at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to liquefaction. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater landslide, lateral spreading, subsidence, liquefaction or collapse risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of landslide, lateral spreading, subsidence, liquefaction or collapse during construction is low. Thus, impacts would be less than significant.

Operation: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Given that the general locations of the Program facilities are known, and based on the above discussion, the issue of landslide for all Program facilities would be less than significant. As there is a potential for some facilities to be located within areas that are considered to be susceptible to lateral spreading, subsidence, liquefaction, or collapse the Program would be exposed to potentially significant soil instability impacts. As a result, **MM GEO-1**, is required to minimize lateral spreading, subsidence, liquefaction, collapse and other soil instability impacts as a result of Program implementation. With the implementation of **MM GEO-1** for the major site facilities, adverse effects involving unstable soils would be less than significant. Furthermore, pipelines failure can occur, but can be repaired and placed back into operation with no loss of human life. Therefore, impacts from the development of the proposed pipeline alignments are considered less than significant.

### **Other Physical Changes to the Environment**

In the future, treated effluent is likely to continue being delivered to the LV Site during winter months, but the reduction in discharge of treated effluent to this site has no known potential to result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse hazards. The additional discharge of Program Water to Big Bear Lake, and the potential change in water source at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore would have no known potential to result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse hazards. No impacts would occur, and no mitigation is required at these sites due to implementing the Program.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: Refer to **MM GEO-1**, above.*

**GEO-1:** *Prior to the construction of each Program-related improvement, a design-level geotechnical investigation, including the collection of site-specific subsurface data if*

***appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including ground shaking hazard, and characterize the soil profiles, including liquefaction potential, expansive soil potential, subsidence, and landslide potential as appropriate relative to the type of facility and risk to human life. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and non-seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual projects. If the project specific geotechnical study cannot mitigate potential seismic related impacts, then the facility shall be relocated. If relocation is not possible, a second tier CEQA evaluation shall be completed.***

*Level of Significance After Mitigation: Less Than Significant*

The implementation of **MM GEO-1** would reduce the potential impacts related to unstable soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects.

**d. Would the project be located on expansive soil, as defined in CBC Section 1803.5.3, creating substantial direct or indirect risks to life or property?**

**Program Category 1: Conveyance Pipelines**

Construction: The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed underground and outdoors. Construction workers would generally only be at risk when working indoors. This is because expansive soils may cause structural damage that would could affect persons inside structures to be exposed to risk associated with I expansive soils when indoors, which is not anticipated to occur during Conveyance Facility construction. Overall, construction would be temporary in nature and the probability of expansive soils during construction is low. Thus, impacts would be less than significant.

Operation: When expansive soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as loads resulting from structure foundations or underground utilities, and can result in structural distress and/or damage. As stated above, soils throughout the Program Area mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. However, the proposed pipelines would be installed below ground; soils with expansive characteristics could exert pressure on the pipelines during times of saturation, potentially threatening pipeline stability. Therefore, adverse effects involving expansive soils would be potentially significant. As such, the implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects. Therefore, impacts would be less than significant with mitigation incorporated.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive

soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Sand Canyon Recharge Pipeline Discharge Outlet). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because expansive soils may cause structural damage that would could affect persons inside structures to be exposed to risk associated with expansive soils when indoors. The structures within which the pump station and monitoring wells would be installed, would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to expansive soils. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater expansive soils risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of expansive soils during construction is low. Thus, impacts would be less than significant.

Operation: When expansive soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as loads resulting from structure foundations or underground utilities, and can result in structural distress and/or damage. As stated above, soils throughout the Program Area mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. As some Ancillary Facilities would be installed within these locations, adverse effects involving expansive soils would be potentially significant. As such, the implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects. Therefore, impacts would be less than significant with mitigation incorporated.

### **Program Category 3: Solar Evaporation Ponds Project**

Construction: The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds). Construction workers would generally only be at risk when working indoors. This is because expansive soils may cause structural damage that would could affect persons inside structures to be exposed to risk associated with expansive soils when indoors. Overall, construction would be temporary in nature and the probability of expansive soils during construction is low. Thus, impacts would be less than significant.

Operation: When expansive soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as loads resulting from structure foundations or underground utilities, and can result in structural distress and/or damage. As stated above, soils throughout the Program Area mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on



Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. As the Solar Evaporation Ponds would be installed within Baldwin Lake, adverse effects involving expansive soils would be potentially significant. As such, the implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects. Therefore, impacts would be less than significant with mitigation incorporated.

#### **Program Category 4: BBARWA WWTP Upgrades Project**

Construction: The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because expansive soils may cause structural damage that would could affect persons inside structures to be exposed to risk associated with expansive soils when indoors or when installing solar atop a habitable structure. The structures within which the AWPf at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to expansive soils. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater expansive soils risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of expansive soils during construction is low. Thus, impacts would be less than significant.

Operation: When expansive soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as loads resulting from structure foundations or underground utilities, and can result in structural distress and/or damage. As stated above, soils throughout the Program Area mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. As the BBARWA WWTP Upgrades would be installed within Baldwin Lake, adverse effects involving expansive soils would be potentially significant. Therefore, adverse effects involving expansive soils would be potentially significant. As such, the implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects. Therefore, impacts would be less than significant with mitigation incorporated.

#### **Combined Program Categories**

Construction: The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds, pipelines, solar, and some upgrades to the BBARWA WWTP). The remaining

facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because expansive soils may cause structural damage that would could affect persons inside structures to be exposed to risk associated with expansive soils when indoors or when installing solar atop a habitable structure. The structures within which the AWPf at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to expansive soils. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater expansive soils risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of expansive soils during construction is low. Thus, impacts would be less than significant.

Operation: When expansive soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as loads resulting from structure foundations or underground utilities, and can result in structural distress and/or damage. As stated above, soils throughout the Program Area mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Therefore, adverse effects involving expansive soils would be potentially significant. As such, the implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects.

Proposed pipelines would be installed below ground; soils with expansive characteristics could exert pressure on the pipelines during times of saturation, potentially threatening pipeline stability. Therefore, adverse effects involving expansive soils would be potentially significant. As such, mitigation is required to minimize impacts to a less than significant level by ensuring that pipeline and all other Program facilities are analyzed thoroughly through a site-specific geotechnical report with specific design recommendations. Therefore, impacts would be less than significant with mitigation incorporated.

### **Other Physical Changes to the Environment**

In the future, treated effluent is likely to continue being delivered to the LV Site during winter months, but the reduction in discharge of treated effluent to this site would not include the installation of structures that could be impacted by the presence of expansive soils on site. The additional discharge of Program Water to Big Bear Lake, and the potential change in water source at Shay Pond as the installation of structures necessary to facilitate this change have been discussed above as part of the overall Program facilities, and would not include construction beyond that which has been analyzed under Combined Program Categories, above, and therefore, there is no potential for expansive soil impacts. No mitigation is required at these sites due to implementing the Program.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**GEO-1:** *Prior to the construction of each Program-related improvement, a design-level geotechnical investigation, including the collection of site-specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including ground shaking hazard, and characterize the soil profiles, including liquefaction potential, expansive soil potential, subsidence, and landslide potential as appropriate relative to the type of facility and risk to human life. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and non-seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual projects. If the project specific geotechnical study cannot mitigate potential seismic related impacts, then the facility shall be relocated. If relocation is not possible, a second tier CEQA evaluation shall be completed.*

*Level of Significance After Mitigation: Less Than Significant*

The implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects.

- e. **Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?**

**Program Category 1: Conveyance Pipelines**

Construction: There is no planned use of on-site septic systems in support of the Conveyance Pipelines during construction. Therefore, no impact would occur related to soil suitability for septic systems.

Operation: There is no planned use of on-site septic systems in support of the Conveyance Pipelines. Therefore, no impact would occur related to soil suitability for septic systems.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: There is no planned use of on-site septic systems in support of the Ancillary Facilities during construction. Therefore, no impact would occur related to soil suitability for septic systems.

Operation: There is no planned use of on-site septic systems in support of the Ancillary Facilities. Therefore, no impact would occur related to soil suitability for septic systems.

**Program Category 3: Solar Evaporation Ponds Project**

Construction: There is no planned use of on-site septic systems in support of the Solar Evaporation Ponds Project during construction. Therefore, no impact would occur related to soil suitability for septic systems.

Operation: There is no planned use of on-site septic systems in support of the Solar Evaporation Ponds Project facilities. Therefore, no impact would occur related to soil suitability for septic systems.

**Program Category 4: BBARWA WWTP Upgrades Project**

Construction: There is no planned use of on-site septic systems in support of the BBARWA WWTP Upgrades Project during construction. Therefore, no impact would occur related to soil suitability for septic systems.

Operation: There is no planned use of on-site septic systems in support of the BBARWA WWTP Upgrades Project facilities. Therefore, no impact would occur related to soil suitability for septic systems.

**Combined Program Categories**

Construction: There is no planned use of on-site septic systems in support of the construction of the Program facilities. Therefore, no impact would occur related to soil suitability for septic systems.

Operation: There is no planned use of on-site septic systems in support of the Program facilities. Therefore, no impact would occur related to soil suitability for septic systems.

*Level of Significance Before Mitigation: No Impact*

*Mitigation Measures: None required.*

**f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

**Program Category 1: Conveyance Pipelines**

Construction: The San Bernardino Countywide Plan and Big Bear Lake General Plan indicate that only limited portions of Big Bear Valley areas are sensitive to paleontological resources. Most of Big Bear Valley consists of granitic-type bedrock and residual soils developed on this bedrock. However, in the floor areas of Big Bear Valley, previously unknown and unrecorded paleontological resources may be unearthed during excavation and grading-trenching activities for individual projects. This is demonstrated on **Figure 4.8-9**, which depicts the San Bernardino Countywide Plan EIR Paleontological Sensitivity-Mountain Region Map, the Conveyance Facilities traverse through areas with low-to-high, and high paleontological sensitivity. Thus, there is a potential for such resources to exist within the conveyance pipeline alignments. If previously unknown potentially unique paleontological resources are uncovered during excavation or construction, significant impacts could occur. The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. Therefore, mitigation would be implemented that would require site specific studies to identify potentially significant paleontological resources. Additional studies that would identify management measures to minimize impacts to any paleontological resources found within an individual project site would ensure that impacts to paleontological resources are less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact paleontological resources exists.



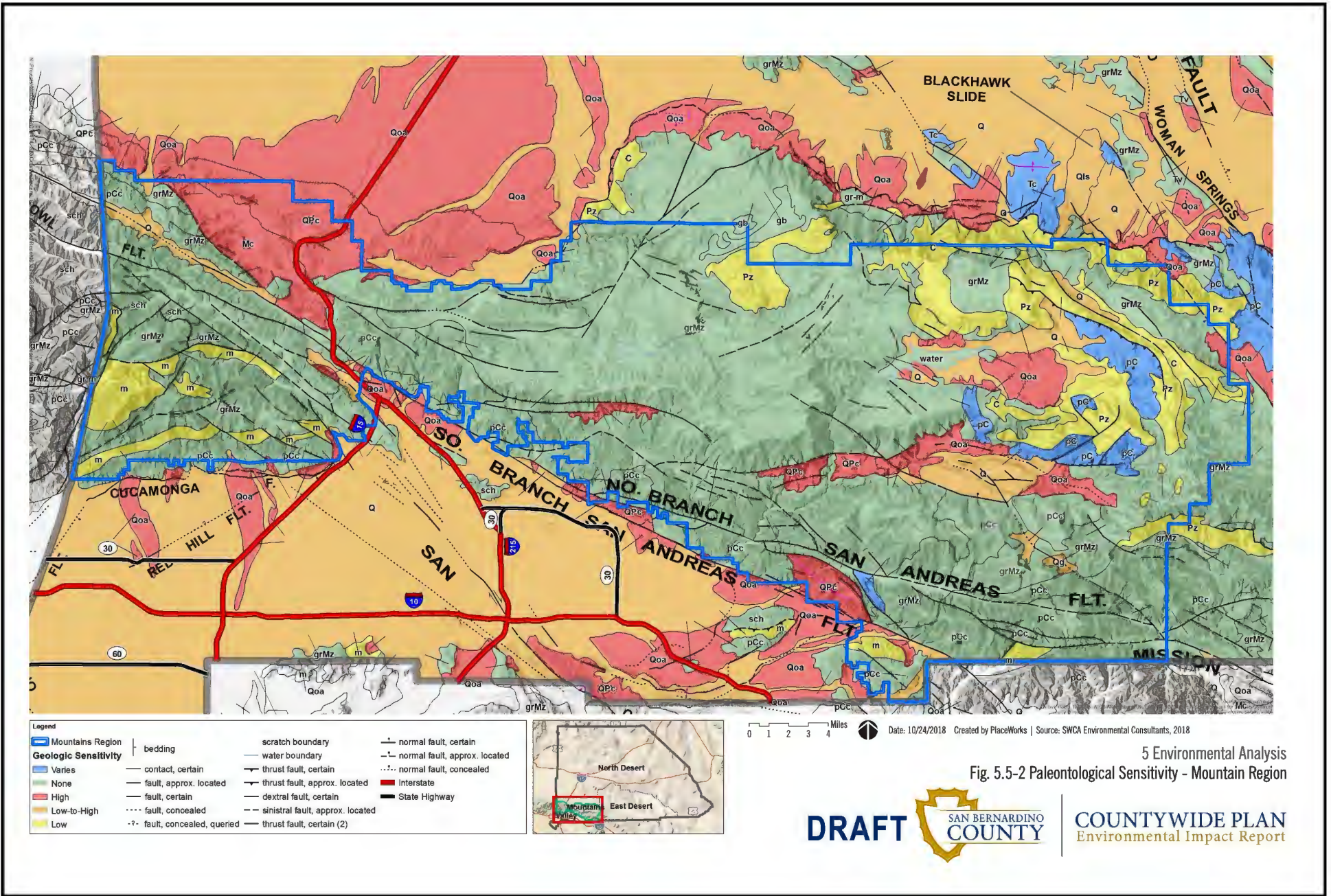


FIGURE 4.8-9

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The San Bernardino Countywide Plan and Big Bear Lake General Plan indicate that only limited portions of Big Bear Valley areas are sensitive to paleontological resources. Most of Big Bear Valley consists of granitic-type bedrock and residual soils developed on this bedrock. However, in the floor areas of Big Bear Valley, previously unknown and unrecorded paleontological resources may be unearthed during excavation and grading-trenching activities for individual projects. This is demonstrated on **Figure 4.8-9**, which depicts the San Bernardino Countywide Plan EIR Paleontological Sensitivity-Mountain Region Map, the Ancillary Facilities may be installed within areas with low-to-high, and high paleontological sensitivity. Thus, there is a potential for such resources to exist within the individual Program facility sites and alignments. If previously unknown potentially unique paleontological resources are uncovered during excavation or construction, significant impacts could occur. The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. Therefore, mitigation would be implemented that would require site specific studies to identify potentially significant paleontological resources. Additional studies that would identify management measures to minimize impacts to any paleontological resources found within individual Program facility sites would ensure that impacts to paleontological resources are less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact paleontological resources exists.

**Program Category 3: Solar Evaporation Ponds Project**

Construction: The San Bernardino Countywide Plan and Big Bear Lake General Plan indicate that only limited portions of Big Bear Valley areas are sensitive to paleontological resources. Most of Big Bear Valley consists of granitic-type bedrock and residual soils developed on this bedrock. However, in the floor areas of Big Bear Valley, previously unknown and unrecorded paleontological resources may be unearthed during excavation and grading-trenching activities for individual projects. This is demonstrated on **Figure 4.8-9**, which depicts the San Bernardino Countywide Plan EIR Paleontological Sensitivity-Mountain Region Map, the Solar Evaporation Ponds Project is located within an area containing low-to-high sensitivity. As the Solar Evaporation Ponds Project would be located within Baldwin Lake, there is a lower potential to uncover paleontological resources than in other areas of the program. Regardless, there is a potential for such resources to exist within the individual Program facility sites and alignments. If previously unknown potentially unique paleontological resources are uncovered during excavation or construction, significant impacts could occur. The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. Therefore, mitigation would be implemented that would require site specific studies to identify potentially significant paleontological resources. Additional studies that would identify management measures to minimize impacts to any paleontological resources found within individual Program facility sites would ensure that impacts to paleontological resources are less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact paleontological resources exists.



#### **Program Category 4: BBARWA WWTP Upgrades Project**

Construction: The San Bernardino Countywide Plan and Big Bear Lake General Plan indicate that only limited portions of Big Bear Valley areas are sensitive to paleontological resources. Most of Big Bear Valley consists of granitic-type bedrock and residual soils developed on this bedrock. However, in the floor areas of Big Bear Valley, previously unknown and unrecorded paleontological resources may be unearthed during excavation and grading-trenching activities for individual projects. This is demonstrated on **Figure 4.8-9**, which depicts the San Bernardino Countywide Plan EIR Paleontological Sensitivity-Mountain Region Map, the BBARWA WWTP Upgrades Project is located within an area containing low-to-high sensitivity. As the BBARWA WWTP Upgrades Project would be located within Baldwin Lake, there is a lower potential to uncover paleontological resources than in other areas of the program. Regardless, there is a potential for such resources to exist within the individual Program facility sites and alignments. If previously unknown potentially unique paleontological resources are uncovered during excavation or construction, significant impacts could occur. The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. Therefore, mitigation would be implemented that would require site specific studies to identify potentially significant paleontological resources. Additional studies that would identify management measures to minimize impacts to any paleontological resources found within individual Program facility sites would ensure that impacts to paleontological resources are less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact paleontological resources exists.

#### **Combined Program Categories**

Construction: The San Bernardino Countywide Plan and Big Bear Lake General Plan indicate that only limited portions of Big Bear Valley areas are sensitive to paleontological resources. Most of Big Bear Valley consists of granitic-type bedrock and residual soils developed on this bedrock. However, in the floor areas of Big Bear Valley, previously unknown and unrecorded paleontological resources may be unearthed during excavation and grading-trenching activities for individual projects. This is demonstrated on **Figure 4.8-9**, which depicts the San Bernardino Countywide Plan EIR Paleontological Sensitivity-Mountain Region Map, the Program Area traverses through areas with low-to-high, and high paleontological sensitivity. Thus, there is a potential for such resources to exist within the individual Program facility sites and alignments. If previously unknown potentially unique paleontological resources are uncovered during excavation or construction, significant impacts could occur. The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. Therefore, mitigation would be implemented that would require site specific studies to identify potentially significant paleontological resources. Additional studies that would identify management measures to minimize impacts to any paleontological resources found within a Replenish Big Bear project site would ensure that impacts to paleontological resources are less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact paleontological resources exists.

### **Other Physical Changes to the Environment**

In the future, treated effluent is likely to continue being delivered to the LV Site during winter months, but the reduction in discharge of treated effluent to this site has no known potential to create new or different potential for impacts to paleontological resources. The additional discharge of Program Water to Big Bear Lake, and the potential change in water source at Shay Pond would not require construction of any kind beyond that which has been analyzed under Combined Program Categories, above, and therefore, would have no known potential to create new or different potential for impacts to paleontological resources. No mitigation is required at these sites due to implementing the Program.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measure:*

**GEO-4:** *For project-level development involving ground disturbance in alluvial deposits, a qualified paleontologist shall be retained to determine the necessity of conducting a study of the Project Area(s) based on the potential sensitivity of the project site for paleontological resources. If deemed necessary, the paleontologist shall conduct a paleontological resources inventory designed to identify potentially significant resources. The paleontological resources inventory would consist of: a paleontological resource records search to be conducted at the SBCM and/or other appropriate facilities; a field survey or monitoring where deemed appropriate by the paleontologist; and recordation of all identified paleontological resources. Treatment of any discovered paleontological resources shall follow current professional standards.*

*Level of Significance Before Mitigation: Less Than Significant*

The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. No mitigation is required for facilities located where bedrock occurs at the surface or where only residual soils occur.

#### **4.8.6 Cumulative Impacts**

Future cumulative development in Big Bear Valley may experience significant impacts associated with geotechnical constraints within Big Bear Valley, including impacting resources such as paleontological resources, which occur below ground. Similarly, development of the Program would be affected by limited geotechnical constraints that occur within Big Bear Valley. None of the future on-site or off-site project-related activities are forecast to cause cumulatively considerable changes in geology or soils or the constraints affecting the Program Area that cannot be fully mitigated. Therefore, with the implementation of **MMs GEO-1** through **GEO-4**, and adherence to the relevant regulatory requirements, the Program would have a less than significant contribution to cumulatively considerable geology or soils impacts within Big Bear Valley.

#### **4.8.7 Significant and Unavoidable Impacts**

As determined in the preceding environmental evaluation, no significant and unavoidable impacts relating to geology and soils would occur as a result of implementing the Program with implementation of **MMs**.

## **4.9 GREENHOUSE GASES / GLOBAL CLIMATE CHANGE**

### **4.9.1 Introduction**

This section assesses potential impacts to GHG from implementation of the Replenish Big Bear Program (Program). The Replenish Big Bear Program Greenhouse Gas Impact Analysis dated August 2023 was prepared by Urban Crossroads to evaluate the potential for the program to emit GHG associated with construction and operation of the facilities proposed as part of the Program. A copy of the Greenhouse Gas Impact Analysis (GHGIA) is provided as **Appendix 16 of Volume 2** to this DPEIR.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Greenhouse Gas Emissions
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to GHG were received at the Scoping Meeting held on behalf of the project or in response to the NOP.

### **4.9.2 Environmental Setting: Greenhouse Gas Emissions**

Note that all references provided herein can be found in the GHGIA prepared by Urban Crossroads provided as **Appendix 16, Volume 2** to this DPEIR.

#### **4.9.2.1 Introduction to Global Climate Change (GCC)**

GCC is defined as the change in average meteorological conditions on the earth with respect to historic temperature, precipitation, and storms. The majority of climate scientists believe that the climate shift taking place since the Industrial Revolution is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of GHGs in the earth's atmosphere, including carbon dioxide (CO<sub>2</sub>), CH<sub>4</sub>, N<sub>2</sub>O, and fluorinated gases, which have the effect of trapping heat in the atmosphere. The majority of scientists believe that this increased rate of climate change is the result of GHGs resulting from human activity and industrialization over the past 200 years.

An individual project like the proposed Program evaluated in this DPEIR cannot generate enough GHG emissions to affect a discernible change in global climate. However, the proposed Program may participate in the potential for GCC by its incremental contribution of GHGs combined with the cumulative increase of all other sources of GHGs, which when taken together constitute potential influences on GCC. Because these changes may have serious environmental consequences, this Subchapter will evaluate the potential for the proposed Program to have a

significant effect on the environment as a result of its potential contribution to the greenhouse effect.

**4.9.2.2 Global Climate Change Defined**

GCC refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the earth’s atmosphere, but prevent radiative heat from escaping, thus warming the earth’s atmosphere. GCC can occur naturally as it has in the past with the previous ice ages.

Gases that trap heat in the atmosphere are often referred to as GHGs. GHGs are released into the atmosphere by both natural and anthropogenic activity. Without the natural GHG effect, the earth’s average temperature would be approximately 61 °F cooler than it is currently. The cumulative accumulation of these gases in the earth’s atmosphere is considered to be the cause for the observed increase in the earth’s temperature.

**4.9.2.3 Greenhouse Gases**

**GHGs and Health Effects**

GHGs trap heat in the atmosphere, creating a GHG effect that results in global warming and climate change. Many gases demonstrate these properties as discussed in **Table 4.9-1**. For the purposes of this analysis, emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O were evaluated (see **Table 4.9-1** later in this report) because these gases are the primary contributors to GCC from development projects. Although there are other substances such as fluorinated gases that also contribute to GCC, these fluorinated gases were not evaluated as their sources are not well-defined and do not contain accepted emissions factors or methodology to accurately calculate the emissions of these gases.

**Table 4.9-1  
 CRITERIA POLLUTANTS**

<b>Greenhouse Gases</b>	<b>Description</b>	<b>Sources</b>	<b>Health Effects</b>
Water	Water is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. Climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. The feedback loop in which water is involved is	The main source of water vapor is evaporation from the oceans (approximately 85%). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.	There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor.

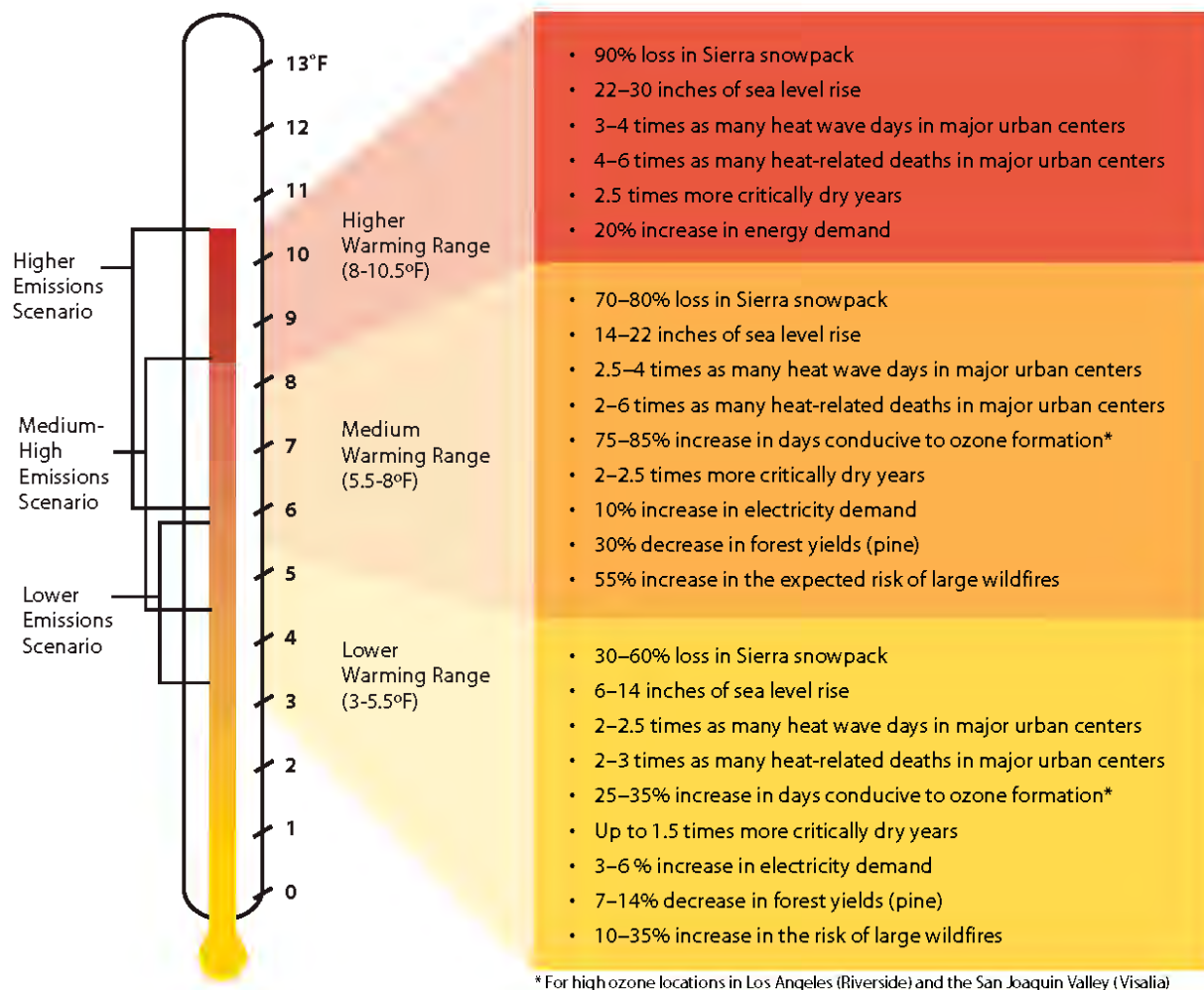
Greenhouse Gases	Description	Sources	Health Effects
	<p>critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there are also dynamics that hold the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the earth's surface and heat it up).</p>		
<p>Carbon Dioxide (CO<sub>2</sub>)</p>	<p>CO<sub>2</sub> is an odorless and colorless GHG. Since the Industrial Revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution, CO<sub>2</sub> concentrations were fairly stable at 280 ppm. Today, they are around 370 ppm, an increase of more than 30%. Left unchecked, the concentration of CO<sub>2</sub> in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources.</p>	<p>CO<sub>2</sub> is emitted from natural and manmade sources. Natural sources include: the decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include: the burning of coal, oil, natural gas, and wood. CO<sub>2</sub> is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks.</p>	<p>Outdoor levels of CO<sub>2</sub> are not high enough to result in negative health effects. According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of CO<sub>2</sub> can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that current concentrations of CO<sub>2</sub> in the earth's atmosphere are estimated to be approximately 370 ppm, the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000</p>

Greenhouse Gases	Description	Sources	Health Effects
			ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of 30,000 ppm averaged over a 15-minute period.
Methane (CH <sub>4</sub> )	CH <sub>4</sub> is an extremely effective absorber of radiation, although its atmospheric concentration is less than CO <sub>2</sub> and its lifetime in the atmosphere is brief (10-12 years), compared to other GHGs.	CH <sub>4</sub> has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of CH <sub>4</sub> . Other anthropogenic sources include fossil-fuel combustion and biomass burning.	CH <sub>4</sub> is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Exposure to high levels of CH <sub>4</sub> can cause asphyxiation, loss of consciousness, headache and dizziness, nausea and vomiting, weakness, loss of coordination, and an increased breathing rate.
Nitrous Oxide (N <sub>2</sub> O)	N <sub>2</sub> O, also known as laughing gas, is a colorless GHG. Concentrations of N <sub>2</sub> O also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 ppb.	N <sub>2</sub> O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant, i.e., in whipped cream bottles. It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. N <sub>2</sub> O can be transported into the stratosphere, be deposited on the earth's surface, and be converted to other compounds by chemical reaction.	N <sub>2</sub> O can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is considered harmless. However, in some cases, heavy and extended use can cause Olney's Lesions (brain damage).
Chlorofluorocarbon (CFC)	CFCs are gases formed synthetically by replacing all hydrogen atoms in CH <sub>4</sub> or ethane (C <sub>2</sub> H <sub>6</sub> ) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface).	CFCs have no natural source but were first synthesized in 1928. They were used for refrigerants, aerosol propellants and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely successful, so much so that	In confined indoor locations, working with CFC-113 or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation.



Greenhouse Gases	Description	Sources	Health Effects
		<p>levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.</p>	
<p>Hydrofluorocarbon (HFC)</p>	<p>HFCs are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential (GWP). The HFCs with the largest measured atmospheric abundances are (in order), chloroform (CHF<sub>3</sub>), 1,1,1,2-tetrafluoroethane (CH<sub>2</sub>FCF), and 1,1-difluoroethane (CH<sub>3</sub>CF<sub>2</sub>). Prior to 1990, the only significant emissions were of CHF<sub>3</sub>. CH<sub>2</sub>FCF emissions are increasing due to its use as a refrigerant.</p>	<p>HFCs are manmade for applications such as automobile air conditioners and refrigerants.</p>	<p>No health effects are known to result from exposure to HFCs.</p>
<p>Perfluorocarbon (PFC)</p>	<p>PFCs have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above earth's surface, are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF<sub>4</sub>) and hexafluoroethane (C<sub>2</sub>F<sub>6</sub>). The EPA estimates that concentrations of CF<sub>4</sub> in the atmosphere are over 70 parts per trillion (ppt).</p>	<p>The two main sources of PFCs are primary aluminum production and semiconductor manufacture.</p>	<p>No health effects are known to result from exposure to PFCs.</p>
<p>Sulfur Hexafluoride (SF<sub>6</sub>)</p>	<p>SF<sub>6</sub> is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest GWP of any gas evaluated (23,900). The EPA indicates that concentrations in the 1990s were about 4 ppt.</p>	<p>SF<sub>6</sub> is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.</p>	<p>In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing.</p>
<p>Nitrogen Trifluoride (NF<sub>3</sub>)</p>	<p>NF<sub>3</sub> is a colorless gas with a distinctly moldy odor. The World Resources Institute (WRI) indicates that NF<sub>3</sub> has a 100-year GWP of 17,200.</p>	<p>NF<sub>3</sub> is used in industrial processes and is produced in the manufacturing of semiconductors, Liquid Crystal Display (LCD) panels, types of solar panels, and chemical lasers.</p>	<p>Long-term or repeated exposure may affect the liver and kidneys and may cause fluorosis.</p>

The potential health effects related directly to the emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O as they relate to development projects such as the proposed Program are still being debated in the scientific community. Their cumulative effects to GCC have the potential to cause adverse effects to human health. Increases in Earth’s ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change will likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas. **Exhibit 4.9-1** presents the potential impacts of global warming.



**Exhibit 4.9-1: SUMMARY OF PROJECTED GLOBAL WARMING IMPACT, 2070-2099  
 (AS COMPARED WITH 1961-1990)**

Source: Barbara H. Allen-Diaz. "Climate change affects us all." *University of California, Agriculture and Natural Resources*, 2009.

#### 4.9.2.4 Global Warming Potential

GHGs have varying GWP values. GWP of a GHG indicates the amount of warming a gas causes over a given period of time and represents the potential of a gas to trap heat in the atmosphere. CO<sub>2</sub> is utilized as the reference gas for GWP, and thus has a GWP of 1. CO<sub>2</sub> equivalent (CO<sub>2</sub>e)

is a term used for describing the difference GHGs in a common unit. CO<sub>2</sub>e signifies the amount of CO<sub>2</sub> which would have the equivalent GWP.

The atmospheric lifetime and GWP of selected GHGs are summarized in **Table 4.9-2**. As shown in the table below, GWP for the 6th Assessment Report<sup>24</sup>, the Intergovernmental Panel on Climate Change (IPCC)'s scientific and socio-economic assessment on climate change, range from 1 for CO<sub>2</sub> to 25,200 for SF<sub>6</sub>.

**Table 4.9-2  
 GWP AND ATMOSPHERIC LIFETIME OF SELECT GHGS**

Gas	Atmospheric Lifetime (years)	GWP (100-year time horizon)
		6 <sup>th</sup> Assessment Report
CO <sub>2</sub>	Multiple	1
CH <sub>4</sub>	12 .4	28
N <sub>2</sub> O	121	273
HFC-23	222	14,600
HFC-134a	13.4	1,526
HFC-152a	1.5	164
SF <sub>6</sub>	3,200	25,200

Source: IPCC Second Assessment Report, 1995 and IPCC Sixth Assessment Report, 2022

#### **4.9.2.5 Greenhouse Gas Emissions Inventory**

##### **Global**

Worldwide anthropogenic GHG emissions are tracked by the IPCC for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Human GHG emissions data for Annex I nations are available through 2020. Based on the latest available data, the sum of these emissions totaled approximately 28,026,643 gigagram (Gg) CO<sub>2</sub>e<sup>25</sup> as summarized on **Table 4.9-3**.

##### **United States**

As noted in **Table 4.9-3**, the U.S., as a single country, was the number two producer of GHG emissions in 2020.

<sup>24</sup> United Nations, 2023. Global Warming Potentials (IPCC Second Assessment Report).

<https://unfccc.int/process/transparency-and-reporting/greenhouse-gas-data/greenhouse-gas-data-unfccc/global-warming-potentials> (accessed 09/05/23)

<sup>25</sup> The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2020 data, the United Nations' Framework Convention on Climate Change (UNFCCC) data for the most recent year were used U.N. Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF," The most recent GHG emissions for China and India are from 2014 and 2016, respectively.

**Table 4.9-3  
 TOP GHG PRODUCING COUNTRIES AND THE EUROPEAN UNION<sup>26</sup>**

<b>Emitting Countries</b>	<b>GHG Emissions (kt CO<sub>2</sub>e)</b>
China	12,300,200
United States	5,981,354
European Union (27-member countries)	3,706,110
India	2,839,420
Russian Federation	2,051,437
Japan	1,148,122
<b>Total</b>	<b>28,026,643</b>

**State of California**

California has significantly slowed the rate of growth of GHG emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls but is still a substantial contributor to the U.S. emissions inventory total.<sup>27</sup> CARB compiles GHG inventories for the State of California. Based upon the 2022 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2020 GHG emissions period, California emitted an average 369.2 million metric tons of CO<sub>2</sub>e per year (MMTCO<sub>2</sub>e/yr) or 369,200 Gg CO<sub>2</sub>e (6.17% of the total U.S. GHG emissions).<sup>28</sup>

**4.9.2.6 Effects of Climate Change in California**

**Public Health**

Higher temperatures may increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation could increase from 25 to 35% under the lower warming range to 75 to 85% under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances, depending on wind conditions. Based on *Our Changing Climate Assessing the Risks to California by the California Climate Change Center*, large wildfires could become up to 55% more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming range scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures could increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

**Water Resources**

A vast network of man-made reservoirs and aqueducts captures and transports water throughout the State from northern California rivers and the Colorado River. The current distribution system

<sup>26</sup> Used [https://di.unfccc.int/time\\_series](https://di.unfccc.int/time_series) data for Annex I countries. Consulted the CAIT Climate Data Explorer in <https://www.climatewatchdata.org> site to reference Non-Annex I countries of China and India.

<sup>27</sup> World Resources Institute, 2023. Climate Analysis Indicator Tool (CAIT). <http://cait.wri.org> (accessed 09/05/23)

<sup>28</sup> CARB, 2023. 2000-2020 GHG Inventory (2022 Edition). <https://ww2.arb.ca.gov/ghg-inventory-data> (accessed 09/05/23)

relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

If temperatures continue to increase, more precipitation could fall as rain instead of snow, and the snow that does fall could melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70% to 90%. Under the lower warming range scenario, snowpack losses could be only half as large as those possible if temperatures were to rise to the higher warming range. How much snowpack could be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack could pose challenges to water managers and hamper hydropower generation. It could also adversely affect winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as a month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta – a major fresh water supply.

Santa Ana Watershed Basin Study:<sup>29</sup> Santa Ana Watershed Project Authority (SAWPA), its five member agencies, and key water sector stakeholders know that warmer temperatures, altered patterns of precipitation and runoff, and rising sea levels are, in all likelihood, going to continue to increase and may potentially compromise local and imported water supplies and Santa Ana River Watershed's environmental resources, and challenge the sustainability of Santa Ana River Watershed communities. Santa Ana River Watershed's water sector managers are aware of these unfolding events and are working toward developing adaptation strategies as they assess impacts on local water supply, infrastructure, and imported water sources, including SWP. In regards to the Big Bear Valley, the Santa Ana Watershed Basin Study concluded the following:

- Simulations indicate significant decreases in April 1st snowpack that amplify throughout the 21st century.
- Warmer temperatures will also result in a delayed onset and shortened ski season.
- Lower elevations are most vulnerable to increasing temperatures.
- The Resorts lie below 3,000 meters and are projected to experience declining snowpack that could exceed 70% by 2070.
- All the climate projections demonstrate clear increasing temperature trends.
- Increasing temperatures will result in a greater number of days above 95°F in the future.
- The number of days above 95°F at Big Bear City is projected to increase from 0 days historically to 4 days in 2070.

### **Agriculture**

Increased temperatures could cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. First, California farmers could possibly lose as much as 25% of the water supply needed. Although higher CO<sub>2</sub> levels can stimulate plant production and increase plant water-use efficiency, California's farmers could face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and

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<sup>29</sup> BOR, 2013. Santa Ana Watershed Basin Study.

<https://www.usbr.gov/watersmart/bsp/docs/finalreport/SantaAnaWatershed/SantaAnaBasinStudySummaryReport.pdf>  
(accessed 10/18/23)

development could change, as could the intensity and frequency of pest and disease outbreaks. Rising temperatures could aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures could worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts.

In addition, continued GCC could shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion could occur in many species while range contractions may be less likely in rapidly evolving species with significant populations already established. Should range contractions occur, new or different weed species could fill the emerging gaps. Continued GCC could alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

### **Forests and Landscapes**

GCC has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55%, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the State. In contrast, wildfires in northern California could increase by up to 90% due to decreased precipitation.

Moreover, continued GCC has the potential to alter natural ecosystems and biological diversity within the State. For example, alpine and subalpine ecosystems could decline by as much as 60 to 80% by the end of the century as a result of increasing temperatures. The productivity of the State's forests has the potential to decrease as a result of GCC.

### **Rising Sea Levels**

Rising sea levels, more intense coastal storms, and warmer water temperatures could increasingly threaten the State's coastal regions. Under the higher warming range scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate low-lying coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. Under the lower warming range scenario, sea level could rise 12-14 inches.

## **4.9.3 Regulatory Setting**

### **4.9.3.1 International**

Climate change is a global issue involving GHG emissions from all around the world; therefore, countries such as the ones discussed below have made an effort to reduce GHGs.

### **Intergovernmental Panel on Climate Change**

In 1988, the United Nations (U.N.) and the World Meteorological Organization established the IPCC to assess the scientific, technical and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.



### **United Nation's Framework Convention on Climate Change**

On March 21, 1994, the U.S. joined a number of countries around the world in signing the United Nation's Framework on Climate Change (UNFCCC). Under UNFCCC, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

### **International Climate Change Treaties**

The Kyoto Protocol is an international agreement linked to UNFCCC. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at an average of 5% against 1990 levels over the five-year period 2008–2012. The UNFCCC encouraged industrialized countries to stabilize emissions; however, the Kyoto Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Kyoto Protocol places a heavier burden on developed nations under the principle of “common but differentiated responsibilities.”

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the U.N. Climate Change Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2°C) above pre-industrial levels, subject to a review in 2015. The U.N. Climate Change Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings are gradually gaining consensus among participants on individual climate change issues.

On September 23, 2014 more than 100 Heads of State and Government and leaders from the private sector and civil society met at the Climate Summit in New York hosted by the U.N. At the Summit, heads of government, business and civil society announced actions in areas that would have the greatest impact on reducing emissions, including climate finance, energy, transport, industry, agriculture, cities, forests, and building resilience.

Parties to the UNFCCC reached a landmark agreement on December 12, 2015 in Paris (Paris Agreement), charting a fundamentally new course in the two-decade-old global climate effort. Culminating a four-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen them in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts and undergo international review.

The agreement and a companion decision by parties were the key outcomes of the conference, known as the 21<sup>st</sup> session of the UNFCCC Conference of the Parties (COP). Together, the Paris Agreement and the accompanying COP decision:

- Reaffirm the goal of limiting global temperature increase well below 2°C, while urging efforts to limit the increase to 1.5 degrees.
- Establish binding commitments by all parties to make “nationally determined contributions” (NDCs), and to pursue domestic measures aimed at achieving them.

- Commit all countries to report regularly on their emissions and “progress made in implementing and achieving” their NDCs, and to undergo international review.
- Commit all countries to submit new NDCs every five years, with the clear expectation that they will “represent a progression” beyond previous ones.
- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too.
- Extend the current goal of mobilizing \$100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025.
- Extend a mechanism to address “loss and damage” resulting from climate change, which explicitly will not “involve or provide a basis for any liability or compensation.”
- Require parties engaging in international emissions trading to avoid “double counting.”
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country’s NDC.

Following President Biden’s day one executive order, the U.S. officially rejoined the landmark Paris Agreement on February 19, 2021, positioning the country to once again be part of the global climate solution. Meanwhile, city, state, business, and civic leaders across the U.S. and around the world have been ramping up efforts to drive the clean energy advances needed to meet the goals of the agreement and put the brakes on dangerous climate change.

#### **4.9.3.2 National**

Prior to the last decade, there have been no concrete Federal regulations of GHGs or major planning for climate change adaptation. The following are actions regarding the Federal government, GHGs, and fuel efficiency.

##### **GHG Endangerment**

In *Massachusetts v. Environmental Protection Agency* 549 U.S. 497 (2007), decided on April 2, 2007, SCOTUS found that four GHGs, including CO<sub>2</sub>, are air pollutants subject to regulation under Section 202(a)(1) of the CAA. The Court held that the EPA Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the CAA:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs— CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>— in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section “Clean Vehicles” below. After a lengthy legal challenge, SCOTUS declined to review an Appeals Court ruling that upheld the EPA Administrator’s findings.

### **Clean Vehicles**

Congress first passed the Corporate Average Fuel Economy (CAFE) law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the U.S. On April 1, 2010, the EPA and the U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the U.S.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO<sub>2</sub> per mile, equivalent to 35.5 miles per gallon (mpg) if the automobile industry were to meet this CO<sub>2</sub> level solely through fuel economy improvements. Together, these standards would cut CO<sub>2</sub> emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the NHTSA issued final rules on a second-phase joint rulemaking establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012. The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of CO<sub>2</sub> in model year 2025, which is equivalent to 54.5 mpg if achieved exclusively through fuel economy improvements.

The EPA and the NHTSA issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks (HDT) and buses on September 15, 2011, effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20% reduction in CO<sub>2</sub> emissions and fuel consumption by the 2018 model year. For HDT and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10% reduction for gasoline vehicles and a 15% reduction for diesel vehicles by the 2018 model year (12 and 17% respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10% reduction in fuel consumption and CO<sub>2</sub> emissions from the 2014 to 2018 model years.

On April 2, 2018, the EPA signed the Mid-term Evaluation Final Determination, which declared that model year (MY) 2022-2025 GHG standards are not appropriate and should be revised. This Final Determination serves to initiate a notice to further consider appropriate standards for MY 2022-2025 light-duty vehicles. On August 2, 2018, the NHTSA in conjunction with the EPA, released a notice of proposed rulemaking, the *Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks* (SAFE Vehicles Rule). The SAFE Vehicles Rule was proposed to amend existing CAFE and tailpipe CO<sub>2</sub> standards for passenger cars and light trucks and to establish new standards covering model years 2021 through 2026. As of March 31, 2020, the NHTSA and EPA finalized the SAFE Vehicle Rule which increased stringency of CAFE and CO<sub>2</sub> emissions standards by 1.5% each year through model year 2026. On December 21, 2021, after reviewing all the public comments submitted on NHTSA's April 2021 Notice of Proposed Rulemaking, NHTSA finalizes the [CAFE Preemption rulemaking](#) to withdraw its portions of the so-called SAFE I Rule. The final rule concludes that the SAFE I Rule overstepped the agency's legal authority and established overly broad prohibitions that did not account for a variety of important State and local interests. The final rule ensures that the SAFE I Rule will no longer form an improper barrier to states exploring creative solutions to address their local communities' environmental and public health challenges.

On March 31, 2022, NHTSA finalized CAFE standards for MY 2024-2026. The standards for passenger cars and light trucks for MYs 2024-2025 were increased at a rate of 8% per year and then increased at a rate of 10% per year for MY 2026 vehicles. NHTSA currently projects that the revised standards would require an industry fleet-wide average of roughly 49 mpg in MY 2026 and would reduce average fuel outlays over the lifetimes of affected vehicles that provide consumers hundreds of dollars in net savings. These standards are directly responsive to the agency's statutory mandate to improve energy conservation and reduce the nation's energy dependence on foreign sources.

### **Mandatory Reporting of GHGs**

The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of GHGs Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the U.S. and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons per year (MT/yr) or more of GHG emissions are required to submit annual reports to the EPA.

### **New Source Review**

The EPA issued a final rule on May 13, 2010, that establishes thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these CAA permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the Federal Code of Regulations, the EPA states:

*"This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the CAA, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to GHG sources, starting with the largest GHG emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for GHG emissions until at least April 30, 2016."*

The EPA estimates that facilities responsible for nearly 70% of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

### **Standards of Performance for GHG Emissions for New Stationary Sources: Electric Utility Generating Units**

As required by a settlement agreement, the EPA proposed new performance standards for emissions of CO<sub>2</sub> for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 MW would be required to meet an output-based standard of 1,000 lbs of CO<sub>2</sub> per MW-hour (MWh), based on the performance of widely used natural gas combined cycle technology. It should be noted that on February 9, 2016, SCOTUS issued a stay of this regulation pending litigation. Additionally, the current EPA Administrator has also signed a measure to repeal the Clean Power Plan, including the CO<sub>2</sub> standards. The Clean Power Plan

was officially repealed on June 19, 2019, when the EPA issued the final Affordable Clean Energy rule (ACE). Under ACE, new State-specific emission guidelines were established that provided existing coal-fired electric utility generating units with achievable standards.

On January 19, 2021, the District of Columbia (D.C.) Circuit Court of Appeals ruled that the EPA's ACE Rule for GHG emissions from power plants rested on an erroneous interpretation of the CAA that barred EPA from considering measures beyond those that apply at and to an individual source. The court therefore vacated and remanded the ACE Rule and adopted a replacement rule which regulates CO<sub>2</sub> emissions from existing power plants, potentially again considering generation shifting and other measures to more aggressively target power sector emissions.

### **Cap-and-Trade**

Cap-and-trade refers to a policy tool where emissions are limited to a certain amount and can be traded or provides flexibility on how the emitter can comply. Successful examples in the U.S. include the Acid Rain Program and the N<sub>2</sub>O Budget Trading Program and Clean Air Interstate Rule in the northeast. There is no Federal GHG cap-and-trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap-and-trade.

The Regional GHG Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each State caps CO<sub>2</sub> emissions from power plants, auctions CO<sub>2</sub> emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008 and in 2020 has retained all participating states.

The Western Climate Initiative (WCI) partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15% below 2005 levels by 2020. The partners were originally California, British Columbia, Manitoba, Ontario, and Quebec. However, Manitoba and Ontario are not currently participating. California linked with Quebec's cap-and-trade system January 1, 2014, and joint offset auctions took place in 2015. While the WCI has yet to publish whether it has successfully reached the 2020 emissions goal initiative set in 2007, SB 32, requires that California, a major partner in the WCI, adopt the goal of reducing statewide GHG emissions to 40% below the 1990 level by 2030.

### **SmartWay Program**

The SmartWay Program (Smartway) is a public-private initiative between the EPA, large and small trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other Federal and State agencies. Its purpose is to improve fuel efficiency and the environmental performance (reduction of both GHG emissions and air pollution) of the goods movement supply chains. SmartWay is comprised of four components:

1. SmartWay Transport Partnership: A partnership in which freight carriers and shippers commit to benchmark operations, track fuel consumption, and improve performance annually.
2. SmartWay Technology Program: A testing, verification, and designation program to help freight companies identify equipment, technologies, and strategies that save fuel and lower emissions.
3. SmartWay Vehicles: A program that ranks light-duty cars and small trucks and identifies superior environmental performers with the SmartWay logo.
4. SmartWay International Interests: Guidance and resources for countries seeking to develop freight sustainability programs modeled after SmartWay.

SmartWay effectively refers to requirements geared towards reducing fuel consumption. Most large trucking fleets driving newer vehicles are compliant with SmartWay design requirements. Moreover, over time, all HDTs will have to comply with the CARB GHG Regulation that is designed with the SmartWay Program in mind, to reduce GHG emissions by making them more fuel-efficient. For instance, in 2015, 53 foot or longer dry vans or refrigerated trailers equipped with a combination of SmartWay-verified low-rolling resistance tires and SmartWay-verified aerodynamic devices would obtain a total of 10% or more fuel savings over traditional trailers.

Through the SmartWay Technology Program, the EPA has evaluated the fuel saving benefits of various devices through grants, cooperative agreements, emissions and fuel economy testing, demonstration projects and technical literature review. As a result, the EPA has determined the following types of technologies provide fuel saving and/or emission reducing benefits when used properly in their designed applications, and has verified certain products:

- Idle reduction technologies – less idling of the engine when it is not needed would reduce fuel consumption.
- Aerodynamic technologies minimize drag and improve airflow over the entire tractor-trailer vehicle. Aerodynamic technologies include gap fairings that reduce turbulence between the tractor and trailer, side skirts that minimize wind under the trailer, and rear fairings that reduce turbulence and pressure drop at the rear of the trailer.
- Low rolling resistance tires can roll longer without slowing down, thereby reducing the amount of fuel used. Rolling resistance (or rolling friction or rolling drag) is the force resisting the motion when a tire rolls on a surface. The wheel will eventually slow down because of this resistance.
- Retrofit technologies include things such as diesel particulate filters, emissions upgrades (to a higher tier), etc., which would reduce emissions.
- Federal excise tax exemptions.

### **Executive Order 13990**

On January 20, 2021, Federal agencies were directed to immediately review, and take action to address, Federal regulations promulgated and other actions taken during the last 4 years that conflict with national objectives to improve public health and the environment; ensure access to clean air and water; limit exposure to dangerous chemicals and pesticides; hold polluters accountable, including those who disproportionately harm communities of color and low-income communities; reduce greenhouse gas emissions; bolster resilience to the impacts of climate change; restore and expand our national treasures and monuments; and prioritize both environmental justice and employment.

### **4.9.3.3 California**

#### **Legislative Actions to Reduce GHGs**

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as the landmark AB 32 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.



### **AB 32**

The California State Legislature enacted AB 32, which required that GHGs emitted in California be reduced to 1990 levels by the year 2020 (this goal has been met<sup>30</sup>). GHGs as defined under AB 32 include CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. CARB is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

*“Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.”*

### **SB 32**

On September 8, 2016, Governor Jerry Brown signed the SB 32 and its companion bill, AB 197. SB 32 requires the State to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15. The new legislation builds upon the AB 32 goal and provides an intermediate goal to achieving S-3-05, which sets a statewide GHG reduction target of 80% below 1990 levels by 2050. AB 197 creates a legislative committee to oversee regulators to ensure that CARB not only responds to the Governor, but also the Legislature.

### **2017 CARB Scoping Plan**

In November 2017, CARB released the *Final 2017 Scoping Plan Update*, which identifies the State's post-2020 reduction strategy. The *Final 2017 Scoping Plan Update* reflects the 2030 target of a 40% reduction below 1990 levels, set by Executive Order B-30-15 and codified by SB 32. Key programs that the proposed Second Update builds upon include the Cap-and-Trade Regulation, the Low Carbon Fuel Standard (LCFS), and much cleaner cars, trucks and freight movement, utilizing cleaner, renewable energy, and strategies to reduce CH<sub>4</sub> emissions from agricultural and other wastes.

The *Final 2017 Scoping Plan Update* establishes a new emissions limit of 260 MMTCO<sub>2e</sub> for the year 2030, which corresponds to a 40% decrease in 1990 levels by 2030.

California's climate strategy will require contributions from all sectors of the economy, including the land base, and will include enhanced focus on zero- and near-zero-emission (ZE/NZE) vehicle technologies; continued investment in renewables, including solar roofs, wind, and other distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (CH<sub>4</sub>, black carbon, and fluorinated gases); and an increased focus on integrated land use planning to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for direct GHG reductions at refineries will further support air quality co-benefits in neighborhoods, including in disadvantaged communities historically located adjacent to these large stationary sources, as well as efforts with California's local air pollution

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<sup>30</sup> Based upon the 2019 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2017 GHG emissions period, California emitted an average 424.1 TCO<sub>2e</sub>. This is less than the 2020 emissions target of 431 MMTCO<sub>2e</sub>.

control and AQMDs (air districts) to tighten emission limits on a broad spectrum of industrial sources. Major elements of the *Final 2017 Scoping Plan Update* framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero-emissions vehicle (ZEV) buses and trucks.
- LCFS, with an increased stringency (18% by 2030).
- Implementing SB 350, which expands the RPS to 50% RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing CH<sub>4</sub> and HFC emissions by 40% and anthropogenic black carbon emissions by 50% by year 2030.
- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20% reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Note, however, that the *Final 2017 Scoping Plan Update* acknowledges that:

*"[a]chieving net zero increases in GHG emissions, resulting in no contribution to GHG impacts, may not be feasible or appropriate for every project, however, and the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA."*

In addition to the statewide strategies listed above, the *Final 2017 Scoping Plan Update* also identifies local governments as essential partners in achieving the State's long-term GHG reduction goals and identifies local actions to reduce GHG emissions. As part of the recommended actions, CARB recommends that local governments achieve a community-wide goal to achieve emissions of no more than 6 MTCO<sub>2e</sub> or less per capita by 2030 and 2 MTCO<sub>2e</sub> or less per capita by 2050. For CEQA projects, CARB states that lead agencies may develop evidenced-based bright-line numeric thresholds—consistent with the Scoping Plan and the State's long-term GHG goals—and projects with emissions over that amount may be required to incorporate on-site design features and MMs that avoid or minimize project emissions to the degree feasible; or, a performance-based metric using a Climate Action Plan (CAP) or other plan to reduce GHG emissions is appropriate.

According to research conducted by the Lawrence Berkeley National Laboratory (LBNL) and supported by CARB, California, under its existing and proposed GHG reduction policies, could achieve the 2030 goals under SB 32. The research utilized a new, validated model known as the California LBNL GHG Analysis of Policies Spreadsheet (CALGAPS), which simulates GHG and criteria pollutant emissions in California from 2010 to 2050 in accordance to existing and future GHG-reducing policies. The CALGAPS model showed that by 2030, emissions could range from 211 to 428 MTCO<sub>2e</sub>/yr, indicating that "even if all modeled policies are not implemented, reductions could be sufficient to reduce emissions 40% below the 1990 level [of SB 32]." CALGAPS analyzed emissions through 2050 even though it did not generally account for policies that might be put in place after 2030. Although the research indicated that the emissions would not meet the State's 80% reduction goal by 2050, various combinations of policies could allow California's cumulative emissions to remain very low through 2050.

### **2022 CARB Scoping Plan**

On December 15, 2022, CARB adopted the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan). The 2022 Scoping Plan builds on the 2017 Scoping Plan as well as the requirements set forth by AB 1279, which directs the State to become carbon neutral no later than 2045. To achieve this statutory objective, the 2022 Scoping Plan lays out how California can reduce GHG emissions by 85% below 1990 levels and achieve carbon neutrality by 2045. The 2022 Scoping Plan scenario to do this is to “deploy a broad portfolio of existing and emerging fossil fuel alternatives and clean technologies, and align with statutes, Executive Orders, Board direction, and direction from the governor.” The 2022 Scoping Plan sets one of the most aggressive approaches to reach carbon neutrality in the world. Unlike the 2017 Scoping Plan, CARB no longer includes a numeric per capita threshold and instead advocates for compliance with a local GHG reduction strategy or AP consistent with State CEQA Guidelines section 15183.5.

The key elements of the 2022 CARB Scoping Plan focus on transportation - the regulations that will impact this sector are adopted and enforced by CARB on vehicle manufacturers and outside the jurisdiction and control of local governments. As stated in the Plan’s executive summary:

*“The major element of this unprecedented transformation is the aggressive reduction of fossil fuels wherever they are currently used in California, building on and accelerating carbon reduction programs that have been in place for a decade and a half. That means rapidly moving to zero-emission transportation; electrifying the cars, buses, trains, and trucks that now constitute California’s single largest source of planet-warming pollution.”*

*“[A]pproval of this plan catalyzes a number of efforts, including the development of new regulations as well as amendments to strengthen regulations and programs already in place, not just at CARB but across state agencies.”*

Under the 2022 Scoping Plan, the State will lead efforts to meet the 2045 carbon neutrality goal through implementation of the following objectives:

- Reimagine roadway projects that increase VMT in a way that meets community needs and reduces the need to drive.
- Double local transit capacity and service frequencies by 2030.
- Complete the High-Speed Rail (HSR) System and other elements of the intercity rail network by 2040.
- Expand and complete planned networks of high-quality active transportation infrastructure.
- Increase availability and affordability of bikes, e-bikes, scooters, and other alternatives to light-duty vehicles, prioritizing needs of underserved communities.
- Shift revenue generation for transportation projects away from the gas tax into more durable sources by 2030.
- Authorize and implement roadway pricing strategies and reallocate revenues to equitably improve transit, bicycling, and other sustainable transportation choices.
- Prioritize addressing key transit bottlenecks and other infrastructure investments to improve transit operational efficiency over investments that increase VMT.
- Develop and implement a statewide transportation demand management (TDM) framework with VMT mitigation requirements for large employers and large developments.
- Prevent uncontrolled growth of autonomous vehicle (AV) VMT, particularly zero-passenger miles.
- Channel new mobility services towards pooled use models, transit complementarity, and lower VMT outcomes.

- Establish an integrated statewide system for trip planning, booking, payment, and user accounts that enables efficient and equitable multimodal systems.
- Provide financial support for low-income and disadvantaged Californians' use of transit and new mobility services.
- Expand universal design features for new mobility services.
- Accelerate infill development in existing transportation-efficient places and deploy strategic resources to create more transportation-efficient locations.
- Encourage alignment in land use, housing, transportation, and conservation planning in adopted regional plans (RTP/SCS and Regional Housing Needs Assessment [RHNA]) and local plans (e.g., general plans, zoning, and local transportation plans).
- Accelerate production of affordable housing in forms and locations that reduce VMT and affirmatively further fair housing policy objectives.
- Reduce or eliminate parking requirements (and/or enact parking maximums, as appropriate) and promote redevelopment of excess parking, especially in infill locations.
- Preserve and protect existing affordable housing stock and protect existing residents and businesses from displacement and climate risk.

Included in the 2022 Scoping Plan is a set of Local Actions (Appendix D to the 2022 Scoping Plan) aimed at providing local jurisdictions with tools to reduce GHGs and assist the State in meeting the ambitious targets set forth in the 2022 Scoping Plan. Appendix D to the 2022 Scoping Plan includes a section on evaluating plan-level and project-level alignment with the State's Climate Goals in CEQA GHG analyses. In this section, CARB identifies several recommendations and strategies that should be considered for new development in order to determine consistency with the 2022 Scoping Plan. Notably, this section is focused on Residential and Mixed-Use Projects, in fact CARB states in Appendix D (page 4): "...focuses primarily on CAPs and local authority over new residential development. It does not address other land use types (e.g., industrial) or air permitting."

Additionally on Page 21 in Appendix D, CARB states: "The recommendations outlined in this section apply only to residential and mixed-use development project types. California currently faces both a housing crisis and a climate crisis, which necessitates prioritizing recommendations for residential projects to address the housing crisis in a manner that simultaneously supports the State's GHG and regional air quality goals. CARB plans to continue to explore new approaches for other land use types in the future." As such, it would be inappropriate to apply the requirements contained in Appendix D of the 2022 Scoping Plan to any land use types other than residential or mixed-use residential development.

### **Cap and Trade Program**

The Scoping Plan identifies a Cap-and-Trade Program as one of the key strategies for California to reduce GHG emissions. According to CARB, a cap-and-trade program will help put California on the path to meet its goal of achieving a 40% reduction in GHG emissions from 1990 levels by 2030. Under cap-and-trade, an overall limit on GHG emissions from capped sectors is established, and facilities subject to the cap will be able to trade permits to emit GHGs within the overall limit.

CARB adopted a California Cap-and-Trade Program pursuant to its authority under AB 32. The Cap-and-Trade Program is designed to reduce GHG emissions from regulated entities by more than 16% between 2013 and 2020, and by an additional 40% by 2030. The statewide cap for GHG emissions from the capped sectors (e.g., electricity generation, petroleum refining, and

cement production) commenced in 2013 and will decline over time, achieving GHG emission reductions throughout the program's duration.

Covered entities that emit more than 25,000 MTCO<sub>2</sub>e/yr must comply with the Cap-and-Trade Program. Triggering of the 25,000 MTCO<sub>2</sub>e/yr "inclusion threshold" is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of GHG Emissions (Mandatory Reporting Rule or "MRR").

Under the Cap-and-Trade Program, CARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or part (if eligible), and may buy allowances at auction, purchase allowances from others, or purchase offset credits. Each covered entity with a compliance obligation is required to surrender "compliance instruments" for each MTCO<sub>2</sub>e of GHG they emit. There also are requirements to surrender compliance instruments covering 30% of the prior year's compliance obligation by November of each year.

The Cap-and-Trade Program provides a firm cap, which provides the highest certainty of achieving the 2030 target. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are only guaranteed on an accumulative basis. As summarized by CARB in the *First Update to the Climate Change Scoping Plan*:

*"The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative."*

The Cap-and-Trade Program covered approximately 80% of California's GHG emissions. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period. The Cap-and-Trade Program covers the GHG emissions associated with the combustion of transportation fuels in California, whether refined in-state or imported.

### **The Sustainable Communities and Climate Protection Act of 2008**

According to the Sustainable Communities and Climate Protection Act of 2008 (SB 375), the transportation sector is the largest contributor of GHG emissions, which emits over 40% of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: it (1) requires MPOs to include sustainable community strategies in their RTPs for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375, as codified in California Public Resources Code Section 21159.28, states that CEQA findings for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts, or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network, if the project:

1. Is in an area with an approved SCS or an alternative planning strategy that the CARB accepts as achieving the GHG emission reduction targets.
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the MMs required by an applicable prior environmental document.

### **AB 1493**

The second phase of the implementation for Pavley was incorporated into Amendments to the Low-Emission Vehicle Program (LEV III) or the Advanced Clean Cars program. The ACC program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for MY 2017 through 2025. The regulation will reduce GHGs from new cars by 34% from 2016 levels by 2025. The new rules will clean up gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid EV and hydrogen fuel cell cars. The package will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California. On March 9, EPA California's authority under the CAA to implement its own GHG emission standards for cars and light trucks, which other states can also adopt and enforce. With this authority restored, EPA will continue partnering with states to advance the next generation of clean vehicle technologies.

### **Clean Energy and Pollution Reduction Act of 2015**

In October 2015, the legislature approved, and the Governor signed Clean Energy and Pollution Reduction Act of 2015 (SB 350), which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for EV charging stations. Provisions for a 50% reduction in the use of petroleum statewide were removed from SB 350 because of opposition and concern that it would prevent the SB 350's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33% to 50% by 2030, with interim targets of 40% by 2024, and 45% by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the CPUC, CEC, and local publicly owned utilities.
- Reorganize the ISO to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western U.S.

### **Executive Orders Related to GHG Emissions**

California's Executive Branch has taken several actions to reduce GHGs through the use of Executive Orders. Although not regulatory, they set the tone for the State and guide the actions of State agencies.

#### ***Executive Order B-55-18 and SB 100***

SB 100 and Executive Order B-55-18 were signed by Governor Brown on September 10, 2018. Under the existing RPS, 25% of retail sales of electricity are required to be from renewable



sources by December 31, 2016, 33% by December 31, 2020, 40% by December 31, 2024, 45% by December 31, 2027, and 50% by December 31, 2030. SB 100 raises California's RPS requirement to 50% renewable resources target by December 31, 2026, and to achieve a 60% target by December 31, 2030. SB 100 also requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kWhs of those products sold to their retail end-use customers achieve 44% of retail sales by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030. In addition to targets under AB 32 and SB 32, Executive Order B-55-18 establishes a carbon neutrality goal for the State of California by 2045; and sets a goal to maintain net negative emissions thereafter. The Executive Order directs the California Natural Resources Agency (CNRA), CalEPA, the California Department of Food and Agriculture, and CARB to include sequestration targets in the Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal.

### ***Executive Order S-3-05***

Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an Executive Order, the goals are not legally enforceable for local governments or the private sector.

### ***Executive Order S-01-07***

Governor Schwarzenegger signed Executive Order S-01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020. CARB adopted the LCFS on April 23, 2009.

After a series of legal changes, in order to address the Court ruling, CARB was required to bring a new LCFS regulation to the CARB for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon intensity fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. On November 16, 2015, the Office of Administrative Law (OAL) approved the Final Rulemaking Package. The new LCFS regulation became effective on January 1, 2016.

In 2018, CARB approved amendments to the regulation, which included strengthening the carbon intensity benchmarks through 2030 in compliance with the SB 32 GHG emissions reduction target for 2030. The amendments included crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector.

### ***Executive Order S-13-08***

Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population

and to its natural resources.” Pursuant to the requirements in the Order, the 2009 California Climate Adaptation Strategy (CNRA 2009) was adopted, which is the “...first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States.” Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

***Executive Order B-30-15***

On April 29, 2015, Governor Brown issued an Executive Order to establish a California GHG reduction target of 40% below 1990 levels by 2030. The Governor’s executive order aligned California’s GHG reduction targets with those of leading international governments ahead of the U.N. Climate Change Conference in Paris late 2015. The Executive Order sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40% below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80% below 1990 levels by 2050 and directs CARB to update the *2017 Scoping Plan* to express the 2030 target in terms of MMTCO<sub>2e</sub>. The Executive Order also requires the State’s climate adaptation plan to be updated every three years, and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this Executive Order is not legally enforceable as to local governments and the private sector. Legislation that would update AB 32 to make post 2020 targets and requirements a mandate is in process in the State Legislature.

**California Regulations and Building Codes**

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California’s energy consumption relatively flat even with rapid population growth.

***Title 20 California Code of Regulations Sections 1601 Et Seq. – Appliance Efficiency Regulations***

The Appliance Efficiency Regulations regulate the sale of appliances in California. The Appliance Efficiency Regulations include standards for both Federally regulated appliances and non-Federally regulated appliances. There are 23 categories of appliances included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles (RV) or other mobile equipment.

***Title 24 California Code of Regulations Part 6 – California Energy Code***

The California Energy Code was first adopted in 1978 in response to a legislative mandate to reduce California’s energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods.

***Title 24 California Code of Regulations Part 11 – California Green Building Standards Code***

California Code of Regulations Title 24 Part 6: The California Energy Code was first adopted in 1978 in response to a legislative mandate to reduce California’s energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. California Code of Regulations, Title 24, Part 11: CALGreen Code is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on August 1, 2009, and is administered by the California Building Standards Commission.

The CALGreen Code is updated on a regular basis, with the most recent approved update consisting of the 2022 CalGreen Code that became effective on January 1, 2023. The California Energy Commission anticipates that the 2022 energy code will provide \$1.5 billion in consumer benefits and reduce GHG emissions by 10 million metric tons. The Program would be required to comply with the applicable standards in place at the time plan check submittals are made. These require, among other items.

#### Nonresidential Mandatory Measures

- **Short-term bicycle parking.** If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- **Long-term bicycle parking.** For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- **Designated parking for clean air vehicles.** In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- **Electric Vehicle (EV) charging stations.** New construction shall facilitate the future installation of EV supply equipment. The compliance requires empty raceways for future conduit and documentation that the electrical system has adequate capacity for the future load. The number of spaces to be provided for is contained in Table 5.106.5.3.3 (5.106.5.3). Additionally, Table 5.106.5.4.1 specifies requirements for the installation of raceway conduit and panel power requirements for medium- and heavy-duty electric vehicle supply equipment for warehouses, grocery stores, and retail stores.
- **Outdoor light pollution reduction.** Outdoor lighting systems shall be designed to meet the backlight, upright and glare ratings per Table 5.106.8 (5.106.8).
- **Construction waste management.** Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- **Excavated soil and land clearing debris.** 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reuse or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- **Recycling by Occupants.** Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- **Water conserving plumbing fixtures and fittings.** Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
  - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
  - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
  - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by

more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).

- Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- **Outdoor potable water uses in landscaped areas.** Nonresidential developments shall comply with a local water efficient landscape ordinance or the current MWELo, whichever is more stringent (5.304.1).
- **Water meters.** Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gallons per day (GPD) (5.303.1.1 and 5.303.1.2).
- **Outdoor water uses in rehabilitated landscape projects equal or greater than 2,500 sf.** Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).
- **Commissioning.** For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

### ***Model Water Efficient Landscape Ordinance***

The Model Water Efficient Landscape Ordinance (MWELo) was required by AB 1881, the California Water Conservation in Landscaping Act of 2006. AB 1881 required local agencies to adopt a local landscape ordinance at least as effective in conserving water as MWELo by January 1, 2010. Governor Brown's Drought Executive Order of April 1, 2015 (Executive Order B-29-15) directed DWR to update MWELo through expedited regulation. The California Water Commission approved the revised MWELo on July 15, 2015 effective December 15, 2015. New development projects that include landscape areas of 500 sf or more are subject to MWELo. The update requires:

- More efficient irrigation systems;
- Incentives for graywater usage;
- Improvements in on-site stormwater capture;
- Limiting the portion of landscapes that can be planted with high water use plants; and
- Reporting requirements for local agencies.

### ***California Air Resources Board Refrigerant Management Program***

CARB adopted a regulation in 2009 to reduce refrigerant GHG emissions from stationary sources through refrigerant leak detection and monitoring, leak repair, system retirement and retrofitting, reporting and recordkeeping, and proper refrigerant cylinder use, sale, and disposal. The regulation is set forth in sections 95380 to 95398 of Title 17, California Code of Regulations. The rules implementing the regulation establish a limit on statewide GHG emissions from stationary facilities with refrigeration systems with more than 50 lbs of a high GWP refrigerant. The refrigerant management program is designed to (1) reduce emissions of high-GWP GHG refrigerants from leaky stationary, non-residential refrigeration equipment; (2) reduce emissions

from the installation and servicing of refrigeration and air-conditioning appliances using high-GWP refrigerants; and (3) verify GHG emission reductions.

### ***Tractor-Trailer GHG Regulation***

The tractors and trailers subject to this regulation must either use EPA SmartWay certified tractors and trailers or retrofit their existing fleet with SmartWay verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty (HD) tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low rolling resistance tires. Sleeper cab tractors MY 2011 and later must be SmartWay certified. All other tractors must use SmartWay verified low rolling resistance tires. There are also requirements for trailers to have low rolling resistance tires and aerodynamic devices.

### ***Phase 1 and 2 Heavy-Duty Vehicle GHG Standards***

In September 2011, CARB adopted a regulation for GHG emissions from HDTs and engines sold in California. It establishes GHG emission limits on truck and engine manufacturers and harmonizes with the EPA rule for new trucks and engines nationally. Existing HD vehicle regulations in California include engine criteria emission standards, tractor-trailer GHG requirements to implement SmartWay strategies (i.e., the [Heavy-Duty Tractor-Trailer GHG Regulation](#)), and in-use fleet retrofit requirements such as the [Truck and Bus Regulation](#). The EPA rule has compliance requirements for new compression and spark ignition engines, as well as trucks from Class 2b through Class 8. Compliance requirements began with MY 2014 with stringency levels increasing through MY 2018. The rule organizes truck compliance into three groupings, which include a) HD pickups and vans; b) vocational vehicles; and c) combination tractors. The EPA rule does not regulate trailers.

CARB staff has worked jointly with the EPA and the NHTSA on the next phase of Federal GHG emission standards for medium-duty trucks (MDT) and HDT vehicles, called Federal Phase 2. The Federal Phase 2 standards were built on the improvements in engine and vehicle efficiency required by the Phase 1 emission standards and represent a significant opportunity to achieve further GHG reductions for 2018 and later MY HDT vehicles, including trailers. The EPA and NHTSA have proposed to roll back GHG and fuel economy standards for cars and light-duty trucks, which suggests a similar rollback of Phase 2 standards for MDT and HDT vehicles may be pursued.

### ***SB 97 and the State CEQA Guidelines Update***

Passed in August 2007, SB 97 added Section 21083.05 to the California Public Resources Code which states "(a) On or before July 1, 2009, the OPR shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the OPR pursuant to subdivision (a)."

In 2012, California Public Resources Code Section 21083.05 was amended to state:

*"The Office of Planning and Research and the Natural Resources Agency shall periodically update the guidelines for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption, to incorporate new information or criteria established by*

*the State Air Resources Board pursuant to Division 25.5 (commencing with Section 38500) of the Health and Safety Code.”*

On December 28, 2018, the CNRA announced the OAL approved the amendments to the State CEQA Guidelines for implementing CEQA. The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing State CEQA Guidelines to reference climate change.

Section 15064.4 was added to the State CEQA Guidelines and states that in determining the significance of a project’s GHG emissions, the lead agency should focus its analysis on the reasonably foreseeable incremental contribution of the project’s emissions to the effects of climate change. A project’s incremental contribution may be cumulatively considerable even if it appears relatively insignificant compared to statewide, national, or global emissions. The agency’s analysis should consider a timeframe that is appropriate for the project. The agency’s analysis also must reasonably reflect evolving scientific knowledge and state regulatory schemes. Additionally, a lead agency may use a model or methodology to estimate GHG emissions resulting from a project. The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently take into account the project’s incremental contribution to climate change. The lead agency must support its selection of a model or methodology with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use.

#### **4.9.3.4 Regional**

The project is within SCAB, which is under the jurisdiction of the SCAQMD.

##### **Southern California Air Quality Management District**

SCAQMD is the agency responsible for air quality planning and regulation in the SCAB. The SCAQMD addresses the impacts to climate change of projects subject to SCAQMD permit as a lead agency if they are the only agency having discretionary approval for the project and acts as a responsible agency when a land use agency must also approve discretionary permits for the project. The SCAQMD acts as an expert commenting agency for impacts to air quality. This expertise carries over to GHG emissions, so the agency helps local land use agencies through the development of models and emission thresholds that can be used to address GHG emissions.

In 2008, SCAQMD formed a working group to identify GHG emissions thresholds for land use projects that could be used by local lead agencies in the SCAB. The working group developed several different options that are contained in the SCAQMD Draft Guidance Document – Interim CEQA GHG Significance Threshold, that could be applied by lead agencies. The working group has not provided additional guidance since release of the interim guidance in 2008. SCAQMD has not approved the thresholds; however, the Guidance Document provides substantial evidence supporting the approaches to significance of GHG emissions that can be considered by the lead agency in adopting its own threshold. The current interim thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG emissions.



- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
  - Residential and Commercial land use: 3,000 MTCO<sub>2</sub>e/yr.
  - Industrial land use: 10,000 MTCO<sub>2</sub>e/yr.
  - Based on land use type: residential: 3,500 MTCO<sub>2</sub>e/yr; commercial: 1,400 MTCO<sub>2</sub>e/yr; or mixed use: 3,000 MTCO<sub>2</sub>e/yr.
- Tier 4 has the following options:
  - Option 1: Reduce Business-as-Usual emissions by a certain percentage; this percentage is currently undefined.
  - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
  - Option 3: 2020 target for service populations (SP), which includes residents and employees: 4.8 MTCO<sub>2</sub>e per SP per year for projects and 6.6 MTCO<sub>2</sub>e per SP per year for plans; or
  - Option 3, 2035 target: 3.0 MTCO<sub>2</sub>e per SP per year for projects and 4.1 MTCO<sub>2</sub>e per SP per year for plans.
- Tier 5 involves mitigation offsets to achieve target significance threshold.<sup>31</sup>

The SCAQMD's interim thresholds used the Executive Order S-3-05-year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap CO<sub>2</sub> concentrations at 450 ppm, thus stabilizing global climate.

SCAQMD only has authority over GHG emissions from development projects that include air quality permits. At this time, it is unknown if the Program would include stationary sources of emissions subject to SCAQMD permits. Notwithstanding, if the Program requires a stationary permit, it would be subject to the applicable SCAQMD regulations.

SCAQMD Regulation XXVII, adopted in 2009 includes the following rules:

- Rule 2700 defines terms and post global warming potentials.
- Rule 2701, SoCal Climate Solutions Exchange, establishes a voluntary program to encourage, quantify, and certify voluntary, high quality certified GHG emission reductions in the SCAQMD.
- Rule 2702, GHG Reduction Program created a program to produce GHG emission reductions within the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

#### **4.9.4 Thresholds of Significance**

According to Appendix G, Section XIII, of the State CEQA Guidelines, a project would have a significant effect related to GHG emissions if the project would:

- a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

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<sup>31</sup> SCAQMD, 2008. "Board Meeting Agenda No. 31: Interim CEQA Greenhouse Gas (GHG) Significance Threshold." October. [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2) (accessed 09/05/23)

#### **4.9.5 Potential Impacts**

This section evaluates the potential impacts of the proposed Program related to GHG emissions.

##### **4.9.5.1 Methodology**

###### **California Emissions Estimator Model™ Employed to Analyze GHG Emissions**

In May 2023, CAPCOA, in conjunction with other California air districts, including SCAQMD, released the latest version of the CalEEMod Version 2022.1.1.12. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO<sub>x</sub>, SO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation. Accordingly, the latest version of CalEEMod has been used for this Program to determine construction and operational air quality emissions. CalEEMod output for both construction and operational scenarios is provided in Appendix 3.1 of the GHGIA.

###### **Construction Life Cycle Analysis Not Required**

A full life-cycle analysis (LCA) for construction and operational activity is not included in this analysis due to the lack of consensus guidance on LCA methodology at this time. LCA (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the project development, infrastructure and on-going operations) depends on emission factors or econometric factors that are not well established for all processes. At this time, an LCA would be extremely speculative and thus has not been prepared.

Additionally, the SCAQMD recommends analyzing direct and indirect project GHG emissions generated within California and not life-cycle emissions because the life-cycle effects from a project could occur outside of California, might not be very well understood or documented, and would be challenging to mitigate. Additionally, the science to calculate life cycle emissions is not yet established or well defined; therefore, SCAQMD has not recommended, and is not requiring, life-cycle emissions analysis.

##### **4.9.5.2 Impact Analysis**

- a) **Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?**

#### **EMISSIONS SUMMARY**

Program construction activities would result in emissions of CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub>. The Replenish Big Bear Program AQIA Report (AQIA) prepared by Urban Crossroads and provided as **Appendix 11, Volume 2** to this DPEIR, contains detailed information regarding construction activities, which is repeated below for ease of reference.

Because few details are known at this time regarding construction of specific projects, it is assumed that construction of any project facilities may occur simultaneously. As a conservative measure, and in order to identify the maximum daily emissions, the GHGIA assumes that the Program would construct the following features simultaneously:

- Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project
  - 2 pump stations: 20 gpm and 1,520 gpm
  - 1,350 LF of brine pipeline

- Total building area: 40,000 SF total on site
- Installation of 2 MW of solar on existing BBARWA property
- Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project
  - 19,940 LF of pipeline (this is the maximum amount of pipeline that would be installed for any of the pipeline options, and as such, for modeling purposes, the maximum pipeline length that could be installed is utilized)
- Replenish Big Bear Component 3: Shay Pond Discharge Project
  - 6,310 LF of pipeline on unpaved area
- Replenish Big Bear Component 4: Solar Evaporation Pond
  - 57 acres of evaporation ponds
  - 2 monitoring wells
- Replenish Big Bear Component 5: Sand Canyon Recharge Project
  - 1 pump station
  - 2 monitoring wells
  - 7,210 LF of conveyance pipeline
  - Erosion control/rip rap at pipeline discharge

Below the construction and operational scenario for each Replenish Big Bear Program Component, as well as an impact analysis of the Program as a whole. The tables have been extracted from **Subsection 4.4, Air Quality**, as the construction scenarios remain the same across the GHGIA, AQIA, and EA.

The Program would be required to comply with regulations imposed by the State of California and SCAQMD aimed at the reduction of air pollutant emissions. Those that are directly and indirectly applicable to the Program and that would assist in the reduction of GHG emissions include:

- Global Warming Solutions Act of 2006 (AB 32).
- Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies (SB 375).
- Pavley Fuel Efficiency Standards (AB 1493). Establishes fuel efficiency ratings for new vehicles.
- CBC (Title 24 California Code of Regulations). Establishes energy efficiency requirements for new construction.
- Appliance Energy Efficiency Standards (Title 20 California Code of Regulations). Establishes energy efficiency requirements for appliances.
- Low Carbon Fuel Standard (LCFS). Requires carbon content of fuel sold in California to be 10 percent (%) less by 2020.
- California Water Conservation in Landscaping Act of 2006 (AB 1881). Requires local agencies to adopt MWELO or equivalent by January 1, 2010 to ensure efficient landscapes in new development and reduced water waste in existing landscapes.
- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions.
- Renewable Portfolio Standards (SB 1078 – also referred to as RPS). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20 % by 2010 and 33% by 2020.

- California Global Warming Solutions Act of 2006 (SB 32). Requires the state to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15.
- Promulgated regulations that will affect the Program's emissions are accounted for in the Program's GHG calculations provided in this report. In particular, AB 1493, LCFS, and RPS, and therefore are accounted for in the Program's emission calculations.

### **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPFP to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

### **Construction Scenario**

#### ***Demolition***

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**, 3,000 tons of concrete would be demolished. Additionally, up to 1,350 CY of asphalt export would be needed.

#### ***Grading Activities***

The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**, it was estimated that up to 8,000 CY of soil would be exported during construction of the new building.

**Construction Worker Trips**

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

**Construction Duration**

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.9-4  
 CONSTRUCTION DURATION: COMPONENT 1**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 1: WWTP Upgrades	Jan 2025	Jan 2027	515

**Construction Equipment**

Associated equipment was based on information provided by the Program Description. A detailed summary of construction equipment is provided on **Table 4.9-5**.

**Table 4.9-5  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 1**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project</b>			
Dozers	Rubber Tired Dozers	1	8
Graders	Graders	1	8
Cranes	Cranes	1	8
Backhoes	Tractors/Loaders/Backhoes	1	8
Drill Rig	Bore/Drill Rig	1	8
Cement Trucks	Off-Highway Trucks	1	8
Forklifts	Forklifts	1	4
Backhoes	Tractors/Loaders/Backhoes	1	4
Front Loaders	Crawler Tractors	1	4
Dump/Delivery Trucks	Off-Highway Trucks	2	8

**Operational Scenario Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

Operations would generate CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions. Primary emissions sources would include:

- Area Source: area sources include architectural coatings, including asphalt, concrete, and parking areas, and landscaping equipment.
  - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project:** area sources include architectural coatings, including interior and exterior coatings, asphalt, concrete, and parking areas, and landscaping equipment.

- Energy Source: energy sources include natural gas and electricity consumption.
  - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project:** electricity and natural gas demands are included herein.
- Mobile Source: mobile sources include trips generated to and from the proposed facilities including employee trips, hauling trips for waste sources such as precipitated brine from the Solar Evaporation Ponds, and worker trips for maintenance purposes.
  - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project:** mobile sources include employee trips and maintenance trips to the remaining Program facilities.
- Solid Waste: solid waste sources include waste generated by workers and operation of the Program facilities, and precipitated brine from the Solar Evaporation Ponds.
  - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project:** solid waste sources include waste generated by workers and operation of the BBARWA WWTP facilities.
- Water Use: outdoor water use for landscaping and operational purposes falls under this category.
  - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project:** water use includes outdoor water use associated with the BBARWA WWTP upgrade facilities.
- Stationary Sources: stationary sources include backup generators and fire pumps.
  - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project:** stationary sources include up to 3 fire pumps.

Mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. While it is anticipated that the Program would require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. As such, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As this Program involves the construction of monitoring wells, Conveyance Facilities and Ancillary Facilities, evaporation ponds, advanced water purification facilities, and associated improvements, heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the proposed Program. Additionally, based on information provided by BBARWA and the Program Team, the Program will include the installation of solar at the BBARWA WWTP and Administration Building sites, and/or at the BBCCSD property adjacent to the BBARWA Administration Building site, which is expected to generate approximately 3,652,117 kWhs per year.

#### **Emissions Summary Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

For construction emissions, GHGs are quantified and amortized over the life of the BBARWA WWTP Upgrades Project. SCAQMD recommends calculating the total GHG emissions for construction activities by amortizing the emissions over the life of the BBARWA WWTP Upgrades Project by dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

The amortized construction emissions are presented in **Table 4.9-6** in combination with operational emissions.



As shown in **Table 4.9-6**, the BBARWA WWTP Upgrades Project will result in approximately 1,056 MTCO<sub>2</sub>e/yr from construction and operational activities of this component of the proposed Program.

**Table 4.9-6  
 PROJECT GHG EMISSIONS: COMPONENT 1**

Emission Source	Emissions (MT/yr)
	Total CO <sub>2</sub> e
Construction: Annual construction-related emissions amortized over 30 years	98.1
Operational Area Source	0.81
Operational Energy Source	40.5
Operational Water Usage	837.91
Operational Waste	11.7
Operational Stationary Source	66.9
<b>Total CO<sub>2</sub>e (All Sources)</b>	<b>1,056*</b>

Source: CalEEMod output, See Appendices 3.1 and 3.2 of the GHGIA for detailed model outputs.  
 \* GHG emissions rounded to the nearest 0.

BBARWA has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions for both construction and operations. However, for the purposes of this GHG analysis, as described above, the SCAQMD methodology is proposed, wherein operational and amortized construction emissions are combined to determine the total GHG emissions generated by a project. A screening threshold of 3,000 MTCO<sub>2</sub>e/yr to determine if additional analysis is required is an acceptable approach. This approach is a widely accepted screening threshold used by numerous cities and counties in the SCAB and is based on the SCAQMD staff’s proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD’s *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* (SCAQMD Interim GHG Threshold). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required.

As GHG emissions are inherently cumulative, the threshold here applied to the whole of the Program determines the level of significant. However, if evaluated on a singular project basis, this individual Program Component would result in 1,056 MTCO<sub>2</sub>e/yr, which falls below the SCAQMD threshold for GHG emissions. Thus, on a singular project basis, GHG impacts would be less than significant.

**Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12” in diameter.

**Construction Scenario**

**Demolition**

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**, it was estimated that up to 5,875 CY of asphalt/concrete export would be needed.

**Grading Activities**

The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**, it was estimated that up to 19,940 CY of soil would be exported.

**Construction Worker Trips**

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

**Construction Duration**

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.9-7  
 CONSTRUCTION DURATION: COMPONENT 2**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 2: Lake Pipeline	May 2025	Oct 2026	370

**Construction Equipment**

Associated equipment was based on information provided by the Program Description. A detailed summary of construction equipment is provided on **Table 4.9-8**.

**Table 4.9-8  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 2**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project</b>			
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Paver	Paver	1	8
Roller	Roller	1	8
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Pavement Cutter	Concrete/Industrial Saws	1	6
Grinder	Concrete/Industrial Saws	1	6

<b>Equipment</b>	<b>CalEEMod Equivalent</b>	<b>Amount</b>	<b>Hours Per Day</b>
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4
Paving Machine	Pavers	1	2

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-14** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-14** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Operational Scenario Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

Operations would generate CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions. Primary emissions sources would include:

- Area Source: area sources include architectural coatings, including asphalt, concrete, and parking areas, and landscaping equipment.
  - **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**, area sources include architectural coatings, including asphalt and concrete.

Mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. While it is anticipated that the Program would require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. As such, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As this Program involves the construction of monitoring wells, Conveyance Facilities and Ancillary Facilities, evaporation ponds, advanced water purification facilities, and associated improvements, heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the proposed Program. Additionally, based on information provided by BBARWA and the Program Team, the Program will include the installation of solar at the BBARWA WWTP and Administration Building sites, and/or at the BBCCSD property adjacent to the BBARWA Administration Building site, which is expected to generate approximately 3,652,117 kWhs per year.

**Emissions Summary Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

For construction emissions, GHGs are quantified and amortized over the life of the Stanfield Marsh/Big Bear Lake Discharge Project. SCAQMD recommends calculating the total GHG emissions for construction activities by amortizing the emissions over the life of the Stanfield Marsh/Big Bear Lake Discharge Project by dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

The amortized construction emissions are presented in **Table 4.9-9** in combination with operational emissions.

As shown in **Table 4.9-9**, the Stanfield Marsh/Big Bear Lake Discharge Project will result in approximately 61 MTCO<sub>2</sub>e/yr from construction and operational activities of this component of the proposed Program.

**Table 4.9-9  
 PROJECT GHG EMISSIONS: COMPONENT 2**

Emission Source	Emissions (MT/yr)
	Total CO <sub>2</sub> e
Construction: Annual construction-related emissions amortized over 30 years	60.56
All Operational Sources	0
<b>Total CO<sub>2</sub>e (All Sources)</b>	<b>61*</b>

Source: CalEEMod output, See Appendices 3.1 and 3.2 of the GHGIA for detailed model outputs.  
 \* GHG emissions rounded to the nearest 0.

BBARWA has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions for both construction and operations. However, for the purposes of this GHG analysis, as described above, the SCAQMD methodology is proposed, wherein operational and amortized construction emissions are combined to determine the total GHG emissions generated by a project. A screening threshold of 3,000 MTCO<sub>2</sub>e/yr to determine if additional analysis is required is an acceptable approach. This approach is a widely accepted screening threshold used by numerous cities and counties in the SCAB and is based on the SCAQMD staff’s proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD’s *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* (SCAQMD Interim GHG Threshold). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required.

As GHG emissions are inherently cumulative, the threshold here applied to the whole of the Program determines the level of significant. However, if evaluated on a singular project basis, this individual Program Component would result in 61 MTCO<sub>2</sub>e/yr, which falls below the SCAQMD threshold for GHG emissions. Thus, on a singular project basis, GHG impacts would be less than significant.

**Replenish Big Bear Component 3: Shay Pond Discharge Project**

The Program would ultimately install about 710 LF of 4” pipeline to reach Shay Pond from either an existing pipeline or a new 6” pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

**Construction Scenario**  
**Grading Activities**

The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 3: Shay Pond Discharge Project**, it was estimated that up to 7,020 CY of soil would be exported.

**Construction Worker Trips**

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

**Construction Duration**

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.9-10  
 CONSTRUCTION DURATION: COMPONENT 3**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 3: Shay Pond	May 2025	Oct 2026	370

**Construction Equipment**

Associated equipment was based on information provided by the Program Description. A detailed summary of construction equipment is provided on **Table 4.9-11**.

**Table 4.9-11  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 3**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 3: Shay Pond Discharge Project</b>			
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Roller	Roller	1	8
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-20** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-20** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Operational Scenario Replenish Big Bear Component 3: Shay Pond Discharge Project**

Operations would generate CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions. Primary emissions sources would include:

- Area Source: area sources include architectural coatings, including asphalt, concrete, and parking areas, and landscaping equipment.
  - **Replenish Big Bear Component 3: Shay Pond Discharge Project**, area sources include architectural coatings, including asphalt and concrete.

Mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. While it is anticipated that the Program would require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. As such, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As this Program involves the construction of monitoring wells, Conveyance Facilities and Ancillary Facilities, evaporation ponds, advanced water purification facilities, and associated improvements, heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the proposed Program. Additionally, based on information provided by BBARWA and the Program Team, the Program will include the installation of solar at the BBARWA WWTP and Administration Building sites, and/or at the BBCCSD property adjacent to the BBARWA Administration Building site, which is expected to generate approximately 3,652,117 kWhs per year.

**Emissions Summary Replenish Big Bear Component 3: Shay Pond Discharge Project**

For construction emissions, GHGs are quantified and amortized over the life of the Shay Pond Discharge Project. SCAQMD recommends calculating the total GHG emissions for construction activities by amortizing the emissions over the life of the Shay Pond Discharge Project by dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

The amortized construction emissions are presented in **Table 4.9-12** in combination with operational emissions.

As shown in **Table 4.9-12**, the Shay Pond Discharge Project will result in approximately 25 MTCO<sub>2</sub>e/yr from construction and operational activities of this component of the proposed Program.



**Table 4.9-12  
 PROJECT GHG EMISSIONS: COMPONENT 3**

Emission Source	Emissions (MT/yr)
	Total CO <sub>2</sub> e
Construction: Annual construction-related emissions amortized over 30 years	25.3
All Operational Sources	0
<b>Total CO<sub>2</sub>e (All Sources)</b>	<b>25*</b>

Source: CalEEMod output, See Appendices 3.1 and 3.2 of the GHGIA for detailed model outputs.

\* GHG emissions rounded to the nearest 0.

BBARWA has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions for both construction and operations. However, for the purposes of this GHG analysis, as described above, the SCAQMD methodology is proposed, wherein operational and amortized construction emissions are combined to determine the total GHG emissions generated by a project. A screening threshold of 3,000 MTCO<sub>2</sub>e/yr to determine if additional analysis is required is an acceptable approach. This approach is a widely accepted screening threshold used by numerous cities and counties in the SCAB and is based on the SCAQMD staff’s proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD’s *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* (SCAQMD Interim GHG Threshold). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required.

As GHG emissions are inherently cumulative, the threshold here applied to the whole of the Program determines the level of significant. However, if evaluated on a singular project basis, this individual Program Component would result in 25 MTCO<sub>2</sub>e/yr, which falls below the SCAQMD threshold for GHG emissions. Thus, on a singular project basis, GHG impacts would be less than significant.

**Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to 2 monitoring wells.

**Construction Scenario**

**Demolition**

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 4: Shay Pond Conveyance Pipeline**, it was estimated that up to 710 CY of asphalt/concrete export would be needed.

**Construction Worker Trips**

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program

Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

**Construction Duration**

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.9-13  
 CONSTRUCTION DURATION: COMPONENT 4**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 4: Evaporation Pond	May 2025	Oct 2026	370

**Construction Equipment**

Associated equipment was based on information provided by the Program Description. A detailed summary of construction equipment is provided on **Table 4.9-14**.

**Table 4.9-14  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 4**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 4: Evaporation Pond</b>			
Bulldozers	Rubber Tired Dozers	2	8
Front End Loaders	Crawler Tractors	2	8
Water Truck	Off-Highway Trucks	2	8
Scrapers	Scraper	7	8
Excavators	Excavator	2	8
Dump Trucks	Off-Highway Trucks	4	8

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-26** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-26** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Operational Scenario Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

Operations would generate CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions. Primary emissions sources would include:

- Area Source: area sources include architectural coatings, including asphalt, concrete, and parking areas, and landscaping equipment.
  - **Replenish Big Bear Component 4: Solar Evaporation Ponds**, area sources include architectural coatings, including asphalt and concrete, and landscaping equipment.
- Mobile Source: mobile sources include trips generated to and from the proposed facilities including employee trips, hauling trips for waste sources such as precipitated brine from the Solar Evaporation Ponds, and worker trips for maintenance purposes.
  - **Replenish Big Bear Component 4: Solar Evaporation Ponds**, mobile sources include employee trips and maintenance trips to BBARWA facilities, as well as hauling trips for the precipitated brine.

- Solid Waste: solid waste sources include waste generated by workers and operation of the Program facilities, and precipitated brine from the Solar Evaporation Ponds.
  - **Replenish Big Bear Component 4: Solar Evaporation Ponds**, solid waste sources include precipitated brine from the Solar Evaporation Ponds

Mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. While it is anticipated that the Program would require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. As such, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As this Program involves the construction of monitoring wells, Conveyance Facilities and Ancillary Facilities, evaporation ponds, advanced water purification facilities, and associated improvements, heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the proposed Program. Additionally, based on information provided by BBARWA and the Program Team, the Program will include the installation of solar at the BBARWA WWTP and Administration Building sites, and/or at the BBCCSD property adjacent to the BBARWA Administration Building site, which is expected to generate approximately 3,652,117 kWhs per year.

**Emissions Summary Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

For construction emissions, GHGs are quantified and amortized over the life of the Solar Evaporation Ponds Project. SCAQMD recommends calculating the total GHG emissions for construction activities by amortizing the emissions over the life of the Solar Evaporation Ponds Project by dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

The amortized construction emissions are presented in **Table 4.9-15** in combination with operational emissions.

As shown in **Table 4.9-15**, the Solar Evaporation Ponds Project will result in approximately 136 MTCO<sub>2</sub>e/yr from construction and operational activities of this component of the proposed Program.

**Table 4.9-15  
 PROJECT GHG EMISSIONS: COMPONENT 4**

Emission Source	Emissions (MT/yr)
	Total CO <sub>2</sub> e
Construction: Annual construction-related emissions amortized over 30 years	135.87
Operational Mobile Source	0.10
<b>Total CO<sub>2</sub>e (All Sources)</b>	<b>136*</b>

Source: CalEEMod output, See Appendices 3.1 and 3.2 of the GHGIA for detailed model outputs.  
 \* GHG emissions rounded to the nearest 0.

**Replenish Big Bear Component 5: Sand Canyon Recharge Project**

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

**Construction Scenario**

***Demolition***

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 5: Sand Canyon**, it was estimated that up to 1,500 CY of concrete/asphalt export would be needed.

***Grading Activities***

The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

- **Replenish Big Bear Component 5: Sand Canyon**, it was estimated that up to 7,210 CY of soil would be exported.

***Construction Worker Trips***

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

***Construction Duration***

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

**Table 4.9-16  
 CONSTRUCTION DURATION: COMPONENT 5**

<b>Construction Activity</b>	<b>Start Date</b>	<b>End Date</b>	<b>Days</b>
Replenish Big Bear Component 5: Sand Canyon	May 2025	Oct 2026	370

**Construction Equipment**

Associated equipment was based on information provided by the Program Description. A detailed summary of construction equipment is provided on **Table 4.9-17**.

**Table 4.9-17  
 CONSTRUCTION EQUIPMENT ASSUMPTIONS: COMPONENT 5**

Equipment	CalEEMod Equivalent	Amount	Hours Per Day
<b>Replenish Big Bear Component 5: Sand Canyon</b>			
Drill Rig	Bore/Drill Rig	1	8
Cranes	Cranes	1	4
Forklifts	Forklifts	1	4
Backhoes	Tractors/Loaders/Backhoes	1	4
Front Loaders	Crawler Tractors	1	4
Cement Trucks	Off-Highway Trucks	1	8
Excavator	Excavator	1	8
Backhoe	Tractors/Loaders/Backhoes	1	8
Compaction Equipment	Plate Compactor	1	8
Pickup Trucks	Off-Highway Trucks	2	8
Paver	Paver	1	8
Roller	Roller	1	8
Water Truck	Off-Highway Trucks	1	8
Traffic Control Signage and Devices	Signal Boards	1	8
Dump/Delivery Trucks	Off-Highway Trucks	10	8
Backhoe	Tractors/Loaders/Backhoes	1	6
Compactor	Plate Compactor	1	6
Roller/Vibrator	Roller	1	6
Pavement Cutter	Concrete/Industrial Saws	1	6
Grinder	Concrete/Industrial Saws	1	6
Haul Truck	Off-Highway Trucks	1	6
Dump Truck	Off-Highway Trucks	2	6
Water Truck	Off-Highway Trucks	1	4
Excavator	Excavator	1	4
Paving Machine	Pavers	1	2
Compactor	Plate Compactor	1	2

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-32** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-32** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

**Operational Scenario Replenish Big Bear Component 5: Sand Canyon Recharge Project**

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

Operations would generate CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions. Primary emissions sources would include:

- Area Source: area sources include architectural coatings, including asphalt, concrete, and parking areas, and landscaping equipment.
  - **Replenish Big Bear Component 5: Sand Canyon Recharge Project**, area sources include architectural coatings, including interior and exterior coatings, asphalt and concrete, and landscaping equipment.
- Energy Source: energy sources include natural gas and electricity consumption.
  - **Replenish Big Bear Component 5: Sand Canyon Recharge Project**, electricity and natural gas demands are included herein.
- Stationary Sources: stationary sources include backup generators and fire pumps.
  - **Replenish Big Bear Component 5: Sand Canyon Recharge Project**, stationary sources include 1 fire pump.

Mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. While it is anticipated that the Program would require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. As such, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As this Program involves the construction of monitoring wells, Conveyance Facilities and Ancillary Facilities, evaporation ponds, advanced water purification facilities, and associated improvements, heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the proposed Program. Additionally, based on information provided by BBARWA and the Program Team, the Program will include the installation of solar at the BBARWA WWTP and Administration Building sites, and/or at the BBCCSD property adjacent to the BBARWA Administration Building site, which is expected to generate approximately 3,652,117 kWhs per year.

#### **Emissions Summary Replenish Big Bear Component 5: Sand Canyon Recharge Project**

For construction emissions, GHGs are quantified and amortized over the life of the Sand Canyon Recharge Project. SCAQMD recommends calculating the total GHG emissions for construction activities by amortizing the emissions over the life of the Sand Canyon Recharge Project by dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.



The amortized construction emissions are presented in **Table 4.9-18** in combination with operational emissions.

As shown in **Table 4.9-18**, the Sand Canyon Recharge Project will result in approximately 221 MTCO<sub>2</sub>e/yr from construction and operational activities of each component of the proposed Program.

**Table 4.9-18  
 PROJECT GHG EMISSIONS: COMPONENT 5**

Emission Source	Emissions (MT/yr)
	Total CO <sub>2</sub> e
Construction: Annual construction-related emissions amortized over 30 years	49.8
Operational Energy Source	4.62
Operational Stationary Source	167
<b>Total CO<sub>2</sub>e (All Sources)</b>	<b>221*</b>

Source: CalEEMod output, See Appendices 3.1 and 3.2 of the GHGIA for detailed model outputs.  
 \* GHG emissions rounded to the nearest 0.

BBARWA has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions for both construction and operations. However, for the purposes of this GHG analysis, as described above, the SCAQMD methodology is proposed, wherein operational and amortized construction emissions are combined to determine the total GHG emissions generated by a project. A screening threshold of 3,000 MTCO<sub>2</sub>e/yr to determine if additional analysis is required is an acceptable approach. This approach is a widely accepted screening threshold used by numerous cities and counties in the SCAB and is based on the SCAQMD staff's proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* (SCAQMD Interim GHG Threshold). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required.

As GHG emissions are inherently cumulative, the threshold here applied to the whole of the Program determines the level of significant. However, if evaluated on a singular project basis, this individual Program Component would result in 221 MTCO<sub>2</sub>e/yr, which falls below the SCAQMD threshold for GHG emissions. Thus, on a singular project basis, GHG impacts would be less than significant.

**Emissions Summary Replenish Big Bear Program: Whole Program**

The amortized construction emissions are presented in **Table 4.9-19** in combination with operational emissions.

As shown in **Table 4.9-19**, the Program will result in approximately 1,499.63 MTCO<sub>2</sub>e/yr from construction and operational activities of each component of the proposed Program (reference the construction equipment assumptions shown in **Table 4.9-191** and the discussion above of operational energy source emissions).

**Table 4.9-19  
 PROGRAM GHG EMISSIONS**

Emission Source	Emissions (MT/yr)				
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Refrigerants	Total CO <sub>2</sub> e
Construction: Annual construction-related emissions amortized over 30 years	361.89	1.94E-02	2.38E-02	2.10E-01	369.69
Operational Mobile Source	0.10	0.00	0.00	0.00	0.10
Operational Area Source	0.81	0.00	0.00	0.00	0.81
Operational Energy Source	44.95	4.61	0.00	0.00	45.08
Operational Water Usage	834.41	0.06	0.01	0.00	837.91
Operational Waste	3.35	0.34	0.00	0.00	11.74
Operational Stationary Source	233.51	166.79	0.01	0.00	234.28
<b>Total CO<sub>2</sub>e (All Sources)</b>	<b>1,499.63</b>				

Source: CalEEMod output, See Appendices 3.1 and 3.2 of the GHGIA for detailed model outputs.

BBARWA has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions for both construction and operations. However, for the purposes of this GHG analysis, as described above, the SCAQMD methodology is proposed, wherein operational and amortized construction emissions are combined to determine the total GHG emissions generated by a project. A screening threshold of 3,000 MTCO<sub>2</sub>e/yr to determine if additional analysis is required is an acceptable approach. This approach is a widely accepted screening threshold used by numerous cities and counties in the SCAB and is based on the SCAQMD staff’s proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD’s *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* (SCAQMD Interim GHG Threshold). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required.

The Program will result in approximately 1,499.63 MTCO<sub>2</sub>e/yr from construction and operational activities. As such, the construction and operation of the proposed Program would not exceed the SCAQMD’s recommended numeric threshold of 3,000 MTCO<sub>2</sub>e. Thus, the Program would not result in a cumulatively considerable impact with respect to GHG emissions.

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant*

**Cumulative Impact Analysis**

Impacts related to GHG emissions are, by definition, cumulative impacts because they affect the worldwide accumulation of GHGs in the atmosphere. Because the effects of climate change are currently occurring, the cumulative worldwide and statewide effects of GHG emissions are significant. For the analysis of impacts related to GHG emissions, CEQA focuses on whether the incremental contribution of a proposed project is cumulatively considerable and thus significant in and of itself. As discussed previously, construction-related GHG emissions would not exceed the SCAQMD’s Interim GHG Threshold. Based upon the 2022 GHG inventory data (i.e., the latest

year for which data are available) for the 2000-2020 GHG emissions period, California emitted an average 369.2 million metric tons of CO<sub>2</sub>e per year (MMTCO<sub>2</sub>e/yr) or 369,200 Gg CO<sub>2</sub>e (6.17% of the total U.S. GHG emissions).<sup>32</sup> The proposed project will generate approximately 1,499.63 metric tons of CO<sub>2</sub>e per year, or about 0.0004062% of this amount. An individual project such as the proposed Program cannot generate enough GHG emissions to effect a discernible change in global climate. Therefore, the contribution of the Program to cumulative impacts related to generation of GHG emissions, either directly or indirectly, that may have a significant impact on the environment would not be cumulatively considerable.

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant.*

**b) Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?**

**Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**  
**CARB 2022 Climate Change Scoping Plan**

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The BBARWA WWTP Upgrades Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for “increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination.”<sup>33</sup> By augmenting local water supplies, the Replenish Big Bear Program, which includes the BBARWA WWTP Upgrades Project, would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the BBARWA WWTP Upgrades Project would not conflict with the 2022 Scoping Plan, and no impact would occur.

***Conclusion***

As discussed above, the BBARWA WWTP Upgrades Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-6**, the BBARWA WWTP Upgrades Project m’s GHG emissions are below the 3,000 MTCO<sub>2</sub>e/yr and 10,000 MTCO<sub>2</sub>e/yr thresholds. As concluded in issue (a), above, the proposed project would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed BBARWA WWTP Upgrades Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

<sup>32</sup> CARB, 2023. 2000-2020 GHG Inventory (2022 Edition). <https://ww2.arb.ca.gov/ghg-inventory-data> (accessed 09/05/23)

<sup>33</sup> CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. [ww3.arb.ca.gov/cc/inventory/pubs/reports/2000\\_2019/ghg\\_inventory\\_trends\\_00-19.pdf](https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf) (accessed 09/06/23).

<sup>33</sup> CARB, 2017. California’s 2017 Climate Change Scoping Plan. December 14, 2017. [https://www.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf) (accessed 09/06/23).

### **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project** ***CARB 2022 Climate Change Scoping Plan***

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The Stanfield Marsh/Big Bear Lake Discharge Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for “increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination.”<sup>34</sup> By augmenting local water supplies, the Replenish Big Bear Program, which includes the Stanfield Marsh/Big Bear Lake Discharge Project, would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the Stanfield Marsh/Big Bear Lake Discharge Project would not conflict with the 2022 Scoping Plan, and no impact would occur.

#### ***Conclusion***

As discussed above, the Stanfield Marsh/Big Bear Lake Discharge Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-7**, the Stanfield Marsh/Big Bear Lake Discharge Project’s GHG emissions are below the 3,000 MTCO<sub>2</sub>e/yr and 10,000 MTCO<sub>2</sub>e/yr thresholds. As concluded in issue (a), above, the proposed project would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Stanfield Marsh/Big Bear Lake Discharge Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

### **Replenish Big Bear Component 3: Shay Pond Discharge Project** ***CARB 2022 Climate Change Scoping Plan***

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The Shay Pond Discharge Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for “increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination.”<sup>35</sup> By augmenting local water supplies, the Replenish Big Bear Program, which

<sup>34</sup> CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. [ww3.arb.ca.gov/cc/inventory/pubs/reports/2000\\_2019/ghg\\_inventory\\_trends\\_00-19.pdf](http://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf) (accessed 09/06/23).

<sup>34</sup> CARB, 2017. California’s 2017 Climate Change Scoping Plan. December 14, 2017. [https://www.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf) (accessed 09/06/23).

<sup>35</sup> CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. [ww3.arb.ca.gov/cc/inventory/pubs/reports/2000\\_2019/ghg\\_inventory\\_trends\\_00-19.pdf](http://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf) (accessed 09/06/23).

includes the Shay Pond Discharge Project would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the Shay Pond Discharge Project would not conflict with the 2022 Scoping Plan, and no impact would occur.

### **Conclusion**

As discussed above, the Shay Pond Discharge Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-8**, the Shay Pond Discharge Project's GHG emissions are below the 3,000 MTCO<sub>2</sub>e/yr and 10,000 MTCO<sub>2</sub>e/yr thresholds. As concluded in issue (a), above, the proposed project would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Shay Pond Discharge Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

### **Replenish Big Bear Component 4: Solar Evaporation Ponds Project** **CARB 2022 Climate Change Scoping Plan**

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The Solar Evaporation Ponds Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for "increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination."<sup>36</sup> By augmenting local water supplies, the Replenish Big Bear Program, which includes the Solar Evaporation Ponds Project, would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the Solar Evaporation Ponds Project would not conflict with the 2022 Scoping Plan, and no impact would occur.

### **Conclusion**

As discussed above, the Solar Evaporation Ponds Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-9**, the Solar Evaporation Ponds Project's GHG emissions are below the 3,000 MTCO<sub>2</sub>e/yr and 10,000 MTCO<sub>2</sub>e/yr thresholds. As concluded in issue (a), above, the proposed Solar Evaporation Ponds Project would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Solar Evaporation Ponds Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

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<sup>35</sup> CARB, 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. [https://www.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf) (accessed 09/06/23).

<sup>36</sup> CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. [ww3.arb.ca.gov/cc/inventory/pubs/reports/2000\\_2019/ghg\\_inventory\\_trends\\_00-19.pdf](http://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf) (accessed 09/06/23).

<sup>36</sup> CARB, 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. [https://www.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf) (accessed 09/06/23).

**Replenish Big Bear Component 5: Sand Canyon Recharge Project**  
***CARB 2022 Climate Change Scoping Plan***

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The Sand Canyon Recharge Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for “increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination.”<sup>37</sup> By augmenting local water supplies, the Replenish Big Bear Program, which includes the Sand Canyon Recharge Project, would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the Sand Canyon Recharge Project would not conflict with the 2022 Scoping Plan, and no impact would occur.

***Conclusion***

As discussed above, the Sand Canyon Recharge Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-10**, the Sand Canyon Recharge Project’s GHG emissions are below the 3,000 MTCO<sub>2</sub>e/yr and 10,000 MTCO<sub>2</sub>e/yr thresholds. As concluded in issue (a), above, the proposed Sand Canyon Recharge Project would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Sand Canyon Recharge Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

**Replenish Big Bear Program: Whole Program**  
***CARB 2022 Climate Change Scoping Plan***

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The Program would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for “increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination.”<sup>38</sup> By augmenting local water

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<sup>37</sup> CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. [ww3.arb.ca.gov/cc/inventory/pubs/reports/2000\\_2019/ghg\\_inventory\\_trends\\_00-19.pdf](http://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf) (accessed 09/06/23).

<sup>37</sup> CARB, 2017. California’s 2017 Climate Change Scoping Plan. December 14, 2017. [https://www.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf) (accessed 09/06/23).

<sup>38</sup> CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. [ww3.arb.ca.gov/cc/inventory/pubs/reports/2000\\_2019/ghg\\_inventory\\_trends\\_00-19.pdf](http://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf) (accessed 09/06/23).

<sup>38</sup> CARB, 2017. California’s 2017 Climate Change Scoping Plan. December 14, 2017. [https://www.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf) (accessed 09/06/23).



supplies, the Replenish Big Bear Program would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the Program would not conflict with the 2022 Scoping Plan, and no impact would occur.

### **Conclusion**

As discussed above, the Program involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-11**, the Program's GHG emissions are below the 3,000 MTCO<sub>2</sub>e/yr and 10,000 MTCO<sub>2</sub>e/yr thresholds. As concluded in issue (a), above, the proposed Program would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Program will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

*Level of Significance Before Mitigation: Less than Significant.*

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant.*

### **Cumulative Impact Analysis**

As discussed under threshold (a), impacts related to GHG emissions are, by definition, cumulative impacts because they affect the worldwide accumulation of GHGs in the atmosphere. Because the effects of climate change are currently occurring, the cumulative worldwide and statewide effects of GHG emissions are significant. For the analysis of impacts related to GHG emissions, CEQA focuses on whether the incremental contribution of a proposed project is cumulatively considerable and thus significant in and of itself. The Program would be consistent with many of the goals of applicable State and local plans and programs, which are designed to reduce the cumulative impact of GHG emissions. Therefore, the contribution of the Program to cumulative impacts related to consistency with applicable plan, policy or regulation adopted for the purpose of reducing the GHG emissions would not be cumulatively considerable.

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant.*

#### **4.9.6 Cumulative Impacts**

As discussed under the cumulative impact analysis presented under issues (a) and (b), above, impacts related to GHG emissions are, by definition, cumulative impacts because they affect the worldwide accumulation of GHGs in the atmosphere. For the analysis of impacts related to GHG emissions, CEQA focuses on whether the incremental contribution of a proposed project is cumulatively considerable and thus significant in and of itself. The Program would be consistent with many of the goals of applicable State and local plans and programs, which are designed to reduce the cumulative impact of GHG emissions. Furthermore, based upon the 2022 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2020 GHG emissions period, California emitted an average 369.2 million metric tons of CO<sub>2</sub>e per year (MMTCO<sub>2</sub>e/yr) or 369,200 Gg CO<sub>2</sub>e (6.17% of the total U.S. GHG emissions).<sup>39</sup> The proposed project will

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<sup>39</sup> CARB, 2023. 2000-2020 GHG Inventory (2022 Edition). <https://ww2.arb.ca.gov/ghg-inventory-data> (accessed 09/05/23)

generate approximately 1,499.63 metric tons of CO<sub>2</sub>e per year, or about 0.0004062% of this amount. An individual Program, such as the proposed Program, cannot generate enough GHG emissions to effect a discernible change in global climate. Therefore, the proposed Program would not contribute to global climate change through an incremental contribution of GHGs because the GHG emissions are well below the SCAQMD thresholds. As such, the Program would not result in a cumulatively considerable or significant adverse GHG impact.

#### **4.9.7 Unavoidable Significant Adverse Impacts**

As stated above, an individual Program, such as the proposed Program, cannot generate enough GHG emissions to effect a discernible change in global climate. However, the proposed Program may contribute to global climate change by its incremental contribution of GHGs above established thresholds. With implementation of the recommended **MMs** identified in **Subchapter 4.4, Air Quality**, the proposed Program would not exceed SCAQMD thresholds for GHG, nor would it conflict with a plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG. Thus, the proposed Program would not result in new significant GHG impacts nor would it result in a substantial increase in the severity of GHG impacts with implementation of the identified Air Quality **MMs**. Program-related GHG emissions are not considered to be significant or adverse and would not result in an unavoidable significant adverse impact on global climate change.

## **4.10 HAZARDS AND HAZARDOUS MATERIALS**

### **4.10.1 Introduction**

This Section describes and evaluates the issues related to hazards and hazardous materials within the Replenish Big Bear Program Area. Discussed are the physical and regulatory settings, the baseline for determining environmental impacts, the criteria used for determining the significance of environmental impacts, and potential impacts and appropriate **MMs** associated with implementation of the Program.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Hazards and Hazardous Materials
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to hazards and hazardous materials were received in response to the NOP. No comments pertaining to this issue were received at the Scoping Meetings held on behalf of the Program.

### **4.10.2 Environmental Setting: Hazards and Hazardous Materials**

#### **4.10.2.1 Introduction**

The term “hazardous materials” refers to both hazardous substances and hazardous wastes. Under Federal and State laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such, or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases). The term “hazardous material” is defined as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.<sup>40</sup>

In some cases, past industrial or commercial activities on a site or an accidental spill could have resulted in spills or leaks of hazardous materials to the ground, resulting in soil and/or groundwater contamination. Hazardous materials may also be present in building materials and released during building demolition activities. If improperly handled, hazardous materials can cause health hazards when released to the soil, groundwater, or air. Individuals are typically exposed to hazardous materials through inhalation or bodily contact. Exposure can come as a result of an accidental release during transportation, storage, or handling and disposal of hazardous materials. Disturbance of subsurface soil during construction can also lead to exposure of workers or the public from stockpiling, handling, or transportation of soils contaminated by hazardous materials from previous spills or leaks.

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<sup>40</sup> State of California Health and Safety Code Chapter 6.95, Section 25501(p).

#### **4.10.2.2 Big Bear Valley**

This Section describes the existing conditions of the Big Bear Valley (where the Program would be implemented) with respect to hazards and hazardous materials. It discusses the potential to encounter hazardous materials in soil and/or groundwater in this area, potential fire hazards, and potential hazards related to proximity to schools and airports.

The Big Bear Valley is mostly a resort community, with little industry that would use large quantities of hazardous materials. The Comprehensive Environmental Response Compensation and Liability Information System (Superfund) -- provides a Federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the EPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup. The EPA maintains the database of contaminated properties under the Federal Superfund program. No CERCLA sites are located in the Big Bear Valley.

The primary uses of hazardous materials, along with subsequent accidental releases thereof, in the Big Bear Valley relate to petroleum products (vehicle and heating fuels). SWRCB's GeoTracker database<sup>41</sup> is the SWRCB's data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater. SWRCB's GeoTracker contains records for sites that require cleanup, such as Leaking Underground Storage Tank (LUST) Sites, Department of Defense Sites, and Cleanup Program Sites. SWRCB's GeoTracker also contains records for various unregulated projects as well as permitted facilities including: Irrigated Lands, Oil and Gas production, operating Permitted underground storage tanks (USTs), and Land Disposal Sites. The SWRCB GeoTracker database was reviewed for the Program, and the information is summarized, below. Additionally, the DTSC's EnviroStor database<sup>42</sup> is an online search and Geographic Information System (GIS) tool for identifying sites that have known or potential contamination as well as facilities permitted to treat, store, or dispose of hazardous waste

#### **Hazardous Building Materials**

Hazardous materials, such as asbestos-containing materials (ACM), lead-based paint (LBP), and polychlorinated biphenyls (PCBs), may be contained in building materials and released during demolition activities. The likelihood of hazardous materials in building components can be generally assessed based on the age of the structures, as these materials were phased out of use during the 1970s and 1980s. Any structures proposed for demolition in implementing elements of the Program would require evaluation of the date of construction and possible inspections by qualified professional to determine presence of ACM, LBP, and/or PCBs.

#### **Asbestos Potential**

Asbestos is a naturally-occurring fibrous material that was used as a fireproofing and insulating agent in building construction before such uses were banned by the EPA in the 1970s, although some nonfriable<sup>43</sup> use of asbestos in roofing materials still exists. The presence of asbestos can be found in such materials as ducting insulation, wallboard, shingles, ceiling tiles, floor tiles, insulation, plaster, floor backing, lining for piping, and many other building materials. ACMs are

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<sup>41</sup> <https://geotracker.waterboards.ca.gov/>

<sup>42</sup> <https://www.envirostor.dtsc.ca.gov/public/>

<sup>43</sup> Nonfriable asbestos refers to ACMs that contain asbestos fibers in a solid matrix that does not allow for them to be easily released.

considered both a hazardous air pollutant and a human health hazard. The risk to human health is from inhalation of airborne asbestos, which commonly occurs when ACMs are disturbed during demolition and renovation activities.

### **Lead Potential**

Lead and lead-based compounds can be found in many types of paint. In 1978, the Consumer Product Safety Commission set the allowable lead levels in paint at 0.06 percent by weight in a dry film of newly applied paint. Lead dust is of special concern, because the smaller particles are more easily absorbed by the body. Common methods of paint removal, such as sanding, scraping, and burning, create excessive amounts of dust. LBPs are considered likely present in buildings constructed prior to 1960, and potentially present in buildings built prior to 1978.

### **Polychlorinated biphenyls Potential**

PCBs are organic oils that were formerly placed in many types of electrical equipment, such as transformers and capacitors, primarily as electrical insulators. They may also be found in hydraulic fluid used for hoists, elevators, etc. Years after widespread and commonplace installation, it was discovered that exposure to PCBs may cause various health effects and that PCBs are highly persistent in the environment. The EPA has listed these substances as carcinogens. PCBs were banned from use in electrical capacitors, electrical transformers, vacuum pumps, and gas turbines in 1979.

### **Household Hazardous Materials**

Household hazardous waste is generated at a place of residence, as defined in California Health and Safety Code Section 25218.1(e). Examples of common household hazardous wastes include antifreeze, household batteries, compressed gas cylinders, television/computer monitors, consumer electronic devices, home-generated sharp items (e.g., needles, syringes, and lancets), oil-based paints, latex paints, motor oil, used oil filters, rodent poison, asbestos, gasoline, fluorescent lamps, partially used aerosol containers, and weed killers. A household hazardous waste collection facility is commonly operated by local public agencies or their contractors for the purposes of collecting, handling, treating, storing, recycling, or disposing of household hazardous wastes (California Health and Safety Code § 25218.1(f)). A household hazardous waste collection facility may also accept wastes from small businesses that are conditionally exempt generators, defined as a small business that generates no more than 100 kilograms of hazardous waste per month.

San Bernardino County has multiple hazardous waste collection centers for household hazardous waste, with the closest facility to the Program Area located in the City of Big Bear Lake. These facilities accept items such as lawn and garden care products, paint and paint-related products, automotive fluids and batteries, beauty products and medicines, household cleaners, electronic waste, and other common household hazardous wastes.

### **Hazardous Materials in Soil and Groundwater**

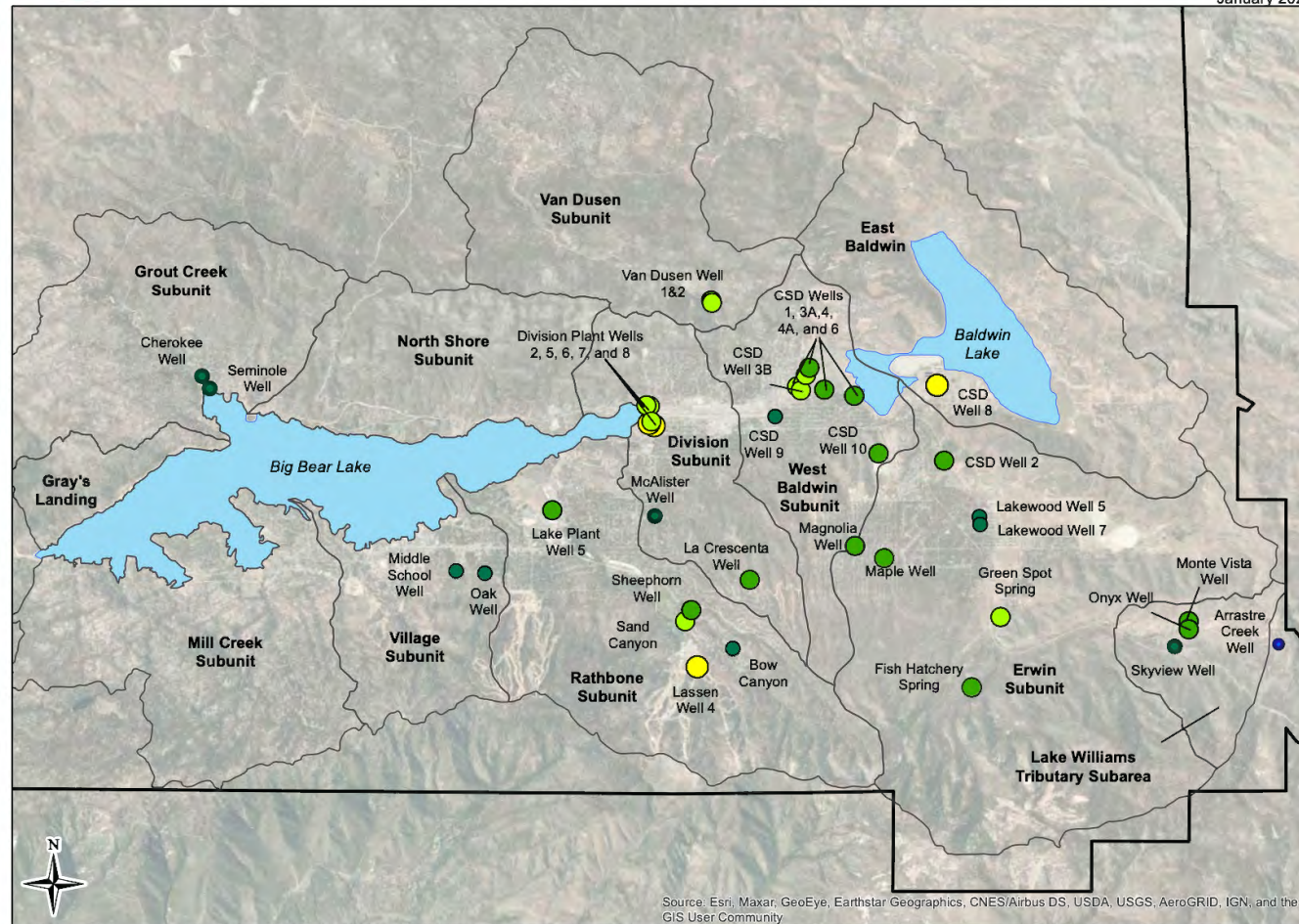
Human activities have caused a small variety of contamination within Big Bear Valley. Several Open LUST Cleanup cases have been documented by the SWRCB's GeoTracker. Additionally, the Bear Valley Basin GSP (GSP; January 2022) provided as **Appendix 8, Volume 2** of this DPEIR documented the groundwater quality in the Bear Valley Basin. The GSP indicated that, overall, the native groundwater quality of the upper and middle aquifers of the Bear Valley Basin from which local agencies produce water is generally very good, with historical TDS measurements generally in the range of 200 to 300 mg/L with no detections above 500 mg/L (**Figure 4.10-1**). Groundwater quality issues in the subbasin include both regional non-point groundwater quality issues and point-source contaminant issues.





January 2022

## Bear Valley Basin Groundwater Sustainability Plan



### Map Features

Total Dissolved Solids (mg/L) - 2017

- < 100
- 100 - 200
- 201 - 300
- 301 - 400
- 401 - 500

- Hydrologic Subunit
- Bear Valley Basin Groundwater Sustainability Agency

Note:

Total Dissolved Solids Secondary MCL = 500 mg/L

Source:  
California Water Boards: State Water  
Resources Water Quality Analyses Data Library

### Groundwater Quality - Total Dissolved Solids

Figure 2-9



Fluoride is a naturally occurring non-point constituent of concern in the Baldwin Lake and Lake William areas (**Figure 4.10-2**). Depth-specific water quality sampling in wells near Baldwin Lake (e.g. BBCCSD's Wells 8, 9 and 10) have shown that fluoride concentrations below a depth of approximately 350 feet are generally higher than the MCL for this constituent of 2 mg/L (Geoscience 2003a, Geoscience, 2003b, and Geoscience, 2003c). This depth generally defines the boundary between the middle aquifer system and lower aquifer system in the Baldwin Lake area. Construction of most of the newer wells in this area is limited to the middle aquifer due to high fluoride in the deep aquifer. One exception is BBCCSD's Well 3B, located at the southwestern edge of Baldwin Lake. Depth-specific isolated aquifer zone testing showed that fluoride concentrations ranged from 6.3 mg/L at a depth of 300 to 320 ft bgs to 9.0 mg/L at a depth of 480 to 500 ft bgs (Geoscience, 2000).

Other naturally occurring groundwater quality constituents of concern have included arsenic, manganese, and uranium. Arsenic has been detected in samples from wells in the Grout Creek subunit (Cherokee Well), Rathbone Subunit (Owen Well) and Mill Creek Subunit (Canvasback test borehole) (**Figure 4.10-3**). The arsenic concentration in the Canvasback test borehole was 88 µg/L and was detected in a depth-specific sample collected from 499 ft bgs (Geoscience, 2003d). Arsenic has not been detected in a shallower well completed near the test hole to a depth of 315 ft bgs, indicating the arsenic concentrations are unique to a deeper aquifer system at the site (Geoscience, 2004b). All other arsenic concentrations detected in the Big Bear Valley have been below the MCL. Uranium has been detected in the Canvasback Well at concentrations above the MCL. Manganese has been detected above its secondary MCL in wells in the Village Subunit and Division Subunit.

For point-source contaminants, there are eight active cleanup sites in the Bear Valley Basin identified on the SWRCB GeoTracker website. Six of the point source contamination sites are associated with LUSTs for which the primary contaminants are gasoline, methyl tert-butyl ether (MTBE), tertiary butyl alcohol (TBA) and/or other oxygenates. There is one DTSC site and one land disposal site listed within the Bear Valley Basin. Contaminants associated with these sites are not reported on the SWRCB GeoTracker website. These are shown on **Figure 4.10-4**. Additionally, the description of each of the eight active cleanup sites in the Bear Valley Basin, within which the Program will operate, is provided as **Appendix 17, Volume 2** to this DPEIR.

### **Sensitive Receptors**

Preschools, schools, daycare centers, nursing homes, and hospitals are considered sensitive receptors for hazardous material issues because children and the elderly are more susceptible than adults to the effects of many hazardous materials. There are numerous sensitive receptors throughout Big Bear Valley and there is the potential for many sensitive receptors to be within 0.25 mile of existing and proposed future Program facilities.

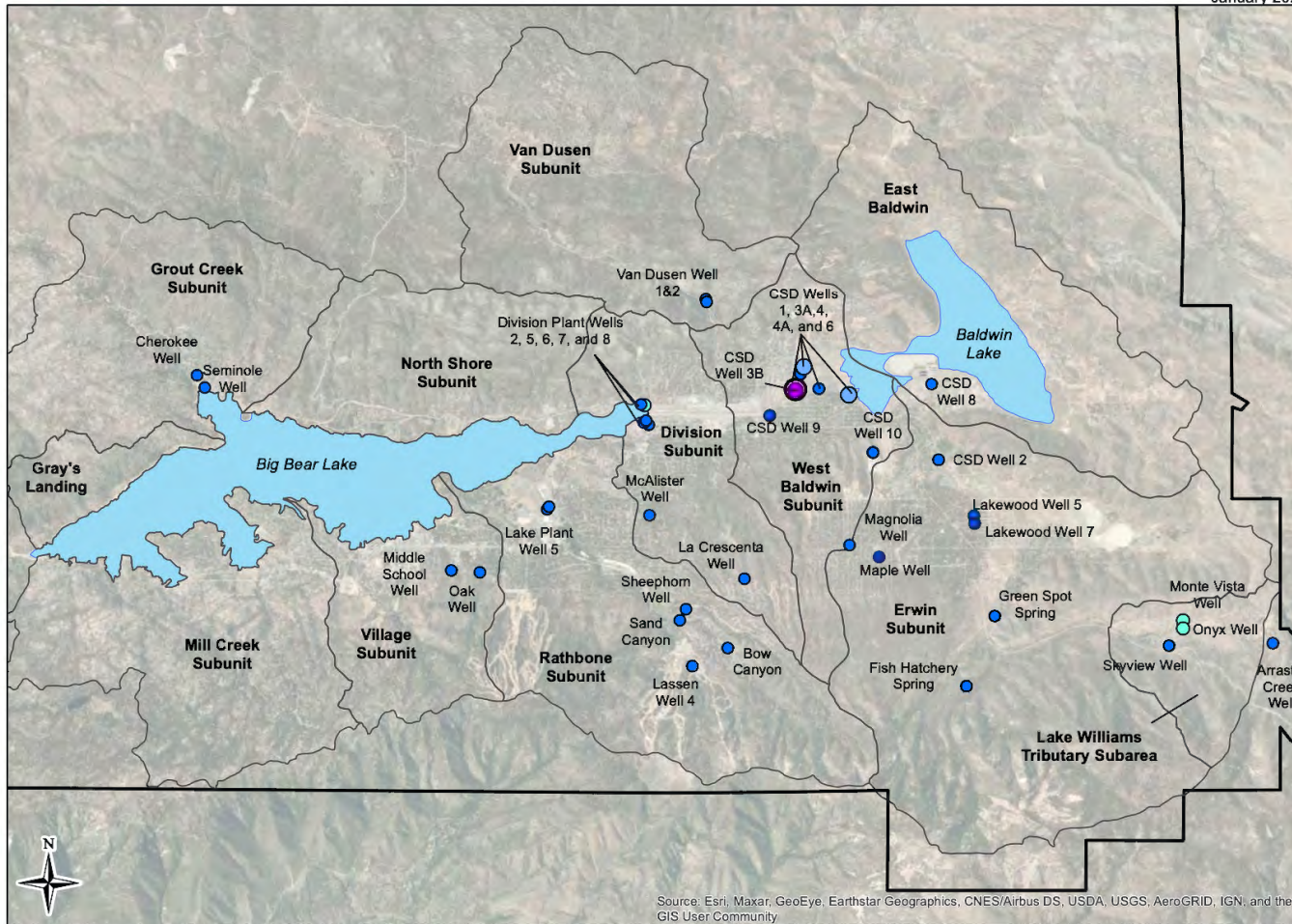
### **Wildland Fire Hazards**

CAL FIRE maps the FHSZs of the Big Bear Valley. The FHSZs are based on an evaluation of fuels, topography, dwelling density, weather, infrastructure, building materials, brush clearance, and fire history. The majority of Big Bear Valley is located within a very high FHSZ, as shown on **Figure 4.10-5**, which depicts the San Bernardino Countywide Plan FHSZ Map. In relation to the physical components of the Program, the features that would be developed within the BBARWA WWTP are designated as being within a high FHSZ. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options traverse through areas designated as being within very high, high, and moderate FHSZs. The Sand Canyon Booster Station and pipeline traverses through an area designated as being within a very high FHSZ. The Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipelines traverse through an area designated as being



January 2022

## Bear Valley Basin Groundwater Sustainability Plan



**Map Features**

Fluoride (mg/L) - 2017

- < 1.0
- 1.1 - 2.0
- 2.1 - 3.0
- 3.1 - 4.0
- 4.1 - 5.0

Hydrologic Subunit  
 Bear Valley Basin Groundwater Sustainability Agency

Note:

Fluoride MCL = 2.0 mg/L

Source:  
California Water Boards: State Water  
Resources Water Quality Analyses Data Library

Thomas Harder & Co.  
Groundwater Consulting



### Groundwater Quality - Fluoride

Figure 2-10

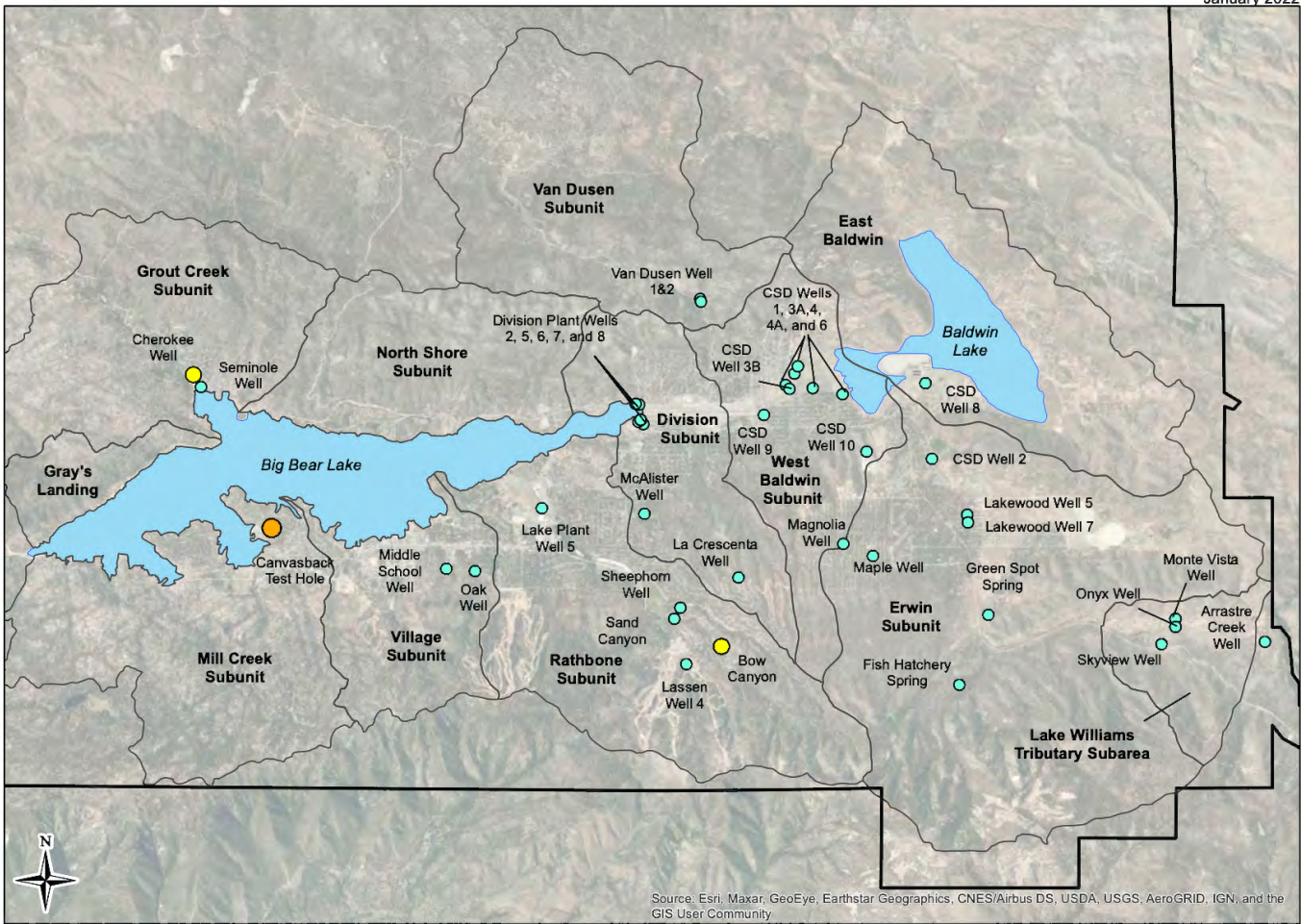
FIGURE 4.10-2





January 2022

**Bear Valley Basin  
Groundwater Sustainability Plan**



**Map Features**

Arsenic ( $\mu\text{g/L}$ ) - 2017

- 0
- 7 - 8
- 88
- Hydrologic Subunit
- Bear Valley Basin Groundwater Sustainability Agency

Note:  
Arsenic MCL = 10  $\mu\text{g/L}$

Source:  
California Water Boards: State Water Resources Water Quality Analyses Data Library

Thomas Harder & Co.  
Groundwater Consulting



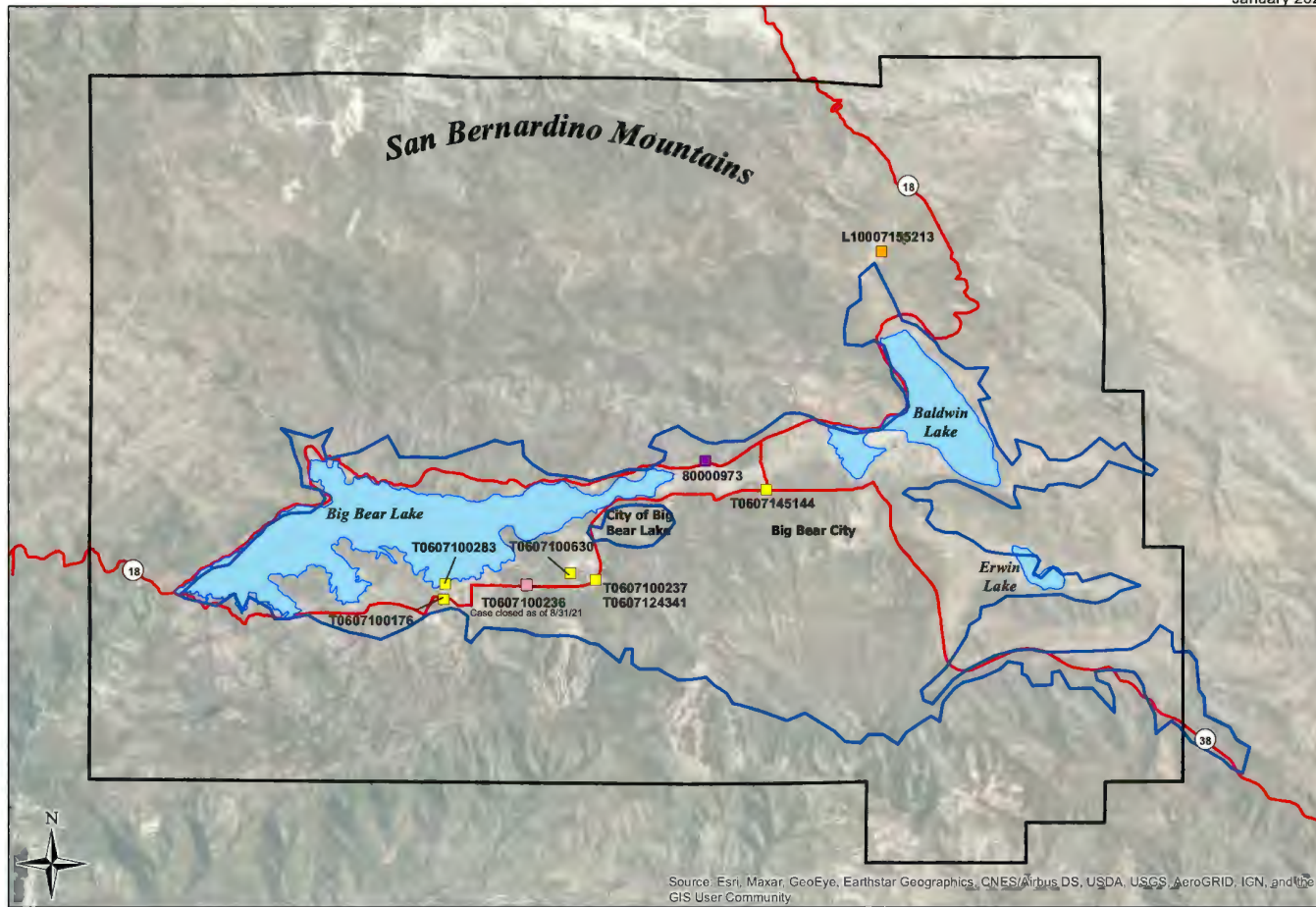
**Groundwater Quality - Arsenic**  
Figure 2-11

FIGURE 4.10-3



January 2022

### Bear Valley Basin Groundwater Sustainability Plan



**Map Features**

- Closed LUST Cleanup Site
- Active Cleanup Site
- DTSC Cleanup Site
- Land Disposal Site
- LUST Cleanup Site
- Bear Valley Basin Groundwater Sustainability Agency Boundary
- Bear Valley Groundwater Basin (DWR Bulletin 118, Rev. 2018)
- Highway

Source: <https://geotracker.waterboards.ca.gov>



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 0.5 1 2 Miles

NAD 83 UTM Zone 11

**Thomas Harder & Co.**  
Groundwater Consulting

### Active Clean Up Sites within the Bear Valley Basin

Figure 2-12

FIGURE 4.10-4



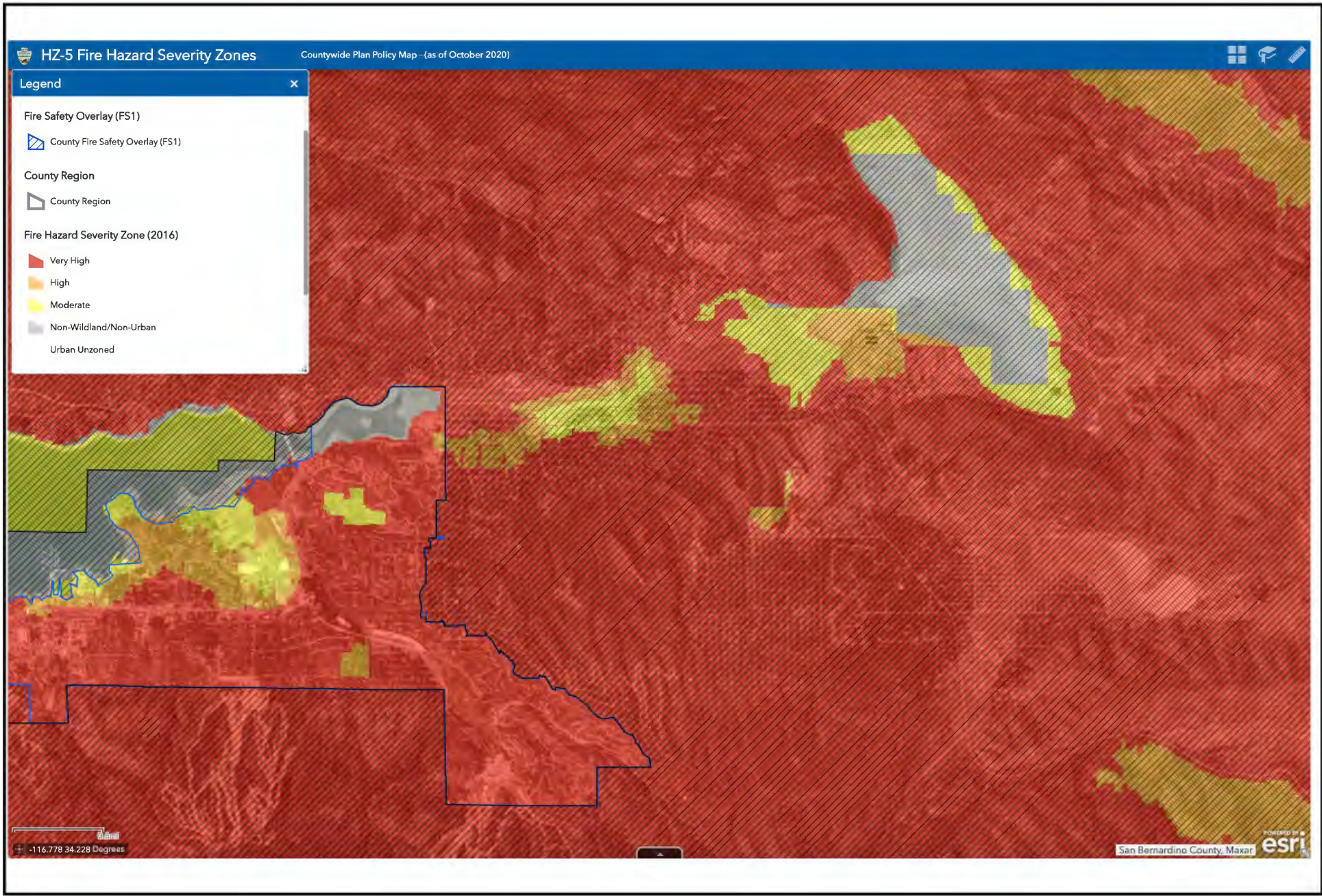


FIGURE 4.10-5



within a very high FHSZ. These FHSZs are almost entirely located within State Responsibility Areas, with the exception of those areas that fall within the City of Big Bear Lake, which are in Local Responsibility Areas (**Figure 4.10-6**).

A majority of the Program Area is within the San Bernardino County Fire Safety Overlay, with the exception of those areas that fall within the City of Big Bear Lake (**Figure 4.10-5**).

### **Airports**

There is only one airport located within Big Bear Valley: Big Bear Airport. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options (shown on **Figure 3-2**) traverse either side of the Big Bear Airport boundaries. No other physical components of the Program would be located within either the Big Bear Airport Noise Contours or Big Bear Airport Safety Review Areas shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas (**Figure 4.10-7**).

### **Schools**

Based on a review of the San Bernardino Countywide Plan Education Facilities Map (**Figure 4.10-8**), there is one school district—Bear Valley Unified School District—with six schools located in Big Bear Valley. The schools in Big Bear Valley are: Big Bear Middle, North Shore Elementary, Baldwin Lane Elementary, Chautauqua High (a continuation school), and Big Bear High.

### **Evacuation Routes**

The San Bernardino Countywide Plan PEIR identifies SR-18 and SR-38 in the vicinity of the proposed Program as designated evacuation routes.

#### **4.10.2.3 Lucerne Valley**

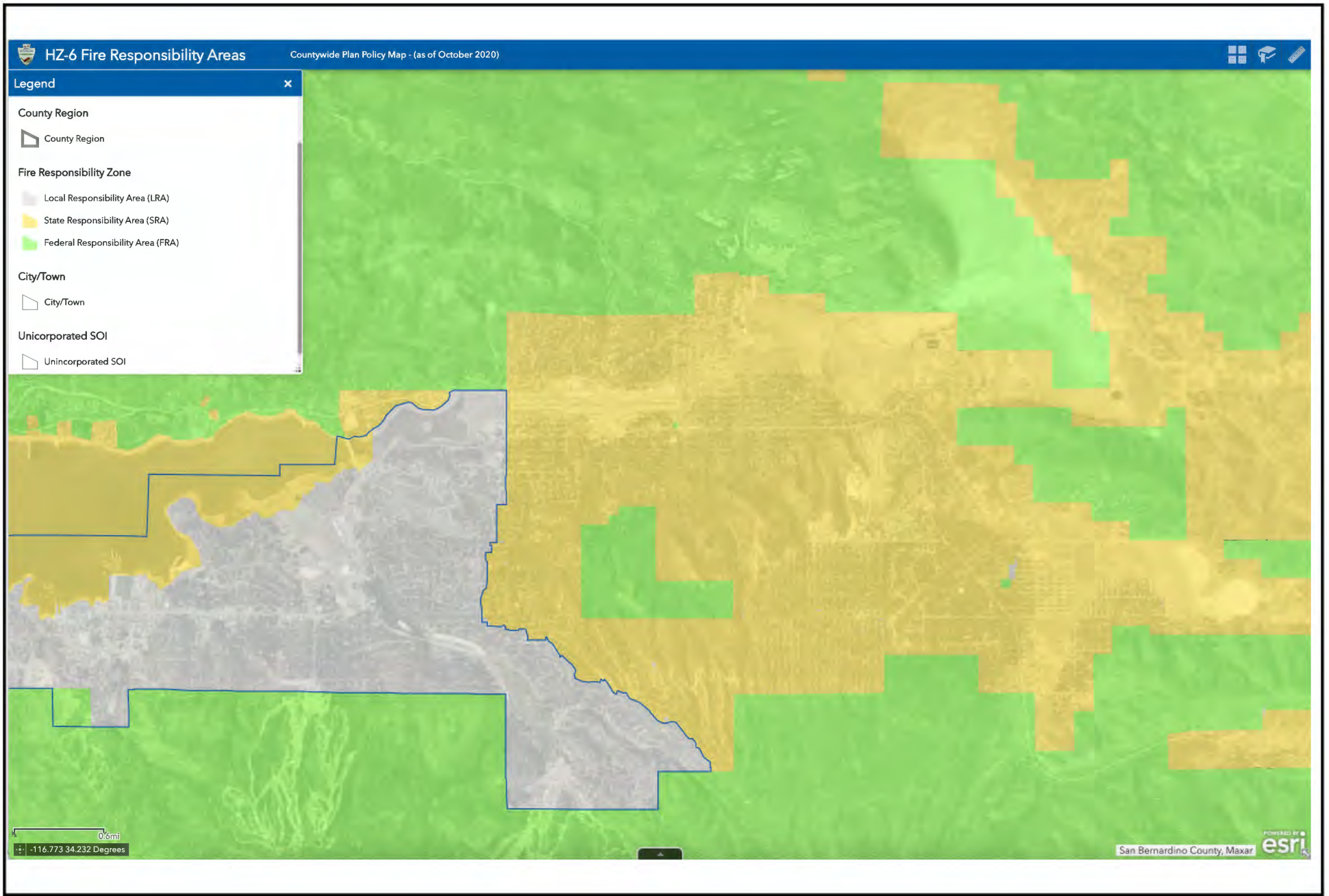
A review of the SWRCB GeoTracker and DTSC's EnviroStor databases indicate that no open cleanup or other contaminated sites exist at or in the vicinity of the LV Site (refer to **Figures 4.10-9** and **4.10-10**). The LV Site referred to herein is the 480-acre portion of the larger 630-acre BBARWA owned site in Lucerne Valley that is regulated by a Colorado Regional Board WDR. There is a state response site that is inactive within one mile of the LV Site, but the change in discharge to the LV Site as a result of the Program is not anticipated to affect or be affected by this inactive DTSC State Response Site.

The LV Site is designated as being within a moderate FHSZ on the San Bernardino Countywide Plan FHSZ Map (**Figure 4.10-11**) within an area with a State Responsibility Area as shown on the San Bernardino Countywide Plan Fire Responsibility Areas Map (**Figure 4.10-12**). Evacuation routes in Lucerne Valley includes SR-247, which is located along the northern boundary of the LV Site.

There are no schools within one quarter mile of the LV Site. As with the Big Bear Valley, there are sensitive receptors (residences) within 0.25 mile of LV Site, though as discussed in Chapter 3, Program Description, no new facilities are anticipated to be developed at the LV Site, but a potential for a modification to the existing agricultural use at the LV Site may result from Program implementation.

The LV Site is located within a designated Low-Altitude/High Speed Military Airspace overlay, as shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas Map shown on **Figure 4.10-13**.





**FIGURE 4.10-6**

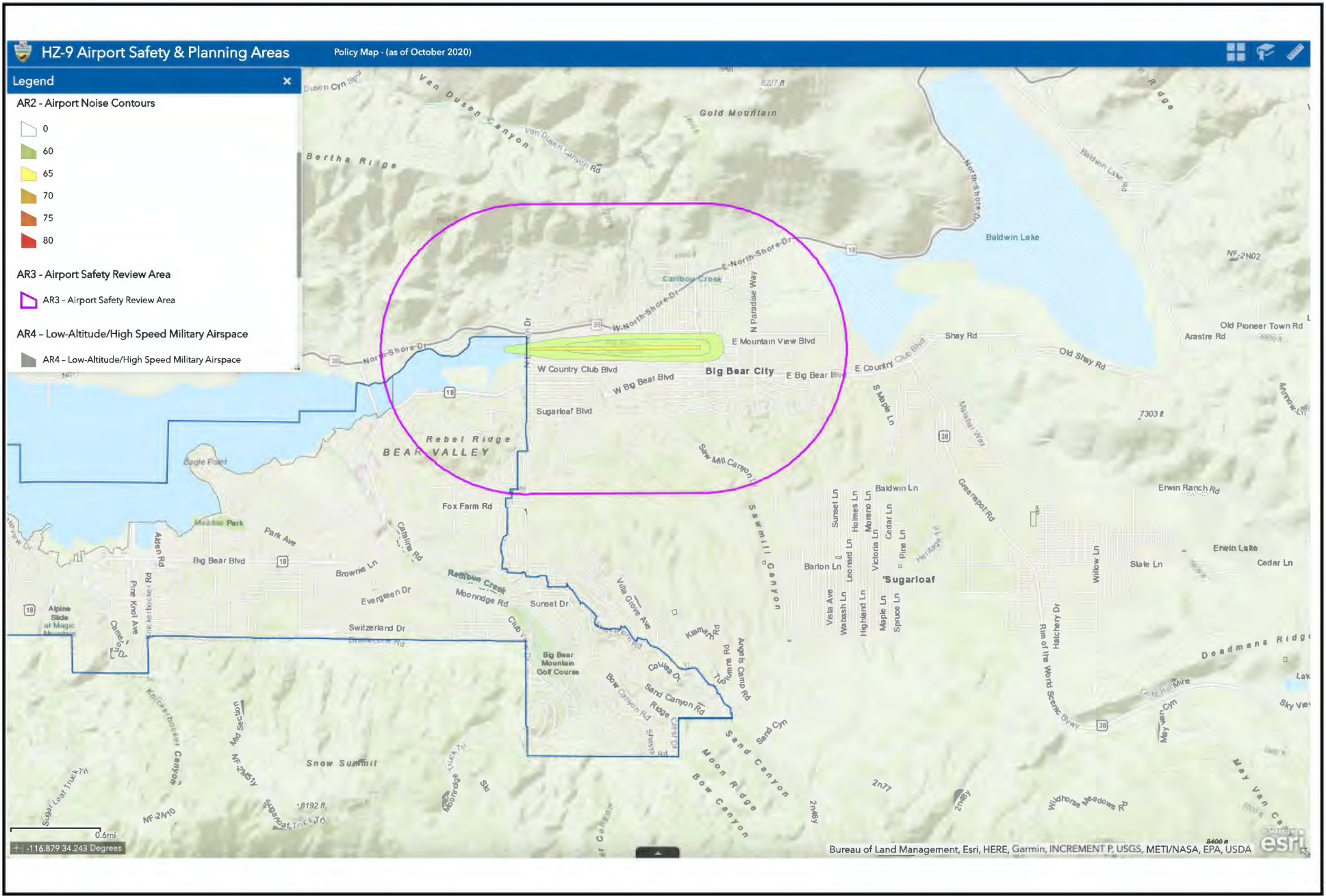
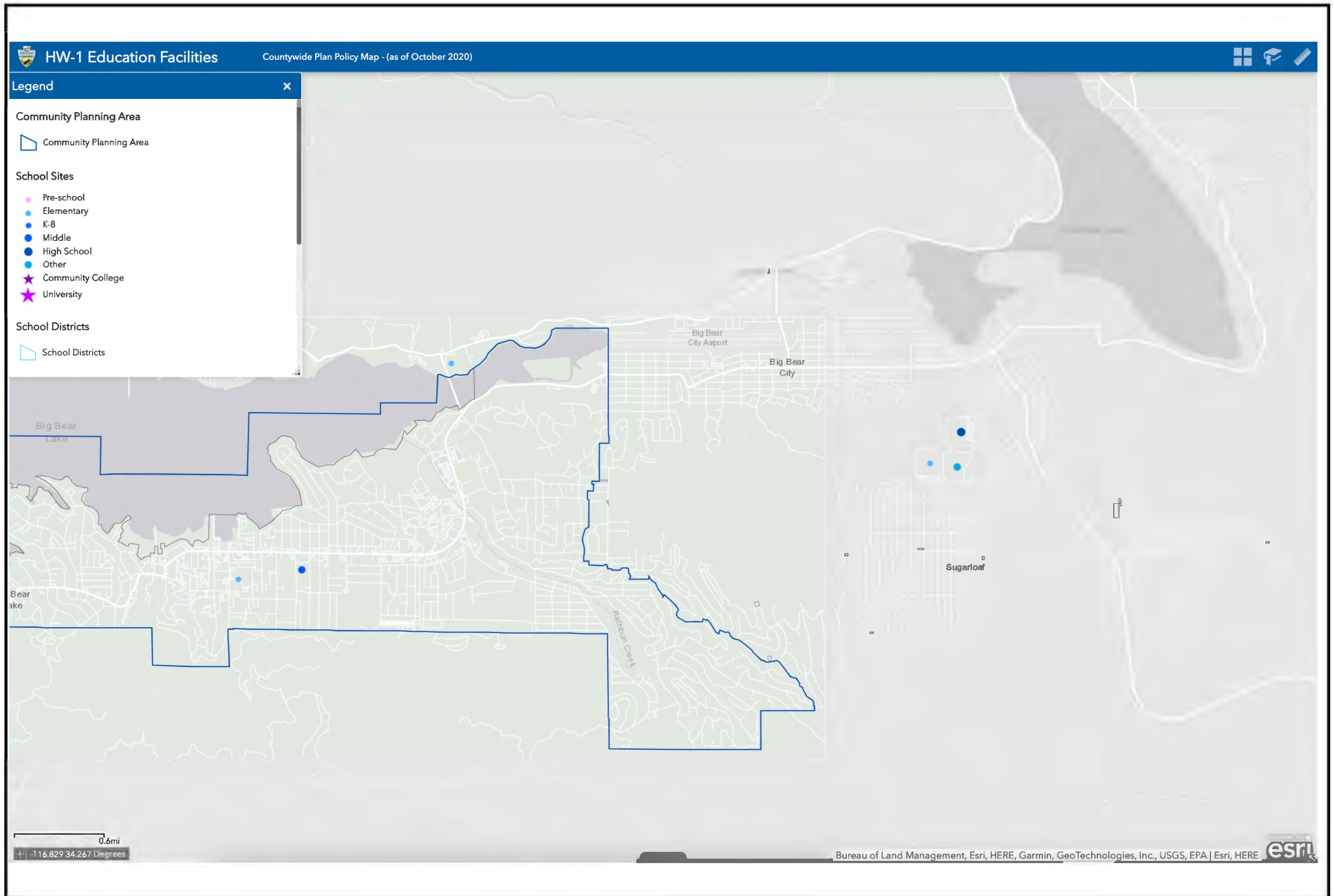


FIGURE 4.10-7





**FIGURE 4.10-8**

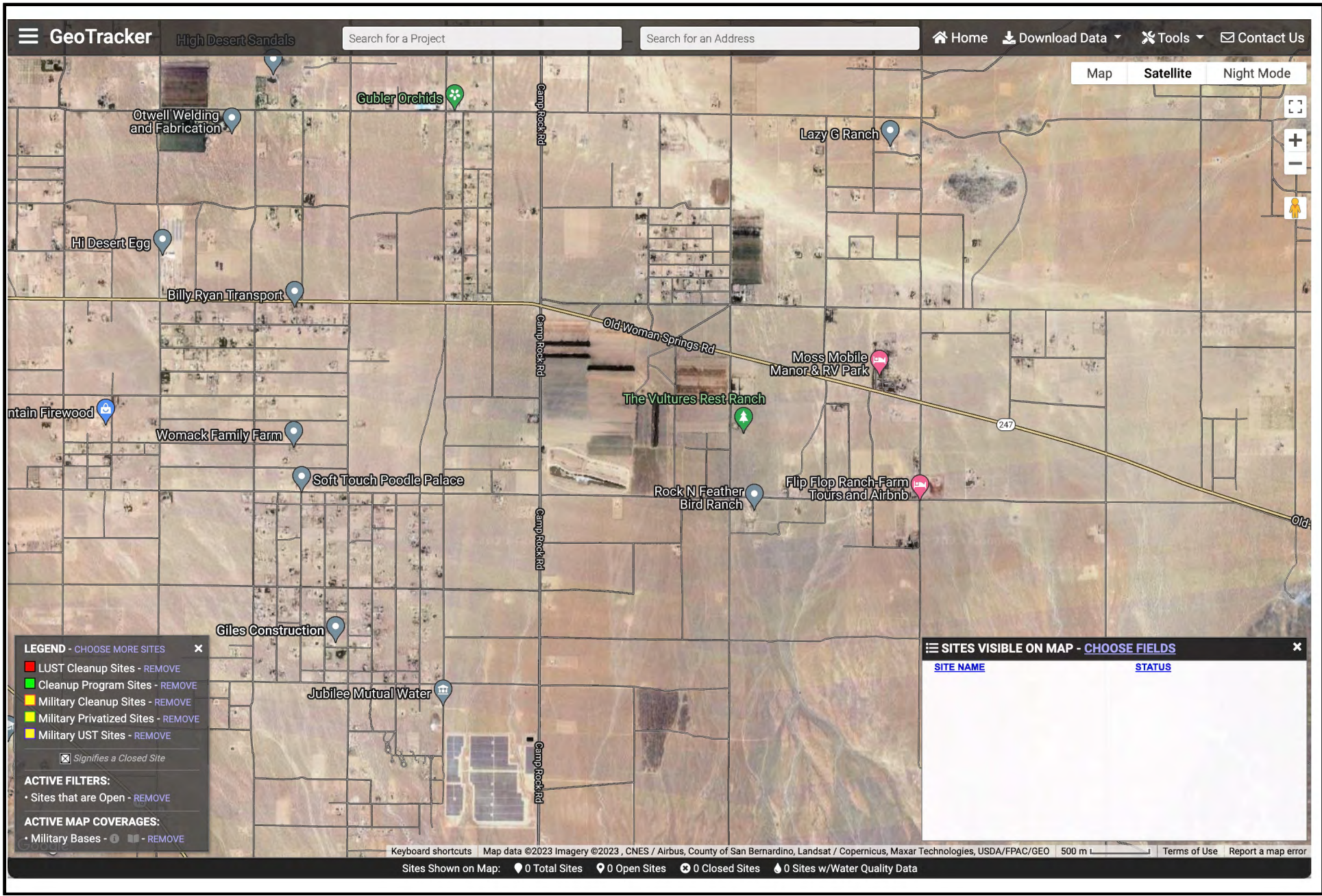


FIGURE 4.10-9



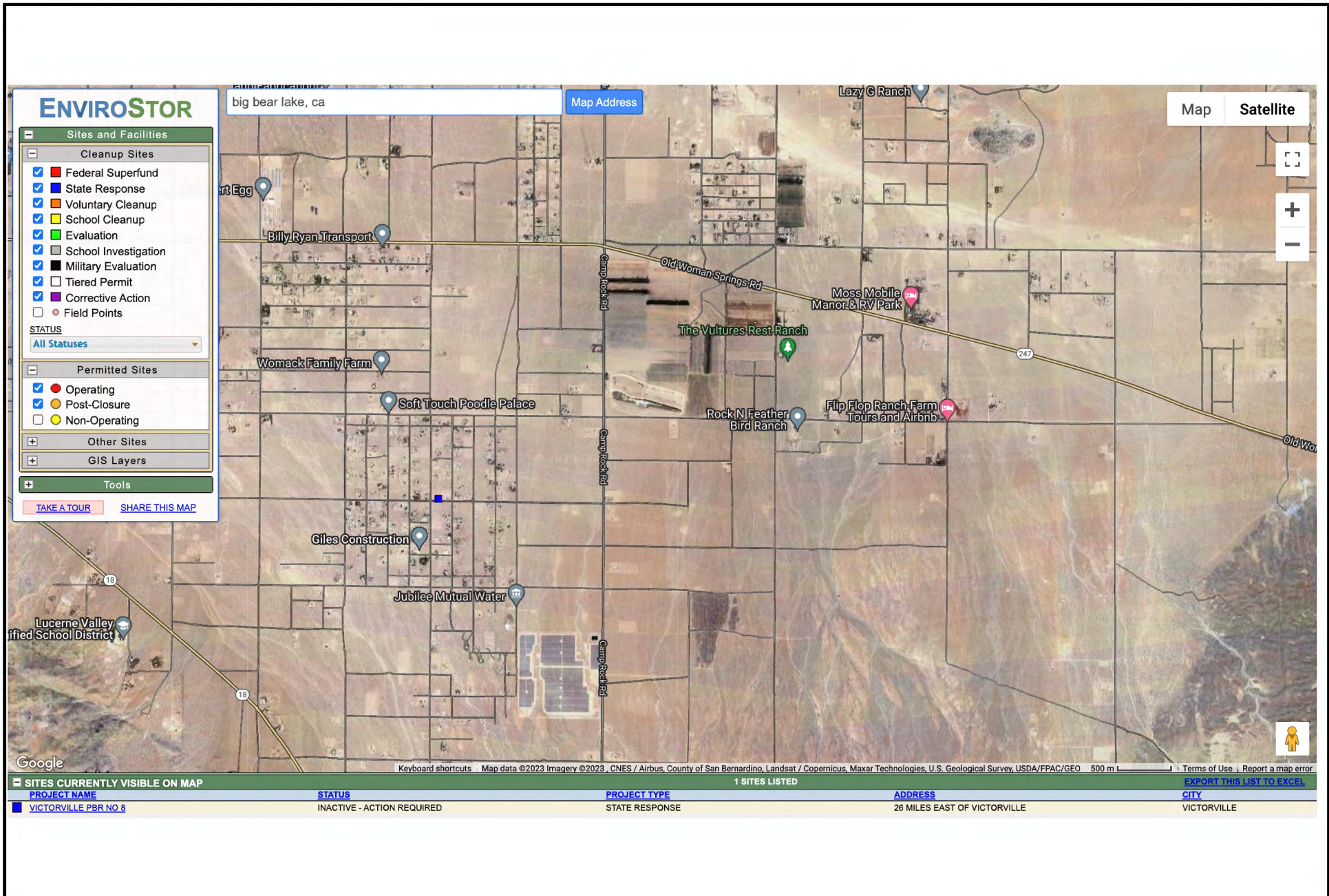


FIGURE 4.10-10



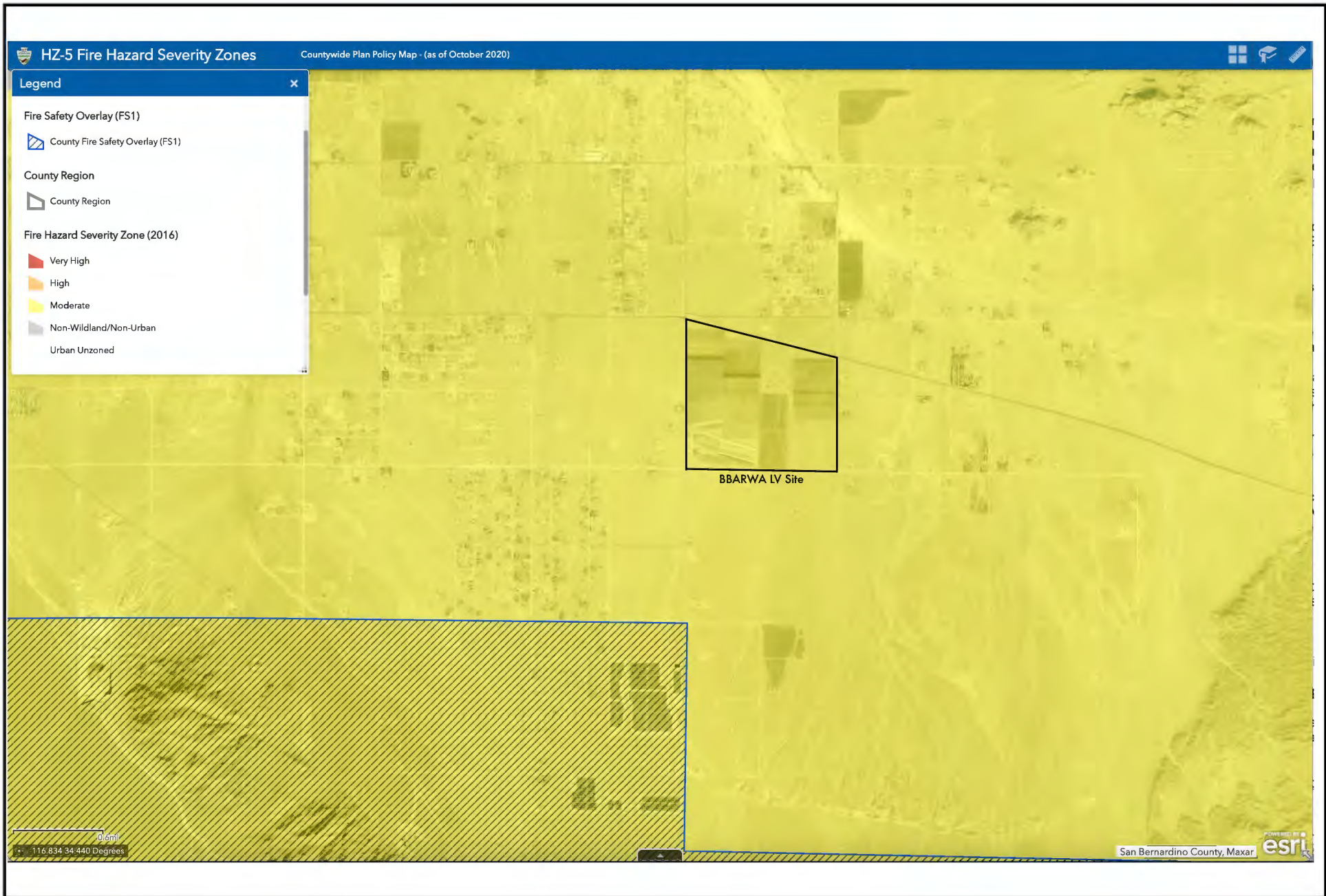


FIGURE 4.10-11



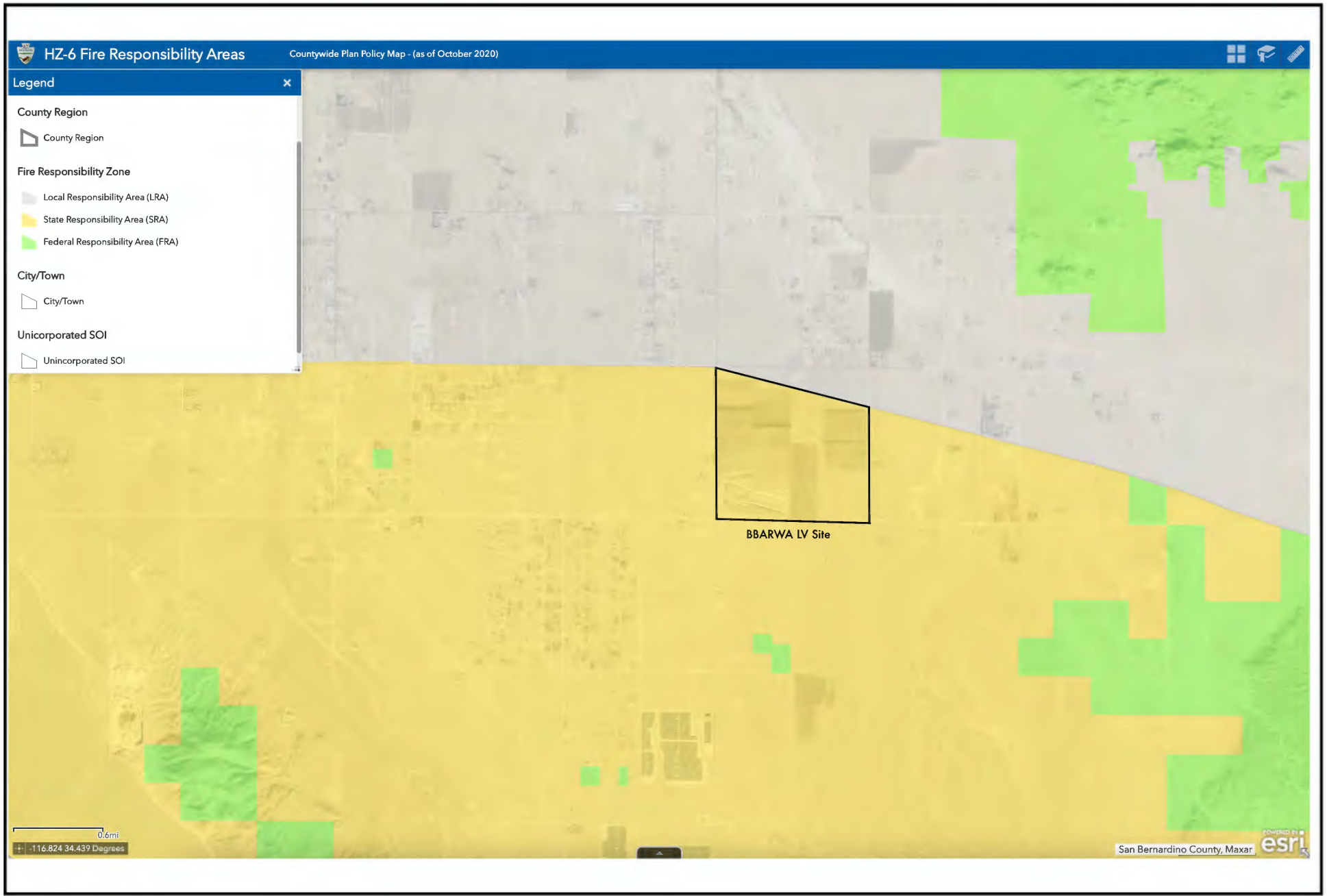
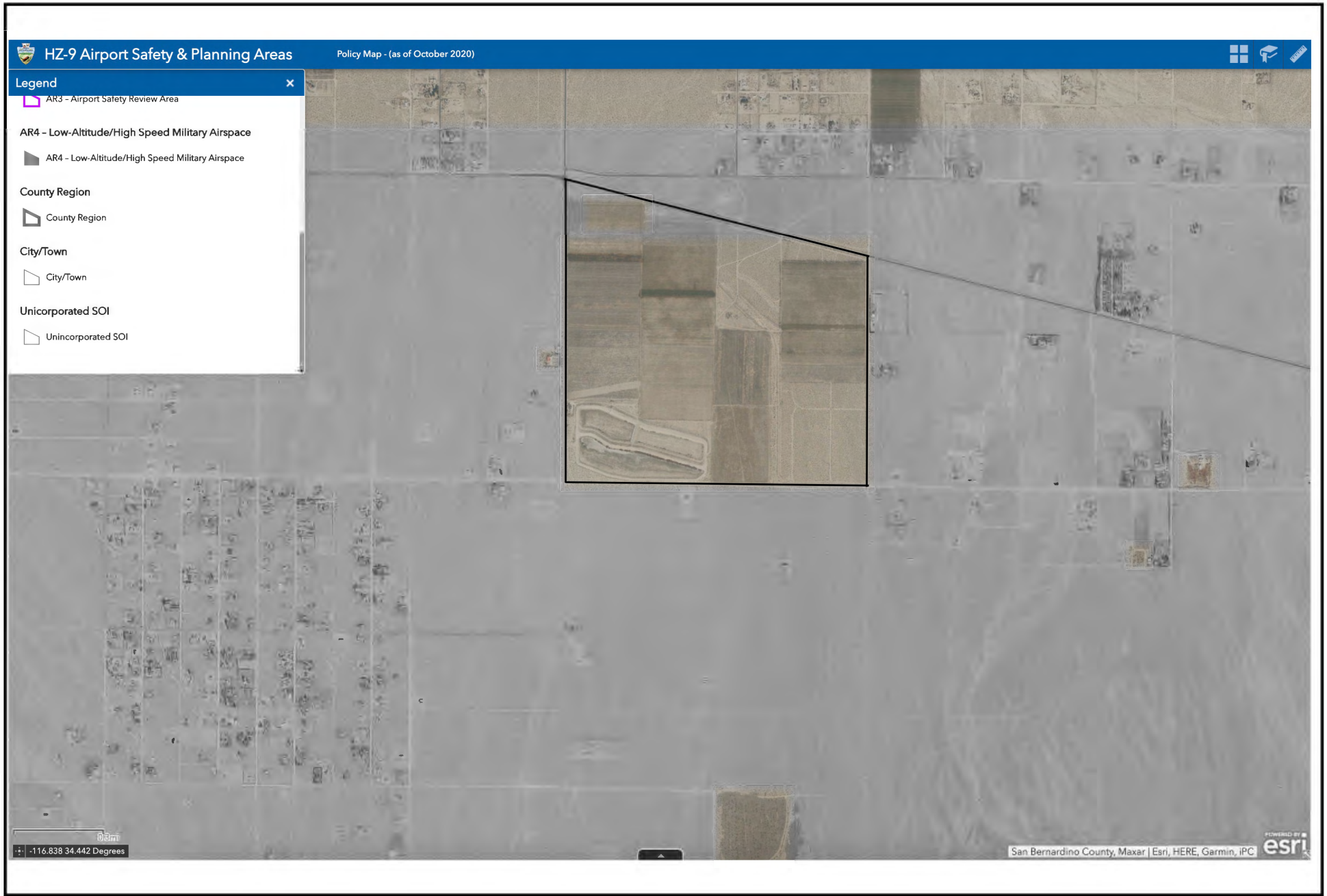


FIGURE 4.10-12



**FIGURE 4.10-13**

### **4.10.3 Regulatory Setting**

Federal, State, and local laws, regulations, plans, and guidelines that are applicable to the proposed Program are summarized below.

#### **4.10.3.1 Federal**

##### **U.S. Environmental Protection Agency**

The EPA is the primary Federal agency responsible for the implementation and enforcement of hazardous materials regulations. In most cases, enforcement of environmental laws and regulations established at the Federal level is delegated to State and local environmental regulatory agencies. Federal regulations such as the CERCLA and the Superfund Amendments and Reauthorization Act (SARA), regulate the cleanup of known hazardous waste sites and compile lists of the sites investigated, or currently being investigated, for a release or potential release of a regulated hazardous substance under the CERCLA regulations. The National Priority List (NPL) of Superfund Sites is the EPA's database of hazardous waste sites currently identified and targeted for priority cleanup action under the Superfund program including Proposed NPL sites, Delisted NPL sites, and NPL Recovery sites. The NPL Liens database contains a list of filed notices of Federal Superfund Liens. Under the authority granted the EPA by CERCLA of 1980, the EPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability.

The Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984 requires hazardous waste handlers (generators, transporters, treaters, storers, and disposers of hazardous waste) to provide information about their activities to State environmental agencies. These agencies pass the information to regional and national EPA offices. The RCRA also set forth a framework for managing nonhazardous wastes. Later amendments required phasing out land disposal of hazardous waste and added underground tanks storing petroleum and other hazardous substances.

The Toxic Substances Control Act (TSCA) of 1976 (15 USC § 2601 et seq.) gave the EPA the ability to track the 75,000 industrial chemicals produced or imported into the U.S. The EPA repeatedly screens these chemicals; can require reporting or testing of any that may pose an environmental or human health hazard; and can ban the manufacture and import of chemicals that pose an unreasonable risk. The EPA tracks the thousands of new chemicals each year with unknown or dangerous characteristics. The TSCA supplements other Federal statutes, including the CAA and the Toxics Release Inventory under the Emergency Planning and Community Right-to-Know Act (EPCRA) (42 USC § 11001 et seq.).

##### **Federal Emergency Management Agency**

FEMA is responsible for ensuring the establishment and development of policies and programs for emergency management at the Federal, State, and local levels. This includes the development of a national capability to mitigate against, prepare for, respond to, and recover from a full range of emergencies.

##### **Department of Defense**

USGS maintains the U.S. Department of Defense (DOD) database, which consists of Federally owned or administered lands, administered by the DOD, that have an area equal to or greater than 640 acres in the U.S., Puerto Rico, and/or the U.S. Virgin Islands.

### **Formerly Used Defense Sites**

USACE maintains a database of locations of Formerly Used Defense Sites (FUDS) where USACE is actively working or will take necessary cleanup actions.

### **Occupational Safety and Health Administration**

The Occupational Safety and Health Act of 1970 requires employers to provide a safe and healthful workplace. The Occupational Safety and Health Administration (OSHA) sets and enforces standards for safe and healthful working conditions. California standards for workers dealing with hazardous materials are contained in Title 8 of the California Code of Regulations and include practices for all industries (General Industrial Safety Orders), and specific practices for construction and other industries. Workers at hazardous waste sites (or working with hazardous wastes as might be encountered during excavation of contaminated soil) must receive specialized training and medical supervision according to the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations.

OSHA Regulation 29 CFR Standard 1926.62 regulates the demolition, renovation, or construction of buildings involving lead materials. Federal, State, and local requirements also govern the removal of asbestos or suspected ACMs, including the demolition of structures where asbestos is present. All friable (crushable by hand) ACMs, or non-friable ACMs subject to damage, must be abated prior to demolition following all applicable regulations.

### **Department of Transportation**

The U.S. Department of Transportation (DOT) includes the Pipeline and Hazardous Materials Safety Administration (PHMSA) which is responsible for regulating and ensuring the safe and secure movement of hazardous materials to industry and consumers by all modes of transportation, including pipelines. CFR Title 49 governs the manufacturing of packaging and transport containers; packing and repacking; labeling; and the marking of hazardous material transport.

### **Department of Housing and Urban Development**

Federal and State regulations govern the renovation and demolition of structures where materials containing lead and asbestos are present. The U.S. Department of Housing and Urban Development (HUD) provides guidelines regulating lead exposure. CFR Part 61, Subpart M regulates asbestos exposure.

#### **4.10.3.2 State**

The primary State agencies with jurisdiction over hazardous chemical materials management are the DTSC and the Santa Ana and Colorado Regional Boards. Other State agencies involved in hazardous materials management are the California Department of Industrial Relations (California Division of Occupational Safety and Health [Cal/OSHA] implementation), California Office of Emergency Services (Cal OES)—California Accidental Release Prevention (CalARP), CARB, Caltrans, California Office of Environmental Health Hazard Assessment (OEHHA—Proposition 65 implementation), and California Integrated Waste Management Board (CIWMB). Hazardous materials management laws in California include the following statutes and regulations:

### **Hazardous Waste Control Act (California Health and Safety Code, Section 25100 et seq.)**

The Hazardous Waste Control Act (HWCA) is the State equivalent of RCRA and regulates the generation, treatment, storage, and disposal of hazardous waste. This act implements the RCRA “cradle-to-grave” waste management system in California but is more stringent in its regulation of

non-RCRA wastes, spent lubricating oil, small-quantity generators, and transportation and permitting requirements, as well as in its penalties for violations.

**California Accidental Release Prevention Program**

The purpose of California Accidental Release Prevention Program (CalARP) is to prevent accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases do occur, and to satisfy community right-to-know laws. This is accomplished by requiring businesses that handle more than a threshold quantity of a regulated substance listed in the regulations to develop a Risk Management Plan (RMP). An RMP is a detailed engineering analysis of the potential accident factors present at a business and the measures that can be implemented to reduce this accident potential. The RMP contains safety information, hazards review, operating procedures, training requirements, maintenance requirements, compliance audits, and incident investigation procedures.

**California Hazardous Materials Release Response Plans and Inventory Law of 1985**

The California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act) requires preparation of hazardous materials business plans (HMBP) and disclosure of hazardous materials inventories, including an inventory of hazardous materials handled, plans showing where hazardous materials are stored, an emergency response plan, and provisions for employee training in safety and emergency response procedures (California Health and Safety Code §§ 25500-25519). Statewide, DTSC has primary regulatory responsibility for management of hazardous materials, with delegation of authority to local jurisdictions that enter into agreements with the State. Local agencies are responsible for administering these regulations.

Several State agencies regulate the transportation and use of hazardous materials to minimize potential risks to public health and safety, including CalEPA and the California Emergency Management Agency. The California Highway Patrol and Caltrans enforce regulations specifically related to the transport of hazardous materials. Together, these agencies determine container types used and license hazardous waste haulers for hazardous waste transportation on public roadways.

Business Plan Act applies to this Program—for hazardous chemicals necessary for storage at the AWPf—because contractors will be required to comply with its handling, storage, and transportation requirements that would reduce the possibility of spills, and to prepare an emergency response plan to respond to accidental spills.

**California Health and Safety Code, Section 25500 et seq.**

This code and the related regulations in 19 California Code of Regulations Sections 2620 et seq., require local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit an HMBP to their local CUPA and to report releases to the local CUPA and Cal OES. This code would apply to the Program because the contractors would be required to prepare a HMBP that would provide procedures for the safe handling, storage, and transportation of hazardous materials to the AWPf.

**California Division of Occupational Safety and Health**

California Division of Occupational Safety and Health (Cal/OSHA) is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. Among other requirements, Cal/OSHA requires many entities to prepare

injury and illness prevention plans and chemical hygiene plans, and provides specific regulations to limit exposure of construction workers to lead. Cal/OSHA applies to this Program because contractors will be required to comply with its handling and use requirements that would increase worker safety and reduce the possibility of spills, and to prepare an emergency response plan to respond to accidental spills.

### **Government Code Section 65962.5, Cortese List**

The provisions in Government Code Section 65962.5 are commonly referred to as the “Cortese List” (after the Legislator who authored and enacted the legislation). The list, or a site’s presence on the list, has bearing on the local permitting process, as well on compliance with CEQA. The list is developed with input from the State Department of Health Services, SWRCB, CIWMB, and DTSC. At a minimum, at least annually the DTSC shall submit to the Secretary for Environmental Protection a list of the following:

1. All hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the California Health and Safety Code.
2. All land designated as hazardous waste property or border zone property pursuant to Sections 25220-25227) of the California Health and Safety Code.
3. All information received by the DTSC pursuant to Section 25242 of the California Health and Safety Code on hazardous waste disposals on public land.
4. All sites listed pursuant to Section 25356 of the California Health and Safety Code.
5. All sites included in the Abandoned Site Assessment Program.
6. All underground storage tanks for which an unauthorized release report is filed pursuant to Section 25295 of the California Health and Safety Code.
7. All solid waste disposal facilities from which there is a migration of hazardous waste and for which a California RWQCB has notified the DTSC pursuant to Water Code Section 13273(e).
8. All cease-and-desist orders issued after January 1, 1986, pursuant to Section 13301 of the Water Code, and all cleanup or abatement orders issued after January 1, 1986, pursuant to Section 13304 of the Water Code, that concern the discharge of wastes that are hazardous materials.
9. All solid waste disposal facilities from which there is a known migration of hazardous waste.

The Secretary for Environmental Protection shall consolidate the information submitted pursuant to this section and distribute it in a timely fashion to each city and county in which sites on the lists are located. The Cortese List does not apply to this Program because there are no sites on the Cortese List within the Program APE.

### **Hazardous Materials Transportation**

Section 31303 of the California Vehicle Code and DOT regulate hazardous materials transport. The California Highway Patrol and Caltrans are the enforcement agencies. Cal OES provides emergency response services involving hazardous materials incidents. This regulation applies to the Program because hazardous materials may be transported periodically in support of the operation of the AWPf, which may require storage of hazardous chemicals.

### **Utility Notification Requirements**

Title 8, Section 1541 of the California Code of Regulations requires excavators to determine the approximate locations of subsurface utility installations (e.g., sewer, telephone, fuel, electric, water lines, or any other subsurface installations that may reasonably be encountered during excavation work) prior to opening an excavation. The California Government Code (§§ 4216 et



seq.) requires owners and operators of underground utilities to become members of and participate in a regional notification center. According to California Government Code Section 4216.1, operators of subsurface installations that are members or participate and share in the costs of a regional notification center are in compliance with this section of the code. Underground Services Alert of Southern California (known as DigAlert) receives planned excavation reports from public and private excavators and transmits those reports to all participating members of DigAlert that may have underground facilities at the location of excavation. Members will mark or stake their facilities, provide information, or give clearance to dig.

#### **4.10.3.3 Local**

##### **Certified Unified Program Agency**

In 1993, SB 1082 was passed by the State Legislature to streamline the permitting process for those businesses that use, store, or manufacture hazardous materials. The passage of SB 1082 provided for the designation of a Certified Unified Program Agency (CUPA) that would be responsible for the permitting process and collection of fees. CUPA would be responsible for implementing the Unified Program at the local level, which serves to consolidate, coordinate, and make consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental and emergency management programs:

- Hazardous Waste
- Hazardous Materials Business Plan (HMBP)
- California Accidental Release Prevention Program (CalARP)
- Underground Hazardous Materials Storage Tanks
- Aboveground Petroleum Storage Tanks/Spill Prevention Control & Countermeasure Plans
- Hazardous Waste Generator and On-Site Hazardous Waste Treatment (tiered permitting) Programs

In the San Bernardino County, the Hazardous Materials Division of the SBCFD is designated as the CUPA responsible for implementing the above-listed program elements. The laws and regulations that established these programs require that businesses that use or store certain quantities of hazardous materials and submit an HMBP that describes the hazardous materials usage, storage, and disposal to the CUPA. The contractors constructing the specific project and the implementing agency (BBARWA, BBCCSD, BBLDWP, or BMWWD) as the operator of the facility would be required to prepare and implement an HMBP.

In San Bernardino County, the Business Emergency/Contingency Plan (Business Plan) is also used to satisfy the contingency plan requirement for hazardous waste generators. Any business subject to any of the CUPA permits is required in San Bernardino County to file a Business Plan using the California Environmental Reporting System. This submission is used as the basis for the permit application. A new business going through the process of obtaining San Bernardino County planning or building approval is required to comply with the Business Plan requirement prior to obtaining final certificate of occupancy and prior to bringing hazardous materials onto the property.

The quantities that trigger disclosure are based on the maximum quantity on site at any time excluding materials under active shipping papers or for direct retail sale to the public. The basic quantities are: hazardous materials at or exceeding 55 gallons, 500 lbs, or 200 cubic feet at any time in the course of a year; specified amounts of radioactives, and extremely hazardous substances above the threshold planning quantity (SBCFD, 2023).

### **San Bernardino County Emergency Operations Plan**<sup>44</sup>

The Emergency Management Program of San Bernardino County is governed and coordinated by the SBCFD, Office of Emergency Services. The National Response Framework (NRF), National Incident Management System (NIMS), Standardized Emergency Management System (SEMS), and State of California Emergency Operations Plan provide planning and policy guidance to counties and local entities. These documents support the foundation for San Bernardino County's Emergency Operations Plan (EOP), an all-hazard plan describing how San Bernardino County will organize and respond to incidents. It is based on and compatible with the laws, regulations, plans, and policies listed above. The EOP describes how various agencies and organizations in San Bernardino County will coordinate resources and activities with other Federal, State, County, local, and private-sector partners (San Bernardino County Fire Department, 2018).

The 2018 San Bernadino County EOP describes a comprehensive emergency management system that provides for a planned response to disaster situations associated with natural disasters, technological incidents, terrorism, and nuclear-related incidents. It delineates operational concepts relating to various emergency situations, identifies components of the Emergency Management Organization, and describes the overall responsibilities for protecting life and property and providing for the overall well-being of the population. The EOP also identifies the sources of outside support that might be provided (through mutual aid and specific statutory authorities) by other jurisdictions, state and Federal agencies, and the private sector.

### **Multi-Jurisdictional Hazard Mitigation Plan**

The San Bernardino County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) is reviewed, monitored, and updated to reflect changing conditions and new information every five years. The purpose of the San Bernardino County's Multi-Jurisdictional Hazard Mitigation Plan (San Bernardino County, 2022) is to identify San Bernardino County's hazards, review and assess past disaster occurrences, estimate the probability of future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term risk to people and property from natural and human-made hazards. The 2022 updated San Bernardino County Unincorporated Area MJHMP<sup>45</sup> was approved by FEMA. The MJHMP presents updated information regarding hazards faced by the county, San Bernardino County Fire Protection District, SBCFCD, Big Bear Valley Recreation and Parks District, Bloomington Recreation and Parks District, and those Board-governed Special Districts administered by the San Bernardino County Special Districts Department. The MJHMP also presents measures to help reduce consequences from hazards, as well as outreach/education efforts within the unincorporated area of the County since 2005. An important San Bernardino County MJHMP component is the Community Emergency Response Team, which educates community members about disaster preparedness and trains them in basic response skills, including fire safety.

### **San Bernardino County Fire Department**

The Program Area receives fire and emergency response services from the San Bernardino County Fire Department (SBCFD). The SBCFD is responsible, on both the city and county level, for enforcing the State regulations governing hazardous waste generators, hazardous waste storage, and underground storage tanks, including inspections and enforcement. The SBCFD also regulates the use, storage, and disposal of hazardous materials in San Bernardino County

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<sup>44</sup> [https://www.sbcounty.gov/uploads/SBCFire/documents/OES/2018\\_EOP\\_Update.pdf](https://www.sbcounty.gov/uploads/SBCFire/documents/OES/2018_EOP_Update.pdf)

<sup>45</sup> San Bernardino County, 2022. San Bernardino County Multi-Jurisdictional Hazard Mitigation Plan. <https://www.sbcounty.gov/uploads/SBCFire/documents/EmergencyServices/Hazard-Mitigation-Plan-202212.pdf> (accessed 07/26/23)

by issuing permits, monitoring regulatory compliance, investigating complaints, and other enforcement activities.

Within the Big Bear Valley, the only SBCFD outpost is located in Fawnskin at 39188 Rim of the World Dr, Fawnskin, CA 92333. This is located outside of the Program Area, but is noted herein because the Program serves the Big Bear Valley region as a whole.

The San Bernardino County Fire Chief's Association compiled a *Fire and Rescue Mutual Aid Operational Plan* to integrate their operational plan as part of the current State of California Fire and Rescue Emergency Plan. The plan provides for the systematic mobilization, organization, and operation of fire and rescue resources within each zone of San Bernardino County to reduce and minimize effects of emergencies and disasters. The plan provides updated fire and rescue service inventory of personnel, apparatus, and equipment amongst all local, regional, and State fire officials. The plan indicates which fire agencies participate in each zone and the specialized equipment available to each agency.<sup>46</sup>

In addition to providing fire protection and emergency services, SBCFD regulates the use and storage of hazardous materials for San Bernardino County and provides emergency response in the event of accidental release of hazardous materials.

In addition to providing fire protection and emergency services, SBCFD provides emergency response, and administers the local Fire Code which incorporates articles of the Uniform Fire Code (UFC). The UFC is a model code, setting construction standards for buildings and associated fixtures, in order to prevent or mitigate hazards resulting from fire or explosion. SBCFD reviews technical aspects of hazardous waste site cleanups, and oversees remediation of certain contaminated sites resulting from leaking underground storage tanks. SBCFD is also responsible for providing technical assistance to public and private entities which seek to minimize the generation of hazardous waste.

### **San Bernardino County Fire Code**

The San Bernardino County Fire Code consists of Title 2, Division 3, Chapter 1, Sections 23.0101 through 23.011, which adopts the 2022 California Fire Code with some modifications, and applicable sections of the California Code of Regulations. Provisions of the California Fire Code are described under State Regulations, above.

### **San Bernardino County Fire Hazard Abatement Program**

To enhance wildfire prevention efforts, the San Bernardino County Fire Hazard Abatement (FHA) Program enforces fire hazard regulations outlined in San Bernardino County Code Section 23.0301–23.0319. The primary goal of this program is to proactively establish defensible space and reduce or remove flammable materials on properties, thus minimizing the risk of fires in communities.

Throughout the year, FHA conducts property surveys to identify potential fire hazards. Once hazards are identified, property owners are sent notices to address the hazards within 30 days. Failure to comply may result in citations, penalties, and/or fees imposed by San Bernardino County; however, in the Big Bear Valley, Big Bear Fire Department assumes this responsibility. The program is available year-round to respond to complaints in both unincorporated areas and

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<sup>46</sup> San Bernardino County Fire Chiefs' Association. 2014.  
<http://www.sbcounty.gov/Uploads/SBCFire/content/pdf/Mutual-Aid-Manual-with-Zone11.pdf> (accessed 07/14/23)

contracting cities and fire districts. The Program is within the SBCFD’s Mountain Region, which receives one survey during the summer.

**Big Bear Fire Department**

The Big Bear Fire Department is located in San Bernardino County along the shores of Big Bear Lake and surrounded by SBNF and serves a population of approximately 23,000 permanent residents. The fire protection and emergency medical service system is provided by the Big Bear Fire Department for the City of Big Bear Lake and the BBCCSD. Big Bear Fire Department also provides ambulance transport services to the surrounding areas of Big Bear Valley. The Department is a combination of a Community Services District and a Fire Protection District with a Joint Powers Agreement to operate both as a single unit. There is a Board of Directors for each district with both boards combining to make up the Board for the JPA operating as the Big Bear Fire Authority.

The Big Bear Valley is a large three season resort destination with populations upwards of 100,000 on the weekends during ski season and holidays. The City of Big Bear Lake is a Charter City and operates under a Council/Manager form of government with a five-member council elected at large. The City Council is also the governing board of the Big Bear Lake Fire Protection District that is a subsidiary district of the City of Big Bear Lake. BBCCSD is a California Special District that provides fire protection, water, sanitation, and solid waste services.

Within the Big Bear Valley, the Big Bear Fire Department serves the whole of the Program Area, as shown on **Figure 4.16-1**. Stations within the Big Bear Valley are listed below in **Table 4.10-1**. Station equipment can be found at the Big Bear Fire Department website.<sup>47</sup>

**Table 4.10-1  
 BIG BEAR FIRE AUTHORITY FIRE STATIONS**

Station Number	Full Address
281	41090 Big Bear Blvd, Big Bear Lake, CA 92315
282	301 W Big Bear Blvd, Big Bear City, CA 92314
283	550 Maple Ln, Sugarloaf, CA 92386
284	45360 Lucky Baldwin Ranch Road, Big Bear City, CA 92314
<b>Paid Call Stations</b>	
Boulder Bay Station	39690 Big Bear Blvd, Big Bear Lake, CA 92315
Moonridge Station	42610 Rathbun Dr., Moonridge, CA 92315
SOURCE: Big Bear Fire Department, 2023. Stations. <a href="https://bigbearfire.com/about-us/stations">https://bigbearfire.com/about-us/stations</a> (accessed 07/14/23)	

**Hazardous Materials Fire Code Requirements**

As the local CUPA, SBCFD, enforces the hazardous materials-related standards of the California Fire Code, including requirements for signage of hazardous materials storage areas, storage of flammable materials, secondary containment for storage containers, and separation of incompatible chemicals.

<sup>47</sup> Big Bear Fire Department, 2023. Station Equipment. <https://bigbearfire.com/about-us/station-equipment> (accessed 07/14/23)

#### **4.10.4 Thresholds of Significance**

The criteria used to determine the significance of impacts related to hazards and hazardous materials are based on Appendix G, Section IX, of the State CEQA Guidelines. The Program would result in a significant impact with respect to hazards or hazardous materials if the project would:

- a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area.
- f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

A discussion of the impacts and **MMs** for the Program are presented below.

#### **4.10.5 Potential Impacts**

This analysis focuses on the potential to encounter hazardous substances in soil and groundwater during construction and is based on regulatory database searches. The analysis also addresses the potential for Program facilities to release hazardous materials during construction and operation, interfere with an adopted emergency response plan or emergency evacuation plan, and create fire hazards. Each potential impact is assessed in terms of the applicable regulatory requirements, and **MMs** are identified as appropriate.

- a) **Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

##### **Program Category 1: Conveyance Pipelines**

**Construction:** Construction of conveyance pipeline can require delivery of hazardous materials (such as petroleum products) to support their installation. Implementation of mitigation outlined below, is necessary to avoid a significant impact under this issue and ensure that the use and generation of hazardous substances in support of both construction and operation of Program Category 1 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies

with State and Federal law. These MMs will be applied to these future Program facilities and would reduce potential impacts to a level of less than significant.

Operation: Long-term operation of Conveyance Facilities would not require use of hazardous materials. These facilities would be installed belowground, and the remaining Program facilities outlined below would support the transmission of brine, Program Water, and Lake Water through the new pipelines. Thus, no potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials existings. No impacts would occur.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: In most instances these proposed facilities would not involve the routine transport, use, or disposal of hazardous materials. Construction activities would be required for the installation of proposed monitoring wells and pump stations at the existing BBARWA WWTP and Sand Canyon Recharge Area. Construction activities required for implementation of the facilities would potentially involve drilling, trenching, excavation, grading, and other ground-disturbing activities. The anticipated construction activities described above would temporarily require the transport, use, and disposal of hazardous materials including gasoline, diesel fuel, hydraulic fluids, paint, and other similarly related materials. The implementation of mitigation, outlined below, is required to ensure that the use and generation of hazardous substances in support of both construction of Program Category 4 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

Operation: In most instances these proposed facilities would not involve the routine transport, use, or disposal of hazardous materials. However, in certain instances hazardous materials are used routinely in support of drilling monitoring wells and installing and operating pump stations, and related treatment operations, and thus, some activities in support of Program Category 2 may generate routine transport of hazardous materials. Construction activities would be required for the installation of proposed monitoring wells and pump stations at the existing BBARWA WWTP and Sand Canyon Recharge Area. Construction activities required for implementation of the facilities would potentially involve drilling, trenching, excavation, grading, and other ground-disturbing activities. The anticipated construction activities described above would temporarily require the transport, use, and disposal of hazardous materials including gasoline, diesel fuel, hydraulic fluids, paint, and other similarly related materials. Long term operation of the monitoring wells and pump stations can require small quantities of hazardous materials such as cleaning supplies and petroleum products, but typically only minimal quantities to keep equipment operating safely and efficiently. Thus, construction impacts would be the same as Program Category 1, and the implementation of **MMs HAZ-1** through **HAZ-5**, outlined below, is necessary to avoid a significant impact under this issue and ensure that the use and generation of hazardous substances in support of both construction and operation of Program Category 2 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for



accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-3** would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Construction of these facilities can require delivery of hazardous materials (namely petroleum products) to support their installation, similar to Program Categories 1 and 2, above. This could result in a potentially significant impact to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. As noted under Program Categories 1, and 2, above, the implementation of mitigation outlined below, is required to ensure that the use and generation of hazardous substances in support of both construction of Program Category 4 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

Operation: Installation of these facilities can require delivery of hazardous materials (namely, petroleum products) to support their installation. Long term operation of the Solar Evaporation Ponds is not anticipated to require use of hazardous materials.

However, the Solar Evaporation Ponds will require management. Typically, Solar Evaporation Ponds are lined shallow basins in which concentrate evaporates naturally as a result of solar radiation. As the brine evaporates, the minerals in the concentrate are precipitated in salt crystals, which are removed periodically, and disposed of off-site to the local landfill, though the use of hazardous materials to remove the brine is not anticipated. No use of hazardous materials in brine disposal is anticipated. Other management may include a requirement to manage insects, primarily midges. This can be accomplished with a mix of insect control activities, but most often includes some use of pesticides. The use of pesticides, which are typically hazardous materials (poisons), is controlled through cooperation with those county agencies assigned the responsibility for controlling vectors, such as mosquitos. Mitigation is provided below to address management of pesticide use to minimize hazards at the Solar Evaporation Ponds and the environment surrounding the Solar Evaporation Ponds.

Other than the use of pesticides to control vectors, impacts would be the same as Program Categories 1 and 2. Additionally, Operational and Construction impacts would be the same as

Program Category 1 and 2, and the implementation of **MMs HAZ-1** through **HAZ-6**, outlined below, is necessary to avoid a significant impact under this issue and ensure that the use and generation of hazardous substances in support of operation of Program Category 3 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. **MM HAZ-6** would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Construction of these facilities can require delivery of hazardous materials (namely petroleum products) to support their installation, similar to Program Categories 1 through 3, above. This could result in a potential significant impact to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. As noted under Program Categories 1, 2, and 3, above, the implementation of **MMs HAZ-1** through **HAZ-6**, outlined below, is required to ensure that the use and generation of hazardous substances in support of both construction of Program Category 4 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-3** would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. **MM HAZ-6** would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

Operation: Long-term operation of the AWPf would be similar to that which occurs at the BBARWA WWTP at present, but with additional treatment trains utilizing new treatment systems and chemicals to achieve full advanced treatment. The modest quantities of hazardous materials required to operate the full advanced treatment train, such as chemical provisions for supplemental carbon and chemical precipitant addition for denitrification and phosphorus, sodium hypochlorite or hydrogen peroxide as part of the chemical injection and mixing system required as part of the AOP process, etc. (refer to **Table 3-4** in Chapter 3, Program Description for a full description of the AWPf treatment process upgrades) would not enter the atmosphere in the quantities and form used, and therefore would not pose a significant hazard, as the established

handling protocols per Federal, State, and local laws and regulations (including the HMBP) minimize the potential for a hazard to occur. However, as noted under Program Categories 1, 2, and 3, above, the implementation of **MMs HAZ-1** through **HAZ-6**, outlined below, is required to ensure that the use and generation of hazardous substances in support of operation of Program Category 4 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-3** would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. **MM HAZ-6** would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

#### **Other Physical Changes to the Environment**

The proposed Program would also result in other physical changes to the environment, including future release of Program Water into Big Bear Lake by way of Stanfield Marsh, and possible utilization of Program Water, the existing water source—groundwater—in support of the Stickleback fish at Shay Pond, and a decrease of up to 2,200 AFY less discharge to the LV Site, for a total estimated annual discharge to Lucerne Valley of about 340 AFY.

These other physical changes would not involve the routine transport, use, or disposal of hazardous materials, and thus, a significant hazard to the public or the environment would not occur.

#### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant Impact*

*Mitigation Measures:*

**HAZ-1:** *For Program facilities that handle hazardous materials or generate hazardous waste, the HMBP prepared and submitted to the CUPA shall incorporate BMPs designed to minimize the potential for accidental release of such chemicals and shall meet the standards required by California law for HMBPs. The facility managers shall implement these measures to reduce the potential for accidental releases of hazardous materials or wastes. The HMBP shall be approved prior to operation of the given facility.*

**HAZ-2:** *The HMBP shall assess the potential accidental release scenarios and identify the equipment and response capabilities required to provide immediate containment, control, and collection of any released hazardous material. Prior to issuance of the certificate of occupancy, each facility shall ensure that necessary equipment has been installed and training of personnel has occurred to obtain sufficient resources to control and prevent the spread of any accidentally released hazardous or toxic materials.*

- HAZ-3:** *Prior to occupancy of any site for which storage of any acutely hazardous material will be required, such as chlorine gas, modeling of pathways of release and potential exposure of the public to any released hazardous material shall be completed and specific measures, such as secondary containment, shall be implemented to ensure that sensitive receptors will not be exposed to significant health threats based on the toxic substance involved.*
- HAZ-4:** *All hazardous materials during both operation and construction of Program facilities shall be delivered to a licensed treatment, disposal, or recycling facility and be disposed of in accordance with State and Federal law.*
- HAZ-5:** *Before determining that an area contaminated as a result of an accidental release during project operation or construction is fully remediated, specific thresholds of acceptable clean-up shall be established and sufficient samples shall be taken and tested within the contaminated area to verify that these clean-up thresholds have been met in compliance with State and Federal law.*
- HAZ-6:** *Vector management plans shall be prepared and use of pesticides shall be reviewed and coordinated with the San Bernardino Vector Control Program for approval prior to implementing vector control at any of the new or expanded storage basins. All pesticides shall be applied in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality.*

*Level of Significance After Mitigation: Less than Significant*

**MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials.

**MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials.

**MM HAZ-3** would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite.

**MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law.

**MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law.

**MM HAZ-6** would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality.

### **Cumulative Impact Analysis**

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Big Bear Valley area continues to develop, the addition of more development could

create a significant hazard to the public or the environment through the routine transport, use, and/or disposal of hazardous materials. However, all cumulative development would be subject to Federal, State, and local regulations related to the routine transport, use, storage, and disposal of hazardous materials. Since the individual projects proposed under the Program would result in less than significant impacts related to the routine handling, use, and/or disposal of hazardous materials through the implementation of mitigation, the Program's contributions to such impacts would be not be cumulatively considerable, and therefore, would not result in a significant cumulative impact.

*Mitigation Measures: **MMs HAZ-1 through HAZ-6** are required to minimize cumulative impacts.*

*Level of Significance After Mitigation: Less than Significant*

- b) **Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

**Program Category 1: Conveyance Pipelines**

**Construction:** As discussed above, construction activities associated with implementation of the proposed Conveyance Facilities could create hazards to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials used in construction activities and equipment. Construction activities may involve the use of adhesives, solvents, paints, thinners, petroleum products, and other chemicals. Cal/OSHA regulations provide for the proper labeling, storage, and handling of hazardous materials to reduce the potential harmful health effects that could result from worker exposure to hazardous materials. If not properly handled, however, accidental release of these substances could expose construction workers, degrade soils, or become entrained in stormwater runoff, resulting in adverse effects on the public or the environment. Agencies implementing Program Category 1 projects are required to comply with all relevant and applicable Federal, State, and local laws and regulations that pertain to the accidental release of hazardous materials during construction of proposed facilities such as California Health and Safety Code Sections 25500 et seq. Compliance with all applicable Federal, State, and local regulations can reduce potential impacts to the public or the environment regarding accidental release of hazardous materials to less than significant impact, but a contingency **MM** is provided to ensure accidental releases and any related contamination would not significantly affect the environment at facility locations, thereby avoiding a potentially significant impact. **MM HAZ-7**, would minimize the potential hazard to the public or environment due to accidental release.

The use of hazardous materials and substances during construction would be subject to the Federal, State, and local health and safety requirements for the handling, storage, transportation, and disposal of hazardous materials, summarized in the Regulatory Setting. With compliance with these regulations, and preparation and implementation of **MM HAZ-7**, hazardous material impacts related to construction activities would be less than significant.

**Operation:** Operation of the proposed Conveyance Facilities would consist of facilities designed transport and/or discharge Program Water. Hazardous materials would not be associated with the regular operation of these facilities. Therefore, operational impacts would be less than significant.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

**Construction:** Construction impacts would generally be the same as Program Category 1. While it is not anticipated that Program Category 2 facilities would be developed on sites that require demolition of structures, a possibility exists for this to occur. Thus, where structures would be required to be demolished, such structures would need appropriate abatement of identified asbestos prior to demolition. Federal and State regulations govern the demolition of structures where materials containing lead and asbestos are present. ACMs are regulated both as a hazardous air pollutant under CAA and as a potential worker safety hazard under the authority of Cal/OSHA. These requirements include SCAQMD Rules and Regulations pertaining to asbestos abatement (including Rule 1403); Construction Safety Orders 1529 (pertaining to asbestos) and 1532.1 (pertaining to lead) from California Code of Regulations Title 8; CFR Title 40, Part 61, Subpart M (pertaining to asbestos); and lead exposure guidelines provided by HUD. Asbestos and lead abatement must be performed and monitored by contractors with appropriate certifications from the California Department of Health Services.

In addition, Cal/OSHA has regulations concerning the use of hazardous materials, including requirements for safety training, availability of safety equipment, hazardous materials exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces the hazard communication program regulations, which include provisions for identifying and labeling hazardous materials, describing the hazards of chemicals, and documenting employee-training programs. All demolition that could result in the release of lead and/or asbestos would be conducted in accordance with Cal/OSHA standards. Adherence to existing regulations and the **MM** provided below would ensure that potential impacts related to ACMs and LBPs would be less than significant. Compliance with all applicable Federal, State, and local regulations can reduce potential impacts to the public or the environment regarding accidental release of hazardous materials to less than significant impact, but a contingency **MM** is provided to ensure accidental releases and any related contamination would not significantly affect the environment at facility locations, thereby avoiding a potentially significant impact. **MM HAZ-7**, would minimize the potential hazard to the public or environment due to accidental release. Impacts would be less than significant through the implementation of mitigation.

**Operation:** Operation of the proposed facilities could include the storage and use of chemicals. Any storage tanks would be designed in accordance with the applicable hazardous materials storage regulations for long-term use summarized in the Regulatory Setting. The delivery and disposal of chemicals to and from wastewater treatment facility site would occur in full accordance with all applicable Federal, State, and local regulations. The established handling protocols per Federal, State, and local laws and regulations would ensure operational impacts for Program Category 2 facilities would be less than significant.

As noted in the Regulatory Setting, an HMBP must be prepared to avoid a significant adverse impact. Thus, **MMs HAZ-1** and **HAZ-2** shall be implemented for the proposed Program facilities as required by the San Bernardino County CUPA. The HMBP would minimize hazards to human health and the environment from fires, explosions, or an accidental release of hazardous materials into air, soil, surface water, or groundwater. Compliance with all applicable Federal, State, and local regulations regarding the handling, storage, transportation, and disposal of hazardous materials, and preparation and implementation of the HMBP would reduce potential impacts to the public, employees, or the environment related to the transport, use, or disposal of hazardous materials to a less than significant impact.

### **Program Category 3: Solar Evaporation Ponds**

Impacts would generally be the same as Program Categories 1 and 2.



Construction: The primary difference is that the construction effort for the Solar Evaporation Ponds would be the largest in size of the facilities proposed under the Program. Regardless, compliance with all applicable Federal, State and local regulations regarding the handling, storage, transportation, and disposal of hazardous materials is required. However, a potentially significant impact may occur and preparation and implementation of the **MMs HAZ-7** would reduce potential impacts to the public, employees, or the environment related to the transport, use, or disposal of hazardous materials to a less than significant impact.

Operation: Operation of the proposed Solar Evaporation Ponds would consist of periodically removing the salt crystals and hauling the precipitated crystal to the local landfill. The brine would not be considered a hazardous material, and thus the handling of hazardous materials would not be associated with the regular operation of these facilities. Furthermore, as noted in the Regulatory Setting, an HMBP must be prepared to avoid a significant adverse impact. Thus, **MMs HAZ-1** and **HAZ-2** and implemented for the proposed Program facilities as required by the San Bernardino County CUPA. The HMBP would minimize hazards to human health and the environment from fires, explosions, or an accidental release of hazardous materials into air, soil, surface water, or groundwater. Therefore, operational impacts would be less than significant with the implementation of mitigation.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Construction impacts would be the same as Program Category 1, 2, and 3. Compliance with all applicable Federal, State, and local regulations can reduce potential impacts to the public or the environment regarding accidental release of hazardous materials to less than significant impact, but a contingency **MM** is provided to ensure accidental releases and any related contamination would not significantly affect the environment at facility locations, thereby avoiding a potentially significant impact. **MM HAZ-7** would minimize the potential hazard to the public or environment due to accidental release. Impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the AWWPF would consist of upgrades to the existing facilities designed to treat wastewater. The modest quantities of hazardous materials required to operate the AWWPF's treatment train, such as chemical provisions for supplemental carbon and chemical precipitant addition for denitrification and phosphorus, sodium hypochlorite or hydrogen peroxide as part of the chemical injection and mixing system required as part of the AOP process, etc. (refer to **Table 3-4** in Chapter 3, Program Description for a full description of the WWTP treatment process upgrades) would not enter the atmosphere and in the quantities and form used, and therefore would not pose a significant hazard, as the established handling protocols per Federal, State, and local laws and regulations minimize the potential for a hazard to occur. However, implementation of **MMs HAZ-1** through **HAZ-7** are required to minimize potential impacts from accidental release of hazardous materials to a less than significant impact. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-3** would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. **MM**

**HAZ-6** would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality. **MM HAZ-7** would minimize the potential hazard to the public or environment due to accidental release. Thus, impacts would be less than significant through the implementation of mitigation.

### **Other Physical Changes to the Environment**

The proposed Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh, possible utilization of Program Water in place of the existing water source — groundwater — in support of the Stickleback fish at Shay Pond, and a decrease about 2,200 AFY less discharge to the LV Site, for a total discharge to Lucerne Valley of about 340 AFY.

These other physical changes to the environment would not involve construction or operation of any new facilities. Thus, no significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment is anticipated to occur.

### **Combined Program Categories**

*Mitigation Measures: MMs HAZ-1 through HAZ-7 are required to minimize impacts:*

- HAZ-1:** *For Program facilities that handle hazardous materials or generate hazardous waste, the HMBP prepared and submitted to the CUPA shall incorporate BMPs designed to minimize the potential for accidental release of such chemicals and shall meet the standards required by California law for HMBPs. The facility managers shall implement these measures to reduce the potential for accidental releases of hazardous materials or wastes. The HMBP shall be approved prior to operation of the given facility.*
- HAZ-2:** *The HMBP shall assess the potential accidental release scenarios and identify the equipment and response capabilities required to provide immediate containment, control, and collection of any released hazardous material. Prior to issuance of the certificate of occupancy, each facility shall ensure that necessary equipment has been installed and training of personnel has occurred to obtain sufficient resources to control and prevent the spread of any accidentally released hazardous or toxic materials.*
- HAZ-3:** *Prior to occupancy of any site for which storage of any acutely hazardous material will be required, such as chlorine gas, modeling of pathways of release and potential exposure of the public to any released hazardous material shall be completed and specific measures, such as secondary containment, shall be implemented to ensure that sensitive receptors will not be exposed to significant health threats based on the toxic substance involved.*
- HAZ-4:** *All hazardous materials during both operation and construction of Program facilities shall be delivered to a licensed treatment, disposal, or recycling facility and be disposed of in accordance with State and Federal law.*
- HAZ-5:** *Before determining that an area contaminated as a result of an accidental release during project operation or construction is fully remediated, specific thresholds of acceptable clean-up shall be established and sufficient samples shall be taken and tested within the contaminated area to verify that these clean-up thresholds have been met in compliance with State and Federal law.*

**HAZ-6:** *Vector management plans shall be prepared and use of pesticides shall be reviewed and coordinated with the San Bernardino Vector Control Program for approval prior to implementing vector control at any of the new or expanded storage basins. All pesticides shall be applied in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality.*

**HAZ-7:** *All accidental spills or discharge of hazardous material during construction activities shall be reported to the local CUPA and shall be remediated in compliance with applicable Federal, State, and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste shall be collected and disposed of at a licensed disposal or treatment facility. This measure shall be incorporated into SWPPP prepared for each future facility developed under the Program, or where an SWPPP is not required due Project size, shall be incorporated as a BMP. Prior to accepting the site as remediated, the area contaminated shall be tested to verify that any residual concentrations meet the standard for future residential or public use of the site.*

*Level of Significance After Mitigation: Less Than Significant*

**MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials.

**MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials.

**MM HAZ-3** would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite.

**MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law.

**MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law.

**MM HAZ-6** would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality.

**MM HAZ-7** would minimize the potential hazard to the public or environment due to accidental release.

### **Cumulative Impact Analysis**

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Program Area continues to develop, the addition of more development could create a significant hazard to the public or the environment through potential hazard to the public or environment due to accidental release. However, all cumulative development would be subject to Federal, State, and local regulations related to accidental release of hazardous materials. Since the proposed Program facilities would result in less than significant impacts related to accidental

release of hazardous materials during both construction and operation through the implementation of mitigation, the Program's contributions to such impacts would be not be cumulatively considerable, and therefore, would not result in a significant cumulative impact.

*Mitigation Measures: **MMs HAZ-1 through HAZ-7** are required to minimize cumulative impacts.*

*Level of Significance After Mitigation: **Less than Significant***

**c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

**Program Category 1: Conveyance Pipelines**

Construction: Based on a review of the locations of schools in the vicinity of the proposed conveyance pipeline alignments (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed alignments. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Operation: Based on a review of the locations of schools in the vicinity of the proposed conveyance pipeline alignments (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed alignments. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that operation of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Based on a review of the locations of schools in the vicinity of the proposed Ancillary Facilities (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed Ancillary Facilities. While the precise locations of the monitoring wells downstream of Sand Canyon are presently unknown, there are no schools located in the Sand Canyon area. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Operation: Based on a review of the locations of schools in the vicinity of the proposed Ancillary Facilities (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed Ancillary Facilities. While the precise locations of the monitoring wells downstream of Sand Canyon are presently unknown, there are no schools located in the Sand Canyon area. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that operation of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Based on a review of the locations of schools in the vicinity of the proposed Solar Evaporation Ponds (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed Solar Evaporation Ponds. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Operation: Based on a review of the locations of schools in the vicinity of the proposed Solar Evaporation Ponds (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed Solar Evaporation Ponds. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction or operation of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Based on a review of the locations of schools in the vicinity of the proposed BBARWA WWTP upgrades (i.e. AWPF), evaporation ponds, and Ancillary Facilities (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed alignments. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Operation: Based on a review of the locations of schools in the vicinity of the proposed BBARWA WWTP upgrades (i.e. AWPF), evaporation ponds, and Ancillary Facilities (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed alignments. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction or operation of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

### **Other Physical Changes to the Environment**

The proposed Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh, utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback at Shay Pond, and a decrease about 2,200 AFY less discharge to the LV Site, for a total discharge to Lucerne Valley of about 340 AFY.

These other physical changes to the environment would not involve construction or operation of any new facilities. Thus, these other physical changes to the environment would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None required.*

*Level of Significance After Mitigation: Less Than Significant*

### **Cumulative Impact Analysis**

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Program Area continues to develop, emissions of hazardous emissions or handling of hazardous materials, substances, and/or waste within one-quarter mile of an existing or proposed school becomes a greater possibility with potential for cumulative impacts to occur. All cumulative development would be subject to Federal, State, and local regulations related to the routine transportation, use, storage, and disposal of hazardous materials, including the proposed Program. Though compliance with the regulatory framework for proposed Program facilities, cumulative impacts would not be significant and the proposed Program projects contributions would not be cumulatively considerable.

*Mitigation Measures: None required.*

*Level of Significance After Mitigation: Less Than Significant*

- d) **Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

### **Program Category 1: Conveyance Pipelines**

Construction: The hazardous sites analysis undertaken for this Program, including records searches on the SWRCB GeoTracker and the DTSC EnviroStor databases, revealed that there are eight active cleanup sites in the Bear Valley Basin identified on the SWRCB GeoTracker website. These sites are discussed under **Subsection 4.10.2.2, Environmental Setting: Big Bear Valley**, and are shown on **Figure 4.10-4**, which indicates that the proposed Conveyance Pipelines would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. However, given that the pipeline alignments would be located in close proximity to one open Clean-Up case, unknown contaminants may exist within the Program facility area. Thus, during project construction, it is possible that contaminated soil and/or groundwater could be encountered during excavation, thereby posing a health threat to construction workers, the public, and the environment. Additionally, occasionally, a project that involves subsurface excavation or exploration may encounter an unknown contaminated site. Once encountered, there are existing protocols to address such contamination. In addition to implementing **MM HAZ-7**, which would address encounters with unknown contamination and avoid a potentially significant impact, notification of regulatory agencies and following their guidance would ensure Conveyance Pipelines would have a less than significant impact related to contaminated sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils. With implementation of mitigation measures, potential conflicts with contaminated sites can be reduced to a less than significant impact.



Operation: Once the Conveyance Pipelines are operational, there would be no new potential to encounter hazardous sites beyond that which is discussed under the construction header above. No soil excavation would occur during operation that could result in encountering an unknown contamination site. Thus, no impacts during operation would occur.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The hazardous sites analysis undertaken for this Program, including records searches on the SWRCB GeoTracker and the DTSC EnviroStor databases, revealed that there are eight active cleanup sites in the Bear Valley Basin identified on the SWRCB GeoTracker website. These sites are discussed under **Subsection 4.10.2.2, Environmental Setting: Big Bear Valley**, and are shown on **Figure 4.10-4**, which indicates that the proposed Ancillary Facilities would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Occasionally, a project that involves subsurface excavation or exploration may encounter an unknown contaminated site. Once encountered, there are existing protocols to address such contamination. However, in addition to implementing **MM HAZ-7**, which would address encounters with unknown contamination, notification of regulatory agencies and following their guidance would ensure Ancillary Facilities would have a less than significant impact related to contaminated sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils. With implementation of mitigation measures, potential conflicts with contaminated sites can be reduced to a less than significant impact.

Operation: Once the Ancillary Facilities are operational, there would be no new potential to encounter hazardous sites beyond that which is discussed under the construction header above. No soil excavation would occur during operation that could result in encountering an unknown contamination site. Thus, no impacts during operation would occur.

**Program Category 3: Solar Evaporation Ponds**

Construction: The hazardous sites analysis undertaken for this Program, including records searches on the SWRCB GeoTracker and the DTSC EnviroStor databases, revealed that there are eight active cleanup sites in the Bear Valley Basin identified on the SWRCB GeoTracker website. These sites are discussed under **Subsection 4.10.2.2, Environmental Setting: Big Bear Valley**, and are shown on **Figure 4.10-4**, which indicates that the proposed Solar Evaporation Ponds would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Occasionally, a project that involves subsurface excavation or exploration may encounter an unknown contaminated site. Once encountered, there are existing protocols to address such contamination. However, in addition to implementing **MM HAZ-7**, which would address encounters with unknown contamination, notification of regulatory agencies and following their guidance would ensure Solar Evaporation Ponds would have a less than significant impact related to contaminated sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils. With implementation of mitigation measures, potential conflicts with contaminated sites can be reduced to a less than significant impact.

Operation: Once the Solar Evaporation Ponds are operational, there would be no new potential to encounter hazardous sites beyond that which is discussed under the construction header above. No soil excavation beyond the removal of brine, which would occur within the Solar Evaporation Ponds liners, would occur during operation that could result in encountering an unknown contamination site. Thus, no impacts during operation would occur.

#### **Program Category 4: BBARWA WWTP Upgrades**

**Construction:** The hazardous sites analysis undertaken for this Program, including records searches on the SWRCB GeoTracker and the DTSC EnviroStor databases, revealed that there are eight active cleanup sites in the Bear Valley Basin identified on the SWRCB GeoTracker website. These sites are discussed under **Subsection 4.10.2.2, Environmental Setting: Big Bear Valley**, and are shown on **Figure 4.10-4**, which indicates that the proposed BBARWA WWTP Upgrades would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Additionally, occasionally, a project that involves subsurface excavation or exploration may encounter an unknown contaminated site. Once encountered, there are existing protocols to address such contamination. In addition to implementing **MM HAZ-7**, which would address encounters with unknown contamination, notification of regulatory agencies and following their guidance would ensure BBARWA WWTP Upgrade facilities would have a less than significant impact related to contaminated sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils. With implementation of mitigation measures, potential conflicts with contaminated sites can be reduced to a less than significant impact level for future Program facilities.

**Operation:** Once the BBARWA WWTP Upgrades are operational, there would be no new potential to encounter hazardous sites beyond that which is discussed under the construction header above. No soil excavation would occur during operation that could result in encountering an unknown contamination site. Thus, no impacts during operation would occur.

#### **Other Physical Changes to the Environment**

The additional Program Water discharged to Big Bear Lake and the change in water source at Shay Pond as a result of the proposed Program operations would not have a potential to be exposed to or exacerbate hazardous conditions from existing contaminated sites identified on **Figure 4.10-4** within the Big Bear Valley.

As shown on **Figure 4.10-9** and **4.10-10**, there are no sites that are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 within the LV Site. Furthermore, the only site that is within close proximity to the LV Site is the Victorville PBR No. 8 (Site 80000528), which is a former firing range that may contain explosives and munitions debris soil contamination. Given that the media affected at this site is soil, not groundwater, it is not anticipated that the reduced discharge to the LV Site would be exposed to or exacerbate hazardous conditions from this existing contaminated site.

#### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**HAZ-7:** *All accidental spills or discharge of hazardous material during construction activities shall be reported to the local CUPA and shall be remediated in compliance with applicable Federal, State, and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste shall be collected and disposed of at a licensed disposal or treatment facility. This measure shall be incorporated into SWPPP prepared for each future facility developed under the Program, or where an SWPPP is not required due Project size, shall be incorporated as a BMP. Prior to accepting the site*

*as remediated, the area contaminated shall be tested to verify that any residual concentrations meet the standard for future residential or public use of the site.*

**HAZ-8:** *Should an unknown contaminated site be encountered during construction of Program facilities, all work in the immediate area shall cease; the type of contamination and its extent shall be determined by a hazardous materials specialist, such as an Environmental Scientist; and the local CUPA or other regulatory agencies (such as the DTSC or Santa Ana Regional Board) shall be notified. Based on investigations of the contamination, the site may be closed and avoided or the contaminant(s) shall be remediated to a threshold acceptable to the CUPA or other regulatory agency threshold and any contaminated soil or other material shall be delivered to an authorized treatment or disposal site.*

*Level of Significance After Mitigation: Less Than Significant*

While it is not anticipated that facilities under the proposed Program would be installed on a known site containing hazardous contamination, during project construction, it is possible that contaminated soil and/or groundwater could be encountered during excavation, thereby posing a health threat to construction workers, the public, and the environment. Impacts would be potentially significant. Therefore, mitigation is necessary to minimize impacts. The implementation of **MM HAZ-8** would identify recommendations and cleanup measures to reduce risk to the public and the environment from development on hazardous materials sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils. Therefore, impacts to the public and the environment related to hazardous materials sites would be less than significant with implementation of mitigation.

#### **Cumulative Impact Analysis**

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Program Area continues to develop, the addition of developments could be located on sites that are included on a list of hazardous materials sites and as a result, could create significant hazards to the public or the environment. Since the proposed Program projects are not anticipated to be constructed on existing open hazardous material sites, but may be installed within sites containing unknown hazardous contamination, impacts would be cumulatively considerable and therefore, would result in a potentially significant cumulative impact. The implementation of **MMs HAZ-8** would ensure that the proposed facilities' contribution to cumulative development on hazardous materials sites would be reduced to less than cumulatively considerable by requiring recommendations and cleanup measures to reduce risk to the public and the environment from development on hazardous materials sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils such that the proposed Program would not contribute to significant cumulatively considerable impacts.

*Mitigation Measures: **MM HAZ-8** is required to minimize project impacts.*

*Level of Significance After Mitigation: Less Than Significant*

- e) **Would the project, for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area?**

The only airport located in the vicinity of the Program is the Big Bear Airport, as shown on **Figure 4.10-7**, which depicts the airport safety review area for the Big Bear Airport.

**Program Category 1: Conveyance Pipelines**

Construction: Pipelines are anticipated to be constructed below the ground surface within existing public ROW, and as such, no operational impacts pertaining to airports would occur. Construction of Conveyance Pipelines has a potential to be located adjacent to the Big Bear Airport could be installed within the Big Bear Airport's safety review area. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options have been overlaid on the Big Bear Airport Layout Map (**Figure 4.10-14**) and the Big Bear Airport Safety Review Area Map (**Figure 4.10-15**). These Maps indicate that, regardless of the alignment selected by BBARWA for Big Bear Lake Discharge conveyance pipeline, a portion of the alignment will be constructed within one of the three airport safety review areas. During construction of facilities in close proximity to or within the Big Bear Airport, there is a potential for workers at the site to be exposed to hazards from the Big Bear Airport. Construction contractors would be required to comply with Cal/OSHA regulations related to exposure to airport hazards, such as noise. The requisite adherence to these regulations would reduce construction worker exposure to airport-proximity related hazards such as noise, such that proposed Program construction activities would not expose employees to airport safety hazards. Construction impacts across all Program Categories related to airport and aircraft hazards would be less than significant, and no mitigation is required.

Operation: During operation, the Conveyance Facilities are anticipated to be unmanned and therefore would not put any workers at risk, except where maintenance is required. Therefore, potential airport hazard impacts could be potentially significant. **MM HAZ-9** would require facilities within the airport safety zones to be designed in conformance with the ALUCP, or, where a conflict with the ALUCP is identified, the facility shall be relocated or redesigned to avoid a conflict with the ALUCP, thereby avoiding a potentially significant conflict with an airport safety zone. Implementation of **MM HAZ-9** would ensure that the proposed Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options would not conflict with airport operations and would protect the workers within the airport safety review areas; thus, impacts would be less than significant.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: A review of the Ancillary Facility locations indicates that no potential exists for the Ancillary Facilities to be installed within one of the three airport safety review areas. As these facilities would not be installed within the Big Bear Airport safety review area, no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during construction. No impacts are anticipated.

Operation: A review of the Ancillary Facility locations indicates that no potential exists for the Ancillary Facilities to be installed within one of the three airport safety review areas. As these facilities would not be installed within the Big Bear Airport safety review area, and no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during operation. No impacts are anticipated.

**Program Category 3: Solar Evaporation Ponds**

Construction: A review of the Solar Evaporation Ponds location indicates that no potential exists for the Solar Evaporation Ponds to be installed within one of the three airport safety review areas. As the Solar Evaporation Ponds would not be installed within the Big Bear Airport safety review area, no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during construction. No impacts are anticipated.



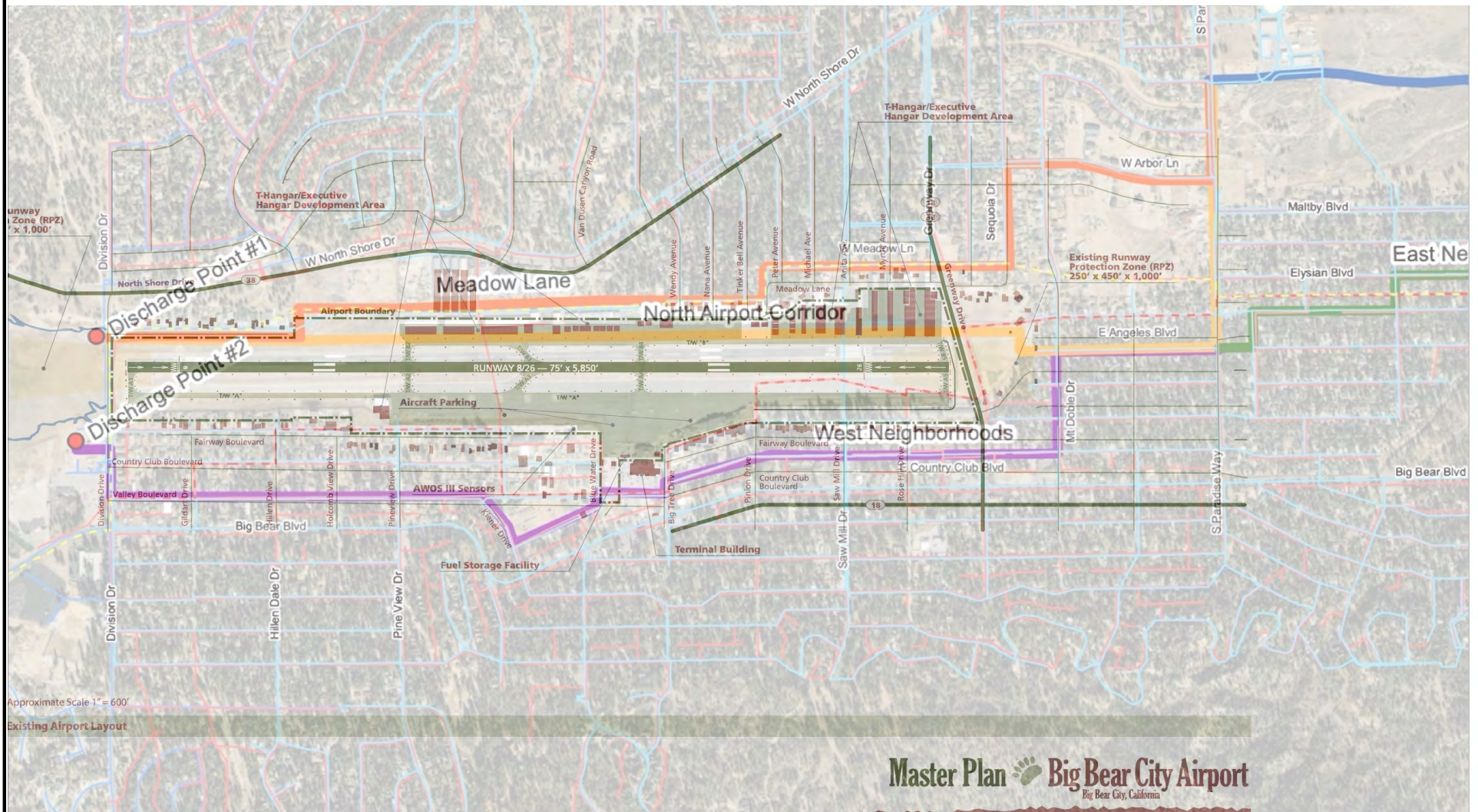
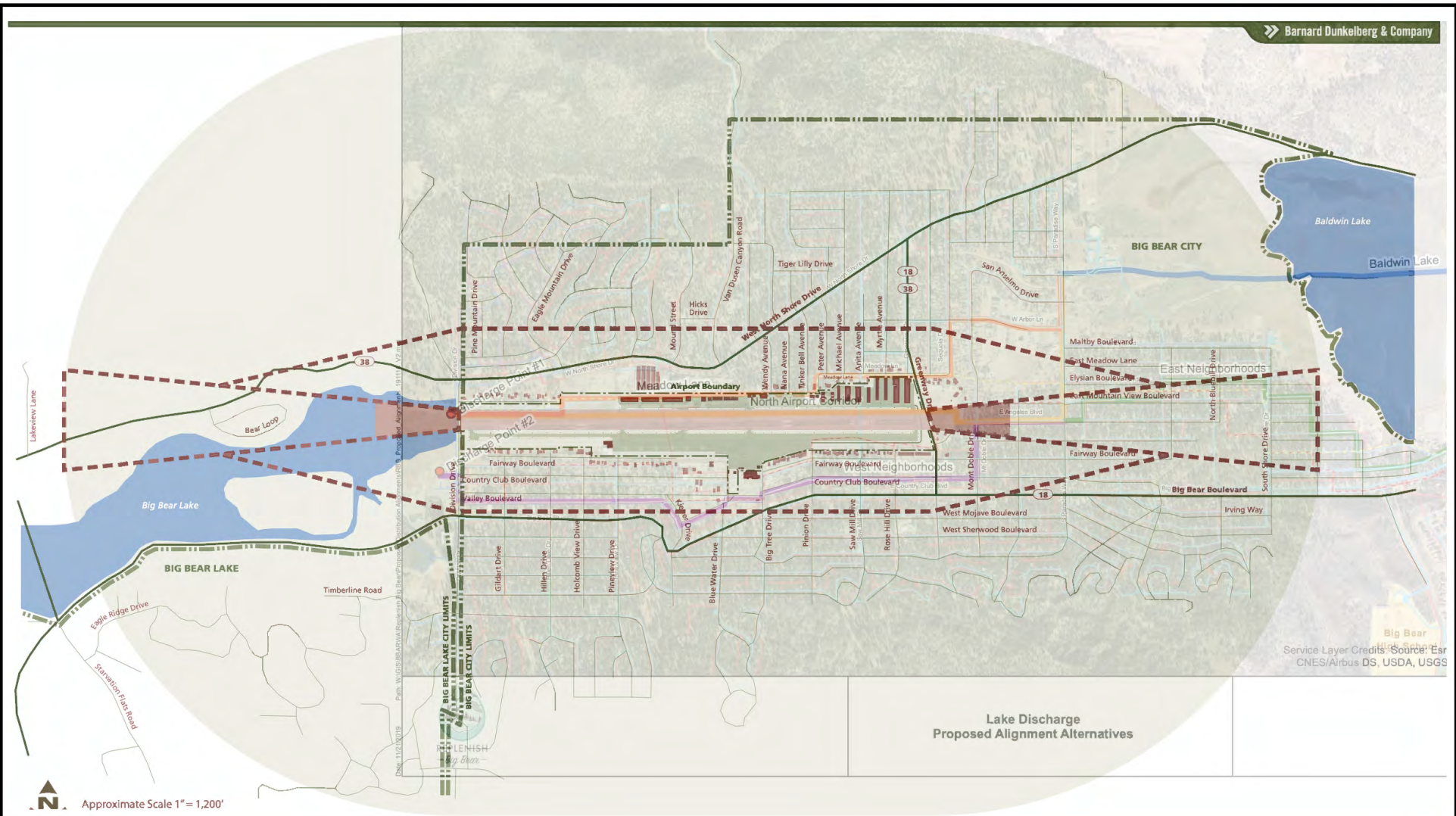


FIGURE 4.10-14





Service Layer Credits: Source: Esri, CNES/Airbus DS, USDA, USGS

Figure A6 Airport Safety Review Areas

- Safety Review Area 1
- Safety Review Area 2
- Safety Review Area 3

Source Existing Zoning: San Bernardino County Planning Department, Big Bear City Airport Comprehensive Plan, February 1992.  
 Source: Base Map: Google Maps—Map Data: NAVTEQ 2005.

FIGURE 4.10-15



Operation: A review of the Solar Evaporation Ponds location indicates that no potential exists for the Solar Evaporation Ponds to be installed within one of the three airport safety review areas. As the Solar Evaporation Ponds would not be installed within the Big Bear Airport safety review area, no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during operation. No impacts are anticipated.

**Program Category 4: BBARWA WWTP Upgrades**

Construction: A review of the BBARWA WWTP Upgrades location indicates that no potential exists for the BBARWA WWTP to be installed within one of the three airport safety review areas. As the BBARWA WWTP Upgrades would not be installed within the Big Bear Airport safety review area, no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during construction. No impacts are anticipated.

Operation: A review of the BBARWA WWTP Upgrades location indicates that no potential exists for the BBARWA WWTP to be installed within one of the three airport safety review areas. This Program Category would install solar panels would be located adjacent to existing solar panels at BBARWA, which have not resulted in glare impacts to nearby sensitive receptors or to aircraft fly-overs. The addition of new solar panels is not anticipated to result in glare impacts or other hazards to aircraft fly-overs, particularly given that the BBARWA WWTP Site is located outside of the Big Bear Airport land use compatibility zone. Further, solar panels typically result in less glare than standard home window glass,<sup>48</sup> and are designed to absorb light, rather than reflect it. Thus, airport compatibility impacts from the installation of the solar panels are not anticipated. As the BBARWA WWTP Upgrades would not be installed within the Big Bear Airport safety review area, and no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during operation. No impacts are anticipated.

**Other Physical Changes to the Environment**

The additional Program Water discharged to Big Bear Lake, change in water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. No impacts are anticipated.

The LV Site is located within a designated Low-Altitude/High Speed Military Airspace overlay, as shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas Map shown on **Figure 4.10-13**. As the LV Site does not propose any new operations beyond those that already occur at the Site in support of the existing farming operation, maintaining the site, and discharge of effluent to the onsite recharge basins, no greater potential to result in a safety hazard or excessive noise for people residing or working in the vicinity of the LV Site than that which presently exists would occur as a result of implementation of the proposed Program. No impacts are anticipated.

**Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

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<sup>48</sup> <https://www.nrel.gov/state-local-tribal/blog/posts/research-and-analysis-demonstrate-the-lack-of-impacts-of-glare-from-photovoltaic-modules.html>

*Mitigation Measures:*

**HAZ-9:** *For projects within airport safety zones, facility design shall follow the guidelines of the appropriate ALUCP. If a potential conflict with an ALUCP is identified as a result of implementation of Big Bear Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, the implementing agency shall relocate the facility outside the area of conflict, or if the site is deemed essential, the implementing agency shall propose an alternative design that reduces any conflict to a less than significant impact, with no conflicts with the ALUCP.*

*Level of Significance After Mitigation: Less Than Significant*

Most proposed projects' locations would occur outside of the Big Bear Airport safety review areas, but the proposed Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options alignment alternatives traverse through the Big Bear Airport safety review areas, which in turn could result in a safety hazard for people residing or working in the Program Area. Therefore, airport hazard impacts could be potentially significant. Thus, mitigation is required. The implementation of **MM HAZ-9** would ensure compliance with the appropriate airport land use plan, minimization of conflicts with the airport safety review areas, and coordination with the appropriate airport management agencies to ensure safety for people residing or working within the Program Area during construction and operation of the Program facilities. **MM HAZ-9** would require facilities within the airport safety zones to be designed in conformance with the ALUCP, or, where a conflict with the ALUCP is identified, the facility shall be relocated or redesigned to avoid a conflict with the ALUCP, thereby avoiding a potentially significant conflict with an airport safety zone.

**Cumulative Impact Analysis**

Implementation of **MM HAZ-9** and compliance with the appropriate airport land use plan and coordination with the appropriate airport management agencies would ensure that the proposed facilities would not contribute to cumulative impacts, significant or otherwise, related to development within airport safety zones.

*Mitigation Measures: Implementation of **MM HAZ-9** is required.*

*Level of Significance After Mitigation: Less Than Significant*

f) **Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

**Program Category 1: Conveyance Pipelines**

**Construction:** Conveyance pipeline installation would require construction along or in public roadways, with some areas of the Conveyance Pipelines located in undisturbed areas, such as a dirt pathway within Baldwin Lake or along undisturbed pathways from Shay Road to Shay Pond, or in a forested area between Ridgecrest Drive and Sand Canyon Road. Pipeline installed within public roadways could interfere with an adopted emergency response plan or emergency evacuation plan. The San Bernardino Countywide Plan PEIR identifies SR-18 and SR-38 in the vicinity of the Program Area as emergency evacuation routes, this is illustrated on **Figure 4.10–16**, the San Bernardino Countywide Plan Evacuation Route Map. The proposed Program conveyance pipeline alignments have been designed to avoid conflicts with these roadways—as demonstrated on **Figures 3-2, Figure 3-34, and 3-31**—and therefore would not interfere with adopted emergency evacuation routes. However, in order to ensure adequate emergency circulation during construction of the proposed pipelines, **MMs TRAN-1 and WF-1**, identified under **Subchapters 4.18 and 4.21** of this DPEIR, respectively, would be required. This is because this construction activity, and other anticipated construction activities associated with

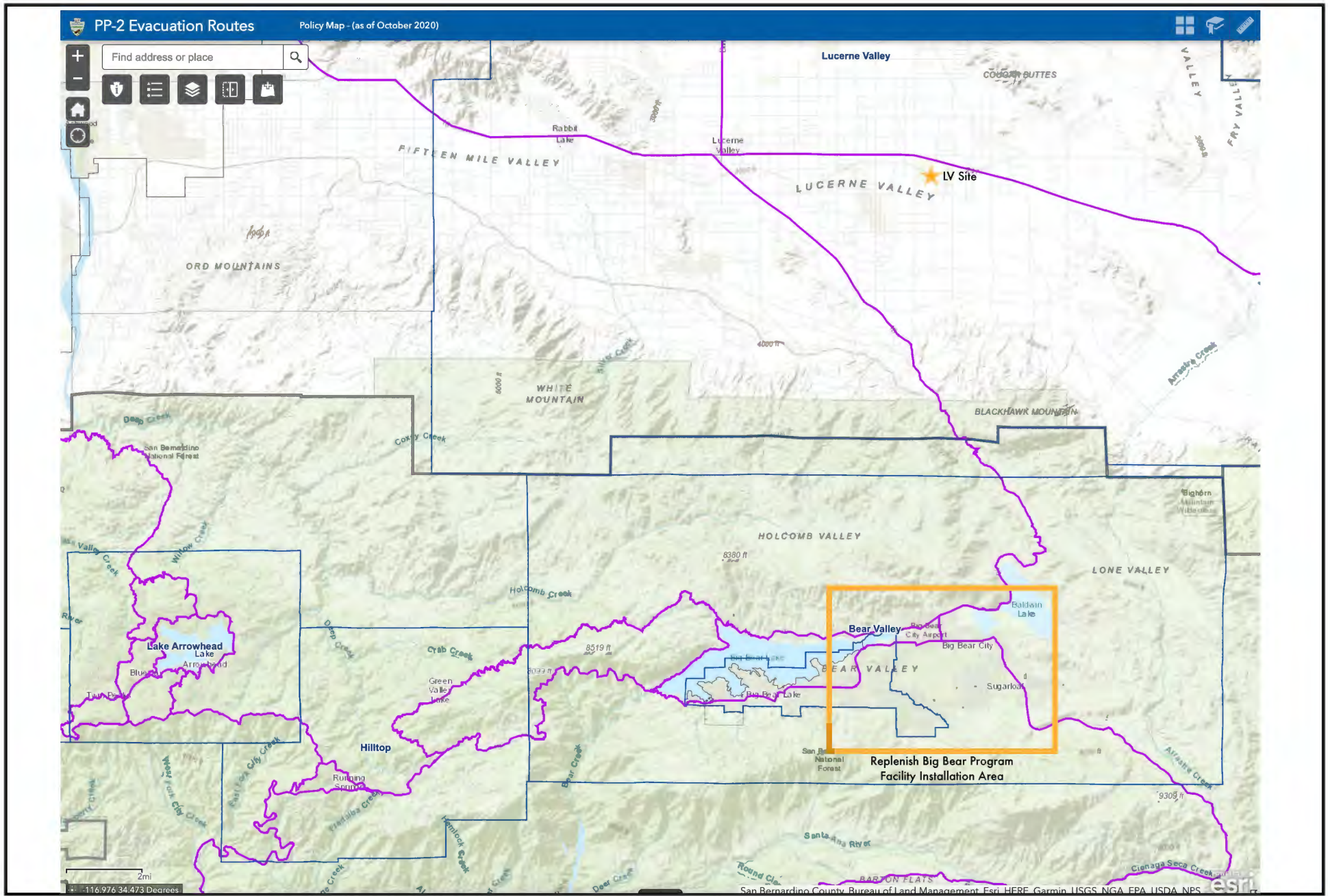


FIGURE 4.10-16

conveyance systems, could potentially block access to roadways and driveways for emergency vehicles. The construction-related impacts, although temporary, could potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. However, at no time during the installation of the Conveyance Pipelines will the entirety of the roadways be closed. It is anticipated that the installation of the proposed conveyance pipeline alignments within road ROW, would require only one lane to be closed, which would allow for through-traffic so long as a traffic management plan is developed and implemented, which shall be enforced through the implementation of **MMS TRAN-1** and **WF-1**. Construction impacts would be less than significant through the implementation of mitigation.

Operation: Following construction, the operation of the pipelines would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan as they would be located underground. Impacts related to an adopted emergency plan would be less than significant during operation.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The proposed facilities under Program Category 2 would not impair the implementation of or physically interfere with adopted emergency response plans or emergency evacuation plans. There would be no installation of pipelines or other facilities within ROW surrounding the individual facility sites under Program Category 2, making the possibility of interfering with evacuation routes highly unlikely. The truck trips associated with construction activities would not require closure of any roadways and would only temporarily slow traffic near project sites. All project facilities would be contained within the boundaries of the project sites, and project-related vehicles would not block existing street access to the sites. Therefore, no impact related to an emergency evacuation plan would occur during the construction of Program Category 2 facilities.

Operation: Operation of the proposed Program Category 2 facilities would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. The operation of the proposed facilities would not interfere with traffic flows, as BBARWA, BBCCSD, BBLDWP, and BMWWD do not anticipate any employees in support of the Ancillary Facilities. Additionally, it is possible that an increase in routine maintenance trips as a result of additional facilities managed by the agencies supporting the proposed Program could occur, but given the limited number of additional facilities that would be installed requiring routine maintenance outside of BBARWA's WWTP facility (3 conveyance pipeline alignments, 1 pump station, and 2 monitoring wells), it is not anticipated that additional routine maintenance trips in support of operational activities would conflict with the surrounding roadways such that a significant impact to emergency response and evacuation plans would occur. Impacts related to an adopted emergency or evacuation plan would be less than significant during operation.

### **Program Category 3: Solar Evaporation Ponds**

Construction: The proposed facilities under Program Category 3 would not impair the implementation of or physically interfere with adopted emergency response plans or emergency evacuation plans. There would be no installation of pipelines or other facilities within ROW surrounding Program Category 3, making the possibility of interfering with evacuation routes highly unlikely. The truck trips associated with construction activities would not require closure of any roadways and would only temporarily slow traffic near project sites. All project facilities would be contained within the boundaries of the project sites, and project-related vehicles would not block existing street access to the sites. Therefore, no impact related to an emergency evacuation plan would occur during the construction of Program Category 3 facilities.

Operation: Operation of the proposed Program Category 3 facilities would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. The operation of the proposed facilities would not interfere with traffic flows, as BBARWA, BBCCSD, BBLDWP, and BBMWD do not anticipate a substantial increase in the number of employees working at these agencies as a result of implementation of the Program (an anticipated five new employees would be required in support of these agencies as a result of implementation of the Program). It is anticipated the operations at the BBARWA WWTP/AWPF would be the only site operation within the Program Area that would require on-site personnel, which could be attributed to the Solar Evaporation Ponds. Given the minimal number of additional workers that would be employed by BBARWA as a result of Program implementation, no substantial increase in daily employee trips to BBARWA's WWTP site such that a significant impact to emergency response and evacuation plans would occur. Impacts related to an adopted emergency or evacuation plan would be less than significant during operation.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: The proposed facilities under Program Category 4 would not impair the implementation of or physically interfere with adopted emergency response plans or emergency evacuation plans. There would be no installation of pipelines or other facilities within ROW surrounding Program Category 4, making the possibility of interfering with evacuation routes highly unlikely. The truck trips associated with construction activities would not require closure of any roadways and would only temporarily slow traffic near project sites. All project facilities would be contained within the boundaries of the project sites, and project-related vehicles would not block existing street access to the sites. Therefore, no impact related to an emergency evacuation plan would occur during the construction of Program Category 4 facilities.

Operation: Operation of the proposed Program Category 4 facilities would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. The operation of the proposed facilities would not interfere with traffic flows, as BBARWA, BBCCSD, BBLDWP, and BBMWD do not anticipate a substantial increase in the number of employees working at these agencies as a result of implementation of the Program (an anticipated five new employees would be required in support of these agencies as a result of implementation of the Program). It is anticipated the operations at the BBARWA WWTP/AWPF would be the only site operation within the Program Area that would require on-site personnel, which could be attributed to the BBARWA WWTP Upgrades. Given the minimal number of additional workers that would be employed by BBARWA as a result of Program implementation, no substantial increase in daily employee trips to BBARWA's WWTP site such that a significant impact to emergency response and evacuation plans would occur. Impacts related to an adopted emergency or evacuation plan would be less than significant during operation.

#### **Other Physical Changes to the Environment**

The additional Program Water discharged to Big Bear Lake, change in water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. Thus, no impacts related to an adopted emergency or evacuation plan are anticipated to occur.

As the LV Site does not propose any new operations beyond those that already occur at the Site in support of the existing farming operation, continuation and enhancement of maintaining the site, and discharge of effluent to the onsite recharge basins, no greater potential to conflict with an adopted emergency or evacuation plan than that which presently exists would occur as a result of implementation of the proposed Program.

## **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

### **TRAN-1: Prepare and Implement Construction Transportation Management Plan**

**A construction TMP shall be developed and implemented by the implementing agency, in coordination with the respective jurisdictions, SBCTA, and/or other relevant parties during construction of the proposed project. The TMP shall conform to Caltrans' Transportation Management Plan Guidelines and shall include but is not limited to:**

**Construction Traffic Routes and Staging Locations: The TMP shall identify construction staging site locations and potential road closures, alternate routes for detours, and planned truck routes for construction-related vehicle trips, including but not limited to haul trucks, material delivery trucks, and equipment delivery trucks. It shall also identify alternative safe routes and policies to maintain safety along bicycle and pedestrian routes during construction. Construction vehicle routes shall avoid local residential streets and avoid peak morning and evening commute hours to the maximum extent practicable. Staging locations, alternate detour routes, and construction vehicle routes shall avoid other active construction projects within 0.25 mile of the project construction sites to the maximum extent practicable.**

**Damage Repair: The TMP shall include the following requirements to minimize damage to the existing roadway network:**

- **A list of precautionary measures to protect the existing roadway network, including but not limited to pavements, curbs, gutters, sidewalks, and drainage structures, shall be outlined. The construction contractor(s) shall be required to implement these measures throughout the duration of construction of the water Conveyance Pipelines.**
- **The roadway network along the proposed Program Water distribution alignment(s) shall be surveyed prior to the start of project construction activities, and existing roadway conditions shall be summarized in a brief report.**
- **Any damage to the roadway network that occurs as a result of project construction activities shall be noted, and the implementing agency or its contractors shall repair all damage.**

**Coordination with Emergency Services: The TMP shall include requirements to notify local emergency response providers, including relevant police and sheriff departments, ambulance services, and paramedic services at least one week prior to the start of work within public ROW if lane and/or road closures are required. To the extent practicable, the duration of disruptions/closures to roadways and critical access points for emergency services shall be minimized.**

**Coordination with Active Transportation Facilities: The TMP shall require coordination with owners/operators of any affected active transportation facilities to minimize the duration of disruptions/closures to bike paths, pedestrian trails, and adjacent access points.**

**Coordination with SBCTA: If the proposed project affects access to existing transit stops, the TMP shall also include temporary, alternative transit stops and directional signage, as determined in coordination with Mountain Transit.**

**Coordination with Caltrans: If the proposed project requires lane and/or road closures of State highways or State highway ramps, the TMP shall require coordination with**



**Caltrans to ensure the TMP conforms with Caltrans' Transportation Management Plan Guidelines.**

**Coordination with Nearby Construction Sites: The TMP shall identify all active construction projects within 0.25 mile of project construction sites and require coordination with the applicants and/or contractors of these projects during all phases of construction regarding the following:**

- **All temporary lane and/or roadway closures shall be coordinated to limit overlap of roadway closures;**
- **All major deliveries and haul truck trips shall be coordinated to limit the occurrence of simultaneous deliveries and haul truck trips; and**
- **The implementing agency, its contractor(s), or its representative(s) shall meet on a regular basis with the applicant(s), contractor(s) or their representative(s) of active construction projects within 0.25 mile of the project construction sites during construction to address any outstanding issues related to construction vehicles.**

**Transportation Control and Safety: The TMP shall provide for roadway vehicle control measures including flag persons, warning signs, lights, barricades, cones, and/or detour routes to provide safe passage of vehicular, bicycle, and pedestrian circulation and access by emergency responders.**

**Plan Approval: The TMP shall be submitted to SBCTA for review and approval.**

**WF-1: Prior to initiating construction of proposed Conveyance Pipelines or other Program facilities within public ROW, BBARWA or the implementing agency shall prepare and implement a traffic control plan that contains comprehensive strategies for maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The implementing agency shall ensure that the traffic control plan and other construction activities are consistent with the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.**

*Level of Significance After Mitigation: Less Than Significant*

Program Category 1 proposed Conveyance Pipelines would be constructed, in part, within public ROW. This construction activity, and other anticipated construction activities associated with conveyance systems, could potentially block access to roadways and driveways for emergency vehicles. The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be potentially significant. Therefore, mitigation is necessary to minimize impacts. The implementation of **MMs TRAN-1** and **WF-1**, identified under **Subchapters 4.18 and 4.21** of this DPEIR, respectively, would require the preparation of a TMP with comprehensive strategies to reduce potential disruption to emergency evacuation or an emergency response plan. Therefore, potential significant impacts to emergency access and evacuation would be reduced to a less than significant level.

### **Cumulative Impact Analysis**

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Program Area continues to develop, the addition of more development could impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan by constructing facilities within public ROW. Since a majority of the proposed Program Conveyance Pipelines would be constructed within public ROW, the proposed project's contribution to the cumulative impact related to area construction would be considerable. The implementation of **MMs TRAN-1** and **WF-1** would ensure that the proposed facilities' contribution to cumulative emergency access and evacuation impacts would be reduced to less than cumulatively considerable by requiring the preparation of a TMP with comprehensive strategies to reduce disruption to emergency access and evacuation.

*Mitigation Measures: Implementation of **MMs TRAN-1** and **WF-1** is required.*

*Level of Significance After Mitigation: Less Than Significant*

**g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?**

The majority of the Big Bear Valley is located within a very high FHSZ, as shown on **Figure 4.10-5**, which depicts the San Bernardino Countywide Plan FHSZ Map. In relation to the physical components of the Program, the features that would be developed within the BBARWA WWTP are designated as being within a high FHSZ. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options traverse through areas designated as being within very high, high, and moderate FHSZs. The Sand Canyon Recharge Project traverses through an area designated as being within a very high FHSZ. The Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipelines traverse through an area designated as being within a very high FHSZ. These FHSZs are almost entirely located within State Responsibility Areas with the exception of those areas that fall within the City of Big Bear Lake, which are in Local Responsibility Areas (**Figure 4.10-6**).

The LV Site is designated as being within a moderate FHSZ on the San Bernardino Countywide Plan FHSZ Map (**Figure 4.10-11**) within an area with a State Responsibility Area as shown on the San Bernardino Countywide Plan Fire Responsibility Areas Map (**Figure 4.10-12**).

### **Program Category 1: Conveyance Pipelines**

**Construction:** The proposed pipelines would be constructed primarily within paved roadway ROW, with some areas of the Conveyance Pipelines located in undisturbed areas, such as a dirt pathway within Baldwin Lake or along undisturbed pathways from Shay Road to Shay Pond, or in a forested area between Ridgecrest Drive and Sand Canyon Road. CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The use of spark-producing construction machinery within a fire risk area could create hazardous fire conditions and expose construction workers to wildfire risks. Impacts would be potentially significant. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. Therefore, **MM WF-2** shall be implemented for these facilities in high and very high FHSZs.

Operation: During operation, the proposed facilities would distribute Program Water from the AWPf, Big Bear Lake, or Resort, throughout the Program Area, and these facilities would not be constructed of flammable materials or involve any spark-producing activities. Thus, operation of the proposed Conveyance Pipelines would have a less than significant potential to expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. Impacts would be less than significant.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The ancillary features that would be developed within the BBARWA WWTP are designated as being within a high FHSZ. The Sand Canyon Booster Station and Sand Canyon Monitoring Wells would be located within areas designated as being within a very high FHSZ. CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The use of spark-producing construction machinery within a fire risk area could create hazardous fire conditions and expose construction workers to wildfire risks. Impacts would be potentially significant. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. Therefore, **MM WF-2** shall be implemented for these facilities in high and very high FHSZs to reduce impacts to a level of less than significant.

Operation: CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The Ancillary Facilities would be supplied and operate on electricity and would be enclosed within structures. These structures would be required to meet current CBC standards, which stipulates that all projects in fire hazard severity zones shall be designed, built, and operated in accordance with state regulations specifying building materials and structural designs for structures in such zones, including CBC Chapter 7A and California Fire Code Chapter 49; and regulatory requirements for defensible space including California Public Resources Code Sections 4291 et seq. and San Bernardino County Code of Ordinances Sections 23.0301 et seq. The facilities proposed under this Program will comply with the CBC. Furthermore, **MM WF-2** shall be enforced for those facilities located in high and very high FHSZs. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. All Ancillary Facilities would be unmanned and would only require routine maintenance; therefore, no people would be exposed to a significant risk involving wildland fires. Operational impacts of the proposed Program facilities would be less than significant with implementation of **MM WF-2**.

**Program Category 3: Solar Evaporation Ponds**

Construction: The Solar Evaporation Ponds are located in an area designated as being within a high FHSZ. CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The use of spark-producing construction machinery within a fire risk area could create hazardous fire conditions and expose construction workers to wildfire risks. Impacts would be potentially significant. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire

risks. Therefore, **MM WF-2** shall be implemented for these facilities in high and very high FHSZs. Impacts would be less than significant through the implementation of mitigation.

Operation: CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The Solar Evaporation Ponds would be not require electricity to operate, other than the electricity needed to supply the BBARWA WWTP Upgrades Project operations. These Solar Evaporation Ponds Project would be required to meet current CBC standards, which stipulates that all projects in fire hazard severity zones shall be designed, built, and operated in accordance with state regulations specifying building materials and structural designs for structures in such zones, including CBC Chapter 7A and California Fire Code Chapter 49; and regulatory requirements for defensible space including California Public Resources Code Sections 4291 et seq. and San Bernardino County Code of Ordinances Sections 23.0301 et seq. The Solar Evaporation Ponds proposed under this Program will comply with the CBC. Furthermore, **MM WF-2** shall be enforced for those facilities located in high and very high FHSZs. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. The Solar Evaporation Ponds would be unmanned, with the exception of the new and existing employees that would support the overall BBARWA operations. Given the minimal number of additional workers that would be employed by BBARWA as a result of Program implementation, it is not anticipated that any greater any greater risk involving wildland fire exposure than that which occurs at present would occur as a result of Program implementation. As the Program would install facilities that are consistent with the existing site use, and is not anticipated to introduce substantial new persons to the Solar Evaporation Ponds area as part of Program operations, it is not anticipated that any greater risk involving wildland fire exposure than that which occurs at present would occur as a result of Program implementation. Ultimately, as with Program Categories 1 and 2, above, **MM WF-2** would be required to reduce potential wildland fire hazard impacts to a less than significant impact level. Impacts would be less than significant through the implementation of mitigation.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: The BBARWA WWTP Upgrades are located in an area designated as being within a high FHSZ. CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The use of spark-producing construction machinery within a fire risk area could create hazardous fire conditions and expose construction workers to wildfire risks. Impacts would be potentially significant. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. Therefore, **MM WF-2** shall be implemented for these facilities in high and very high FHSZs. Impacts would be less than significant through the implementation of mitigation.

Operation: Impacts would be generally the same as Program Categories 1, 2, and 3. However, BBARWA WWTP/AWPF operations include structures that would be manned, as BBARWA operations are housed at the WWTP. BBARWA does not anticipate a substantial increase in the number of permanent employees as a result of the implementation of the Program (an anticipated five new employees would be required in support of BBARWA as a result of implementation of the Program). It is anticipated the operation of the BBARWA WWTP would be the only site operation within the Program Area that would require on-site personnel, but given the minimal

number of additional workers that would be employed by BBARWA as a result of Program implementation, it is not anticipated that any greater any greater risk involving wildland fire exposure than that which occurs at present would occur as a result of Program implementation. As the Program would install facilities that are consistent with the existing site use, and is not anticipated to introduce substantial new persons to the BBARWA WWTP area as part of Program operations, it is not anticipated that any greater risk involving wildland fire exposure than that which occurs at present would occur as a result of Program implementation. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. Ultimately, as with Program Categories 1 through 3, above, **MM WF-2** would be required to reduce potential wildland fire hazard impacts to a less than significant impact level. Impacts would be less than significant through the implementation of mitigation.

### **Other Physical Changes to the Environment**

The proposed Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh, utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback at Shay Pond, and a decrease of about 2,200 AFY less discharge to the LV Site, for a total discharge to Lucerne Valley of about 340 AFY.

The additional Program Water discharged to Big Bear Lake, change in water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. However, the provision of additional water resources available for use in the Big Bear Valley, which is almost entirely located within high and very high FHSZs would be beneficial to wildfire protections, as the provision of additional water would provide redundancies in the water resources available for fire flow and fire protection in the event of a wildfire.

As the LV Site does not propose any new operations beyond those that already occur at the LV Site in support of the existing farming operation, continuation and enhancement of maintaining the LV Site, and discharge of effluent to the onsite recharge basins, has no greater potential to expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires would occur as a result of implementation of the proposed Program. The continuation and enhancement of site maintenance at the LV Site would ensure that vegetation that could create greater wildfire hazard is removed and stabilized within the LV Site. This is anticipated to ensure that, even though less effluent will be discharged to the LV Site, the proposed Program would not contribute to greater wildfire risk at the LV Site than that which exists at present. Furthermore, given the high desert location of the LV Site, the area is only considered to be moderately susceptible to wildfire risk as shown on **Figure 4.10-11**. Thus, other physical changes to the environment would have a less than significant potential to expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. Impacts would be less than significant.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**WF-2:** *Prior to construction of facilities located in areas designated as High or Very High FFHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.*

*Level of Significance After Mitigation: Less Than Significant*

As discussed at the beginning of the discussion provided under this issue, many of the proposed Program would be located within or near a wildland area with high or very high fire risk. Impacts would be potentially significant and require implementation of **MM WF-2** to reduce impacts to a less than significant level. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. The implementation of **MM WF-2** would require the preparation of a fire management plan/fuel modification plan for Program infrastructure proposed within very high FHSZs, and it would identify comprehensive strategies to reduce fire potential during construction and over long-term operation. Therefore, potential significant impacts due to the installation of Program infrastructure would be reduced to less than significant level with the implementation of **MM WF-2**.

**Cumulative Impact Analysis**

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Program Area continues to develop, the addition of more development could expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Since there would be potential for Program projects to be located within or adjacent to areas with high wildland fire risks, impacts from the Program projects would be cumulatively considerable and therefore, would result in a potentially significant cumulative impact. The implementation of **MM WF-2** would ensure that the proposed facilities' contribution to cumulative impacts related to wildfires would not be cumulatively considerable by implementing fire hazard reduction measures during construction and operations in areas designated as high and very high FHSZs to reduce the potential for wildfire impacts on people or structures.

*Mitigation Measures: **MM WF-2** is required to minimize project impacts.*



*Level of Significance After Mitigation: Less Than Significant*

#### **4.10.6 Cumulative Impacts**

The cumulative analysis of each Hazards and Hazardous Materials issue evaluated in this **Subchapter (4.10)** of the DPEIR determined that the proposed project would not result in a cumulatively considerable contribution to cumulative hazards and hazardous materials impacts within the Big Bear Valley or Lucerne Valley as a result of implementation of MMs. While cumulative development within the region may result in significant cumulative impacts related to exposure to hazards, the potential for the proposed Program to result in a cumulatively considerable contribution to such impacts has been minimized to a level of less than significant through the implementation of MMs.

#### **4.10.7 Significant and Unavoidable Impacts**

As determined in the preceding evaluation, with the implementation of mitigation, the proposed project would not result in any significant and unavoidable adverse hazard and hazardous materials impacts.

## **4.11 HYDROLOGY AND WATER QUALITY**

### **4.11.1 Introduction**

This Subchapter will evaluate the environmental impacts related to the issue areas of Hydrology (watershed, drainage, and flood hazards) and Water Quality from the implementation of the Replenish Big Bear Program (Program). This section will evaluate the available information about the background hydrology and water quality and forecast the type of impacts that may occur, including identification of mitigation measures that can ensure potential impacts from constructing and operating the various components of the Program that can be reduced to the minimum level achievable consistent with meeting project objectives.

The Program includes treatment upgrades and additions to BBARWA's WWTP to produce Program Water that meets stringent discharge requirements for Big Bear Lake, particularly for nutrients (specifically phosphorus and TIN and TDS. To achieve the anticipated effluent limits, BBARWA will need to implement a series of upgrades to existing unit processes and integrate new unit processes:

- Upgrade the existing oxidation ditches to biological nutrient removal process;
- Tertiary filtration and nutrient removal via denitrification filters;
- UF and RO membrane filtration;
- Brine pellet reactor for brine minimization; and
- UV/AOP.

To accomplish the above uses, the Program includes permitting, design, and construction of full AWPf upgrades at the existing BBARWA WWTP, about 6.59 miles or 34,810 LF of pipeline for Program Water and RO brine minimization, three pump stations, a groundwater recharge facility, up to four monitoring wells, and 2 MW of solar panels. The Program is currently estimated to produce approximately 1,950 AFY of Program Water and may produce up to 2,200 AFY by 2040 through operation of a high-recovery brine minimization technology. Piloting is being conducted to confirm the feasibility of the higher yield estimates. For the purposes of this document, 2,200 AFY is used to be conservative in evaluating environmental impacts related to water quality.

The Program envisions that the Shay Pond Discharge will replace potable water currently discharged to the water body to maintain the water flow through the pond, which is shown on **Figure 3-19**. Up to 80 AFY of Program Water will be sent to Shay Pond, and any remaining Program Water will be sent to Stanfield Marsh, a tributary of Big Bear Lake. Additionally, when needed, Program Water stored in Big Bear Lake will be pumped to Sand Canyon to recharge the groundwater basin to strengthen the sustainability of the local groundwater basin. The facilities envisioned to facilitate the Sand Canyon Recharge Area include a pump station and pipeline that are planned to be sized to convey 380 AF of recharge water over a 6-month period.

For redundancy purposes, BBARWA is also seeking to maintain its current discharge location at the LV Site, where undisinfected secondary effluent is currently conveyed to irrigate crops used for livestock feed.

These potential facilities are separated into four project categories: 1) Program Category 1: Conveyance Pipelines; 2) Program Category 2: Ancillary Facilities including Pump Stations and Monitoring Wells; 3) Program Category 3: Evaporation Pond; 4) Program Category 4: BBARWA WWTP Upgrades. While the proposed Program would result in the installation of several facilities, it would also result in other physical changes to the environment, including releasing Program

Water into Big Bear Lake by way of Stanfield Marsh, and reducing discharge of secondary effluent to the LV Site, the impacts for which are discussed under a separate category: Other Physical Changes to the Environment.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the Project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues pertaining to hydrology and water quality will be discussed below under the following framework:

- Introduction
- Environmental Setting: Hydrology and Water Quality
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Unavoidable Adverse Impacts

The Program Team received 3 comments pertaining to hydrology and water quality at the Scoping Meeting held on behalf of the Program, and 6 comments specific to this topic were received in response to the NOP. Refer to **Chapter 2, Introduction** for specific responses to the NOP and Scoping Meeting Comments.

Information contained in this Subchapter is supported by the following technical studies: the *Big Bear Lake Analysis: Replenish Big Bear Final Report* provided as **Appendix 2**, Volume 2 to this DPEIR; the *Bear Valley Basin Groundwater Sustainability Plan* provided as **Appendix 8**, Volume 2 to this DPEIR; the *Groundwater Quality Evaluation at the Lucerne Valley Land Discharge Location* provided as **Appendix 6**, Volume 2 to this DPEIR; *Antidegradation Analysis for Proposed Discharges to Stanfield Marsh/Big Bear Lake and Shay Pond* provided as **Appendix 3**, Volume 2 to this DPEIR; *Irrigation Management Plan for the LV Site* provided as **Appendix 7**, Volume 2 to this DPEIR. *Response to Comments Regarding Potential Impacts of the Replenish Big Bear Project on the Lucerne Valley Land Discharge Location* provided as **Appendix 9** Volume 2 to this DPEIR; *Replenish Big Bear: Modeling of Higher Flows and With Zero TP Load* provided as **Appendix 10** Volume 2 to this DPEIR; *Memorandum Sand Canyon Background Data* provided as **Appendix 18** Volume 2 to this DPEIR; and, *Analysis of Aquatic Life Effects and Water Quality of Replenish Big Bear Project's Discharge to Stanfield Marsh and Big Bear Lake* provided as **Appendix 19** Volume 2 to this DPEIR.

#### **4.11.2 Environmental Setting: Stanfield Marsh/Big Bear Hydrology**

As part of the Program, BBARWA will discharge Program Water to the east end of Stanfield Marsh, then flow into Big Bear Lake. Stanfield Marsh and Big Bear Lake are connected through a set of culverts under Stanfield Cutoff. This section describes the hydrology of Stanfield Marsh and Big Bear Lake.

##### **4.11.2.1 Precipitation**

Stanfield Marsh/Big Bear Lake is a reservoir in the western U.S., located in the San Bernardino Mountains in San Bernardino County, California. The local climate is a semi-arid, Mediterranean environment with cold winters, warm summers, and moderate rainfall. Average annual precipitation ranges from nearly 40 inches at the west end of Big Bear Lake to 10-15 inches at

the east end of the Big Bear Valley. Annual precipitation is highly variable, as it is common to have long dry periods (3 to 8 years) mixed with years of above-average precipitation.

#### **4.11.2.2 Surface Water**

Stanfield Marsh is a scenic 145-acre nature park that includes a gazebo, walking paths, and two boardwalks that extend out into Stanfield Marsh, so visitors can observe the wildlife. Stanfield Marsh is home to rare and diverse species of birds, fish, amphibians, and mammals. Rainfall and snowmelt are the only sources of water for Stanfield Marsh, so the water level varies from season to season. During wet periods, Stanfield Marsh is a thriving wildlife preserve. During extended drought conditions, the water level recedes dramatically, the boardwalks extend over dry soil, and presence of wildlife becomes scarce. In the last 15 years, Stanfield Marsh has been less than half full nearly 40 percent of the time. However, between January and June 2023, Big Bear Lake level increased from 16.98 feet below full to 6.18 feet below full due to all the rain, resulting in a wetter Stanfield Marsh.



Stanfield Marsh is hydrologically connected to Big Bear Lake through a set of culverts under Stanfield Cutoff. Big Bear Lake is located about 6,743 ft or 2,055 meters amsl in the San Bernardino Mountains in San Bernardino County. Together, Stanfield Marsh and Big Bear Lake have a surface area of approximately 3,000 acres, a storage capacity of 73,320 AF, and an average depth of 32 ft. Big Bear Lake's sole source of water is currently snowmelt and stormwater runoff, which are highly variable. Big Bear Lake has several sources of water loss, including evaporation, water extraction for snowmaking, dam releases for flood control, fishery protection, and water rights discharges.

Big Bear Lake was formed following the construction of the Bear Valley Dam in 1883-1884 to serve as an irrigation supply for the citrus industry in the downstream Redlands-San Bernardino communities. BBMWD was formed in 1964 to manage and help stabilize the water level in Big Bear Lake. Historically, Big Bear Lake was operated as a storage reservoir by Mutual. However, due to the drastic fluctuations in Lake levels, legal negotiations arising from a disagreement between Mutual, BBMWD, and the community of Big Bear Valley regarding water rights and management of Big Bear Lake, a 1977 Judgment was established. Under the terms of this court judgment, Mutual retains a storage right and ownership of all water inflow into Big Bear Lake. BBMWD is required to provide Mutual with up to 65,000 AF of water from Big Bear Lake in a 10-year rolling period.

In 1996, an In-Lieu Agreement was executed that allows BBMWD to maintain higher Lake levels by delivering water to Mutual from an alternate source of water. This alternate source of water, referred to as In-Lieu Water, comes mainly from the SWP through the San Bernardino Valley Municipal Water District, a State water contractor. Under the In-Lieu Agreement, when Big Bear Lake level falls more than 6 foot below full, and during some months when Big Bear Lake is between 4 and 6 feet below full, San Bernardino Valley Municipal Water District delivers SWP water to meet Mutual's needs instead of BBMWD releasing water from Big Bear Lake. BBMWD

pays the San Bernardino Municipal Water District an annual fee that is adjusted each year based on property tax values.

Big Bear Lake is an important resource that provides extensive recreational, economic, ecological, and aesthetic benefits for the local community as well as the larger inland southern California region. The beneficial uses of Big Bear Lake and Stanfield Marsh are presented in **Table 4.11-1**.

**Table 4.11-1  
 BENEFICIAL USES OF BIG BEAR LAKE AND STANFIELD MARSH**

<b>Beneficial Uses</b>	<b>Big Bear Lake</b>	<b>Stanfield Marsh</b>
AGR - Agricultural Supply	✓	
COLD - Cold Freshwater Habitat	✓	✓
COMM - Commercial and Sport Fishing	✓	
GWR - Groundwater Recharge	✓	
MUN - Municipal and Domestic Supply	✓	✓
RARE - Rare, Threatened, or Endangered Species	✓	✓
REC1 - Water Contact Recreation	✓	✓
REC2 - Non-Contact Water Recreation	✓	✓
SPWN - Spawning, Reproduction, and/or Early Development	✓	
WARM - Warm Freshwater Habitat	✓	
WILD - Wildlife Habitat	✓	✓

**4.11.2.3 Surface Water Quality**

According to the Antidegradation Analysis (**Appendix 3**) prepared for the Program, Lake water samples were taken on December 2, 2021 by BBMWD. **Table 4.11-2** outlines the existing water quality of Big Bear Lake. Samples were also collected in July 2023 to evaluate constituents with water quality objectives set to protect the Bear Valley Basin. The results are shown in **Table 4.11.7**.

**Table 4.11-2  
 SUMMARY STATISTICS FOR CONSTITUENTS EVALUATED IN BIG BEAR LAKE**

Constituent	Unit	Big Bear Lake <sup>(a)</sup>			
		No. of Samples	% Non-Detected	Avg. <sup>(b)</sup>	Max.
Ammonia as N	mg/L	1,281	33%	0.063 <sup>(c)</sup>	0.094
Boron, Total	mg/L	1	0%	0.054 <sup>(d)</sup>	0.054 <sup>(d)</sup>
Chloride	mg/L	1	0%	26	26
Fluoride	mg/L	1	0%	0.41	0.41
Hardness, Total (as CaCO <sub>3</sub> )	mg/L	1,176	0%	157 <sup>(c)</sup>	183
MBAS	mg/L	1	0%	0.058 <sup>(d)</sup>	0.058 <sup>(d)</sup>
Sodium	mg/L	1	0%	33	33
Sulfate	mg/L	1	0%	18	18
<b>Total Dissolved Solids</b>	mg/L			251 <sup>(f)</sup>	
<b>Total Inorganic Nitrogen</b>	mg/L			0.049 <sup>(f)</sup>	
<b>Total Nitrogen</b>	mg/L			0.948 <sup>(f)</sup>	
<b>Chlorophyll-a</b>	µg/L			9.3 <sup>(f)</sup>	
<b>Total Phosphorus</b>	mg/L			0.037 <sup>(f)</sup>	
Chlordane	µg/L	1	100%	<0.034	<0.034
4,4'-DDT	µg/L	1	100%	<0.001	<0.001
PCBs (Aroclors) <sup>(g)</sup>	µg/L	1	100%	<0.5	<0.5
Cadmium, Total	µg/L	1	100%	<0.11	<0.11
Copper, Total	µg/L	1	100%	<6.5	<6.5
Lead, Total	µg/L	1	100%	1.8 <sup>(d)</sup>	1.8 <sup>(d)</sup>
Mercury, Total	ng/L	2	50%	270	270
Aluminum, Total	µg/L	1	0%	58	58
Specific Conductance	µmhos/cm			391 <sup>(i)</sup>	

Notes: Bolded constituents were identified as constituents of interest by the Santa Ana Regional Board.

NS – Not sampled; N/A – Not applicable.

a) For constituents with only ND data, the method of detection limit (MDL) is shown as “<MDL.”

b) The average was estimated using detected values only, unless stated otherwise. NDs were not included due to the limited number of samples. This approach may result in higher averages. For samples with only one data point, the reported value or “<MDL” is presented.

c) The averages and maximums are for Big Bear Lake-wide results and were calculated using Nutrient TMDL 2009-2019 data. See Appendix E – for estimates. ND were used and assumed to be “MDL/2”.

d) Values detected below the reporting limit (RL); reported concentration is estimated. Reported as “J-Flag.”

f) TDS average was obtained from Big Bear Lake Analysis Table 19, and nutrients and chlorophyll-a from Big Bear Lake Analysis Table 22 (Appendix B of the Antidegradation Analysis).

g) PCBs are a class of chemicals which include Aroclors 1242, 1254, 1221, 1232, 1248, 1260, and 1016. The aquatic life criteria apply to the sum of the set of seven Aroclors. All results were non-detect.

i) Big Bear Lake TDS average from Big Bear Lake Analysis report was converted to µmhos/cm using a 1 mg/L of TDS = 0.642 µmhos/cm conversion factor.



### 4.11.3 **Environmental Setting: Shay Pond Hydrology**

As part of the Program, up to 80 AFY of Program Water is proposed for discharge to Shay Pond. The proposed Shay Pond Discharge is intended to replace potable water that is currently discharged to the pond to support the Stickleback, a Federal and State listed endangered species. This section describes the hydrology of Shay Pond.

#### 4.11.3.1 **Precipitation**

The Shay Pond is located about 1.2 miles southeast of the BBARWA WWTP and is on the east side of the Big Bear Valley. As discussed above, on average, the annual precipitation recorded at the east end of Big Bear Valley is between 10-15 inches.

#### 4.11.3.2 **Surface Water**

Shay Pond has a surface area of approximately 10 acres and is located about 1.2 miles southeast of the BBARWA WWTP. According to the Bear Valley Basin GSP, *“Shay Pond is a natural surface water body at the southern base of an unnamed ridge that separates it from Baldwin Lake. The nature of this pond is unknown, but it may be fed, in part, from spring flow, surface runoff, and periodically, groundwater intersecting the land surface. Although the pond may have historically been fed from surface water runoff in the ephemeral, upstream segment of Shay Creek, urban development has altered the course of this stream, and it no longer flows into the pond. Surface water exits Shay Pond via the downstream segment of Shay Creek, which flows northwards toward Baldwin Lake and intermittently provides water to Baldwin Lake.”* “Surface water sources to Baldwin Lake are primarily in the form of ephemeral streams with relatively low flow volumes. The only stream where surface water flow periodically has been measured is Shay Creek at its outlet from Shay Pond.” “Surface water runoff does not reach Baldwin Lake during most years but percolates into the groundwater system. However, during prolonged precipitation, surface water does flow into Baldwin Lake. All surface water that enters Baldwin Lake is lost to evaporation. The high clay content of the playa sediments prevents vertical migration, and the topographical configuration of Big Bear Lake prevents outflow from Baldwin Lake” (TH&Co, 2022). **Exhibit 4.11-1** shows how Baldwin Lake, an ephemeral lake, is connected to Shay Pond via Shay Creek. This exhibit also shows the population of Stickleback in the vicinity of Shay Pond extracted from the USFWS 5-Year Review Report for the Stickleback.<sup>49</sup>

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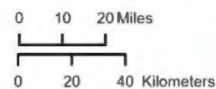
<sup>49</sup> USFWS, 2021. USFWS Unarmoured Threespine Stickleback 5-Year Review. [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/1506.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1506.pdf) (accessed 10/20/23)




**Unarmored Threespine Stickleback Site Locations and Status**

**Site Status - 2021**

- Extant
- Extirpated
- ▲ Unknown





Ventura Fish and Wildlife Office  
 2493 Portola Road, Suite B  
 Ventura, California  
 805.644.1766

The USFWS makes no warranty for use of this map and cannot be held liable for actions or decisions based on map content.

\* Introgressed (*G. a. williamsoni* x *G. a. microcephalus*) sticklebacks but *G. a. williamsoni* may still be present in some sites.  
 \*\* Present only in Shay Pond.  
 \*\*\* Additional work needed to determine if unarmored threespine sticklebacks.

(Source: USFWS, 2021)

**Exhibit 4.11-1: UNARMORED THREESPINE STICKLEBACK LOCATIONS AND CURRENT STATUS**



The population of Stickleback is unique in that it occurs at a high elevation, about 6,700 ft amsl, while all other Stickleback populations inhabit streams below 3,000 ft. In 1985 and 1986, catastrophic mortality of Stickleback in Big Bear Valley occurred due to insufficient amounts of water. By the summer of 1990, it was thought that the Stickleback remained in only Shay Pond.

There is a long history of study and group effort regarding the Stickleback in the Shay Creek area. The main stakeholders include the USFWS, CDFW, SBNF, BBCCSD, BBLDWP, and BBARWA. Additionally, the Shay Creek Working Group, which includes representatives from the USFWS, CDFW, SBNF, BBCCSD, BBLDWP, and BBARWA, was formed during the process of preparing the 2002 BO for the area (Evans, 2002).

The requirements of the 2002 BO state that BBCCSD will provide water to Shay Pond to maintain a minimum 20 gpm outflow from Shay Pond. The objective is to maintain a minimum pond water level that will support suitable habitat conditions for the Stickleback. BBCCSD currently meets this requirement by discharging potable water into Shay Pond, but the 2002 BO also states that, should a suitable alternative supply of water be found to be appropriate for the Stickleback in the future, BBCCSD may use an 'in-lieu' water supply, which could include the use of tertiary-treated water.

The discharge rate needed to maintain the required outflow, accounting for evaporation and infiltration, has varied from year to year. However, based on the average volume of discharges measured between 2012 and 2020, BBCCSD discharges approximately 50 AFY of potable water to Shay Pond on average. At times, the required discharge has been up to 80 AFY; this maximum volume is used as the basis for the project design and analysis to be conservative. **Exhibit 4.11-2** shows an aerial view of Shay Pond and the proposed discharge location.



**Exhibit 4.11-2: SHAY POND AERIAL VIEW**

**4.11.3.3 Surface Water Quality**

According to the Antidegradation Analysis (**Appendix 3**) prepared for the Program, water quality data for the specific well that discharges to Shay Pond is not available, so the data used for this analysis was obtained by compiling and averaging the water quality data from seven drinking water wells near Shay Pond, which is expected to be representative of the quality of groundwater currently used to maintain flows to Shay Pond. BBCCSD collected these data in 2020. **Table 4.11-3** outlines the existing water quality of Shay Pond.

**Table 4.11-3  
 MOST STRINGENT WATER QUALITY OBJECTIVE OR CRITERION TO CURRENT BBCCSD POTABLE WATER SUPPLY QUALITY**

Constituent	Units	Reference for Most Stringent WQO or Criterion	Average Quality of Potable Groundwater Supply <sup>(a)</sup>	Shay Pond Ambient Quality <sup>(b)</sup>
Ammonia as N	mg/L	1.4 <sup>©</sup>	NS	0.24
Boron	mg/L	0.75	<0.1	0.059
Chloride	mg/L	500	9	7.6
Fluoride	mg/L	0.9	2.1	1.2
Hardness, Total (as CaCO <sub>3</sub> )	mg/L	100	209	180
MBAS	mg/L	0.05	<0.1	<0.1
Sulfate	mg/L	500	39	23
Total Dissolved Solids	mg/L	1000	291	320
Total Nitrogen	mg/L-N	10	NS	1.2
Cadmium	µg/L	1.5 <sup>(d)</sup>	<1	<1
Copper	µg/L	16.6 <sup>(d)</sup>	<50	<50
Lead	µg/L	3.5 <sup>(d)</sup>	<5	<5
Aluminum	µg/L	200	<50	120
Specific Conductance	µmhos/cm	700/1000	496	450

Notes: NS – Not sampled/no data

a) The average groundwater potable water supply was estimated from 7 domestic wells that were tested and are near Shay Pond. NDs were excluded from the average. Constituents with all ND are reported as “<RL.” The MDL was not provided.

b) For Shay Pond, only one sample is available. The results are reported. ND are reported as “<MDL.”

c) The total ammonia was estimated using the equation presented in Table 4-4 of the Basin Plan. The field temperature on November 17, 2021, was 56 °F (13.3°C) and pH was 7.7.

d) The cadmium, copper, and lead were estimated using a total hardness value of 180 mg/L, based on the sample collected as Shay Pond.

**4.11.4 Environmental Setting: Bear Valley Groundwater Basin Hydrology**

As part of the Program, up to 380 AFY of Program Water stored in Big Bear Lake will be used for groundwater recharge at the Sand Canyon Recharge Area over a six-month dry weather period. In addition, Program Water stored in Big Bear Lake can also be extracted to irrigate Bear Mountain Golf Course, which currently uses approximately 120 AFY from private groundwater wells for

irrigation. The additional surface water available due to Program would provide irrigation water in lieu of groundwater pumping, thus reducing the demand on the aquifer system in an area where groundwater levels have been declining. A new proposed use under the Program is to use Program Water stored in Big Bear Lake to provide dust control for the Snow Summit Bike Park. Each spring, the Snow Summit Ski Resort is transformed into the Snow Summit Bike Park. Program Water stored in Big Bear Lake could be used from April to October for this purpose. It is estimated that about 120 AFY of Program Water stored in Big Bear Lake could be utilized in support of this use under the Program.

#### **4.11.4.1 Precipitation**

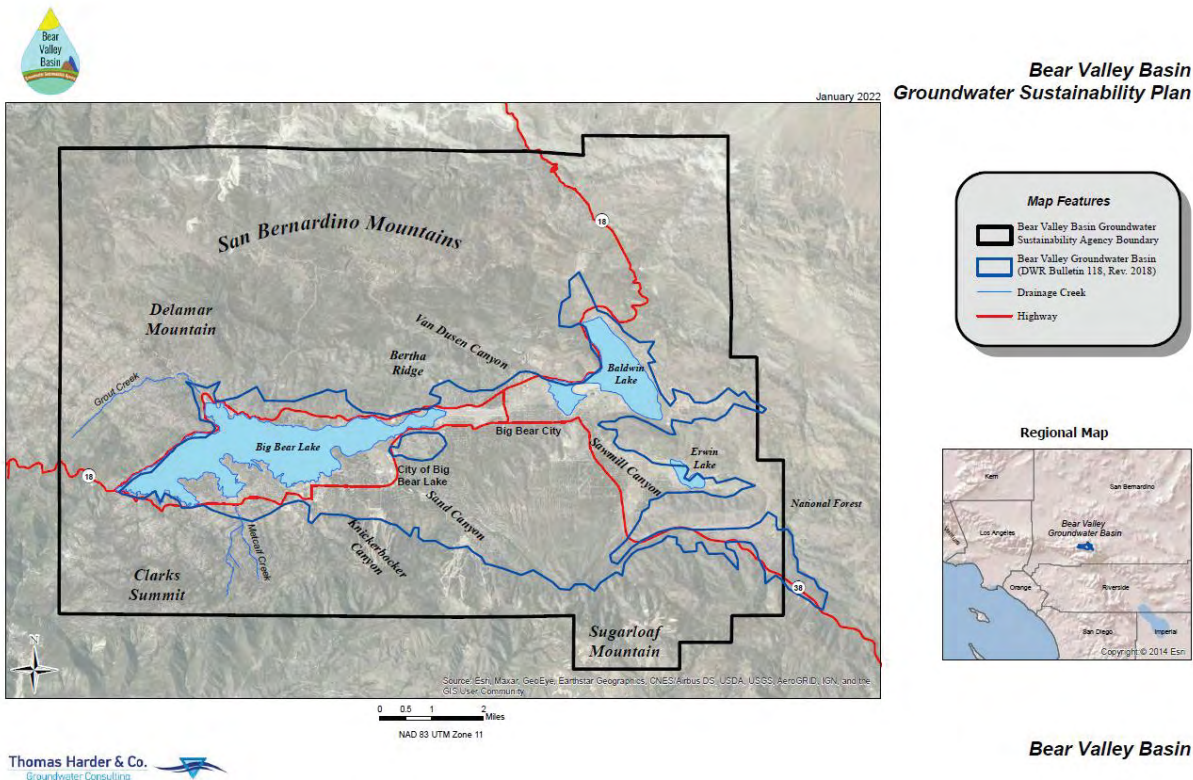
See the Stanfield Marsh/Big Bear Hydrology section for information.

#### **4.11.4.2 Groundwater Basin**

The Bear Valley Basin (No. 8-009) is situated at an elevation of approximately 6,740 ft amsl and covers approximately 30 square miles within the San Bernardino Mountains in southern San Bernardino County, California. The Big Bear Valley is an east-west trending valley that extends from Big Bear Lake Dam on the west to the eastern portion of Baldwin Lake on the east. The Big Bear Valley is surrounded by a series of local mountain ranges which rise to approximately 7,000 to 8,000 feet above sea level. The area of the Bear Valley Basin is defined by the latest version of DWR Bulletin 118 (DWR, 2018) and is shown in **Exhibit 4.11-3**. The Bear Valley Basin area includes the jurisdictional areas of multiple water districts and service entities, including BBLDWP, BBCCSD, BBMWD, and BBARWA.

Big Bear Lake and Baldwin Lake are the primary surface water features within the Bear Valley Basin, and the basin is within the watershed areas of the Big Bear Lake and Baldwin Lake surface water drainage basins. These drainage basins are composed of multiple subbasins which are defined by surface water divides. The numerous creeks within these subbasins drain into Big Bear and Baldwin Lakes; the only significant surface water outflow from the Big Bear Valley is through Bear Valley Dam. Urban areas within the Bear Valley Basin include the cities of Big Bear Lake, Fawnskin, Sugarloaf, and Big Bear City. SR-18 and SR-38 are the primary driving routes within the Big Bear Valley.





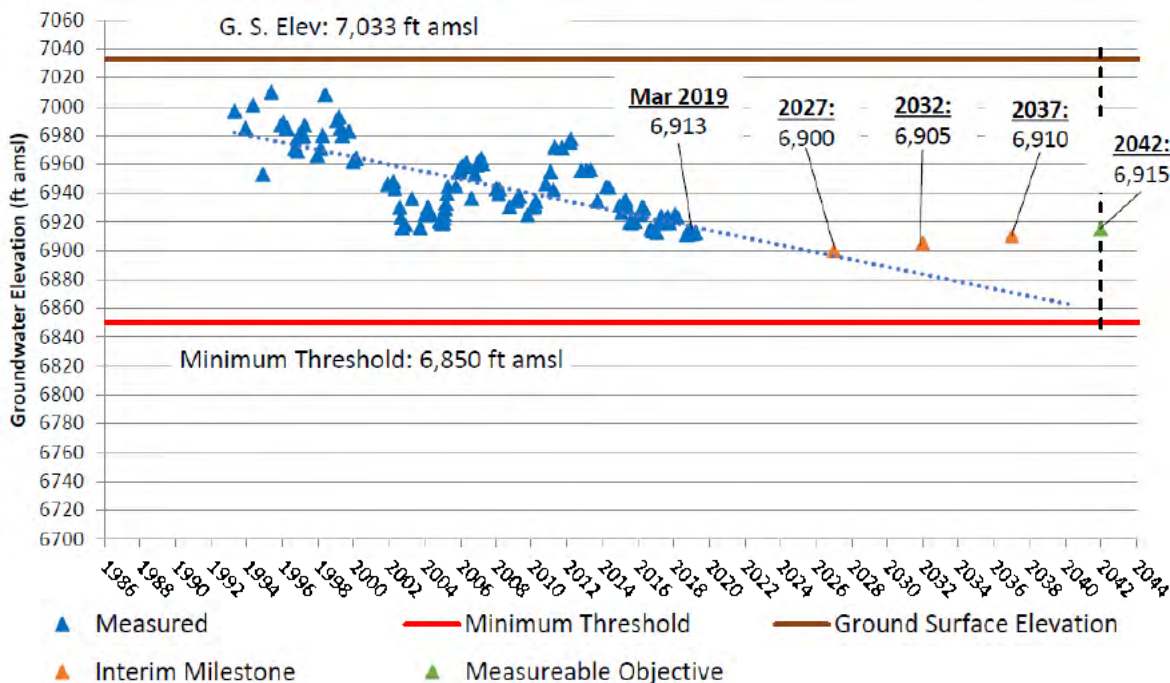
**Exhibit 4.11-3: BEAR VALLEY BASIN**

The Bear Valley Basin is generally composed of alluvial deposits which are bound by pre-Tertiary crystalline (basement) rocks of the San Bernardino Mountains. Groundwater is produced from three primary geologic formations: unconsolidated or semi-consolidated alluvial sediments, fractures and weathered zones in granitic bedrock, and fractures and cavities in carbonate bedrock. Groundwater production wells that typically have the highest yields are constructed within the aquifers of the alluvial sediments. Currently, the entire municipal water supply in the Big Bear Valley is from groundwater, as there is no means of importing water into the area. The perennial yield (i.e., safe yield or sustainable yield) of the Bear Valley Basin has been estimated to be approximately 5,300 AFY. To date, annual groundwater production has never exceeded the perennial yield estimate, and groundwater levels periodically recover to historical high conditions during wet periods. However, due to relatively limited aquifer storage in the Bear Valley Basin, groundwater levels can vary widely between periods of relatively high precipitation and periods of low precipitation. As such, it is critical to monitor and manage groundwater levels to ensure adequate supplies during periods of prolonged drought. Since 2003, local agencies have implemented groundwater monitoring and management programs that have been successful at managing groundwater supplies to address periodic drought conditions, including the recent dry period between 2011 and 2017.

In addition, the Program will provide substantial benefits to help mitigate localized imbalances in the Bear Valley Basin. While the Bear Valley Basin as a whole is sustainable, there are localized areas that show persistent groundwater level declines, which may exceed established sustainability criteria if allowed to continue. One such area is in the vicinity of the Bear Mountain Golf Course. The landscape for the course is irrigated, in part, from private wells located on or near the property. As shown in **Exhibit 4.11-4**, groundwater levels in the monitoring well Sand Canyon No. 1, which were evaluated for the GSP, have shown an overall decline since 1992,



despite periodic recovery during wet years. Without a change in groundwater management in the area, groundwater levels in this well could drop below the minimum threshold by 2042 (see **Exhibit 4.11-4**).



**Exhibit 4.11-4: GROUNDWATER ELEVATION HYDROGRAPH, SAND CANYON WELL #1**

#### 4.11.4.3 Groundwater Quality

Per the 2022 Bear Valley Basin GSP, the groundwater quality in the Bear Valley Basin varies across the basin and with depth in the aquifer system. Overall, the native groundwater quality of the upper and middle aquifers from which local agencies produce water is generally very good, with historical TDS measurements generally in the range of 200 to 300 mg/L with no detections above 500 mg/L. Groundwater quality issues in the subbasin include both regional non-point groundwater quality issues and point-source contaminant issues.

Other naturally occurring groundwater quality constituents of concern have included arsenic, manganese, and uranium. Arsenic has been detected in samples from wells in the Grout Creek subunit (Cherokee Well), Rathbone Subunit (Owen Well), and Mill Creek Subunit (Canvasback test borehole). The arsenic concentration in the Canvasback test borehole was 88 mg/L and was detected in a depth-specific sample collected from 499 ft bgs (Geoscience, 2003). Arsenic has not been detected in a shallower well completed near the test hole to a depth of 315 ft bgs, indicating the arsenic concentrations are unique to a deeper aquifer system at the site (Geoscience, 2004). All other arsenic concentrations detected in the Big Bear Valley have been below the MCL. Uranium has been detected in the Canvasback Well at concentrations above the MCL. Manganese has been detected above its secondary MCL in wells in the Village Subunit and Division Subunit.

#### **4.11.5 Environmental Setting: Big Bear Valley Flood Hazards**

FEMA's National Flood Insurance Program has created Flood Insurance Rate Map (FIRM) panels that delineate flood hazard areas. The FEMA FIRM panels for the Big Bear Valley Basin are provided as **Figures 4.11-1** through **4.11-5**. The FEMA FIRM panels, for the portions of Big Bear Valley that would be impacted by the Program include the following:

06071C7295H  
06071C8007H  
06071C8026H  
06071C7315H  
06071C7320H

By referencing these maps, it can be determined if proposed future projects associated with the Program will be located within flood hazard areas. Flood hazard areas are also shown in the City of Big Bear Lake and San Bernardino Countywide Plan (Safety Element).

To provide an overview, **Figure 4.11-6**, the San Bernardino Countywide Plan Flood Hazard Map of Big Bear Valley, demonstrates that the whole of Big Bear Lake, including some of the shoreline, is in the 100-year (1% annual chance) flood hazard. Additionally, much of Stanfield Marsh is located in the 100-year (1% annual chance) flood hazard. There is a distinct area in Big Bear City between the eastern limits of Stanfield Marsh and the western limits of Baldwin Lake that are located within the 100-year (1% annual chance) flood hazard. Additionally, much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain. The Sand Canyon Recharge Area is also located within the 100-year (1% annual chance) flood hazard. The area in which the Shay Pond replacement/existing pipeline alignment and Shay Pond itself are located in the DWR 100-year flood awareness zone.

#### **4.11.6 Environmental Setting: Lucerne Valley Hydrology**

All remaining flows in excess of the new treatment train's 2.2 MGD capacity will continue to be treated to undisinfected secondary standards and conveyed to BBARWA's existing LV Site.

The LV Site is the 480-acre site owned by BBARWA that is regulated by a Colorado Regional Board WDR. The LV Site is located near the intersection of Camp Rock Road and Highway 247 (Old Woman Springs Road) in Lucerne Valley, CA, as shown in **Figure 4.11-7**. This site is located approximately 17 miles north of BBARWA's WWTP.

The LV Site is surrounded by a barbed wire fence to restrict public access to the farm. Warning signs are clearly posted to inform the public that non-disinfected recycled water is used at this site.

The LV Site is regulated by a Colorado Regional Board WDR, which stipulates that 340 acres of the LV Site can be irrigated with recycled water from BBARWA's WWTP, with an additional 140 acres available for irrigation utilizing other water sources. The LV Site has been in operation as a farm since 1980 and is operated by a farmer who leases the land from BBARWA. Alfalfa and a grain mixture consisting of barley, oat, and wheat are grown onsite and sold as feed for animals, not producing milk for human consumption. Historically, up to 330 acres of the site had been farmed; however, the farmed area was reduced in 2012 to only 190 acres due to reduced water

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding...

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or Floodways have been determined...

Coastal Base Flood Elevations shown on this map apply only to landward of 0.0 North American Vertical Datum of 1988 (NAVD 88)...

Boundaries of the Floodways were compiled at cross sections and interpolated between cross sections. The Floodways were based on hydraulic considerations...

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures"...

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11N. The horizontal datum was NAD 83 (GRS80) spheroid...

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations...

NGS Information Services NDA, NAD 83 National Geodetic Survey SING-3, 80023 1215 East-West Highway Silver Spring, Maryland 20910-1282 (301) 715-3342

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 715-3342...

Base map information shown on this FIRMA was derived from digital orthorectification collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

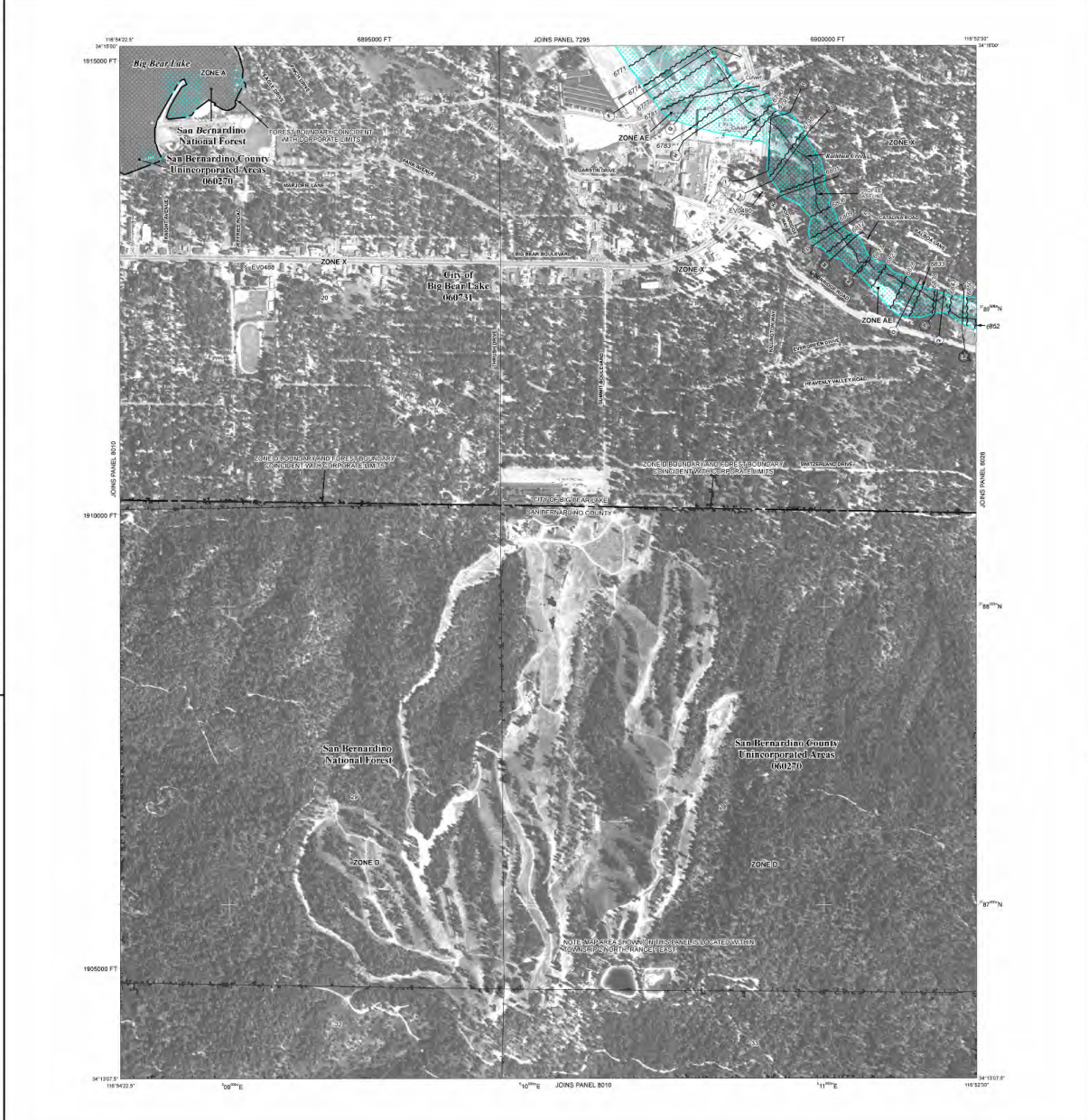
This map may reflect more detailed and up-to-date stream channel configurations than those shown on the previous FIRMA for this jurisdiction. The floodways and floodways that were transferred from the previous FIRMA may have been adjusted to conform to these new stream channel configurations...

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or disannexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limits locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels, community map repository addresses, and a listing of Communities with National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the FEMA Map Service Center at 1-800-358-9616 for information on available products associated with this FIRMA. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by fax at 1-800-358-9625 and its website at <http://www.fema.gov>.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.



LEGEND

LEGEND section containing various symbols and descriptions for flood zones (ZONE A, ZONE AE, ZONE AH, ZONE AN, ZONE AR, ZONE V, ZONE VE, ZONE X, ZONE Y), floodway areas, and other map features. Includes a scale bar and map number 06071C8007H.

FIGURE 4.11-1



**NOTES TO USERS**

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updates or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or Floodway areas have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only to landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the Floodways were compiled at cross sections and interpolated between cross sections. The Floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The horizontal datum was NAD 83. Considerable differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services  
NDA, NVD212  
National Geodetic Survey  
SIOC 3, 90505  
1215 East-West Highway  
Silver Spring, Maryland 20910-2882  
(301) 713-3342

To obtain current elevation, elevation and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3342 or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

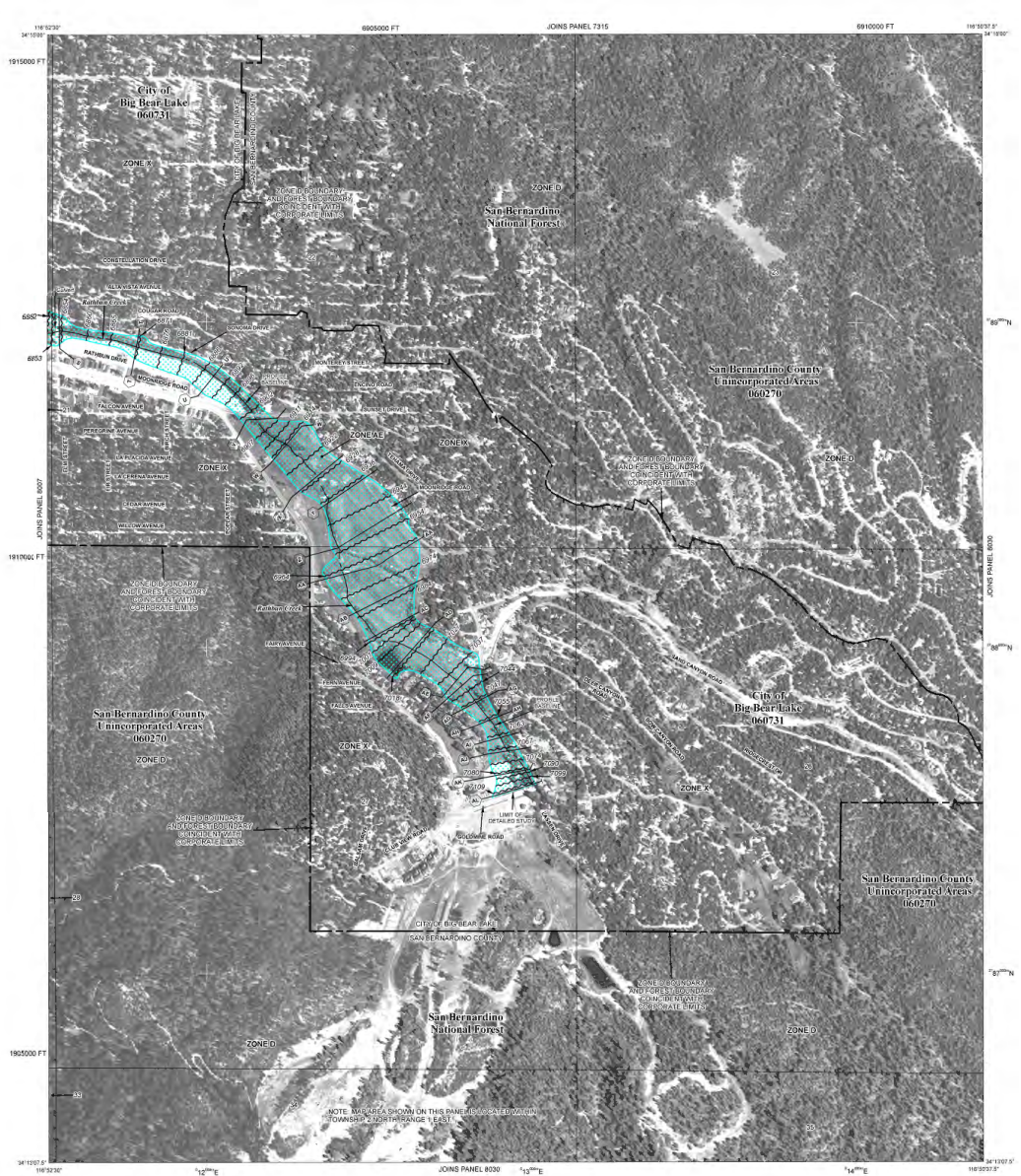
This map may reflect more detailed and up-to-date stream channel configurations than those shown on the previous FIS for this jurisdiction. The floodways and floodways that were transferred from the previous FIS may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contain authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexation or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

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If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.



**LEGEND**

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**

The 1% annual chance (100-year flood) also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, X, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

**ZONE A** No Base Flood Elevation determined.

**ZONE AE** Base Flood Elevation determined.

**ZONE AH** Flood depths of 1 to 3 feet, usually areas of ponding. Base Flood Elevation determined.

**ZONE AO** Flood depths of 1 to 3 feet, usually areas of sloping terrain. Average depth determined. For areas of actual land flooding, reduction also determined.

**ZONE AR** Special Flood Hazard area formerly protected from the 1% annual chance flood by a levee system. The Special Flood Hazard area is being maintained to provide protection from the 1% annual chance flood.

**ZONE AN** Area to be protected from 1% annual chance flood by a Federal Flood Protection System under construction. Base Flood Elevation determined.

**ZONE V** Coastal Flood zone with velocity hazard (wave action). Base Flood Elevation determined.

**ZONE VE** Coastal Flood zone with velocity hazard (wave action). Base Flood Elevation determined.

**FLOODWAY AREAS IN ZONE AE**

The Floodway is the channel of a stream plus any adjacent floodplain area that must be kept free of encroachments so that the 1% annual chance flood can be carried without substantial increase in flood height.

**OTHER FLOOD AREAS**

**ZONE X** Areas of 0.2% annual chance flood. Areas of 1% annual chance flood with average depths of less than 1 foot or with average depths less than 1.5 feet and are not protected by levees from the 1% annual chance flood.

**OTHER AREAS**

**ZONE X** Areas not shown on this map.

**ZONE D** Areas not shown on this map.

**COASTAL HARBOR REDUCED-RISK SYSTEM (CHRS) AREAS**

**OTHERWISE PROTECTED AREAS (OPAs)**

CHRS areas and OPAs are normally shown with a legend to Special Flood Hazard Areas.

0.2% annual chance flood boundary

1% annual chance flood boundary

Floodway boundary

Zone boundary

CHRS and OPA boundary

Boundary showing Special Flood Hazard from Zone A and otherwise protected areas (OPAs). Special Flood Hazard Areas of otherwise protected areas (OPAs) are normally shown with a legend to Special Flood Hazard Areas.

Base Flood Elevation value where within zone elevation is less.

1. Referenced to the North American Vertical Datum of 1988

2. Cross section 104

3. Horizontal line

4. Geographic coordinates referenced to the North American Datum of 1983 (NAD 83). UTM zone 11N.

5. 1000-meter Universal Transverse Mercator grid values, zone 11N

6. 5000-foot grid (California State Plane coordinates) zone 11N of PICTURES 1983, Lambert Conformal Conic projection

7. North north line orientation in Note 6 to User's Guide of this FIRM report

8. User file

9. MAP REPOSITORY

10. Refer to Index of Map Repositories and User Notes

11. EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

12. MAP 18 1988

EFFECTIVE DATES OF REVISIONS TO THIS PANEL:

August 28, 2008 - Update to reflect changes in the Base Flood Elevation and Special Flood Hazard Areas in the community map repository.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-435-6625.

MAP SCALE 1" = 500'

0 100 200 FEET

0 100 200 METERS

**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 8026H**

**FIRM**

**FLOOD INSURANCE RATE MAP**

**SAN BERNARDINO COUNTY, CALIFORNIA**

**LANDING UNINCORPORATED AREAS**

**PANEL 8026 OF 9400**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN BERNARDINO COUNTY	DELTA	8026	H

Notes to User: The Map Number shown below should be used when filing claims under the Community Number subject to the same conditions as used in insurance applications for the subject community.

**MAP NUMBER 06071C8026H**

**MAP REVISED AUGUST 28, 2008**

Federal Emergency Management Agency

**FIGURE 4.11-2**



**NOTES TO USERS**

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding; operators from local drainage sources of small size. The community map preparator should be consulted for possible additions.

To obtain more detailed information on areas where **Base Flood Elevations (BFEs)** and/or **Footprints** have been determined, users are encouraged to consult the Flood Profiles and Footprint Data and/or Summary of Base Flood Elevations labels contained within the Flood Insurance Study (FIS) report that accompanies this FIS. Users should be aware that BFEs shown on the FIS represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIS for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of the FIS should be aware that coastal flood elevations are also provided in the Summary of Base Flood Elevations labels in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Base Flood Elevations labels should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIS.

Boundaries of the Floodways were compiled at cross sections and interpolated between cross sections. The Floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The horizontal datum was NAD 83. CROSS differences in datum, spherical projection or UTM zones used in the production of FISs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIS.

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NGS Information Services  
NDA, NVD210  
National Geodetic Survey  
Bldg 3, 90505  
1215 East-West Highway  
Silver Spring, Maryland 20910-3282  
(301) 713-3342

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3342, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIS was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was from 2005 and was produced with a 1-meter ground sample distance.

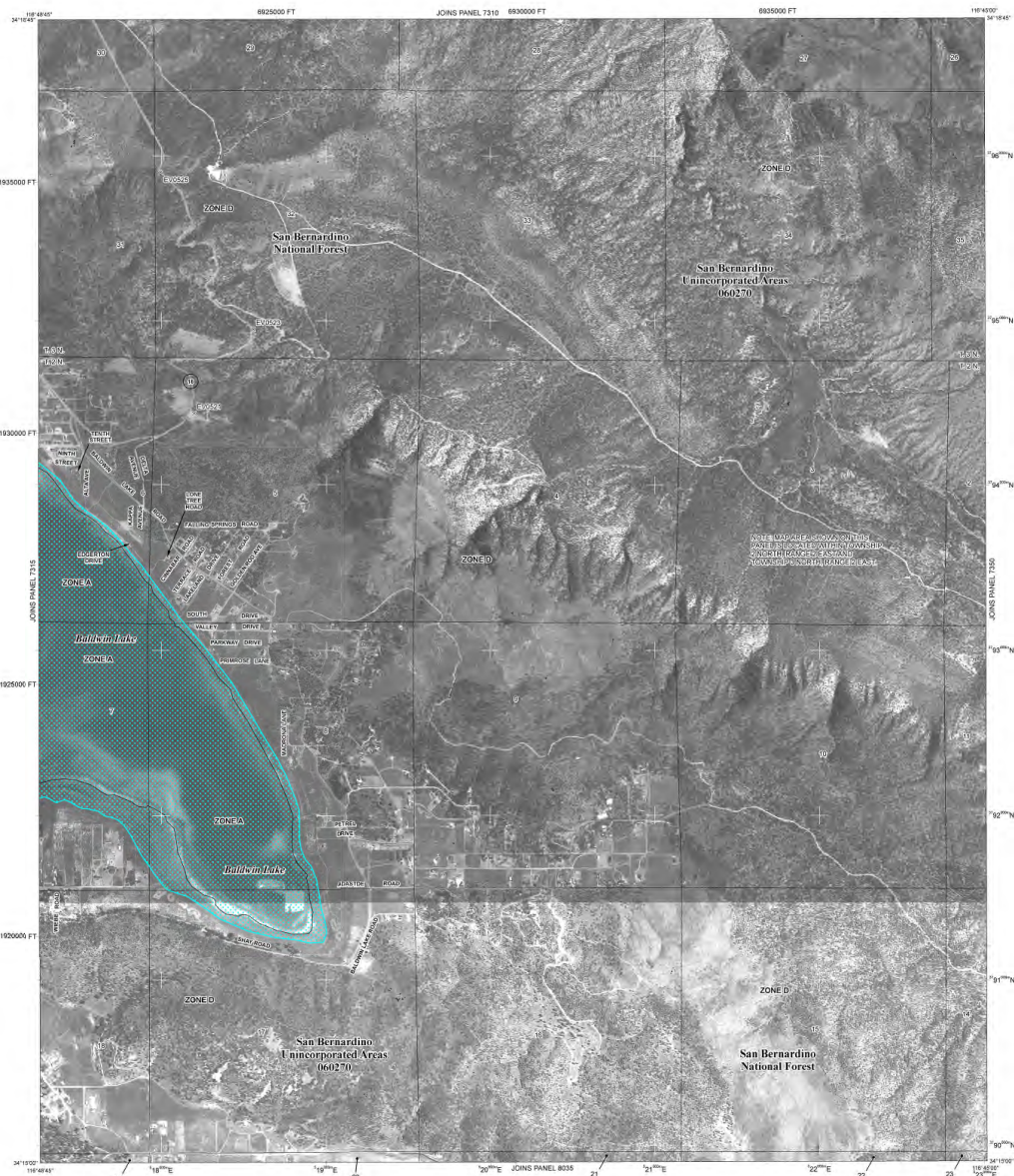
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If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.



**LEGEND**

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO FOUNDATION OF THE 1% ANNUAL CHANCE FLOOD**

The 1% annual chance (100-year flood) flow occurs on the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flow. Areas of Special Flood Hazard include:

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually above flow on existing terrain); average depths determined. For areas of shallow low flooding, velocities also determined.
- ZONE AN** Special Flood Hazard areas formerly protected from the 1% annual chance flow by flood control structures that have been removed or are under construction. Zone AN indicates that the former flood control system is being retained to provide protection from the 1% annual chance flood.
- ZONE AV** Area to be protected from the 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

**FLOODWAY AREAS IN ZONE AE**

The following is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachments so that the 1% annual chance flood can be carried without substantial interference in flood flows.

**OTHER FLOOD AREAS**

- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected from the 1% annual chance flood.
- OTHER AREAS** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are unassessable, but possible.

**COASTAL HAZARD RESOURCE SYSTEM (CHRS) AREAS**

OTHERWISE PROTECTED AREAS (OPAs)

- CHRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% annual chance footprint boundary
- 0.2% annual chance footprint boundary
- Floodway boundary
- Zone boundary
- CHRS and OPA boundary
- Boundary of Special Flood Hazard Area Zone AV and boundary of Special Flood Hazard Area of other Base Flood Elevations; flood depths in flood sections
- Base Flood Elevation low water elevation in the\*
- Base Flood Elevation water surface elevation, elevation in feet

(NAD 83)

\* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Watermark
- UNITS: 1:25000
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83); western hemisphere
- Coordinate Universal Transverse Mercator grid with UTM zone 11N
- 1:5000 feet grid; California State Plane coordinate system, zone 16 (FIPS2000) (NAD 83); UTM zone 11N
- CHRS and OPA
- M 1:5
- Scale 1:6

**MAP REPOSITORY**

Refer to Index of the Flood Insurance Study Report for the location of the community map repository.

**EFFECTIVE DATE OF REVIEWERS TO THIS PANEL:**  
Map 1: 198

**EFFECTIVE DATE OF REVIEWERS TO THIS PANEL:**  
August 28, 2008 - to update coordinate errors, to correct flood elevation and Special Flood Hazard Areas, to update water surface elevation and flood depths, and to incorporate previously issued Letters of Map Change.

For community map revision history prior to coordinate mapping, refer to the Community Map History files located in the Flood Insurance Study report for this jurisdiction.

To determine if Flood Insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-426-6225.

**MAP SCALE 1" = 1000'**

0 500 1000 1500 2000 FEET  
0 500 1000 1500 METERS

**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 7320H**

**FIRM**

**FLOOD INSURANCE RATE MAP**

**SAN BERNARDINO COUNTY, CALIFORNIA**

**UNINCORPORATED AREAS**

**PANEL 7320 OF 9400**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY	NUMBER	PANEL	SHEET
SAN BERNARDINO COUNTY	7320	H	1

**MAP NUMBER**  
06071C7320H

**MAP REVISED**  
AUGUST 28, 2008

Federal Emergency Management Agency

**FIGURE 4.11-3**



**NOTES TO USERS**

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map preparator should be consulted for possible guidance.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **Footprints** have been determined, users are encouraged to consult the Flood Profiles and Footprint Data and/or Summary of Significant Elevation Labels contained within the Flood Insurance Study (FIS) report that accompanies the FIS. Users should be aware that BFEs shown on the FIS represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIS for purposes of construction and/or floodplain management.

Coastal **Base Flood Elevations** shown on the map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of the FIS should be aware that coastal flood elevations are also provided in the Summary of Significant Elevation Labels in the Flood Insurance Study report for the jurisdiction. Elevations shown in the Summary of Significant Elevation Labels should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIS.

Boundaries of the floodways were compiled at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for the jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The horizontal datum was NAD 83 (GRS80) spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FISs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIS.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services  
NDA, NGS-12  
National Geodetic Survey  
SIOC-3, 80525  
1215 East-West Highway  
Silver Spring, Maryland 20910-3282  
(301) 715-3342

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 715-3342, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIS was derived from digital orthorectification collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

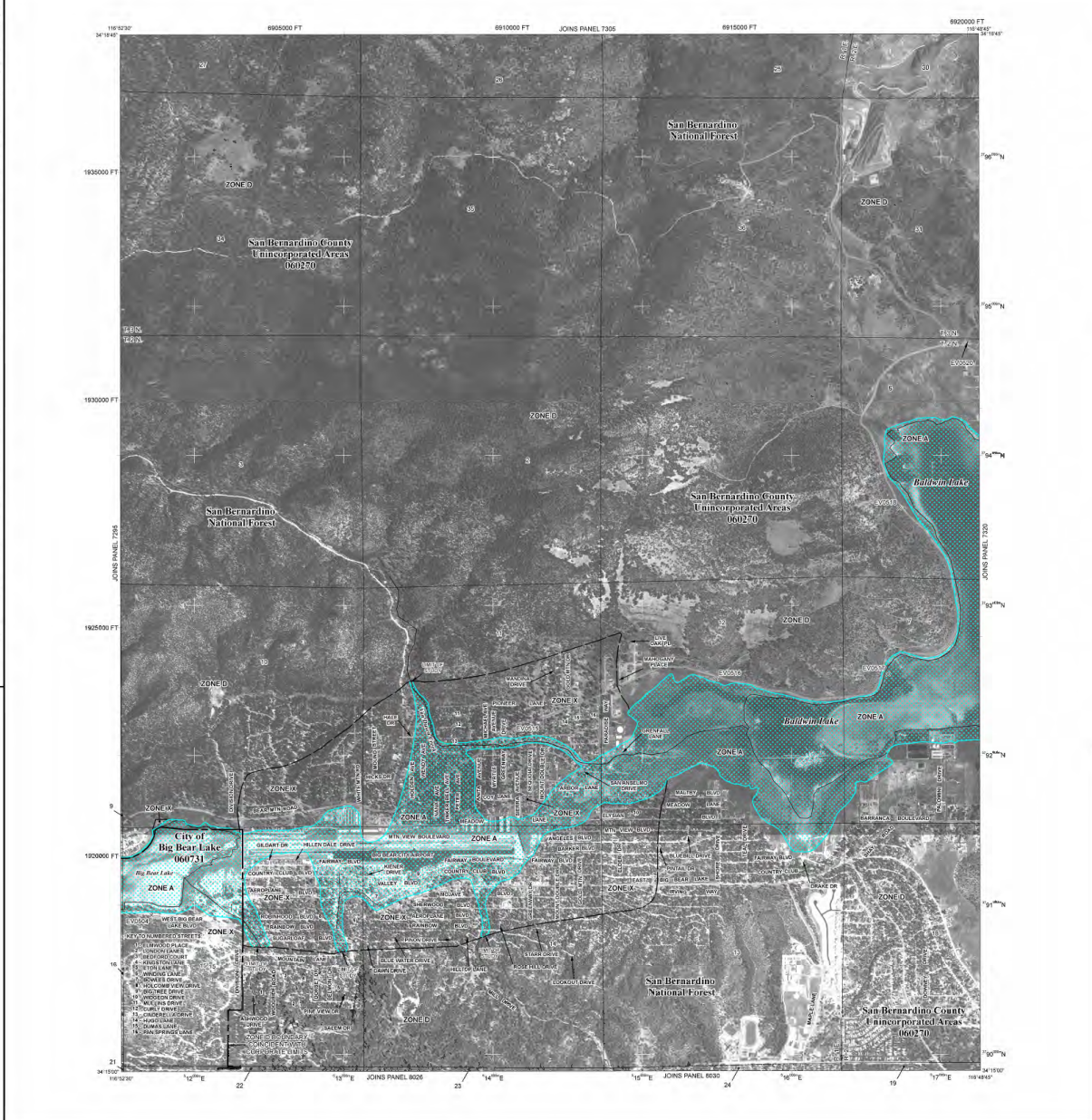
The map may reflect more detailed and up-to-date stream channel configurations than those shown on the previous FIS for this jurisdiction. The floodways and footprints that were transferred from the previous FIS may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Footprint Data tables in the Flood Insurance Study Report (which contain authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or disincorporations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limits locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a listing of Communities liable concerning National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with the FIS. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9625 and by e-mail at [fmh@fema.dhs.gov](mailto:fmh@fema.dhs.gov).

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.



**LEGEND**

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO FOUNDATION OF THE 1% ANNUAL CHANCE FLOOD**

The 1% annual flood (100-year flood) elevation and the base flood is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual flood. Areas of Special Flood Hazard include: Zone A, AE, AH, AO, AV, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual flood.

- ZONE A:** No Base Flood Elevation determined.
- ZONE AE:** Base Flood Elevation determined.
- ZONE AH:** Flood depths of 1 to 3 feet (usually based on ponding); Base Flood Elevation determined.
- ZONE AO:** Flood depths of 1 to 3 feet (usually based on flow-obstructing objects); flood depths determined. For areas of shallow flow, velocities also determined.
- ZONE AV:** Special Flood Hazard areas formerly protected from the 1% annual chance flood by flood control structures that are no longer maintained. Zone AV indicates that the former flood control system is being retained to provide protection from the 1% annual chance flood.
- ZONE AVX:** Area to be protected from 1% annual chance flood by a Federal flood control structure under construction; no Base Flood Elevation determined.
- ZONE VE:** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevation determined.
- ZONE VEC:** Coastal flood zone with velocity hazard (wave action); Base Flood Elevation determined.

**FLOODWAY AREAS IN ZONE AE**

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

**OTHER FLOOD AREAS**

- ZONE X:** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile and are protected by levees from the 1% annual chance flood.
- OTHER AREAS:** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D:** Areas in which flood hazards are unassessable, but possible.

**CONTIGUOUS HAZARDOUS RESOURCE SYSTEM (CHRS) AREAS**

OTHERWISE PROTECTED AREAS (OPAs)

- OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 7% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Zone boundary
- CHRS and OPA boundary
- Boundary of a Special Flood Hazard Area Zone A and boundary of a Special Flood Hazard Area of other Base Flood Elevation; flood depths or flood velocities
- Base Flood Elevation for wet water, whether in a "wet" or "dry" state
- Base Flood Elevation value where uniform water flow, station 0 feet
- Intersected on the North American Vertical Datum of 1988
- Cross section line
- Wetland line
- Geographic coordinate referenced to the North American Datum of 1983 (NAD 83); western hemisphere
- Universal Transverse Mercator grid northings, zone 11N
- 100-foot grid lines; California State Plane coordinate system, with UTM ZONES 11N01, 11N02, 11N03, 11N04, 11N05, 11N06, 11N07, 11N08, 11N09, 11N10, 11N11, 11N12, 11N13, 11N14, 11N15, 11N16, 11N17, 11N18, 11N19, 11N20, 11N21, 11N22, 11N23, 11N24, 11N25, 11N26, 11N27, 11N28, 11N29, 11N30, 11N31, 11N32, 11N33, 11N34, 11N35, 11N36, 11N37, 11N38, 11N39, 11N40, 11N41, 11N42, 11N43, 11N44, 11N45, 11N46, 11N47, 11N48, 11N49, 11N50, 11N51, 11N52, 11N53, 11N54, 11N55, 11N56, 11N57, 11N58, 11N59, 11N60, 11N61, 11N62, 11N63, 11N64, 11N65, 11N66, 11N67, 11N68, 11N69, 11N70, 11N71, 11N72, 11N73, 11N74, 11N75, 11N76, 11N77, 11N78, 11N79, 11N80, 11N81, 11N82, 11N83, 11N84, 11N85, 11N86, 11N87, 11N88, 11N89, 11N90, 11N91, 11N92, 11N93, 11N94, 11N95, 11N96, 11N97, 11N98, 11N99, 11N100
- MAP REPOSITORY: Where to locate the map; information on how to obtain the map
- EFFECTIVE DATE OF REVIEW: TO THIS PANEL: August 28, 2008
- TO PREVIOUS PANEL: August 28, 2008

For community map revision history, prior to coordinate mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-426-6223.

**MAP SCALE 1" = 100'**

0 100 200 300 400 500 600 FEET  
0 100 200 300 400 METERS

**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 7315H**

**FIRM FLOOD INSURANCE RATE MAP**

**SAN BERNARDINO COUNTY, CALIFORNIA**

**LAND IN UNINCORPORATED AREAS**

**PANEL 7315 OF 9400**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY: [blank] SUBMITTED: [blank] EFFECTIVE DATE: [blank]

NO. OF PANELS: [blank] CITY OF: [blank] COUNTY: [blank]

MAP NUMBER: 09071C7315H

MAP REVISED: AUGUST 28, 2008

Federal Emergency Management Agency

**FIGURE 4.11-4**



**NOTES TO USERS**

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding; potential flood loss drainage sources of small size. The community map preparer should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or Floodway Data and/or Floodway Data and/or Floodway Data labels contained within the Flood Insurance Study (FIS) report that accompanies this FIS, users should be aware that BFEs shown on the FIS represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIS for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.2 North American Vertical Datum of 1988 (NAVD 88). Lines of the FIS should be aware that coastal flood elevations are also provided in the Summary of Significant Elevation Labels in the Flood Insurance Study report for the jurisdiction. Elevation shown in the Summary of Significant Elevation Labels should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIS.

Boundaries of the Floodways were compiled at cross sections and interpolated between cross sections. The Floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for the jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The horizontal datum was NAD 83, GRS80 datum. Differences in datum, spheroid projection or UTM zones used in the production of FISs, for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIS.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services  
NIMA, NGS212  
National Geodetic Survey  
SIGNAL CENTER  
1215 East-West Highway  
Silver Spring, Maryland 20910-2882  
(301) 713-3342

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at 800-735-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIS was derived from digital orthorectified imagery collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

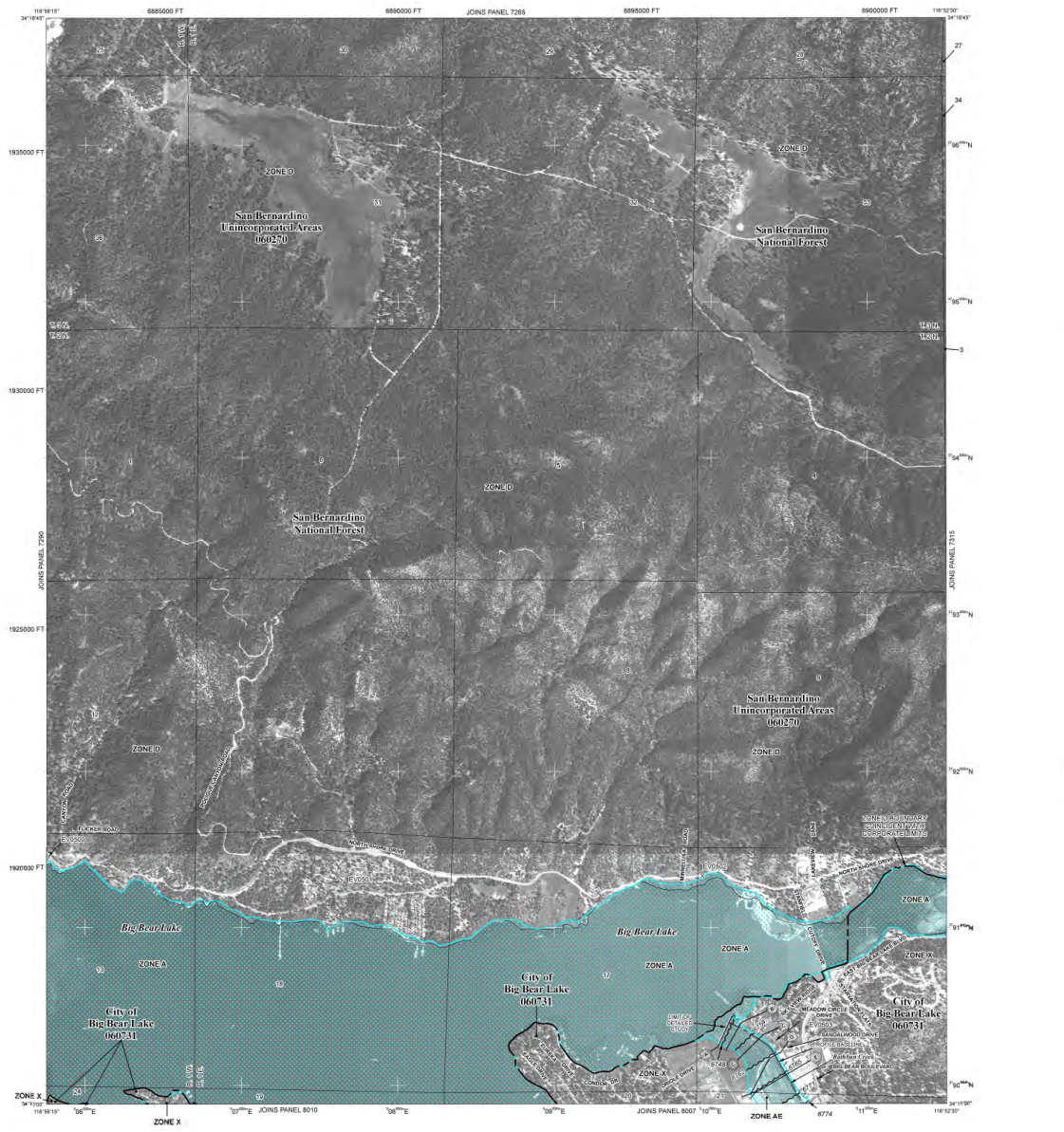
This map may reflect more detailed and up-to-date stream channel configurations from those shown on the previous FIS for this jurisdiction. The floodplains and floodways that were transferred from the previous FIS may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data labels in the Flood Insurance Study Report (which contain authoritative hydraulic data) may reflect stream channel details that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexation or de-annexation may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map zones, community map repository addresses, and a listing of Communities Labels containing National Flood Insurance Program data for each community as well as a listing of the panels on which each community is located.

Contact the FEMA Map Service Center at 1-800-358-9618 for information on available products associated with the FIS. Available products may include previously issued letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by fax at 1-800-358-9622 and its website at [www.fema.gov](http://www.fema.gov).

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.



**LEGEND**

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO FOUNDATION OR THE 1% ANNUAL CHANCE FLOOD**

The 1% annual flood (100-year flood) elevation at the base flood is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual flood. Areas of Special Flood Hazard include:

- ZONE A** No Base Flood Elevation determined.
- ZONE AE** Base Flood Elevation determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually based on wind-storm surge); Base Flood Elevation determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually based on wind-storm surge); average depths determined. For areas of shallow flow, velocities are determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a levee. Flood elevations are based on the 1% annual chance flood elevation. Areas to be protected from the 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevation determined.
- ZONE AV** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevation determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevation determined.

**FLOODWAY AREAS IN ZONE AE**

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment to the 1% annual flood level can be carried without substantial increase in flood height.

**OTHER FLOOD AREAS**

- ZONE E** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with average depths less than 1.5 feet and are protected by levees from the 1% annual chance flood.
- OTHER AREAS** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are unassessable, but possible.

**CENTRAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**

OTHERWISE PROTECTED AREAS (OPAs)

- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 7% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone boundary
- CBRS and OPA boundary
- Boundary of the Special Flood Hazard Area Zone and boundary of the Special Flood Hazard Area of other Base Flood Elevations, Flood depths or flood velocities
- Base Flood Elevation label and value, elevation in feet\*
- Base Flood Elevation value where uniform within zone, elevation in feet

(EL. 587)

\* Referenced to the North American Vertical Datum of 1988

Contour interval  
Contour section line  
Washed line  
Geographic coordinate referenced to the North American Datum of 1983 (NAD 83); UTM zone  
Coordinate Universal Transverse Mercator grid values, zone 11N  
100-foot grid lines, California State Plane coordinate system, zone 18F (NAD 83); UTM zone coordinate grid  
Floodway name (see explanation in Note to Users section of this FIS)  
Flood way  
Flood line  
MAP REPOSITORY  
Name in area of the Flood Insurance Study report  
EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP  
March 15, 1995

**EFFECTIVE DATE OF REVISIONS TO THIS PANEL:**  
August 28, 2008 - Update coordinate system to National Flood Insurance Program Standard Flood Hazard Areas to comply with FEMA and to update flood zones and to incorporate previously issued letters of Map Change.

For community map information prior to coordinate mapping, refer to the Community Map Hazard Labels located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-426-6225.

**MAP SCALE 1" = 1000'**

0 500 1000 1500 2000 2500 3000 3500 4000 FEET  
0 160 320 480 METERS

**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 7295H**

**FIRM**

**FLOOD INSURANCE RATE MAP**

**SAN BERNARDINO COUNTY, CALIFORNIA**

**AN UNINCORPORATED AREAS**

**PANEL 7295 OF 9400**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:	SUBJECT:	PANEL:	SECT:
UNINCORPORATED AREAS	SAN BERNARDINO COUNTY	7295	H

Map Number 09071C7295H  
Map Revised August 28, 2008  
Federal Emergency Management Agency

**FIGURE 4.11-5**



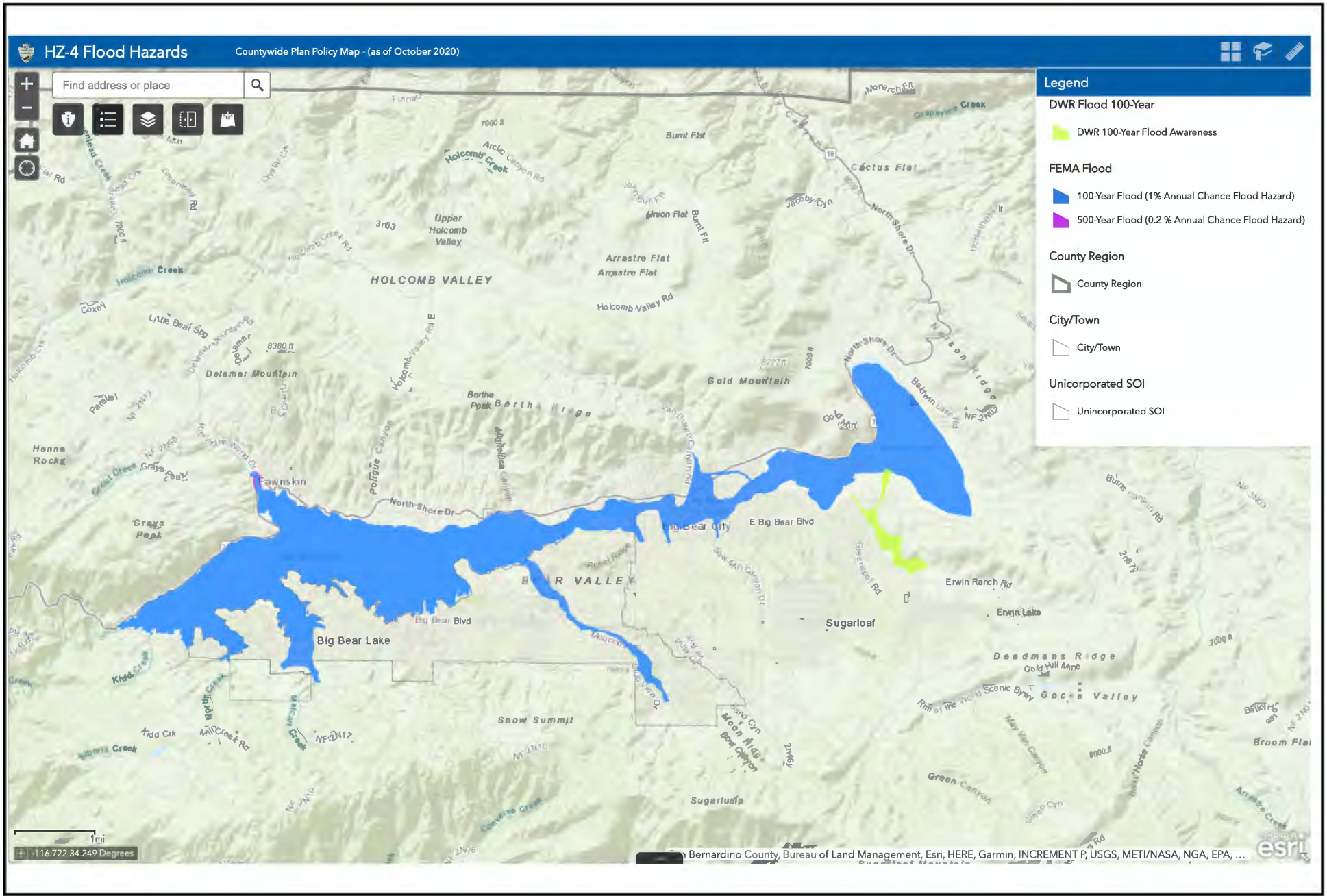


FIGURE 4.11-6

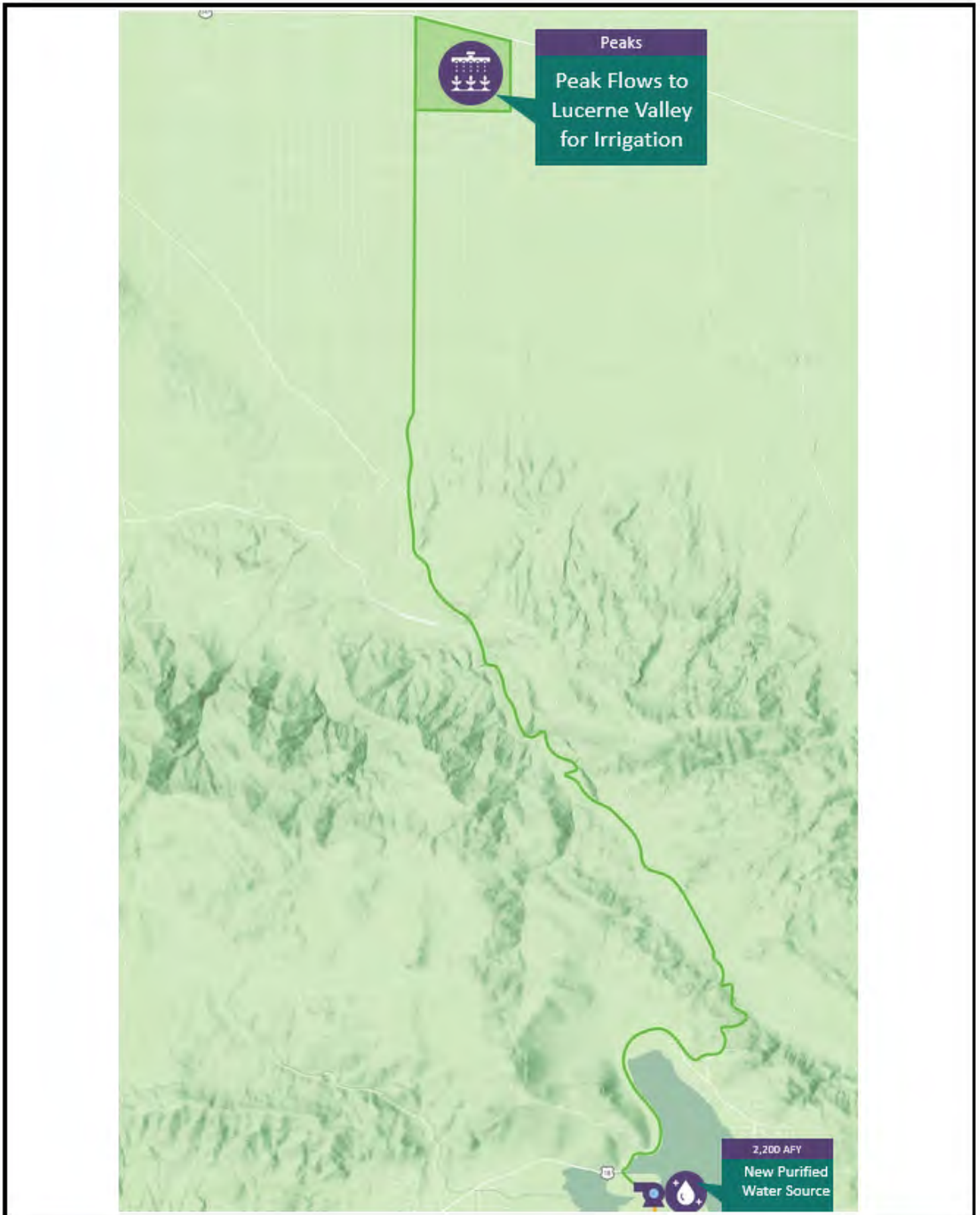


FIGURE 4.11-7

availability associated with drought conditions. The current farmed area remains at 190 acres, with no plans to increase the acreage.

**4.11.6.1 Precipitation**

The climatic conditions for the Lucerne Valley Region were determined using California Irrigation Management Information Systems (CIMIS) data for the Victorville Station (Station 117) and are summarized in **Table 4.11-4**. According to MWA’s 2015 UWMP, Victorville CIMIS station is representative of the regional climate for the surrounding region. However, the Lucerne Valley can be drier, windier, and have greater temperature variability than is seen within the City of Victorville.

The annual precipitation in the Lucerne Valley region averages about 3.5 inches. Annual evapotranspiration rate is approximately 69.7 inches.

**Table 4.11-4  
 CLIMATE DATA FOR THE LUCERNE VALLEY REGION**

Year	Total ETo (in)	Total Rainfall (in)
2012	70.2	5.0
2013	68.9	1.1
2014	67.8	1.5
2015	67.7	2.4
2016	70.3	3.8
2017	70.0	2.2
2018	70.6	4.2
2019	67.9	7.6
2020	69.7	4.0
2021	72.6	3.8
2022	70.8	3.0
<b>Average</b>	<b>69.7</b>	<b>3.5</b>

**4.11.6.2 Groundwater**

The LV Site is located within the Lucerne Valley Basin, as defined by DWR’s Bulletin 118 (DWR, 2003). Topographically, the Lucerne Valley Basin is a closed hydrologic system such that all surface water flow terminates within the Lucerne Valley Basin at Lucerne Dry Lake (see **Exhibit 4.11-5**). Groundwater flow out of the Lucerne Basin is also assumed to be negligible (Pioneer Consultants, 1977). Notably, the Lucerne Valley Basin is part of the MBA, which is adjudicated as a result of the January 1996 Judgment (1996 Judgment) by the Riverside County Superior Court, which established MBA Watermaster as the Watermaster for the MBA. The Lucerne Valley Basin correlates with the Este Subbasin as defined under the 1996 Judgment in the MBA. The MBA is shown on **Figure 4.11-8**.



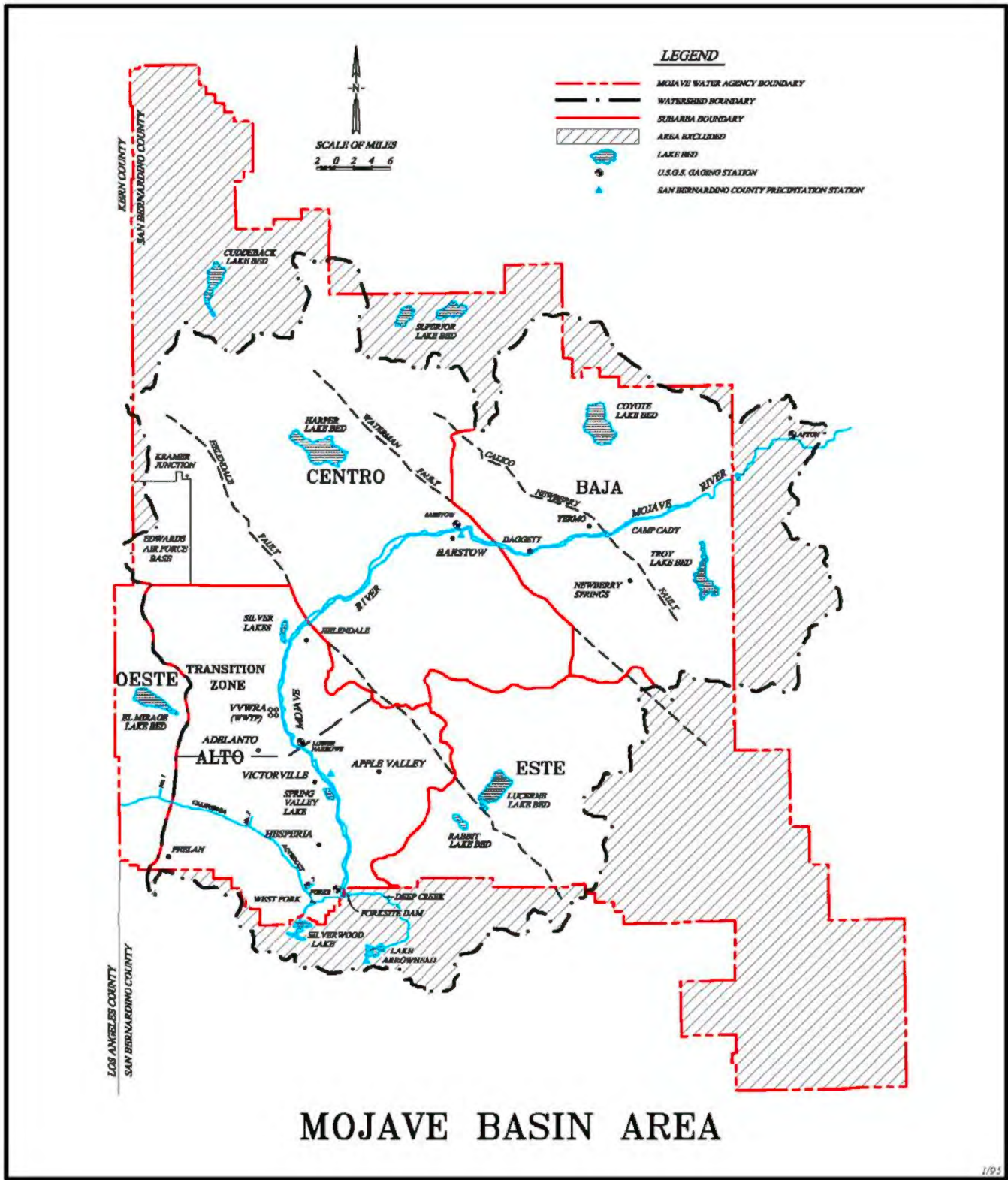


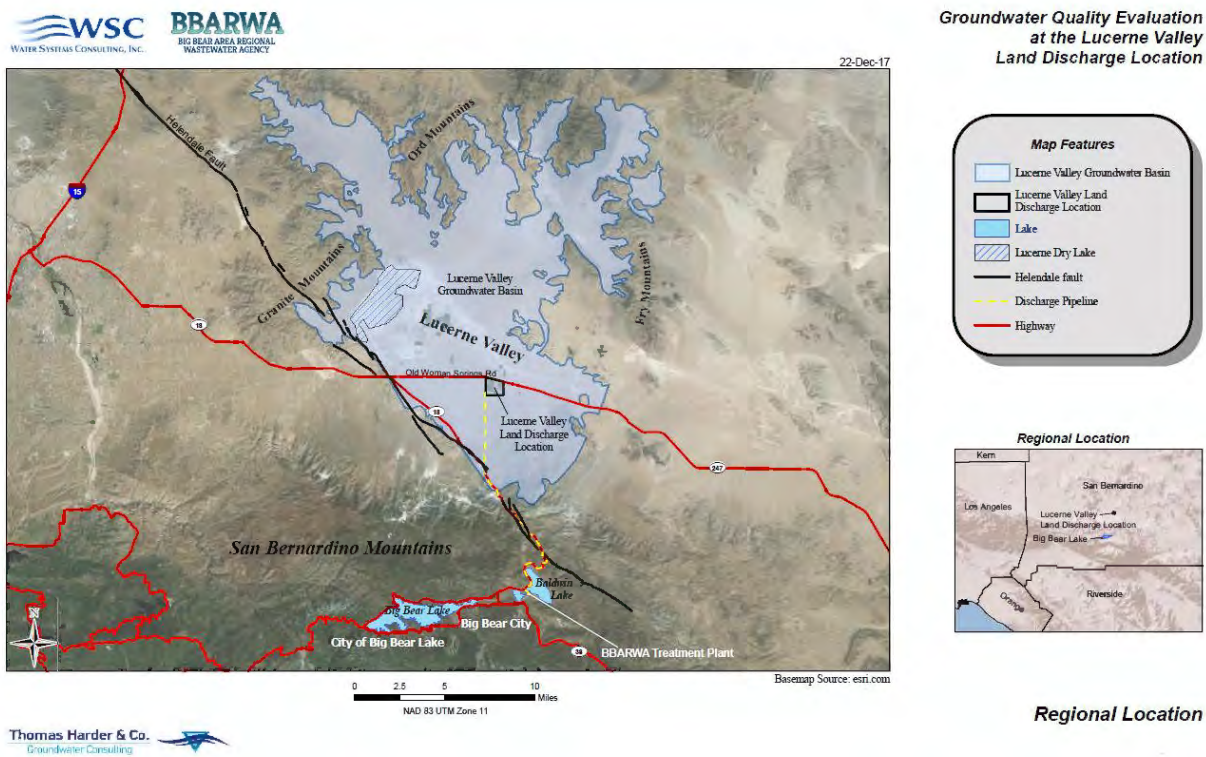
FIGURE 4.11-8

However, it is important to note that BBARWA’s wastewater flow to the LV Site is not considered an adjudication water right or claim to the LV Basin, but only considered to be an accounting for that supply (**Appendix 23**). Since BBARWA’s wastewater is not included in the LV Basin’s annual yield calculation or claim to that supply, BBARWA is not bound by the LV Basin’s adjudication and its wastewater can be diverted to be reused in Big Bear Valley at BBARWA’s discretion (**Appendix 24**).

**Recharge**

A Hydrogeology and Simulation of Groundwater Flow in the Lucerne Valley Groundwater Basin, California was prepared by USGS in conjunction with MWA. Much of the data contained in this section has been abstracted from this report. Recharge to the Lucerne Valley is by the infiltration of water from the washes draining the San Bernardino Mountains to the south and by anthropogenic sources such as septic and sewage effluent, and irrigation return (USGS, 2022). The aquifer in the Lucerne Valley Basin is recharged from precipitation runoff and infiltration along the base of the San Bernardino Mountains and, to a lesser degree, along the Ord and Fry Mountains to the north (Pioneer Consultants, 1977; DWR, 1975). Natural recharge to the Lucerne Valley occurs primarily by the infiltration of sporadic runoff from ephemeral washes. The primary source of groundwater discharge through evapotranspiration at Lucerne Dry Lake. Previous reports have indicated that the aquifer in the vicinity of the Lucerne Valley is unconfined (Blazevic, et al., 2005).

According to the Hydrogeology and Simulation of Groundwater Flow in the Lucerne Valley Groundwater Basin, the potential annual recharge to the area covered by the entire Lucerne Valley Basin was estimated to range from about 325 to 2,340 AFY, with an average of about 940 AFY for the period between 1942 and 2016, and an estimated cumulative total of about 70,600 AF for the same period.

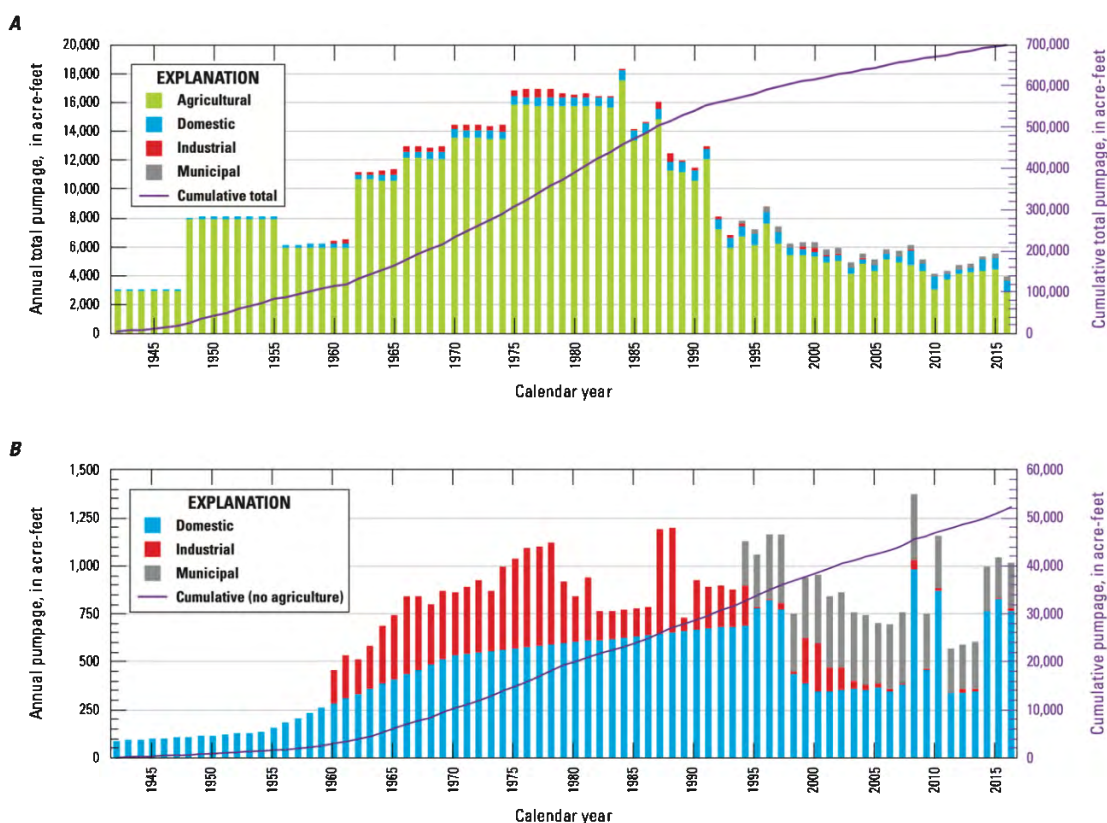




**Discharge**

As discussed above, a Hydrogeology and Simulation of Groundwater Flow in the Lucerne Valley Groundwater Basin was prepared by USGS in conjunction with MWA. Much of the data contained in this section has been abstracted from this report. Before groundwater development in the Lucerne Valley, natural discharge from the basin occurred through a few springs along the Helendale Fault, as evaporation at the playa surface, and by evapotranspiration from the sparse desert vegetation.

Groundwater development and the use of wells in the Lucerne Valley began in the late 1880s because Mendenhall (1909) noted that several wells had been drilled and flowing wells were reported at established ranches by 1905. Groundwater use in the Lucerne Valley Basin was primarily for irrigated agriculture, with some cattle and poultry farming and a small amount for homesteads (USGS, 2022). Estimates of total pumpage for 1942–2016 ranged from about 3,010 AF in 1942 to about 18,300 AF in 1984. The total cumulative amount of groundwater removed from the Lucerne Valley Basin by pumping between 1942 and 2016 was estimated to be about 700,000 AF (**Exhibit 4.11-6**), which was about 10 times greater than the cumulative amount of recharge to the entire Lucerne Valley groundwater basin (of about 70,600 AF), as estimated by the California Basin Characteristic Model (CA-BCM).<sup>50</sup>



**Exhibit 4.11-6: ANNUAL AND CUMULATIVE PUMPAGE FOR 1942–2016. A, ALL WATER USES; AND B, WATER USES NOT INCLUDING AGRICULTURE, LUCERNE VALLEY, CALIFORNIA<sup>51</sup>**

<sup>50</sup> The CA-BCM uses a monthly regional water-balance model to simulate hydrologic responses to climate and renders estimates of basin recharge and runoff.

<sup>51</sup> Mojave Water Agency, 2019. Consumptive Water Use Study and Production Safe Yield Update for 2017-2018. [https://www.mojavewater.org/wp-content/uploads/2022/06/CU\\_Study\\_PSY\\_Update\\_20190501.pdf](https://www.mojavewater.org/wp-content/uploads/2022/06/CU_Study_PSY_Update_20190501.pdf) (accessed 07/05/23)

Furthermore, the MBA Watermaster prepared a Consumptive Water Use Study and Production Safe Yield Update for 2017-2018, dated May 1, 2019 (MBA Watermaster, 2019), which indicated that the production safe yield for 2018 is 4,728 AFY, which was based on long-term average natural water supply and outflow, and imports, consumptive use, and is shown on **Table 4.11-5**.

**Table 4.11-5  
 PRODUCTION SAFE YIELD UPDATE BASED ON LONG-TERM AVERAGE NATURAL WATER SUPPLY AND OUTFLOW, AND IMPORTS, CONSUMPTIVE USE, AND PRODUCTION FOR 2018 (AFY)**

	<b>Este Subbasin</b>
<b>Water Supply</b>	
Surface Water Inflow	1,700
Imports	2,000
<b>Total</b>	<b>3,700</b>
<b>Consumptive Use<sup>1</sup> and Outflow</b>	
Subsurface Outflow	200
Agriculture	2,327
Urban	1,500
<b>Total</b>	<b>4,027</b>
Surplus/Deficit	(327)
Total Estimated Production	5,055
<b>Production Safe Yield<sup>2</sup></b>	<b>4,728</b>

<sup>1</sup> Consumption or Consumptive Use - The permanent removal of water from the MBA through evaporation or evapotranspiration.  
<sup>2</sup> Production Safe Yield - The highest average Annual Amount of water that can be produced from a Subarea: (1) over a sequence of years that is representative of long-term average annual natural water supply to the Subarea net of long-term average annual natural outflow from the Subarea, (2) under given patterns of Production, applied water, return flows and Consumptive Use, and (3) without resulting in a long-term net reduction of groundwater in storage in the Subarea.

The production safe yield (PSY) is calculated as the difference between total pumping in a subarea and the deficit between total water supply and consumptive use and outflow.

Elements of supply included in PSY include certain imports that have been long term reliable supplies but could be interrupted. Wastewater effluent discharged to the MBA in the Este Subbasin by BBARWA, is included in the PSY calculation for the Subarea (Este Subbasin/Lucerne Valley Basin). PSY for 2018 is considered representative for future planning. Changes that occur in the annual amount discharged by these entities are evaluated annually and reported, but BBARWA ultimately holds the rights to its effluent.

Note that more recently, in 2021-2022, the total water supply for Este Subbasin was 4,706 AF, while the outflow and consumptive use was 4,706 AF. To maintain proper water balances within each Subarea, the 1996 Judgment establishes a decreasing FPA in each Subarea during the first five years and provides for the Riverside County Superior Court to review and adjust, as appropriate, the FPA for each Subarea annually thereafter. According to the MBA Watermaster Annual Report for Water Year 2021-2022, the PSY for the Este Subbasin will be reevaluated within the next year and a recommendation provided to MBA Watermaster and the Riverside County Superior Court during the 2023-24 Water Year. The 2022-2023 FPA is 12,523 AFY, which is greater than the PSY of 4,728. As FPA remains higher than PSY in the Este Subbasin, the MBA Watermaster determined that additional rampdown is warranted. It is recommended that the Este Subbasin FPA be reduced by 5% to 55% for Water Year 2023-24.

**LV Site Groundwater Levels**

There are three monitoring wells (MW-1, MW-2, and MW-3) located within the LV Site. MW-1 is located on the south end of the property and MW-2 and MW-3 are located on the north end (see **Exhibit 4.11-**). Groundwater levels and groundwater quality data have been collected from the monitoring wells on a semi-annual to annual basis since they were completed in 1991. Each monitoring well is constructed of 4-inch diameter PVC casing to a depth of 250 ft bgs. The wells are each constructed with multiple perforation intervals between 135 ft bgs and 250 ft bgs. The monitoring wells are completed 2.5 ft above ground surface with locking monument casing.

Based on hydrographs from MW-1 through MW-3, groundwater elevations are generally between 2,845 and 2,885 ft amsl. This corresponds to a groundwater level depth of approximately 125 to 175 ft bgs. Groundwater elevations in MW-1 (the upgradient well) are generally 25 ft higher than those in MW-2 and MW-3. Since the onsite groundwater monitoring wells were first constructed in 1991, groundwater levels beneath the LV Site have generally been rising. Although there is year-to-year variation associated with precipitation trends, groundwater levels have risen approximately 10 ft beneath the LV Site between 1991 and 2016 (refer to **Appendix 6**, Volume 2 of this DPEIR). The groundwater flow direction beneath the Lucerne Valley is generally to the northwest. Although the groundwater elevations have changed over time, the groundwater flow direction has been consistent towards the Lucerne Dry Lake.



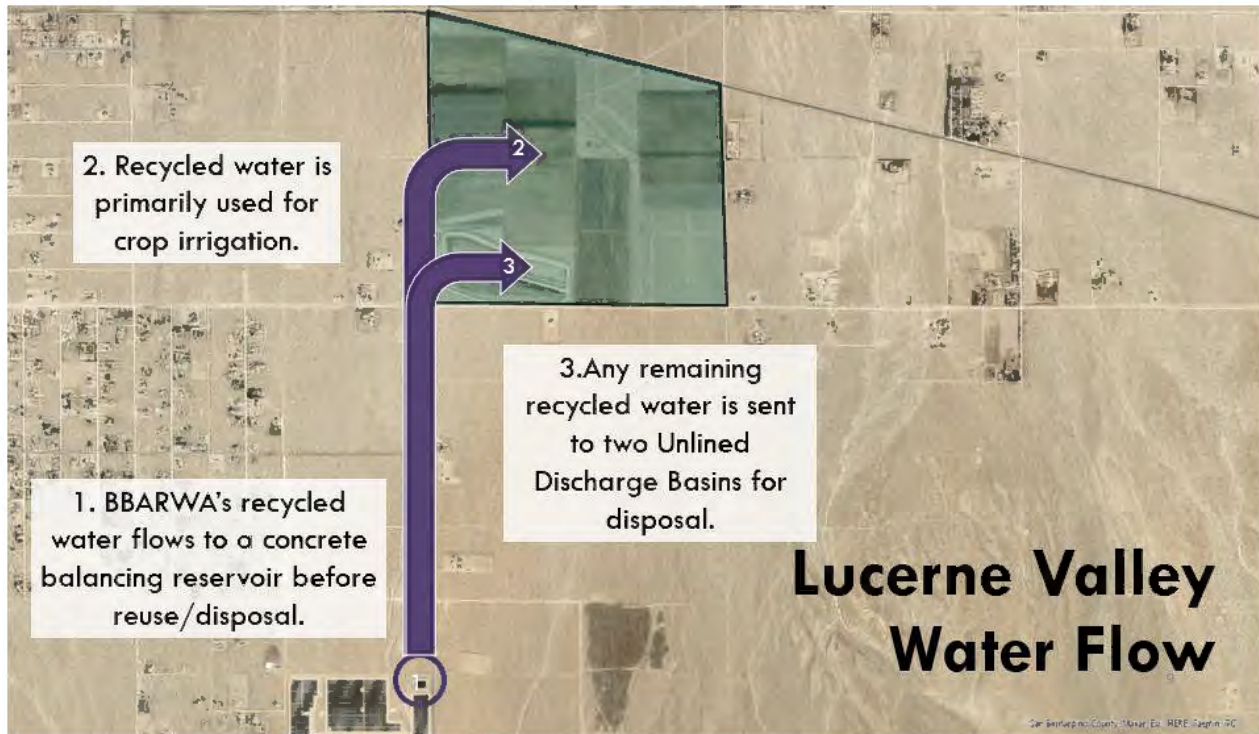
**Exhibit 4.11-7: LV SITE AND MONITORING WELLS**

**Water Balance**

With the Program implementation, less water will be sent to the LV Site. As mentioned above, the LV Site is leased to a farmer who uses the BBARWA effluent to irrigate alfalfa and grain, which is sold as feed to animals that are not producing milk for human consumption. The water that is not used is sent to an unlined discharge basin, as shown in **Exhibit 4.11-8**.

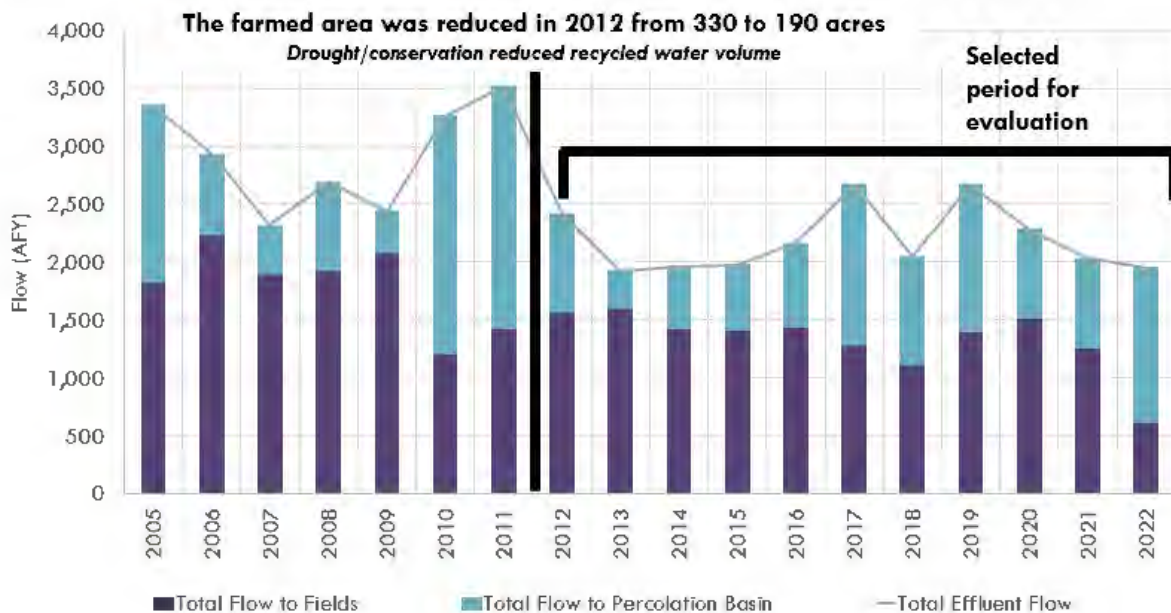
To assess the impacts that the Program will have on the LV Site, a water balance was completed to estimate the volume of water that percolates into the Lucerne Valley Basin and estimate the reduction in flows resulting from the Program. Please note that this analysis did not account for the oasis effect, as this type of analysis requires many years of data to understand the microclimate of the area, which is currently not available. A study to this effect has not been conducted, as the reduction in flow to the LV Site is being proposed as part of this Program. As such, no former efforts to quantify the amount of BBARWA discharge that reaches the Lucerne Valley Basin had, to date, been conducted so far as BBARWA is aware. The water balance that was prepared simplifies actual conditions and is conservative as the actual volume percolating into the Lucerne Valley Basin is likely less due to the losses not accounted for.

The water balance was completed using flows sent to the LV Site from 2012 through 2022. This period was used because, in 2012, the farmed area was reduced from 330 to 190 acres. In addition, BBARWA reduced its flows due to conservation efforts. **Exhibit 4.11-9** shows the historical data from 2005-2022, which shows the decrease in flows. **Exhibit 4.11-10** shows the monthly uses from 2012-2022. Based on this data, between 2012-2022, BBARWA sent about 2,190 AFY of water to the LV Site, of which 1,330 AFY were used for crop irrigation and 860 AFY were discharged into the unlined basin.



**Exhibit 4.11-8: LV SITE RECYCLED WATER USE**





**Exhibit 4.11-9: 2005-2022 BBARWA FLOWS SENT TO LV SITE**



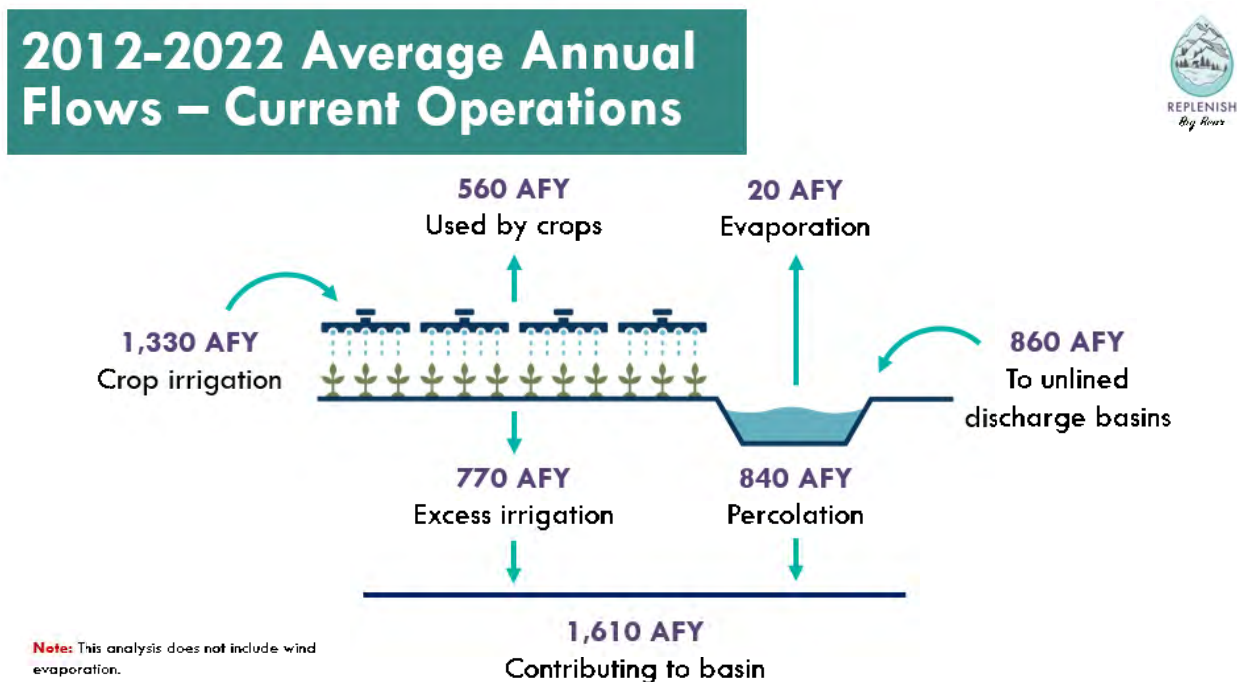
**Exhibit 4.11-10: 2012-2022 AVERAGE MONTHLY BBARWA FLOWS SENT TO LV SITE**

For water balance analysis, it was assumed that all the water discharged into the unlined basin would percolate into the Lucerne Valley Basin, minus the evaporation, which was estimated to be 2%. Therefore, it was estimated that about 840 AFY percolate into the Lucerne Valley Basin as shown in **Exhibit 4.11-6**.

For the water used for irrigation, it was assumed that flows applied in excess of crop needs percolate into the Lucerne Valley Basin. Excess water was estimated by calculating the total water depth applied to the farmed acreage (irrigation plus precipitation), subtracting the water demand for the crops irrigated. Since 2012, 50 acres have been used to grow grain, and 140 acres are

used to grow alfalfa. Crop irrigation requirements were estimated using evapotranspiration data gathered from the CIMIS Station 117 in Victorville, CA, which is based on grass as the reference crop. Crop specific demand was estimated using the Food and Agricultural Organization (FAO) Grass-Based Crop Coefficients method outlined in *ASCE Manual No. 70: Evaporation, Evapotranspiration, and Irrigation Water Requirements*.<sup>52</sup>

It is estimated that of the 1,330 AFY used for irrigation, about 560 AFY are used by alfalfa or grain, and the remaining 770 AFY is applied in excess. In total, about 1,610 AFY are assumed to percolate the Lucerne Valley Basin under current operational conditions of the LV Site (see **Exhibit 4.11-6**).



**Exhibit 4.11-61: LV SITE WATER BALANCE – AVERAGE ANNUAL FLOWS - CURRENT OPERATIONS**

### 4.11.6.3 Groundwater Quality

The native groundwater quality within the Lucerne Valley Basin varies greatly with respect to location in the Lucerne Valley Basin. In the southern upgradient portion of the Lucerne Valley Basin, TDS concentrations in groundwater are generally below 500 mg/L. In the downgradient portion near Lucerne Dry Lake, natural TDS concentrations in groundwater increase significantly due to evaporative concentration. Time series plots of TDS concentration for the period between 1952 and 1980 for two wells immediately north of the LV Site (04N01E06H01S and 05N01E32R01S) show that TDS concentrations before 1980 (prior to BBARWA’s discharge operation) were generally between 350 and 500 mg/L but periodically spiked above 500 mg/L (Schlumberger, 2007). The cause of the TDS spikes is unknown, but may be associated with

<sup>52</sup> Crop specific demand was estimated using Equation 1, where K<sub>c</sub> is a seasonal crop coefficient specific to each crop. This K<sub>c</sub> value was determined using the FAO Grass-Based Crop Coefficients method outlined in *ASCE Manual No. 70: Evaporation, Evapotranspiration, and Irrigation Water Requirements*.

$$ET_c = K_c * ET_o$$

Equation 1: Crop-Specific Evapotranspiration Rate



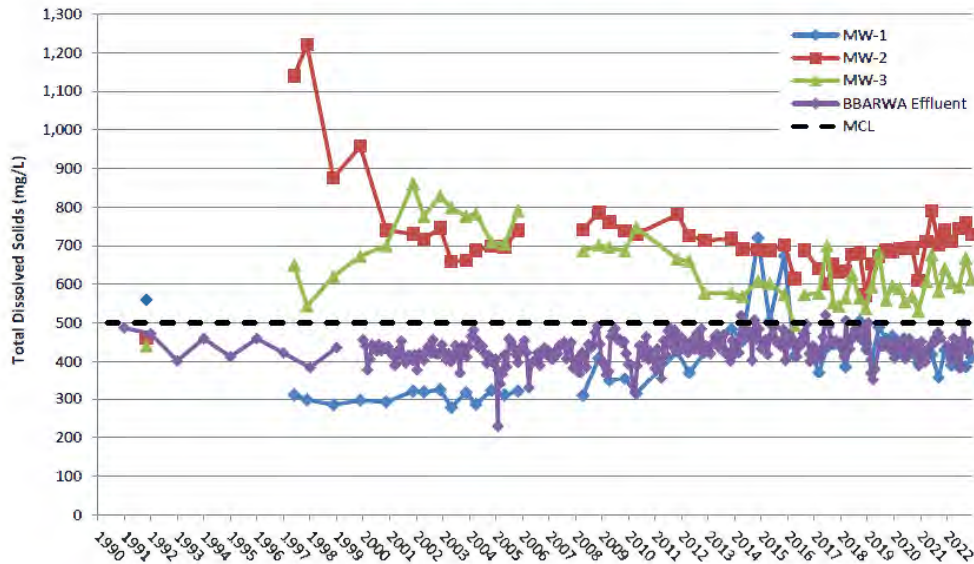
localized pumping depressions that reverse the groundwater flow gradient, resulting in the capture of high TDS groundwater from beneath Lucerne Dry Lake, which is known to have TDS concentrations ranging from 2,000 to 3,000 mg/L (Schlumberger, 2007). The average TDS concentration in the Lucerne Valley Basin is reported to be approximately 1,100 mg/L, although the average concentration in the southern portion of the Lucerne Valley Basin (south of Old Woman Springs Road and including the LV Site) is likely closer to 500 mg/L.

Data regarding nitrate concentrations in groundwater in the vicinity of the Lucerne Valley was not available for the period prior to 1980 when the facility began operation. The earliest available data, from 1991 through 1998, show nitrate concentrations in groundwater in the Lucerne Valley to be less than 2 mg/L (SWRCB, 2017).

TDS and nitrate concentrations in BBARWA effluent sent to the LV Site have historically been lower than the TDS and nitrate concentrations detected in samples from the downgradient monitoring wells at the LV Site (MW-2 and MW-3). Based on the BBARWA effluent water quality it was concluded that BBARWA is not the source of the high TDS and nitrate. TDS concentrations in BBARWA effluent since 2017 show a slightly decreasing trend, while TDS concentrations in the groundwater from downgradient Monitoring Wells MW-2 and MW-3 show a slightly increasing trend (see **Exhibit 4.11-**), suggesting the two are not correlated. Further, the downgradient concentrations are higher than the BBARWA effluent concentrations. From a mass balance standpoint, recharge of BBARWA effluent cannot be the source of the higher groundwater TDS concentrations.

Similarly, nitrate concentrations in groundwater from all onsite monitoring wells are higher than concentrations in the BBARWA effluent (see **Exhibit 4.11-13**). Thus, while the detection of low concentrations of nitrate in the BBARWA effluent contributes to nitrate in groundwater, the significantly higher nitrate concentrations detected in groundwater beneath the site indicates the BBARWA effluent is only a minor contributor and not the primary source of degradation.

Total Dissolved Solids Concentrations  
 Lucerne Valley Monitoring Wells



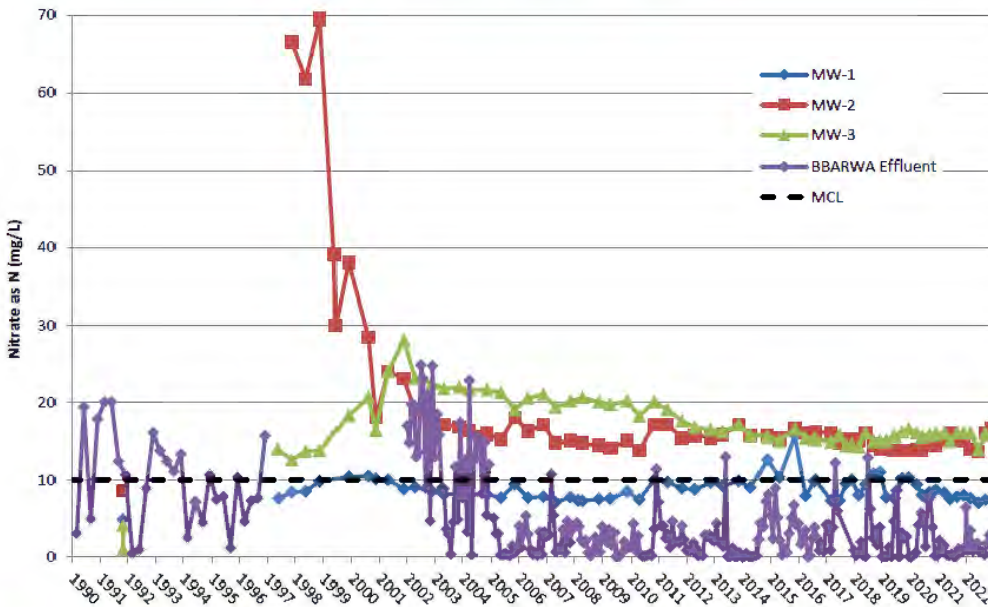
Note: mg/L = milligrams per liter



March 2023

Exhibit 4.11-12: TDS CONCENTRATIONS IN THE LUCERNE VALLEY MONITORING WELLS

Nitrate (as N) Concentrations  
 Lucerne Valley Monitoring Wells



Note: mg/L = milligrams per liter



March 2023

Exhibit 4.11-13: NITRATE AS N CONCENTRATIONS IN THE LUCERNE VALLEY MONITORING WELLS

#### **4.11.7 Environmental Setting: Lucerne Valley Flood Hazards**

The FEMA FIRM panel for the LV Site is provided as **Figure 4.11-9**. The FEMA FIRM panels, for the portions of the Lucerne Valley that would be impacted by the Program include the 06071C6600H. The FEMA FIRM Panel for the LV Site indicates that the site has not been mapped by the FEMA flood mapping program.

Additionally, **Figure 4.11-10**, the San Bernardino Countywide Plan Flood Hazard Map of Big Bear Valley, demonstrates that the LV Site has been mapped within the DWR 100-year flood awareness zone.

#### **4.11.8 Regulatory Setting**

There are certain regulations that also are used to evaluate the potential significance of impacts on hydrology and water quality. These issues are summarized in the following text.

##### **4.11.8.1 Federal**

##### **Federal Clean Water Act**

Pursuant to Section 404 of the CWA, USACOE regulates discharges of dredged and/or fill material into. "Waters of the United States" are defined in USACOE regulations at 33 CFR Part 328.3(a). Navigable waters of the U.S. are those waters of the United States that are navigable in the traditional sense. Waters of the U.S. is a broader term than navigable waters of the U.S. and includes adjacent wetlands and tributaries to navigable waters of the U.S. and other waters where the degradation or destruction of which could affect interstate or foreign commerce.

CWA requires all states to conduct water quality assessments of their water resources to identify water bodies that do not meet water quality standards. The water bodies that do not meet water quality standards are placed on a list of impaired waters pursuant to the requirements of Section 303(d) of the CWA.

CWA and the Porter-Cologne Act, require basin-wide planning. Additionally, the NPDES empowers regional boards to set discharge standards, and encourages the development of new approaches to water quality management. As part of the NPDES program, a SWPPP must be prepared for construction activities affecting greater than one acre because the discharge of stormwater during construction is considered a non-point source of water pollution.

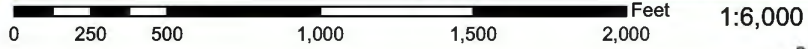
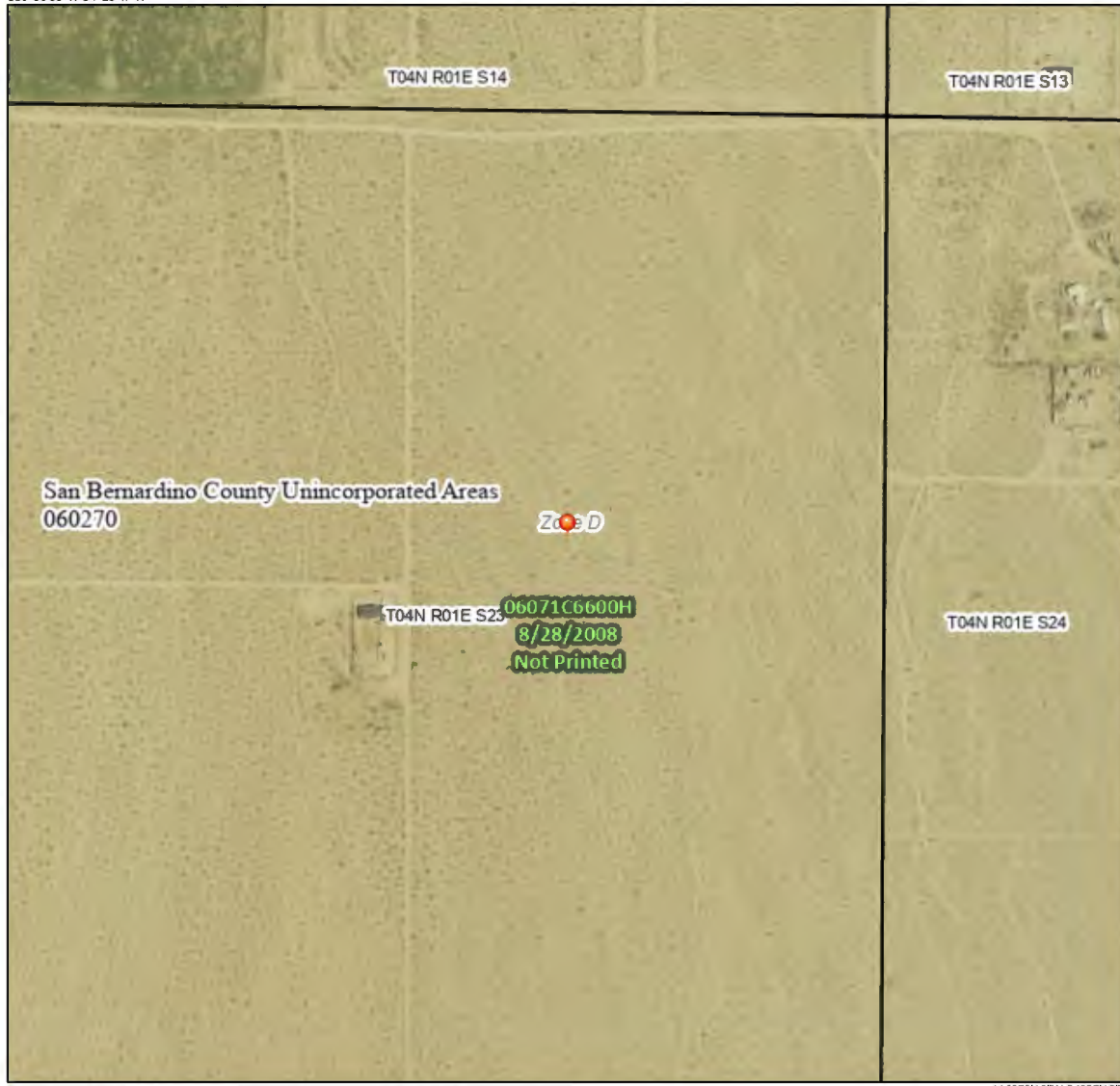
The Stanfield Marsh/Big Bear Lake and the Bear Valley Basin are located in the Santa Ana Regional Board jurisdiction. The LV Site discharge component of the project falls within the Colorado Regional Board jurisdiction.

In 1972, the CWA was amended to prohibit the discharge of pollutants to Waters of the United States unless the discharge complies with a NPDES permit. The CWA focused on tracking point sources, primarily from wastewater treatment facilities and industrial waste dischargers, and required implementation of control measures to minimize pollutant discharges. The CWA was amended again in 1987, adding Section 402(p), to provide a framework for regulating municipal and industrial storm water discharges. In November 1990, the EPA published final regulations that establish requirements for specific categories of industries, including construction projects that encompass certain acreage, currently projects of one acre or larger.

# National Flood Hazard Layer FIRMette



116°50'55"W 34°25'47"N



Basemap Imagery Source: USGS National Map 2023

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- SPECIAL FLOOD HAZARD AREAS**
  - Without Base Flood Elevation (BFE) Zone A, V, A99
  - With BFE or Depth Zone AE, AO, AH, VE, AR
  - Regulatory Floodway
  
- OTHER AREAS OF FLOOD HAZARD**
  - 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
  - Future Conditions 1% Annual Chance Flood Hazard Zone X
  - Area with Reduced Flood Risk due to Levee. See Notes. Zone X
  - Area with Flood Risk due to Levee Zone D
  
- OTHER AREAS**
  - NO SCREEN Area of Minimal Flood Hazard Zone X
  - Effective LOMRs
  - Area of Undetermined Flood Hazard Zone D
  
- GENERAL STRUCTURES**
  - Channel, Culvert, or Storm Sewer
  - Levee, Dike, or Floodwall
  
- CROSS SECTIONS**
  - 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
  - 17.5 Coastal Transect
  - Base Flood Elevation Line (BFE)
  - Limit of Study
  - Jurisdiction Boundary
  
- OTHER FEATURES**
  - Coastal Transect Baseline
  - Profile Baseline
  - Hydrographic Feature
  
- MAP PANELS**
  - Digital Data Available
  - No Digital Data Available
  - Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/19/2023 at 4:50 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

FIGURE 4.11-9



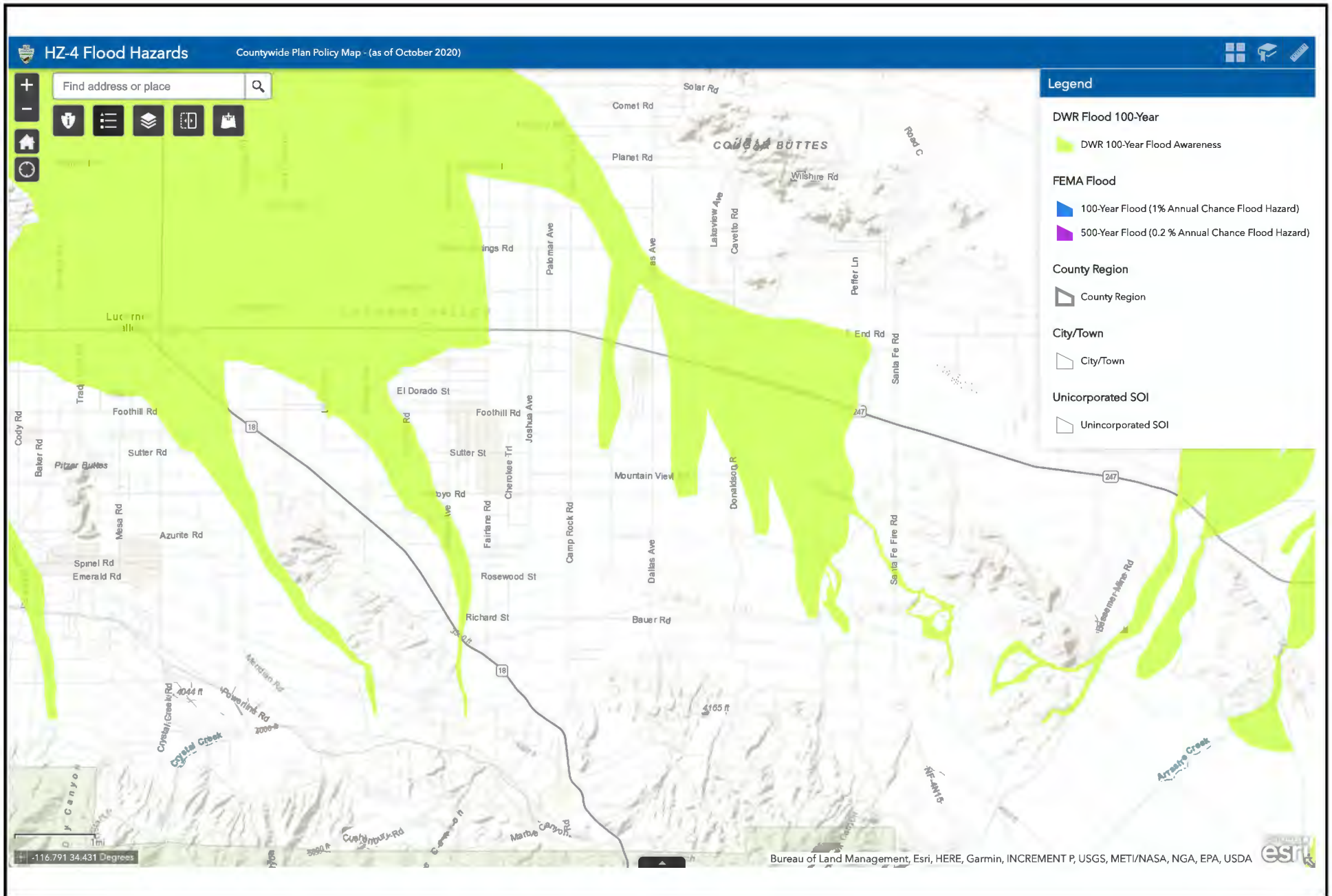


FIGURE 4.11-10

### **National Pollutant Discharge Elimination System (NPDES) Program**

As stated above, the NPDES permit program is administered in the State of California by SWRCB and RWQCBs under the authority of the EPA to control water pollution by regulating point sources that discharge pollutants into Waters of the U.S. (WOTUS). A general NPDES permit covers multiple facilities within a specific activity category such as construction activities. A general permit applies with same or similar conditions to all dischargers covered under the general permit. The program would be covered under the general permits discussed below.

#### ***General Dewatering Permit***

The SWRCB has issued General WDRs under Order No. R8-2003-0061, NPDES No. CAG 998001 (Dewatering General Permit) governing non-stormwater construction-related discharges from activities such as dewatering, water line testing, and sprinkler system testing. The discharge requirements include provisions mandating notification, testing, and reporting of dewatering and testing-related discharges. The General WDRs authorize such construction-related discharges so long as all conditions of the permit are fulfilled. This permit would apply to the Program for the testing of the effluent pipelines and in the event that shallow perched groundwater is encountered during construction that requires dewatering.

#### ***Construction General Permit***

The Construction General Permit (CGP) NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities regulates discharges of pollutants in stormwater associated with construction activity to Waters of the U.S. from construction sites that disturb one or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface. The permit regulates stormwater discharges associated with construction or demolition activities, such as clearing and excavation; construction of buildings; and linear underground projects (LUP), including installation of water pipelines and other utility lines.

The CGP requires the development and implementation of a SWPPP that includes specific (BMPs designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving offsite into receiving waters. The SWPPP BMPs are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. Routine inspection of all BMPs is required under the provisions of the CGP. In addition, the SWPPP is required to contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

#### ***Industrial General Permit***

The Industrial General Permit became effective July 1, 2015 (Order No. 2014-0057-DWQ). The Industrial General Permit covers ten broad categories of industrial activities, including sewage or wastewater treatment works that store, treat, recycle, and reclaim municipal or domestic sewage with a design flow of one million gallons per day or more, or are required to have an approved pretreatment program under 40 CFR Part 403. For a sewage treatment facility, the Industrial General Permit covers both the municipal or domestic sewage being sent to the facility for treatment, and rainwater falling on the facility that must be managed as stormwater. This is because rainwater falling on the facility is routed to the onsite treatment system to prevent contaminants from migrating offsite from the treatment facility.

#### ***Municipal Stormwater Permitting (MS4)***

The State's Municipal Stormwater Permitting Program regulates stormwater discharges from MS4s. MS4 Permits were issued in two phases. Phase I was initiated in 1990, under which



the RWQCBs adopted NPDES stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving more than 250,000 people) municipalities. As part of the Phase II, the SWRCB adopted a General Permit for small MS4s (serving less than 100,000 people) and non-traditional small MS4s including governmental facilities such as military bases, public campuses, and hospital complexes. The permit also requires permittees to develop Comprehensive Bacteria Reduction Plans (CBRP).

### **National Flood Insurance Program**

The National Flood Insurance Program (NFIP) is a Federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods. Participation in the NFIP is based on an agreement between local communities and the Federal government that states if a community will adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas (SFHAs), the Federal government will make flood insurance available within the community as a financial protection against flood losses.

In support of the NFIP, FEMA identifies flood hazard areas throughout the U.S. and its territories by producing Flood Hazard Boundary Maps (FHBMs), FIRMs, and Flood Boundary & Floodway Maps (FBFMs). Several areas of flood hazards are commonly identified on these maps. One of these areas is the SFHA or high-risk area defined as any land that would be inundated by the 100-year flood — the flood having a 1-percent chance of occurring in any given year (also referred to as the base flood).

The high-risk area standard constitutes a reasonable compromise between the need for building restrictions to minimize potential loss of life and property and the economic benefits to be derived from floodplain development. Development may take place within the SFHAs, provided that development complies with local floodplain management ordinances, which must meet the minimum Federal requirements.

#### **4.11.8.2 State**

### **Porter-Cologne Water Quality Act**

The Porter-Cologne Act (California Water Code Division 7, §§ 13000-16104), is California's statutory authority for the protection of water quality. Under this act, the State must adopt water quality policies, plans, and objectives that protect the State's waters. The act sets forth the obligations of the SWRCB and RWQCBs pertaining to the adoption of Basin Plans and establishment of water quality objectives. Unlike the CWA, which regulates only surface water, the Porter-Cologne Act regulates both surface water and groundwater, and this authority serves as the basis for WDRs issued to municipal sewage treatment facilities by the RWQCBs. The Porter-Cologne Act is promulgated in Title 22 of the California Code of Regulations. Title 22 includes treatment and reuse requirements for recycled water projects throughout California.

### **Anti-Degradation Policy**

The SWRCB's Anti-Degradation Policy, otherwise known as Resolution No. 68-16, sets specific restrictions for surface and groundwater that have higher than the required quality in order to avoid degradation of those water bodies. Requirements of this policy must be included within all WQCPs throughout California (discussed below). Under this policy, actions that would lower the water quality in designated water bodies would only be allowed: if the action would provide a

maximum benefit to the people of California, if it will not unreasonably affect beneficial uses, and if it will not lower water quality below applicable standards.

### **Water Recycling Requirements**

The Santa Ana Basin Plan requires that a discharge permit be obtained for the use of recycled water. WRRs are prepared on a case-by-case basis for reuse of Title 22 recycled water as well as for discharge of fully advanced treated water intended for groundwater recharge or injection. WRRs are generally issued to the wastewater treatment agency but also cover intended uses. Water recycling criteria are contained in sections 60301 through 60355 of Title 22 and prescribe recycled water quality and wastewater treatment requirements for the various types of allowed uses in accordance with the SWRCB, DDW (formerly a part of the California Department of Public Health).

### **Water Recycling Policy and Salt and Nutrient Management Plans**

In February 2009, the SWRCB adopted Resolution No. 2009-0011, which established a statewide Recycled Water Policy. Draft amendments to the Recycled Water Policy were released in May 2012, September 2012, October 2012 (SWRCB hearing change sheets), and January 2013. The Recycled Water Policy Amendment was adopted by the SWRCB on January 22, 2013. The Recycled Water Policy encourages increased use of recycled water and local storm water. It also requires local water and wastewater entities, together with local salt/nutrient contributing stakeholders to develop a Salt and Nutrient Management Plan (SNMP) for each groundwater basin and subbasin in California.

The Recycled Water Policy outlines policies for safe use of recycled water, and includes permitting and antidegradation analysis for groundwater recharge projects using recycled water. Under the Recycled Water Policy, projects are permitted on a site-specific basis. Groundwater recharge projects must comply with applicable regulations, including monitoring requirements for priority pollutants. Additionally, project proponents must implement a monitoring program for constituents of emerging concern that involves development of a quality assurance project plan for monitoring constituents of emerging concern to ensure the project data are of known, consistent, and documented quality and that the monitoring is consistent with the Recycled Water Policy. An antidegradation analysis is also required for groundwater recharge with recycled water, consistent with the Antidegradation Policy (SWRCB, 1968).

### **Sustainable Groundwater Management Act**

In 2014, the California State Legislature approved a combination of bills that together formed the SGMA. SGMA requires the formation of local Groundwater Sustainability Agencies (GSAs) that must develop GSPs for medium or high priority groundwater basins in California by 2022. The goal of the GSPs is to make groundwater basins sustainable by the year 2042. In 2017, BBARWA, BBCCSD, BBMWD, and BBLDWP formed the BVBGSA and adopted the Bear Valley Basin GSP on June 21, 2022. For more information, please visit the <https://www.bvbgsa.org>.

### **Recycled Water Groundwater Recharge Projects**

On June 18, 2014, new regulations were adopted covering groundwater recharge for potable reuse with recycled water. The new regulations (California Water Code sections 13500-13529.4) outline permit requirements for recharging groundwater with recycled water for potable reuse in California. The regulations cover surface recharge and subsurface injection and transfer permitting responsibilities from the California Department of Public Health to the DDW. The regulations include protocols to provide for source control, water quality control, retention time, emergency response planning, monitoring programs, operational plans, management plans, reporting requirements, and public review requirements.

**California Water Code Section 1211**

California Water Code section 1211 requires that: (1) the owner of any wastewater treatment plant obtain the approval of the SWRCB before making any change in the point of discharge, place of use, or purpose of use of treated wastewater where changes to the discharge or use of treated wastewater have the potential to decrease the flow in any portion of a watercourse, and (2) the SWRCB review the proposed changes pursuant to the provisions of California Water Code section 1700. In order to approve the proposed change, the SWRCB must determine that the proposed change will not operate to the injury of any legal user of the water involved.

**4.11.8.3 Regional**

**Santa Ana Basin Plan**

The SWRCB sets statewide policy and together with the RWQCBs implement State and Federal laws and regulations. Each of the nine Regional Boards has adopted a basin plan. The Santa Ana Basin Plan covers parts of southwestern San Bernardino County, western Riverside County, and northwestern Orange County.

The Santa Ana Basin Plan establishes beneficial uses and WQOs for the ground and surface waters of the region and includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and protect the water quality standards. The beneficial uses of Big Bear Lake and Stanfield Marsh are presented in **Table 4.11-1**. Per the Santa Ana Basin Plan, the Big Bear Valley beneficial uses are MUN and Industrial Process Supply (PROC). The Santa Ana Basin Plan provides a general narrative regarding the WQO for each water body type and specific numeric objectives for TDS, hardness, sodium, chloride, TIN, TP, sulfate, and COD. The objectives for the waters impacted by Program are summarized below and in **Table 4.11-6**.

**Table 4.11-6  
 WATER QUALITY OBJECTIVES FOR RECEIVING WATERS**

<b>Water Quality Objective (WQO)</b>	<b>Shay Pond</b>	<b>Stanfield Marsh</b>	<b>Big Bear Lake</b>	<b>Big Bear Valley</b>
Total Dissolved Solids (TDS), mg/L	Narrative Objectives	Narrative Objectives	175	300
Hardness, mg/L			125	225
Sodium, mg/L			20	20
Chloride, mg/L			10	10
Total Inorganic Nitrogen, mg/L			0.15	--
Nitrate as N			--	5
Sulfate, mg/L			10	20
Chemical Oxygen Demand, mg/L			--	--
Total Phosphorus, mg/L (TMDL Objective)			0.035	--
Chlorophyll-a, mg/L (TMDL Objective)			0.014	--

As shown in the table above, Big Bear Lake has the most stringent WQOs. The nutrient limits for an NPDES permit to Stanfield Marsh/Big Bear Lake are expected to align with the Santa Ana Basin Plan WQOs and the TMDL numeric targets to protect the beneficial uses of Big Bear Lake. The anticipated effluent nutrient limits of 35 µg/L-P for TP and 0.15 mg/L-N for TIN. These targets require multiple process treatment steps and consistent treatment through seasonality.

The *Water Quality Control Plan for the Santa Ana River Basin Region 8* (Santa Ana Basin Plan) provides the framework for the RWQCB's regulatory program (Santa Ana Regional Board, 2019). Specifically, it:

1. Sets forth surface and groundwater quality standards for the Santa Ana Region;
2. Identifies beneficial uses of water and discusses objectives that shall be maintained or attained to protect those uses;
3. Provides an overview of types of water quality issues, and discusses them in the context of potential threats to beneficial uses;
4. Denotes recommended or required control measures to address the aforementioned water quality issues;
5. Prohibits certain types of discharge in particular areas of the Santa Ana Region;
6. Summarizes relevant SWRCB and RWQCB planning and policy documents, and discusses other relevant WQMPs adopted by Federal, State, and regional agencies; and
7. Identifies past and present water quality monitoring programs, and discusses monitoring activities that could be implemented in future Santa Ana Basin Plan updates.

Overall, the Santa Ana Basin Plan functions as the regulatory authority for water quality standards established in local NPDES permits and other RWQCB decisions.

### **Colorado Basin Plan Objectives**

The Colorado Basin Plan does not have numeric WQOs, but the Colorado Basin Plan's narrative objective for TDS and nitrate is to maintain the water quality to existing historical conditions where possible and to keep the chemical and physical groundwater quality close to or otherwise below the MCLs (RWQCB, 2006). In 2021, BBARWA received an updated WDR Permit (Order R7-2021-0023), which set average monthly effluent limits for TN and TDS of 10 mg/L and 500 mg/L, respectively. These limits are based on the current MCLs for these constituents. Through this permit, the Colorado Regional Board is protecting the water quality of the Lucerne Valley Basin.

#### **4.11.8.4 Local**

San Bernardino County policies generally pertaining to hydrology and water quality have been included in the section below. Future projects under this EIR will be analyzed at the program-level to assess the applicability of all local jurisdiction's General Plan and municipal code policies to those projects.

The Bear Valley Basin includes the City of Big Bear Lake and unincorporated areas of San Bernardino County. Each implement their own General Plan and municipal code that pertains to the protection of hydrological resources.

### **San Bernardino Countywide Plan**

The following goals and policies within the San Bernardino Countywide Plan regarding hydrology and water quality would be applicable to program activities within the Big Bear Valley (County of San Bernardino, 2020).

<b>Goal</b>	<b>NR-2</b>	Clean and safe water for human consumption and the natural environment.
<b>Policy</b>	NR-2.1	Coordination on water quality

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		We collaborate with the state, regional water quality control boards, watermasters, water purveyors, and government agencies at all levels to ensure a safe supply of drinking water and a healthy environment.
	NR-2.2	<p>Water management plans</p> <p>We support the development, update, and implementation of ground and surface water quality management plans emphasizing the protection of water quality from point and non-point source pollution.</p>
	NR-2.3	<p>Military coordination on water quality</p> <p>We collaborate with the military to avoid or minimize impacts on military training and operations from groundwater contamination and inadequate groundwater supply.</p>
	NR-2.4	<p>Wastewater discharge</p> <p>We apply State and Federal water quality standards for wastewater discharge requirements in the review of development proposals that relate to type, location, and size of the proposed project in order to safeguard public health and shared water resources.</p>
	NR-2.5	<p>Stormwater discharge</p> <p>We ensure compliance with the County's Municipal Stormwater NPDES (National Pollutant Discharge Elimination System) Permit by requiring new development and significant redevelopment to protect the quality of water and drainage systems through site design, source controls, stormwater treatment, runoff reduction measures, best management practices, low impact development strategies, and technological advances. For existing development, we monitor businesses and coordinate with municipalities.</p>
	NR-2.6	<p>Agricultural waste and biosolids</p> <p>We coordinate with regional water quality control boards and other responsible agencies to regulate and control animal waste and biosolids in order to protect groundwater and the natural environment.</p>
<b>Goal</b>	<b>IU-1</b>	Water supply and infrastructure are sufficient for the needs of residents and businesses and are resilient to drought
<b>Policy</b>	IU-1.1	<p>Water supply</p> <p>We require that new development be connected to a public water system or a County-approved well to ensure a clean and resilient supply of potable water, even during cases of prolonged drought.</p>
	IU-1.2	<p>Water for military installations</p> <p>We collaborate with military installations to avoid impacts on military training and operations from groundwater contamination and inadequate groundwater supply.</p>
	IU-1.3	<p>Recycled water</p> <p>We promote the use of recycled water for landscaping, groundwater recharge, direct potable reuse, and other applicable uses in order to supplement groundwater supplies.</p>
	IU-1.4	<p>Greywater</p> <p>We support the use of greywater systems for non-potable purposes.</p>
	IU-1.5	<p>Agricultural water use</p> <p>We encourage water-efficient irrigation and the use of non-potable and recycled water for agricultural uses.</p>
	IU-1.6	<p>User fees</p> <p>For water systems operated by County Special Districts, we establish user fees that cover operation and maintenance costs and set aside adequate reserves for capital upgrades and improvements.</p>
	IU-1.7	Areas vital for groundwater recharge

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		We allow new development on areas vital for groundwater recharge when stormwater management facilities are installed onsite and maintained to infiltrate predevelopment levels of stormwater into the ground.
	U-1.8	<b>Groundwater management coordination</b> We collaborate with watermasters, groundwater sustainability agencies, water purveyors, and other government agencies to ensure groundwater basins are being sustainably managed. We discourage new development when it would create or aggravate groundwater overdraft conditions, land subsidence, or other “undesirable results” as defined in the California Water Code. We require safe yields for groundwater sources covered by the Desert Groundwater Management Ordinance.
	IU-1.9	<b>Water conservation</b> We encourage water conserving site design and the use of water conserving fixtures, and advocate for the adoption and implementation of water conservation strategies by water service agencies. For existing County-owned facilities, we incorporate design elements, building materials, fixtures, and landscaping that reduce water consumption, as funding is available.
	IU-1.10	<b>Connected systems</b> We encourage local water distribution systems to interconnect with regional and other local systems, where feasible, to assist in the transfer of water resources during droughts and emergencies.
	IU-1.11	<b>Water storage and conveyance</b> We assist in development of additional water storage and Conveyance Facilities to create a resilient regional water supply system, when it is cost effective for County-owned water and stormwater systems.
<b>Goal</b>	<b>IU-2</b>	Residents and businesses in unincorporated areas have safe and sanitary systems for wastewater collection, treatment, and disposal.
<b>Policy</b>	IU-2.1	<b>Minimum parcel size</b> We require new lots smaller than one-half acre to be served by a sewer system. We may require sewer service for larger lot sizes depending on local soil and groundwater conditions, and the County’s Local Area Management Program.
	IU-2.2	<b>User fees</b> For wastewater systems operated by County Special Districts, we establish user fees that cover operation and maintenance costs and set aside adequate reserves for capital upgrades and improvements.
	IU-2.3	<b>Shared wastewater facilities for recycled water</b> We encourage an expansion of recycled water agreements between wastewater entities to share and/or create connections between wastewater systems to expand the use of recycled water.
<b>Goal</b>	<b>IU-3</b>	A regional stormwater drainage backbone and local stormwater facilities in unincorporated areas that reduce the risk of flooding.
<b>Policy</b>	IU-3.1	<b>Regional flood control</b> We maintain a regional flood control system and regularly evaluate the need for and implement upgrades based on changing land coverage and hydrologic conditions in order to manage and reduce flood risk. We require any public and private projects proposed anywhere in the county to address and mitigate any adverse impacts on the carrying capacity and stormwater velocity of regional stormwater drainage systems.
	IU-3.2	<b>Local flood control</b> We require new development to install and maintain stormwater management facilities that maintain predevelopment hydrology and hydraulic conditions.
	IU-3.3	<b>Recreational use</b>



We prefer that stormwater facilities be designed and maintained to allow for regional open space and safe recreation use without compromising the ability to provide flood risk reduction.

**IU-3.4**      **Natural floodways**  
We retain existing natural floodways and watercourses on County-controlled floodways, including natural channel bottoms, unless hardening and channelization is the only feasible way to manage flood risk. On floodways not controlled by the County, we encourage the retention of natural floodways and watercourses. Our priority is to reduce flood risk, but we also strive to protect wildlife corridors, prevent loss of critical habitat, and improve the amount and quality of surface water and groundwater resources.

**HZ-3.6**      **Contaminated water and soils**  
We advocate for and coordinate with local and regional agencies in efforts to remediate or treat contaminated surface water, groundwater, or soils in or affecting unincorporated environmental justice focus areas. We pursue grant funding and establish partnerships to implement the County's Site Remediation Program in unincorporated environmental justice focus areas, with particular emphasis in addressing the types of contamination identified in the Hazard Element tables.

**HZ-3.7**      **Well Water Testing**  
In unincorporated environmental justice focus areas that are not served by public water systems, we periodically test well water for contamination, identify potential funding sources, and, where feasible, provide technical assistance to implement necessary improvements, with particular emphasis in addressing the types of contamination identified in the Hazard Element tables.

**Goal**        **PP-3**        **Reduced risk of death, injury, property damage, and economic loss due to fires and other natural disasters, accidents, and medical incidents through prompt and capable emergency response.**

**Policy**      **PP-3.5**      **Firefighting water supply and facilities**  
We coordinate with water providers to maintain adequate water supply, pressure, and facilities to protect people and property from urban fires and wildfires.

**City of Big Bear Lake General Plan**

The following City of Big Bear Lake General Plan policies pertain to water, wastewater, and stormwater:

**GOAL**        **ER 3**        **A dependable long-term supply of clean and healthful domestic water to meet the needs of all segments of the community.**

**Policy**        **ER 3.2:**      **Evaluate all proposed land use and development plans for their potential to create groundwater contamination hazards from point and non-point sources, and cooperate with other appropriate agencies to assure appropriate mitigation.**

**Program**      **ER 3.2.1:**    **Monitor changes in State and Federal guidelines and aggressively pursue enforcement to ensure mitigation of groundwater contamination hazards from point and non-point pollutants.**

**Policy**        **ER 3.3:**      **Ensure the long-term balance of water supplies and growth through coordination of land use planning with infrastructure development.**

**Program**      **ER 3.3.1:**    **Ensure coordination of long-range goals and objectives within and between City plans and programs, including the General Plan, Capital Improvement Program, Water Master Plan and others as appropriate.**

**3.3.2:**        **Ensure that the water distribution system is planned and constructed to adequately serve existing and planned development, through the development review process.**

	3.3.3:	Participate with and encourage the appropriate local water agencies to investigate all potential alternatives for the Valley-wide conjunctive use of water.
<b>GOAL</b>	<b>ER 4</b>	An informed public that respects the City's finite water resource and maximizes protection and conservation efforts so that long-term growth in the community is sustainable.
<b>Policy</b>	ER 4.1:	Encourage the use of low water-consuming, drought-tolerant landscape plantings as a means of reducing water demand, and strengthen education/public relations programs to inform residents of the full range of water-saving techniques available.
<b>Program</b>	ER 4.1.2:	Continue to develop educational materials and programs that encourage and facilitate water conservation throughout the community.
	ER 5.1.3:	Site development practices which reduce erosion, promote rapid revegetation and reduce the amount of sediment leaving a construction site shall be adopted and enforced, to protect drainage ways and Lake resources.
	ER 5.1.5:	Develop and implement a public information program for residents and the building trades which details erosion control and construction management practices to protect the watershed.
<b>GOAL</b>	<b>PS 1</b>	<b>GENERAL INFRASTRUCTURE NEEDS</b> Public services and facilities that adequately meet the immediate and long-term needs of the City, providing a high level of service for the lowest reasonable cost, while minimizing impacts on the local and regional environment.
<b>Policy</b>	PS 1.2:	Ensure that adequate infrastructure exists or can reasonably be extended to serve new development, that such extensions are planned in an efficient and cost-effective manner, and that new development pays its fair share of the cost of infrastructure.
<b>Program</b>	PS 1.2.1:	Continue to require that adequate water supply, distribution, fire suppression systems, sewer facilities, and storm drainage facilities are assured prior to issuance of building permits for new construction which increases the use or intensity of a site. This is not to be construed as a requirement to connect to a public utility.
<b>GOAL</b>	<b>PS 2</b>	<b>WATER FACILITIES</b> A water storage and distribution system adequate to meet the community's needs, including domestic and commercial use and fire flow, and which can ultimately accommodate use of reclaimed water when such use becomes feasible within the City.
<b>Policy</b>	PS 1.4:	Assure an adequate water system and source of supply for existing and future development and maintain an adequate reserve of water in storage facilities.
<b>Program</b>	PS 2.1.1:	Update and implement the Department of Water and Power Master Plan for future development of facilities and Fifty-Year Depreciation Plan.
	PS 2.1.2:	Develop and maintain a contingency plan for potential water shortages including ground water management, locations for additional storage facilities, and water conservation programs.
	PS 2.1.3:	Encourage conservation of ground water resources through the following measures: 1. Development standards shall be compatible with and promote the City's water conservation goals and policies; 2. Encourage the use of drought-tolerant and native plants in landscaping plans; 3. Require that new development consider and plan for water reclamation when feasible; 4. Require the utilization of reclaimed water for landscape irrigation, grading, and other non-human contact uses where appropriate and when feasible.
<b>GOAL</b>	<b>PS 3</b>	<b>SEWER FACILITIES</b> A sewer system adequate to serve the long-term needs of the community, including an upgraded sewage collection system and adequate treatment plant capacity.
<b>Policy</b>	PS 3.1	Cooperate with the Big Bear Area Regional Wastewater Agency (BBARWA) in determining future needs and developing plans for wastewater facilities.

<b>Program</b>	PS 3.1.1:	Include in the new Five-Year Capital Improvement Program the upgrading and replacement, as necessary, of the City's main lines and manholes, as well as any other necessary measures to reduce inflow and infiltration into the sewer system.
	PS 3.1.4:	Cooperate with BBARWA as needed in that agency's plans to upgrade the secondary treatment system and to seek customers and facility upgrades needed to accommodate local use of reclaimed water.
	PS 3.1.5:	Actively encourage and support BBARWA in any future requests to change its point of discharge, as determined by the California Regional Water Quality Control Board, from Lucerne Valley to the Big Bear Valley, for local use of reclaimed water at the appropriate time.

#### **4.11.9 Thresholds of Significance**

The criteria used to determine the significance of impacts related to Hydrology and Water Quality may be considered potentially significant if the project would:

- a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
- b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin.
- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
  - (i) Result in substantial erosion or siltation onsite or offsite.
  - (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite.
  - (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?; or,
  - (iv) impede or redirect flood flows.
- d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
- e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

These impact issues are evaluated below under the Impacts Discussion.

#### **4.11.10 Impacts Discussion**

##### **a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?**

This section evaluates potential impacts to water quality standards and WDRs as they relate to surface and groundwater. The information presented herein is abstracted from the following reports:

- Michael A. Anderson, 2021. Big Bear Lake Analysis: Replenish Big Bear Final Report. **(Appendix 2)**
- Michael A. Anderson, 2022. Replenish Big Bear: Modeling of Higher Flows and with Zero TP Loads. **(Appendix 10)**
- Thomas Harder & Company, 2017. Groundwater Quality Evaluation at the Lucerne Valley Land Discharge Location. Dated December 22, 2017. **(Appendix 6)**
- WSC and Larry Walker Associates (LWA), 2021. Antidegradation Analysis for Proposed Discharges to Stanfield Marsh/Big Bear Lake and Shay Pond. February 2022. **(Appendix 3)**
- WSC and Larry Walker Associates (LWA), 2022. Report of Waste Discharge for Big Bear Area Regional Wastewater Agency Regional Treatment Plant. February 2022. **(Appendix 5)**

- Thomas Harder & Co, 2023. Response to Comments Regarding Potential Impacts of the Replenish Big Bear Project on the Lucerne Valley Land Discharge Location. (**Appendix 9**)
- WSC, 2023. Memorandum: Sand Canyon Water Quality Analysis. (**Appendix 18**)
- GEI, September 2023. Analysis of Aquatic Life Effects of Replenish Big Bear Project's Discharge to Stanfield Marsh." (**Appendix 19**)

### **Stanfield Marsh/Big Bear Lake Discharge – Impacts on Surface Water Quality**

As part of the Program, BBARWA will discharge Program Water to the east end of Stanfield Marsh, then flow into Big Bear Lake. Stanfield Marsh and Big Bear Lake are connected through a set of culverts under the Stanfield Cutoff. This section evaluates if the Program Water discharged to Stanfield Marsh/Big Bear Lake will cause these water bodies to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality.

The Federal antidegradation policy was included in the EPA's first water quality standards regulation in 1975.<sup>53</sup> The Federal antidegradation policy applies to surface water, regardless of the quality of the water. Under the Federal policy, "*existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.*" In addition, where the quality of waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality of water must be maintained and protected unless the state finds that:

1. Allowing lower quality is necessary to accommodate important economic or social development in the area in which the waters are located;
2. Water quality is adequate to protect existing beneficial uses fully; and
3. The highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable BMPs for nonpoint source control are achieved.

The Federal regulations further require that if a state determines it is necessary to lower the water quality of high-quality waters, this determination will be based on both an analysis of alternatives that would lessen or prevent degradation and an analysis related to economic or social development in the area in which the waters are located. The Federal policy applies to reductions in water quality after the policy was adopted in November 1975 (State Water Board 1994). The Federal regulations also require that state water quality standards<sup>54</sup> include an antidegradation policy consistent with the Federal policy. SWRCB has interpreted Resolution 68-16 to incorporate the Federal policy where the Federal policy applies under Federal law.<sup>55</sup> Resolution No. 68-16 is the State's antidegradation policy and applies to surface water and groundwater.

As discussed above, under the State and Federal antidegradation policies, the Santa Ana Regional Board, which are the regulating agency for the Stanfield Marsh/Big Bear Lake discharge, is required to make a finding regarding the satisfaction of the policies as they pertain to surface water discharges for which the Santa Ana Regional Board issues an NPDES permit. The State antidegradation policy, which incorporates the Federal antidegradation policy, seeks to maintain

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<sup>53</sup> The Federal antidegradation policy was originally based on the Clean Water Act's objectives, including the objective to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (33 U.S.C. § 1251(a)) In 1987, the Clean Water Act was amended to expressly require satisfaction of antidegradation requirements for revisions of certain effluent limitations. (33 U.S.C. § 1313(d)(4)(B))

<sup>54</sup> The State Water Board continues to reserve its arguments regarding the USEPA's authority to adopt standards for flow and operations, including standards for salinity intrusion. (See Bay-Delta Water Quality Control Plan, footnote 3.) To the extent the proposed flow and salinity water quality objectives are state-only standards, the Federal antidegradation policy would not apply.

<sup>55</sup> The State Water Board continues to reserve its arguments regarding the USEPA's authority to adopt standards for flow and operations, including standards for salinity intrusion. To the extent the proposed flow and salinity water quality objectives are state-only standards, the Federal antidegradation policy would not apply.

the existing high quality of water to the maximum extent possible, and only allows a lowering of water quality if:

- Changes in water quality are consistent with maximum benefit to the people of the State, will not unreasonably affect present and potential beneficial uses, and will not result in water quality lower than applicable standards, and
- WDRs for a proposed discharge will result in the best practicable treatment or control of the discharge necessary to assure:
  - No pollution or nuisance; and
  - Highest water quality consistent with maximum benefit to the people of the State.

In February of 2022, an Antidegradation Analysis (**Appendix 3**) was completed to evaluate the water quality impacts that the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond would have on the beneficial uses of each water body. In general, an antidegradation analysis provides regulators with the information needed to determine whether a proposed discharge is consistent with the State of California and Federal antidegradation policies. As required by the CWA, the discharge of any pollutant or combination of pollutants to surface waters that are deemed Waters of the U.S., as is Big Bear Lake discharge, must be regulated by an NPDES permit. Because the Stanfield Marsh/Big Bear Lake is a new discharge to a surface Waters of the U.S., an NPDES permit must be obtained from the Santa Ana Regional Board.

At the time of completion of the Antidegradation Analysis (**Appendix 3**), it was assumed that BBARWA would produce disinfected, advanced treated effluent through tertiary filtration using ultrafiltration, and RO treatment with UV disinfection. Since then, an AOP system has been added to the treatment process to produce purified water (i.e., Program Water). Therefore, the water quality of the proposed discharge is anticipated to be the same or better than the assumptions used in the Antidegradation Analysis, so the general conclusions still apply.

The Antidegradation Analysis evaluated the projected Program Water quality, the ambient water quality of Big Bear Lake, and the most stringent WQO or criterion to determine if the proposed discharge would degrade water quality in Big Bear Lake. **Table 4.11-7** shows the Antidegradation results. Overall, the Antidegradation Analysis concluded that no constituents in the Program Water exceeded their most stringent WQO or criterion, and only boron and TIN exceeded Big Bear Lake's ambient water quality concentrations. The Antidegradation Analysis completed more analyses on these constituents to determine their overall impact.

As discussed in the Antidegradation Analysis, TDS, TIN, TN, TP, and chlorophyll-a were evaluated using a 2D hydrodynamic-water quality model (CE-QUAL-W2) developed for Big Bear Lake by Dr. Anderson, a limnologist who has in-depth knowledge of Big Bear Lake. The model was used to predict the long-term average water quality of these constituents in Big Bear Lake under the average hydrologic conditions (50<sup>th</sup> percentile), and under increased and time-varying flows. The model simulation also assessed the impact of a TP Offset Program, which is being proposed to offset all the TP added by the Program Water and be consistent with the Nutrient TMDL. For comparison, the model also simulated a NPA to predict the baseline condition. The predicted concentrations are presented in **Table 4.11-8**. Please note that this model run did not account for Program Water extractions, which are discussed in the **Sand Canyon Groundwater Quality** section, because extractions were predicted to improve the water quality of Big Bear Lake, so the conclusions of this scenario are the most conservative. It is expected that the inclusion of these water extractions would only improve conditions.

**Table 4.11-7  
 COMPARISON OF MOST STRINGENT WATER QUALITY OBJECTIVE OR CRITERION TO EXISTING AMBIENT LAKE WATER QUALITY AND PROJECTED  
 EFFLUENT QUALITY OF PROPOSED DISCHARGE**

Constituent	Unit	Most Stringent WQO or Criterion	Average Lake Concentration <sup>(a) (b)</sup>	Projected Average Effluent Quality of Proposed Discharge <sup>(c)</sup>	Comparison of Projected Effluent Quality to Most Stringent WQO (see table Notes)
Ammonia as N	mg/L	0.46	0.063 <sup>(d)</sup>	0.05	1
Boron, Total	mg/L	0.75	0.054 <sup>(e)</sup>	0.11	2
Chloride	mg/L	10	26 <sup>(e)</sup>	0.60	1
Fluoride	mg/L	0.9	0.41 <sup>(e)</sup>	<0.026	1
Hardness, Total (as CaCO <sub>3</sub> )	mg/L	125	157 <sup>(d)</sup>	3.2	1
MBAS	mg/L	0.05	0.058 <sup>(e)</sup>	0.0014	1
Sodium	mg/L	20	33 <sup>(e)</sup>	1.9	1
Sulfate	mg/L	10	18 <sup>€</sup>	0.20	1
<b>Total Dissolved Solids</b>	mg/L	175	251	50	3
<b>Total Inorganic Nitrogen</b>	mg/L	0.15	0.049	0.1	2,3
<b>Total Nitrogen</b>	mg/L	1	0.948	0.6	3
<b>Chlorophyll-a</b>	µg/L	14	9.3	N/A	3
<b>Total Phosphorus</b>	mg/L	0.035	0.037	0.03	3
Chlordane	µg/L	0.00057	<0.034 <sup>(e)</sup>	<0.17	4
4,4'-DDT	µg/L	0.00059	<0.001 <sup>(e)</sup>	<0.0052	4
PCBs	µg/L	0.00017	<0.5 <sup>(e)</sup>	<2.5	4
Cadmium, Total	µg/L	2.2	<0.11 <sup>(e)</sup>	<0.11	4
Copper, Total	µg/L	8.9	<6.5 <sup>(e)</sup>	0.07	1
Lead, Total	µg/L	2.5	1.8 <sup>(e)</sup>	0.01	1
Mercury, Total	ng/L	10	270	<0.5	1
Aluminum, Total	µg/L	200	58 <sup>(e)</sup>	1.3	1
Specific Conductance	µmhos/cm	700/1,000	391	18	1

**Notes:** This table is Table 7 of the Antidegradation Analysis (**Appendix 3**). Refer to that report for the appendices cited in these notes.  
**Bolded** constituents were identified as constituents of interest by the Santa Ana Regional Board and were modeled in Big Bear Lake Analysis (**Appendix-3** - Appendix B & C).  
 N/A – Not applicable.



Constituent	Unit	Most Stringent WQO or Criterion	Average Lake Concentration <sup>(a) (b)</sup>	Projected Average Effluent Quality of Proposed Discharge <sup>(c)</sup>	Comparison of Projected Effluent Quality to Most Stringent WQO (see table Notes)
<p>a) For constituents with only ND data, the method of detection limit (MDL) is shown as “&lt;MDL.”</p> <p>b) The average was estimated using detected values only, unless stated otherwise. NDs were not included due to the limited number of samples. This approach may result in higher averages. For samples with only one data point, the reported value or “&lt;MDL” is presented.</p> <p>c) If the projected effluent quality is anticipated to be below the detection limit. The estimated projected concentration is shown as “&lt;MDL”.</p> <p>d) The averages and maximums are for Big Bear Lake-wide results and were calculated using Nutrient TMDL 2009-2019 data. See <b>Appendix 3</b> Appendix E – for estimates. ND were used and assumed to be “MDL/2”.</p> <p>e) Average is based on one data point.</p> <p>Blue – Projected effluent quality is below the ambient and most stringent WQO or criterion</p> <p>Red – Projected effluent quality is above the ambient or most stringent WQO or criterion</p> <p>1) Projected effluent quality is below the ambient and most stringent WQO or criterion. No degradation anticipated.</p> <p>2) Projected effluent quality is above the ambient, but below the most stringent WQO or criterion. Further analysis needed to determine impacts on water quality.</p> <p>3) Impacts evaluated in Big Bear Lake Analysis (<b>Appendix-3</b> - Appendix B &amp; C).</p> <p>4) Secondary effluent and ambient water quality were ND. No further analysis conducted. It is anticipated that RO will achieve additional removal, resulting in even fewer impacts.</p>					

**Table 4.11-8**  
**PREDICTED LONG-TERM AVERAGE LAKE CONCENTRATIONS FOR TDS, TIN, TN, TP, AND CHLOROPHYLL-A**  
**UNDER DIFFERENT OPERATIONAL SCENARIOS**

Operational Scenario <sup>(a)</sup> (All at 50 <sup>th</sup> %tile hydrologic condition)	TDS <sup>(b)</sup> (mg/L)	TIN <sup>(b)</sup> (mg/L)	TP <sup>(b)</sup> (µg/L)	TN <sup>(b)</sup> (mg/L)	Chlorophyll-a <sup>(c)</sup> (µg/L)
WQO/(TMDL target)	175	0.15	0.15 (35.0)		(14.0)
Baseline (No Project)	195	0.069	47.7	1.15	14.1
2,200 AFY (99% recovery)	179	0.045	42.3	1.04	13.1
2,000 AFY (90% recovery)	180	0.041	43.4	1.06	12.9
2,200 AFY + TP Offset	179	0.072	39.9	1.00	10.2
2,000 AFY + TP Offset	180	0.040	40.9	1.00	9.5

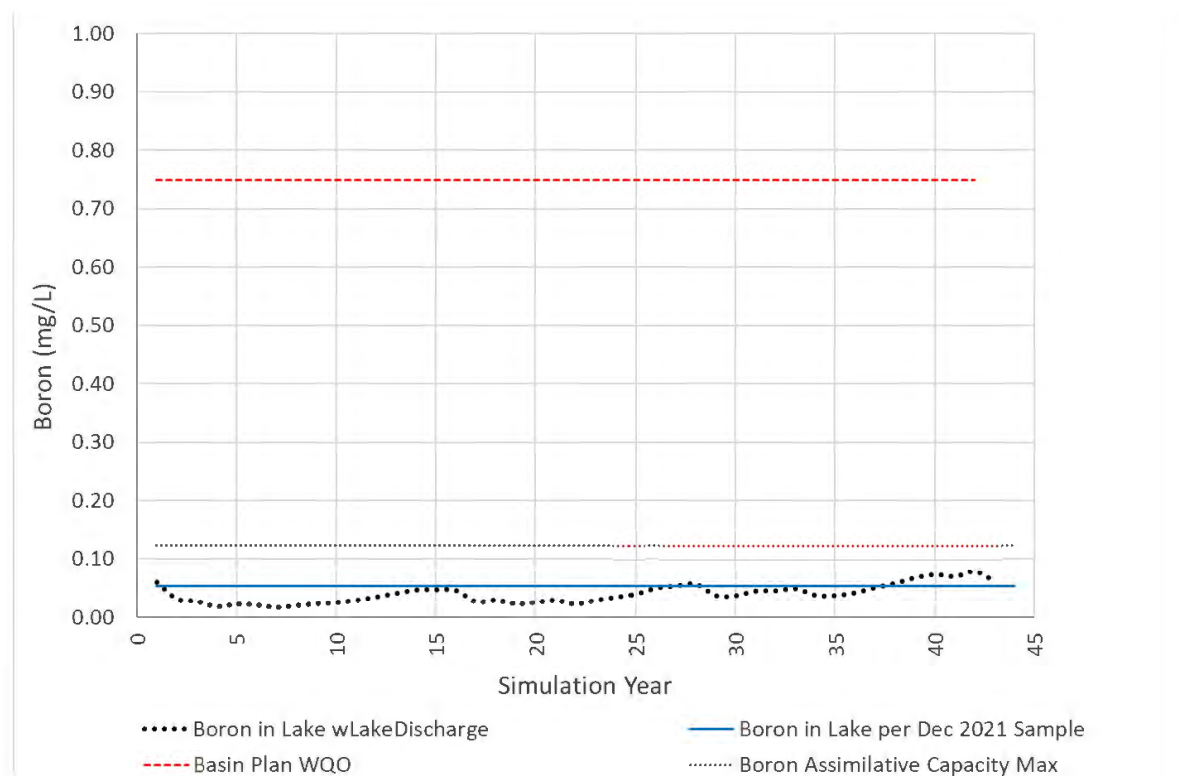
Notes:

- a) The Baseline was evaluated in the 2021 Lake Analysis. The other operational scenarios were evaluated in the 2022 Lake Analysis Update and assume no discharge to Shay Pond. The TP Offset scenarios assume a TP Offset Program is implemented.
- b) Expressed as annual average concentrations
- c) Chlorophyll-a shown as growing season average concentrations

The model simulations predicted that the long-term average concentrations of TDS, TIN, TN, TP, and chlorophyll-a were lower with the Program Water at various rates as compared to the predicted baseline condition, except for TIN under the 2,200 AFY + TP Offset. It is unclear why the model predicted increased TIN under this scenario while all other scenarios showed significantly reduced TIN values relative to the modeled baseline; however, the modeled difference in TIN between the Baseline and 2,200 AFY + TP Offset scenarios is approximately 4%, which is within the range of model variance and is considered statistically insignificant. Therefore, this analysis concludes that projected long-term average concentration of TIN is similar to the modeled baseline condition. Thus, the water quality impacts related to TIN would be less than significant because similar or better conditions would be maintained.

In the Antidegradation Analysis, a simple spreadsheet model was completed because very few data points were available to evaluate the contribution of Big Bear Lake discharge to boron concentrations in Big Bear Lake over time. The calculations are shown in Appendix F of the Antidegradation Analysis (**Appendix 3**). This analysis began with the ambient boron concentration in Big Bear Lake of 0.054 mg/L (which was based on one sample collected in December 2021) and, it was assumed that the natural inflows had a boron concentration of 0 mg/L to estimate the incremental increase of boron in Big Bear Lake as a result of the Big Bear Lake discharge. The 1977-2020 annual inflow and outflow were obtained from the Big Bear Watermaster annual reports, and a 43-year simulation was performed based on a repeat of this historic hydrology. The mass balance equation can be found in **Appendix 3** on page 41.

The projected boron concentration in the proposed Stanfield Marsh/Big Bear Lake discharge (0.11 mg/L) is anticipated to exceed Big Bear Lake ambient water quality (0.054 mg/L), but remain well below the most stringent criterion of 0.75 mg/L for the protection of sensitive crops. The Big Bear Lake's boron assimilative capacity, defined as the difference between the criterion and the ambient water quality, is 0.694 mg/L (i.e., 0.75 mg/L – 0.054 mg/L). Per the 2018 Recycled Water Policy, if a groundwater recharge project proposes to utilize less than 10 percent of the available assimilative capacity in a basin or subbasin, the antidegradation analysis only needs to demonstrate that the project will use less than 10 percent of the available assimilative capacity. If a similar approach is used for Big Bear Lake, 10 percent of the assimilative capacity for boron would be 0.0694 mg/L. If this is added to the ambient water quality, the maximum boron concentration in Big Bear Lake would be about 0.123 mg/L. As shown in **Exhibit 4.11-14**, the projected boron concentrations with the proposed Program Water discharge to Stanfield Marsh/Big Bear Lake are not forecast to exceed this concentration. Thus, the water quality impacts related to boron would be less than significant because less than 10% of the assimilative capacity would be consumed.



**Exhibit 4.11-14 Projected Boron Concentrations with Proposed Lake Discharge**

In addition, the projected boron concentration with the Program Water is considered safe for agricultural crops like citrus trees that show sensitivity to boron starting at concentrations between 0.5 – 0.75 mg/L (USDA, 1990). The projected boron concentration will remain low compared to the most stringent criterion of 0.75 mg/L, which exists in the Santa Ana Basin Plan for the protection of water used to irrigate sensitive crops. Furthermore, while the DDW does not have an MCL for boron, the notification limit is 1 mg/L. Thus, as the boron concentrations within Big Bear Lake would be well below both the criterion for agricultural crops and the notification limit for drinking water at 0.12 mg/L. However, an AMMP shall both monitor boron levels, and implement mitigative strategies to ensure compliance with the NPDES permit for discharge to Stanfield Marsh and the Big Bear Lake to prevent any violation of water quality standards for either body of water, and for downstream users of water from Big Bear Lake. **MM HYD-1** would monitor the boron levels of the Program Water discharge, and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the project by meeting the WQOs, and thereby protecting the water quality of Big Bear Lake and Stanfield Marsh.

As shown in **Tables 4.11-7** and **4.11-8**, Big Bear Lake discharge is predicted to improve Big Bear Lake water quality for TDS, TP, TN, and chlorophyll-a as compared to modeled baseline conditions, and result in similar water quality for TIN as compared to the modeled baseline. In addition, the proposed discharge is anticipated to feature concentrations similar to or lower than ambient water quality and the most stringent water quality objective for criterion for all constituents evaluated except for boron. For boron, concentrations in Big Bear Lake are anticipated to increase as compared to baseline conditions, but remain well below the most stringent water quality objective of 0.75 mg/L and consume less than 10% of the assimilative capacity.

Therefore, the proposed discharge to the Stanfield Marsh/Big Bear Lake at a discharge rate up to 2,200 AFY was determined to comprise the best practicable treatment and control and is anticipated to be consistent with State and Federal antidegradation policies, and thus, impacts would be less than significant with the implementation of **MM HYD-1**, for the following reasons:

- The proposed discharge to Stanfield Marsh/Big Bear Lake will not adversely affect existing or probable beneficial uses of either receiving water or downstream receiving waters, nor will the discharges cause water quality to not meet applicable water quality objectives.
- Overall, the proposed discharge is estimated to improve water quality in Big Bear Lake for TDS, TN, TP, and chlorophyll-a, maintain similar water quality for TIN, and have a very minor impact on boron. Future boron concentrations in Big Bear Lake are estimated to increase very slightly due to the proposed BBARWA discharge but are estimated to remain well below the 0.75 mg/L Santa Ana Basin Plan objective for boron and consume less than 10% of the assimilative capacity. The Lake Analysis shows that projected ambient Lake concentrations of TIN and chlorophyll-a with the proposed discharge will exist below their relevant water quality objective (TIN) or TMDL target (chlorophyll-a). The Lake Analysis also shows that ambient Lake concentration of TDS and TP with the proposed discharge are estimated to exceed the 175 mg/L TDS WQO and the 35 µg/L TP TMDL target, respectively (**refer to Table 4.11-7**). However, the modeled baseline condition is projected to result in Lake concentrations for TDS, TP, TIN, and chlorophyll-a that exceed those concentrations more often than all modeled BBARWA discharge scenarios. The modeled results for the proposed BBARWA discharge, when combined with a TP Offset Program, show the greatest improvements to future ambient Lake concentrations as compared to the modeled baseline condition. As such, TDS and TP concentrations are anticipated to improve with the implementation of the Program.
- Based on the above, the proposed discharge to Stanfield Marsh/Big Bear Lake is consistent with State and Federal antidegradation policies, in that minor lowering of water quality boron in Big Bear Lake (i.e., less than 10% of the assimilative capacity) is necessary to accommodate important economic or social development, will not unreasonably affect beneficial uses, will not cause further exceedances of applicable WQOs, and is consistent with the maximum benefit to the people of the State. Furthermore, **MM HYD-1** would monitor the boron levels of the Program Water discharge, and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the project by meeting the WQOs, and thereby protecting the water quality of Big Bear Lake and Stanfield Marsh.
- Based on the above, the request to permit new discharge to Stanfield Marsh/Big Bear Lake is consistent with the Porter-Cologne Act, in that the resulting water quality will constitute the highest water quality that is reasonable, considering all demands placed on the waters, economic and social considerations, and other public interest factors.
- Given that, with mitigation, the Program would not exceed any WQOs for Big Bear Lake or Stanfield Marsh, the REC-1 and REC-2 beneficial uses of Big Bear Lake and Stanfield Marsh would be maintained.

In addition to the Antidegradation Analysis (**Appendix 3**), a technical memorandum (Memo) was prepared by GEI titled “*Analysis of Aquatic Life Effects of Replenish Big Bear Program’s Discharge to Stanfield Marsh*,” and dated October 2023 (**Appendix 19**). This Memo evaluated modeled outputs from Dr. Anderson’s Big Bear Lake model, partial data from the BBARWA AWPf pilot study collected from June through September 2023, and the antidegradation analysis to evaluate potential impacts on beneficial uses related to aquatic life. The Memo also described the data gaps that limit GEI’s understanding of how the Stanfield Marsh/Big Bear Lake discharge will

affect beneficial uses related to aquatic life and how these beneficial uses of Stanfield Marsh and Big Bear Lake will be protected through the implementation of the Program. Data gaps and sources of uncertainty were addressed by recommending an adaptive management and monitoring plan.

The discharge to Shay Pond was not evaluated by GEI in this Memo because this Program Component will not be implemented in the near future. This is because the utilization of the Program Water in support of Shay Pond resulting from the implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. Should the Program Team decide to modify the water supply at Shay Pond, the water quality impacts on the Stickleback and Shay Pond shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**.

The GEI Memo reviewed and identified the beneficial uses of Stanfield Marsh and Big Bear Lake that protect aquatic life, wildlife, and habitats to assess the water quality conditions that could impact these beneficial uses. Beneficial uses of both Stanfield Marsh and Big Bear Lake are listed in **Table 4.11-1**. The beneficial uses defined in the Santa Ana Basin Plan for Big Bear Lake and Stanfield Marsh that protect aquatic life, wildlife, and habitats and are described below:

- **Commercial and Sport Fishing (COMM)** Uses of water for commercial or recreational collection of fish and shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.
  - This beneficial use protects commercial fishing, which can be an indicator of the health of the wildlife and special status species utilizing Big Bear Lake for foraging and food, such as the American Bald Eagle. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not violate a water quality standard.
- **Warm Freshwater Habitat (WARM)** Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
  - This beneficial use protects warm water ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not violate a water quality standard.
- **Cold Freshwater Habitat (COLD)** Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
  - This beneficial use protects cold water ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not violate a water quality standard.
- **Wildlife Habitat (WILD)** Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
  - This beneficial use protects ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not violate a water quality standard.

- **Rare, Threatened, or Endangered Species (RARE)** Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or Federal law as rare, threatened, or endangered.
  - This beneficial use protects habitats that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not violate a water quality standard.

The parameters that were identified by the GEI Memo that could potentially impact these beneficial uses are algae, temperature, nutrients, dissolved oxygen, pH, boron, and reinvasion by undesirable species. The general observations, analyses, and conclusions of each of these indicators are discussed below and discusses how the COMM, WARM, COLD, WILD, and RARE beneficial uses can be maintained as part of the Program.

### ***Algae***

It is possible that the rewetting of Stanfield Marsh will result in an increase in biologically available phosphorus,<sup>56</sup> which would increase algal growth in Stanfield Marsh, and in Big Bear Lake, if Stanfield Marsh spilled to Big Bear Lake during rewetting. The increase in phosphorus depends on interstitial pore size, total organic carbon in soils,<sup>57</sup> presence of aquatic vegetation, and the extent of the varial zone.<sup>58</sup> A small varial zone may help reduce the amount of phosphorus that is re-released into the aquatic environment. Other factors can include the seasonal timing of rewetting and the amount of uptake and storage by rooted and floating macrophytes – management strategies such as planting of rooted macrophytes can be employed during rewetting, to reduce the amount of phosphorus that remains in Stanfield Marsh and moved into the Big Bear Lake.<sup>59</sup> Limiting the available nutrients in the water column would reduce the probability of nuisance algae blooms. Physical conditions in the rewetted Stanfield Marsh and projected levels of phosphorus in the Program Water should not contribute to increased levels of cyanobacteria. The rewetted Stanfield Marsh will be shallow and well-mixed.<sup>60</sup> Cyanobacteria benefit from stratified conditions because of their natural buoyancy but do not thrive in well-mixed water columns. Thus, it is not anticipated that excessive algal growth in inland surface receiving waters would occur, and therefore, the narrative criterion for algae is predicted to be met by the proposed Program. As a result, the beneficial uses would be maintained under the Program. No impacts related to beneficial uses from algae are anticipated to occur.

### ***Temperature***

The COLD beneficial use is more stringent than the WARM beneficial use. Because Stanfield Marsh was mostly dry from 2015 through 2022, temperature modeling was required to estimate Program effects.<sup>61</sup> Dr. Anderson used his Big Bear Lake model to simulate a run a five-year

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<sup>56</sup> SurrIDGE, B. W. J., A. L. Heathwaite, and A. J. Baird. 2012. Phosphorus mobilization and transport within a long-restored floodplain wetland. *Ecological Engineering* 44:348-359.

<sup>57</sup> Gale, P. M., K. R. Reddy, and D. A. Graetz. 1994. Phosphorus retention by wetland soils used for treated wastewater disposal. *Journal of Environmental Quality* 23(2):370-377.

<sup>58</sup> Song, K-Y., K-D., Zoh, and H. Kang. 2007. Release of phosphate in a wetland by changes in hydrological regime. *Science of the Total Environment* 380(1-3):13-18.

<sup>59</sup> Steffenhagen, P., D. Zak, K. Shultz, T. Timmermann, and S. Zerbe. 2012. Biomass and nutrient stock of submersed and floating macrophytes in shallow lakes formed by rewetting of degraded fens. *Hydrobiologia* 692:99-109.

<sup>60</sup> Dr. Anderson, personal communication 08/2023

<sup>61</sup> Dr. Anderson, M. 2022a. Assessment of Inflow Temperature on Temperature in Stanfield Marsh and Big Bear Lake.



simulation period, with minimum effluent temperatures of 12°C, a maximum temperature of 22°C, and a scenario of approximately 2,200 AFY of discharge.

Under the modeling scenario, water temperature excursions over 5°F/2.8°C in Stanfield Marsh only occurred during discrete periods when water levels were exceptionally low ( $\leq 1$  meter). However, because of the frequency at which low water levels would occur, the number of excursions would be substantial. Results from the Assessment of Inflow Temperature on Temperature in Stanfield Marsh and Big Bear Lake prepared by Dr. Anderson highlighted some important general findings. Stanfield Marsh and Big Bear Lake are hydrologically connected through a set of culverts. For water flows to move from Stanfield Marsh into Big Bear Lake, Stanfield Marsh must first be filled before it starts flowing into the Big Bear Lake. Warm Program Water discharged to the easternmost section of Stanfield Marsh will quickly lose heat through exchange with the atmosphere and will be diluted with existing water. Higher lake levels afford greater opportunity for heat loss and dilution such that temperature effects are more likely at low lake levels. As a result of the modeling, the addition of warm Program Water to Stanfield Marsh does not alter the heat budget for Big Bear Lake and is not predicted to alter lake temperature, duration, or intensity of thermal stratification.

Program-specific information about inflow temperatures is needed to conduct a more complete analysis. Temperature represents beneficial uses for both Stanfield Marsh and Big Bear Lake that could potentially impact wildlife, aquatic life, and habitats if obstructed by the Program. As such, mitigation is necessary to minimize the potential for inflow temperature to Stanfield Marsh and Big Bear Lake falls within the confines of the narrative temperature WQO. **MM HYD-1** would monitor the temperature of the Program Water and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the temperature based beneficial uses are maintained under the Program and minimizing water quality impacts to a level of less than significant. Thus, impacts to beneficial uses from temperature would be less than significant through the implementation of mitigation.

### ***Nutrients***

Nutrient constituents are typically TIN, TN, TP, and chlorophyll-a. As discussed in the Antidegradation Analysis (**Appendix 3**), the proposed discharge is estimated to improve water quality in Big Bear Lake for TN, TP, and chlorophyll-a, maintain similar water quality for TIN. The predicted long-term average concentrations of TIN, TN, TP, and chlorophyll-a were lower with the proposed Program Water at various rates as compared to the predicted baseline condition, except for TIN under the 2,210 AFY + TP Offset. It is unclear why the model predicted increased TIN under this scenario while all other scenarios showed significantly reduced TIN values relative to the modeled baseline; however, the modeled difference in TIN between the Baseline and 2,210 AFY + TP Offset scenarios is approximately 4 percent, which is within the range of model variance and is considered statistically insignificant.

Although modeling shows the projected long-term average concentration of TIN is similar to the modeled baseline condition, the pilot study results (**Appendix 19** Table 3 of GEI's TM) indicated that the average TIN exceeded the Santa Ana Basin Plan WQO. Treatment process optimization is being explored to attain a higher removal efficiency to meet the most stringent TIN WQO of 0.15 ppm. As TIN has a WQO under the Santa Ana Basin Plan, if this objective is not met, the beneficial uses of Stanfield Marsh and/or Big Bear Lake may be obstructed by the Program. For the purposes of this analysis, it is assumed that treatment optimization will result in attainment of 0.15 ppm TIN. As a result, the beneficial uses would be maintained under the Program. However, if additional treatment equipment is needed to meet this objective or if regulatory compliance

mechanisms are pursued to allow discharge above the objectives, consistency with the Program CEQA documentation will be verified, and, if determined necessary to comply with CEQA, subsequent CEQA documentation will be conducted. Impacts under this issue would therefore be less than significant.

### ***Data Gaps and Limitations***

Although modeling and a pilot study have been conducted for this Program, there are still some data gaps to better understand the potential impacts to the designated beneficial uses for Stanfield Marsh and Big Bear Lake with respect to aquatic wildlife and plants. These data gaps would be best resolved when Program Water is discharged to Stanfield Marsh, as the impacts cannot be measured until the Program water is discharged into Stanfield Marsh and wetted, and further, would be monitored with mitigative adaptation to any impacts through **MM HYD-1**. Constituents of interest with data gaps are boron, dissolved oxygen, pH, and temperature. These constituents are further explained below. However, the specific data gaps for each parameter are outlined as follows:

- **Boron:** There is uncertainty as to how boron would be assimilated into Stanfield Marsh. This is because, in order to discharge Program Water to Stanfield Marsh and Big Bear Lake, an NPDES Permit and WDR must first be obtained. Thus, it would be impossible to understand fully how boron in the Program Water into Stanfield Marsh without first observing how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation.
- **Dissolved Oxygen:** Data is not currently available to predict dissolved oxygen levels in Stanfield Marsh, Big Bear Lake, or purified water. This is because, in order to discharge Program Water to Stanfield Marsh and Big Bear Lake, an NPDES Permit and WDR must first be obtained. Thus, it would be impossible to predict dissolved oxygen levels in Stanfield Marsh, Big Bear Lake, or Program Water without the Program being operational, and observing how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation.
- **pH:** The buffering capacity of Stanfield Marsh itself is currently unknown because it has been mostly dry since 2015, but soil chemistry has a large effect on the pH of small bodies of water. As such, it is not presently known precisely how the Program will impact the pH of Stanfield Marsh, and therefore observation of how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation, is necessary to bridge this data gap.
- **Temperature:** There is uncertainty about predicted temperatures arise because no temperature data is available for the Program Water - theoretical temperature ranges were developed using data from a pilot project near sea level and corrected for elevation, but still, there is a gap in data that can only be filled once the Program is operational.
- **Reinvasion of Invasive Species:** Invasive plants and aquatic animals (vertebrate or otherwise) will be able to access Stanfield Marsh when it is rewetted, but it is impossible to predict precisely how discharge of Program Water will influence the proliferation of invasive species.

### ***Boron***

Boron is a naturally occurring element, and boron deposits are found in desert areas in California.<sup>62</sup> Anthropogenic sources of boron include industrial wastewater discharges, municipal

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<sup>62</sup> State Water Resources Control Board (State Water Board). 2017. Groundwater Information Sheet: Boron (B). Division of Water Quality Gama Program. 7 pages. Accessed at: [https://www.waterboards.ca.gov/gama/docs/coc\\_boron.pdf](https://www.waterboards.ca.gov/gama/docs/coc_boron.pdf) (accessed 10/19/23)

wastewater discharges, and agricultural practices. As referenced in Schoderboeck et al. (2011),<sup>63</sup> boron does not biodegrade in surface water or sediments in freshwater environments.

California's searchable database for water quality goals also lists an agricultural goal of 0.7 ppm based on tolerance of various crops to boron reported in Ayers and Westcott;<sup>64</sup> this concentration of 0.7 ppm is well above the effluent concentration of 0.12 ppm. Boron toxicity can affect most crops, but there is a wide range of tolerance; the most sensitive crops are affected by boron concentrations approaching 0.5 ppm. Schoderboeck et al. (2011) also assessed toxicity data for aquatic environments through two approaches and review of extensive data; these two approaches resulted in predicted no effect concentrations in aquatic environments of 0.18 and 0.34 ppm. Boron is accumulated by rooted aquatic plants and algae; the extent to which this occurs is species-specific. Boron does not biomagnify or bioconcentrate in the food web or become concentrated in fish or invertebrates.<sup>65</sup>

While boron concentrations in the Program Water are estimated to consume less than 10% of the assimilative capacity and be below receiving water limits as identified in the Santa Ana Basin Plan, there is uncertainty as to how boron would be assimilated into Stanfield Marsh. This is because, in order to discharge Program Water to Stanfield Marsh and Big Bear Lake, an NPDES Permit and WDR must first be obtained. Thus, it would be impossible to understand fully how boron in the Program Water into Stanfield Marsh without first observing how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation. It appears that uptake by plants can be a significant source of sequestration of boron, suggesting that management of rooted macrophytes may provide a method of removing excess boron from Stanfield Marsh. To determine potential impacts on aquatic wildlife and plants in Stanfield Marsh and Big Bear Lake, it is recommended to conduct boron monitoring once Program Water is discharged to Stanfield Marsh. Quarterly monitoring is recommended of the Program Water effluent to observe the boron concentration prior to introduction into Stanfield Marsh and at the existing TMDL Sampling Station MWDL9. This location is already an established sampling station through the Big Bear Lake Nutrient TMDL and is representative of Stanfield Middle. If observed boron levels do not meet the Santa Ana Basin Plan WQO, the beneficial uses of Stanfield Marsh and/or Big Bear Lake that could potentially impact special status species may be obstructed by the Program. As such, mitigative actions may include but not be limited to the introduction of native plants to absorb boron in Stanfield Marsh. **MM HYD-1** would monitor the boron levels of the Program Water discharge, and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs and minimizing water quality impacts to a level of less than significant. Thus, impacts to beneficial uses from boron would be less than significant through the implementation of mitigation.

### ***Dissolved oxygen***

Dissolved Oxygen has a narrative WQO that must be met pursuant to the WARM and COLD beneficial uses, and is therefore integral to protecting the wildlife, aquatic life, habitats that are supported by the beneficial uses of Stanfield Marsh and Big Bear Lake. Data is not currently available to predict dissolved oxygen levels in Stanfield Marsh, Big Bear Lake, or Program Water.

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<sup>63</sup> Schoderboeck, L. S. Muhleger, A. Losert, C. Guasterer, and R. Hornek. 2011. Effects assessment: boron compounds in the aquatic environment. *Chemosphere* 82: 483-487.

<sup>64</sup> Ayers, R.S. and D.W. Westcott. 1985. *Water Quality for Agriculture*. Food and Agriculture Organization of the United Nations. Accessed at: <https://www.fao.org/3/T0234E/T0234E00.htm#TOC> (accessed 10/19/23)

<sup>65</sup> CMME. 2009. *Canadian water quality guidelines for the protection of aquatic life: boron*. Canadian Council of Ministers and Environment. Available online: <http://ceqg-rcqe.ccme.ca>. (accessed 10/19/23)

As stated above, this is because, in order to discharge Program Water to Stanfield Marsh and Big Bear Lake, an NPDES Permit and WDR must first be obtained. Thus, it would be impossible to predict dissolved oxygen levels in Stanfield Marsh, Big Bear Lake, or Program Water without the Program being operational, and observing how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation. However, low dissolved oxygen levels could be ameliorated through aeration of effluent. Stanfield Marsh is shallow enough that stratification is unlikely to occur (Dr. Anderson, personal communication). In other words, the water column in Stanfield Marsh would be mixed through water movement and via wind mixing, which would facilitate roughly equal concentrations of dissolved oxygen throughout the water column. Also, it is possible to speculate on dissolved oxygen levels in the Program Water, but there is considerable uncertainty surrounding what will happen when this Program Water enters Stanfield Marsh. Low-nutrient water entering Stanfield Marsh may also suppress dissolved oxygen levels by reducing algae and macrophyte production of dissolved oxygen (Dr. Anderson, personal communication). To determine potential impacts to aquatic wildlife, once Program Water is discharged into Stanfield Marsh, dissolved oxygen should be monitored during and after re-wetting of Stanfield Marsh at the Program Water effluent and at existing TMDL Sampling Station MWDL9. If observed dissolved oxygen levels do not meet the Santa Ana Basin Plan WQO designated beneficial uses for COLD and WARM, mitigative actions may include but not be limited to the introduction of mechanical intervention to stabilize dissolved oxygen levels. **MM HYD-1** would monitor the dissolved oxygen levels of the Program Water discharge, and, if observed exceeding NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs and minimizing water quality impacts to a level of less than significant. Thus, impacts to beneficial uses from dissolved oxygen would be less than significant through the implementation of mitigation.

### **pH**

The Santa Ana Basin Plan pH of inland surface waters water quality objective cannot have pH levels depressed below 6.5; pH values below this level also tend to be associated with lower fish and macrophyte productivity.<sup>66</sup> The volume of water entering Stanfield Marsh is significant (up to 2.2 MGD, or 3.4 cfs), so the entire volume of Stanfield Marsh will likely turn over multiple times in a year. While the Program Water hardness was predicted to be low at 50 ppm of calcium carbonate (CaCO<sub>3</sub>),<sup>67</sup> the pilot study results were non-detect because the Program Water was not stabilized. The estimated hardness after stabilization is 25 ppm. The low alkalinity and hardness values of the effluent suggest a low buffering capacity and susceptibility to a change in pH upon entering Stanfield Marsh. The buffering capacity of Stanfield Marsh itself is currently unknown because it has been mostly dry since 2015, but soil chemistry has a large effect on the pH of small bodies of water. As such, it is not presently known precisely how the Program will impact the pH of Stanfield Marsh, and therefore observation of how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation, is necessary to bridge this data gap. Despite minor potential pH concerns in Stanfield Marsh, the low hardness of the effluent suggests that it would likely have a negligible effect on the pH of Big Bear Lake, given its large relative volume to the Program Water and its higher hardness of 157 ppm.

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<sup>66</sup> Avault, J. W. 1996. Fundamentals of Aquaculture: a step-by-step guide to commercial aquaculture. AVA Publishing, Baton Rouge, LA.

<sup>67</sup> Dr. Anderson, M. 2022b. Effect of Sand Canyon and Irrigation Withdrawals on Lake Level. Draft Technical Note. 5 pp.

The expected pH of the effluent is low at 6.09. Since the treatment process maintains a neutral pH between 7 and 8 upstream of the reverse osmosis process, and then become slightly acidic downstream of reverse osmosis, post-treatment chemical addition will be employed to adjust the pH to a neutral level such that the effluent is within the Santa Ana Basin Plan water quality numerical objectives for pH. To determine potential impacts to aquatic wildlife, once purified water is discharged into Stanfield Marsh, pH should be monitored during and after re-wetting of Stanfield Marsh at the Program Water effluent and at existing TMDL Sampling Station MWDL9. If observed pH levels do not meet the Santa Ana Basin Plan WQO for inland surface waters, the beneficial uses of Stanfield Marsh and/or Big Bear Lake that could potentially impact special status species may be obstructed by the Program. As such, mitigative actions may include but not be limited to introduction of a chemical intervention to stabilize pH levels. **MM HYD-1** would monitor the pH levels of the Program Water discharge, and if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs and minimizing water quality impacts to a level of less than significant. Thus, impacts to beneficial uses from pH would be less than significant through the implementation of mitigation.

### ***Temperature***

As discussed above, temperature represents beneficial uses for both Stanfield Marsh and Big Bear Lake that could potentially impact wildlife, aquatic life, habitats if obstructed by the Program. Temperature modeling data show that excursions of the COLD standard occurred 44 percent of the time, during low water, when Stanfield Marsh might otherwise be dry. While it is suspected that maintenance of flows and the presence of water are preferable in dry years, even if the COLD standards are not met, this could be confirmed with an AAMP. Additional uncertainty about predicted temperatures arise because no temperature data is available for the Program Water - theoretical temperature ranges were developed using data from a pilot project near sea level and corrected for elevation, but still, there is a gap in data that can only be filled once the Program is operational. As indicated in earlier discussions on the temperature modeling data, additional monitoring is recommended once the Program Water is discharged into Stanfield Marsh. Temperature modeling is recommended to be conducted using an online analyzer to obtain continuous readings of the Program Water in Stanfield Marsh. Similar to previous discussions on location of monitoring, the existing TMDL Sampling Station MWDL9 can be utilized. If observed temperature levels do not meet the Santa Ana Basin Plan WQO designated beneficial uses for COLD and WARM, the beneficial uses of Stanfield Marsh and/or Big Bear Lake that could potentially impact special status species may be obstructed by the Program. As such, mitigative actions may include but not be limited to introduction of a temperature cooling mechanism to lower the temperature of the Program Water before it is introduced into Stanfield Marsh. **MM HYD-1** would monitor the temperature of the Program Water discharge, and, if observed exceeding permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the temperature based beneficial uses are maintained under the Program and minimizing water quality impacts to a level of less than significant.

### ***Reinvasion by Undesirable Species***

Invasive plants and aquatic animals (vertebrate or otherwise) will be able to access Stanfield Marsh when it is rewetted. Because it is upstream of Big Bear Lake, it may be desirable to prevent contamination of Stanfield Marsh by species such as Eurasian Watermilfoil (*Myriophyllum spicatum*) and Common Carp (*Cyprinus carpio*), which are known invasive species that appear in Big Bear Lake. Proliferation of Eurasian Watermilfoil can cause periodic depression in dissolved oxygen levels, and this species adversely affects all beneficial uses relating to the protection of aquatic life. As the reinvasion by undesirable species can only occur once Stanfield Marsh is

rewetted, monitoring is the only means by which to observe whether such species become invasive in Stanfield Marsh from Program implementation. Thus, it is recommended for monitoring to be conducted at least on a bi-yearly basis to observe the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake, which shall be a requirement of Program implementation through **MM HYD-1**. Furthermore, mitigative actions under **MM HYD-1** if invasive species are observed, would include invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions to remove the invasive species present as a result of introduction of the Program Water. Additionally, **MM HYD-1** requires an account of invasive species within Stanfield Marsh and Big Bear Lake to be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program. This would protect the beneficial uses of Stanfield Marsh and Big Bear Lake by preventing invasive species proliferation in Stanfield Marsh and Big Bear Lake, thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from invasive species would be less than significant through the implementation of mitigation.

***Stanfield Marsh and Big Bear Lake Beneficial Use (COMM, WARM, COLD, WILD, and RARE) Conclusion***

Data gaps were identified for boron, dissolved oxygen, pH, and temperature. To close the data gap, monitoring is recommended once the Program's water is introduced to Stanfield Marsh/Big Bear Lake, and further, as discussed under Data Gaps, above, would be monitored with mitigative adaptation to any impacts through **MM HYD-1**. The Program's discharge effluent would be monitored along with utilizing existing Nutrient TMDL Sampling Station MWDL9. In addition to the identified water quality constituents, at a minimum bi-yearly monitoring is recommended to observe the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake. This monitoring shall be enforced through the implementation of **MM HYD-1**. Additionally, the actions necessary to adapt and mitigate any beneficial use or WQO conflicts observed through the monitoring program that will be undertaken as part of Program operations shall be enforced through **MM HYD-1**.

This Program is anticipated to provide beneficial impacts to the Big Bear Valley. In addition to providing a sustainable water supply to the area and increasing Big Bear Lake levels, rewetting of Stanfield Marsh will be critical to replacing the wetland habitat that was lost in the late 1800s with the construction of the Bear Creek Dam. Thus, the Program would help support the WILD and RARE designated beneficial uses for Stanfield Marsh and Big Bear Lake. The introduction of a TP Offset Program will assist with meeting the Big Bear Lake Nutrient TMDLs. Thus, the proposed discharge of Program Water to Stanfield Marsh/Lake would have a less than significant potential to obstruct the beneficial use of either Stanfield Marsh or Big Bear Lake with the implementation of **MM HYD-1**. Therefore, the potential for the Program to violate water quality standards would be less than significant with the implementation of **MM HYD-1**.

**HYD-1** *BBARWA in collaboration with BBMWD and BBCCSD will collect samples at the pertaining locations. That is BBARWA will monitor the Program Water, BBMWD will collect samples in the Stanfield Marsh and Big Bear Lake, and BBCCSD will collect samples in Shay Pond. BBARWA will develop the AAMP and will coordinate with BBMWD and BBCCSD to implement the AMMP for the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (when implemented). The AMMP will consist of the following;*

- **Conduct a monitoring plan to:**
  - **Collect quarterly boron samples of Program Water (i.e., purified water before it is discharged to Stanfield Marsh or Shay Pond (when implemented)), at the**



- *existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented);*
- *Monitor the dissolved oxygen and pH of the Program Water, in Stanfield Marsh (if permitted), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented) during and after re-wetting of Stanfield Marsh or Shay Pond;*
- *Continuously monitor temperature of the Program Water, Stanfield Marsh, and Shay Pond (when implemented); and*
- *Collect quarterly chloride samples of Program Water stored in Big Bear Lake at the existing TMDL Sampling Station MWDL9 to assess the impacts on the Bear Valley Basin.*
- *Collect nutrient (i.e., TIN, TP, TN, ammonia, nitrate as N, nitrite as N) samples of the Program Water at the frequency stated in the NPDES permit.*
- *Implement a TP Offset Program, expected to be stipulated in BBARWA's future NPDES permit;*
- *Monitor the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake at least on a bi-yearly basis. If observed, mitigative actions, such as invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions shall be undertaken to remove the invasive species present as a result of introduction of the Program Water. An account of invasive species within Stanfield Marsh and Big Bear Lake shall be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program.*

*If temperature, dissolved oxygen, boron, or pH levels exceed the NPDES permit requirements, BBARWA shall pursue mitigation actions which may include, but are not limited to the following:*

- *Introduction of chemical or mechanical intervention to stabilize pH levels and dissolved oxygen.*
- *Introduction of native plants to absorb boron at Stanfield Marsh or Shay Pond (when implemented).*
- *Introduction of a temperature cooling mechanism to lower the temperature of the Program Water before being introduced to the Stanfield Marsh or Shay Pond (when implemented).*

*If recharging Program Water stored in Big Bear Lake would result in exceedance of any of the limits set in the future Sand Canyon Recharge Area WDR permit, the discharge of Program Water to the Sand Canyon Recharge Area would be paused until permit conditions are met.*

*The AMMP shall be aligned with the future requirements of the NPDES and WDR permits.*

### **Standfield Marsh Big Bear Lake Discharge – Impacts on Downstream Surface Water Quality**

As part of the Program, additional inflows into Big Bear Lake will result in higher lake levels than would otherwise occur, which will result in increased releases of water from Big Bear Lake during wet periods for flood control purposes. In addition, higher lake levels may enable BBMWD to negotiate their current Big Bear Lake management strategy to minimize spills and optimize releases to enable additional water to be captured downstream for recharge of the San Bernardino Basin, rather than being discharged to the ocean during high flow periods. This section evaluates if the additional Big Bear Lake releases as a result of the Program Water discharged to Stanfield Marsh/Big Bear Lake will cause downstream water bodies to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality. Based on a review of the WQOs in the Santa Ana Basin Plan, and as shown on **Table 4.11-9**, below, Big Bear Lake has same or more stringent water quality objectives than downstream receiving waters (i.e., surface and groundwaters); therefore, meeting the objectives of Big Bear Lake will also meet

the objectives of all downstream receiving waters, so it can be concluded that downstream uses will be protected.

**Table 4.11-9  
 BIG BEAR LAKE WQOS VS. THE SAR REACHES LOCATED DOWNSTREAM OF BIG BEAR LAKE**

<b>Water Quality Objective (WQO)</b>	<b>Big Bear Lake</b>	<b>SAR Reach 6</b>	<b>SAR Reach 5</b>	<b>SAR Reach 4</b>	<b>SAR Reach 3</b>
Total Dissolved Solids (TDS), mg/L	175	200	300	550	700
Hardness, mg/L	125	100	190	--	350
Sodium, mg/L	20	30	30	--	110
Chloride, mg/L	10	10	20	--	140
Total Inorganic Nitrogen, mg/L	0.15	1	5	10	10
Nitrate as N	--	--	--	--	--
Sulfate, mg/L	10	20	60	--	150
Chemical Oxygen Demand, mg/L	--	5	25	30	30
Total Phosphorus, mg/L (TMDL Objective)	0.035				
Chlorophyll-a, mg/L (TMDL Objective)	0.014				

In addition, the Antidegradation Analysis (**Appendix 3**) considered impacts on the downstream receiving water by evaluating the beneficial uses and the most stringent water quality criteria on the Santa Ana River Reach 6, which is located about 17 miles downstream from Big Bear Lake. Overall, Big Bear Lake has more stringent water criteria than Santa Ana River Reach 6. However, Santa Ana River Reach 6 is also included in California's 2018 Section 303(d) list of impaired water bodies for cadmium, lead, and copper, so these trace metals were added to the analysis. Projected average concentrations of the three trace metals in the proposed discharge are significantly below the hardness-based CTR chronic criterion calculated for each metal using a median total hardness value of 99 mg/L calculated for Reach 6, as shown in **Table 4.11-7**. Cadmium, copper, and lead concentrations contained in the Program Water proposed for discharge to Big Bear Lake are not anticipated to lower water quality in Santa Ana River Reach 6 for these trace metals, nor are they anticipated to affect future load or WLA included in an adopted TMDL. Thus, the water quality impacts related on downstream beneficial uses would be less than significant, because the Program Water will meet the most stringent objectives which are applied to Big Bear Lake.

**Shay Pond Discharge – Impacts on Surface Water Quality**

As part of the Program, up to 80 AFY of Program Water is proposed to be discharged to Shay Pond. The utilization of the full advanced treated water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. The proposed Shay Pond Discharge is intended to replace potable water that is currently discharged to the pond to support the Stickleback, a State and Federal listed endangered species. This section evaluates if the Program Water that will be discharged will cause this water body to violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

In February of 2022, an Antidegradation Analysis (**Appendix 3**) was completed to evaluate the water quality impacts that the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay

Pond would have on the beneficial uses of each water body. In general, an antidegradation analysis provides regulators with the information needed to determine whether a proposed discharge is consistent with State and Federal antidegradation policies. As required by the CWA, an NPDES permit will be requested from the Santa Ana Regional Board once this Program Component is ready for implementation.

Under the State and Federal antidegradation policies, the Santa Ana Regional Board is required to make a finding regarding the satisfaction of the policies as they are responsible for regulating the discharge to Shay Pond, once this component is ready for implementation. The State antidegradation policy, which incorporates the Federal antidegradation policy, seeks to maintain the existing high quality of water to the maximum extent possible, and only allows a lowering of water quality if:

- Changes in water quality are consistent with maximum benefit to the people of the State, will not unreasonably affect present and potential beneficial uses, and will not result in water quality lower than applicable standards, and
- Waste discharge requirements for a proposed discharge will result in the best practicable treatment or control of the discharge necessary to assure:
  - No pollution or nuisance; and
  - Highest water quality consistent with maximum benefit to the people of the State.

At the time of completion of the Antidegradation Analysis (**Appendix 3**), it was assumed that BBARWA would produce disinfected, advanced treated effluent through tertiary filtration using ultrafiltration, and RO treatment with UV disinfection. Since then, an AOP system has been added to the treatment process to produce Program Water. Therefore, the water quality of the proposed discharge is anticipated to be the same or better than the assumptions used in the Antidegradation Analysis, so the general conclusions still apply.

The Antidegradation Analysis evaluated the average quality of potable groundwater supply, projected Program Water quality, the ambient water quality of Shay Pond, and the most stringent WQO or criterion to determine if proposed discharge would degrade water quality in Shay Pond. Per the Antidegradation Analysis, water quality data for the specific well that discharges to Shay Pond is not available so the data used in the antidegradation analysis was obtained by compiling and averaging the water quality data from seven drinking water wells near Shay Pond, which is expected to be representative of the quality of groundwater currently discharged to Shay Pond. BBCCSD collected this data in 2020. For the Antidegradation Analysis, the existing water quality of potable water supplies near Shay Pond were compared to the projected effluent quality of the proposed Shay Pond Discharge to determine if there is a potential for degradation of Shay Pond water quality as a result of the proposed discharge. **Table 4.11-10** shows the Antidegradation results.

Overall, the projected effluent quality of the proposed discharge to Shay Pond is better than the current potable water supply for chloride, hardness, sodium, sulfate, TDS, TN, aluminum, and specific conductance. This is evidenced by the results of the pilot project results presented in **Table 4.11-10**. The projected effluent quality of the proposed discharge is expected to be of similar quality as existing potable water supplies for ammonia, fluoride, MBAS, cadmium, copper, and lead. Boron may be the only constituent that could be above the existing potable water supply quality. The projected boron effluent quality of the proposed Shay Pond Discharge (0.11 mg/L) is anticipated to exceed Shay Pond ambient water quality (0.059 mg/L – based on one sample collected in November 2021), but remain well below the most stringent criterion of 0.75 mg/L for the protection of sensitive crops. Therefore, Shay Pond's boron assimilative capacity, defined as.

Table 4.11-10

Comparison of Most Stringent Water Quality Objective or Criterion to Current BBCCSD Potable Water Supply Quality and Projected Effluent Quality of Proposed Discharge

Constituent	Units	Reference for Most Stringent WQO or Criterion	Average Quality of Potable Groundwater Supply <sup>(a)</sup>	Shay Pond Ambient Quality <sup>(b)</sup>	Projected Effluent Quality of PROPOSED Discharge	Comparison of Projected Effluent Quality to Most Stringent WQO (See Table Notes)
Ammonia as N	mg/L	1.4 <sup>©</sup>	NS	0.24	0.05	1
Boron	mg/L	0.75	<0.1	0.059	0.11	2
Chloride	mg/L	500	9	7.6	0.60	1
Fluoride	mg/L	0.9	2.1	1.2	<0.026	1
Hardness, Total (as CaCO <sub>3</sub> )	mg/L	100	209	180	3.2	1
MBAS	mg/L	0.05	<0.1	<0.1	0.0014	1
Sulfate	mg/L	500	39	23	0.20	1
Total Dissolved Solids	mg/L	1000	291	320	50	1
Total Nitrogen	mg/L-N	10	NS	1.2	0.60	1
Cadmium	µg/L	1.5 <sup>(d)</sup>	<1	<1	<0.11	1
Copper	µg/L	16.6 <sup>(d)</sup>	<50	<50	0.07	1
Lead	µg/L	3.5 <sup>(d)</sup>	<5	<5	0.01	1
Aluminum	µg/L	200	<50	120	1.3	1
Specific Conductance	µmhos/cm	700/1000	496	450	18	1

**Notes:** NS – Not sampled/no data

a) The average groundwater potable water supply was estimated from 7 domestic wells that were tested and are near Shay Pond. NDs were excluded from the average. Constituents with all ND are reported as “<RL.” The MDL was not provided.

b) For Shay Pond, only one sample is available. The results are reported. ND are reported as “<MDL.”

c) The total ammonia was estimated using the equation presented in Table 4-4 of the Santa Ana Basin Plan. The field temperature on November 17, 2021, was 56 °F (13.3°C) and pH was 7.7.

d) The cadmium, copper, and lead were estimated using a total hardness value of 180 mg/L, based on the sample collected as Shay Pond.

**Blue** – Projected effluent quality is below the ambient and most stringent WQO or criterion.

**Red** – Projected effluent quality is above the ambient or most stringent WQO or criterion.

1) Projected effluent quality is below the ambient and most stringent WQO or criterion. No degradation anticipated.

2) Projected effluent quality is above the ambient, but below the most stringent WQO or criterion. Further analysis needed to determine impacts on water quality.

the difference between the criterion and the ambient water quality, is 0.691 mg/L (i.e., 0.75 mg/L – 0.059 mg/L). Per the 2018 Recycled Water Policy, if a groundwater recharge project proposes to utilize less than 10 percent of the available assimilative capacity in a basin or subbasin, the antidegradation analysis only needs to demonstrate that the project will use less than 10 percent of the available assimilative capacity. If a similar approach is used for Shay Pond, this means an increase of up to 0.0691 mg/L would be allowed. If this is added to the ambient water quality, the maximum boron concentration in Big Bear Lake would be about 0.128 mg/L, which is higher than projected Program Water. The projected boron concentrations with the proposed Program Water discharge to Shay Pond are not estimated to exceed this concentration. Thus, the water quality impacts related to boron would be less than significant because less than 10% of the assimilative capacity would be consumed.

The proposed project is estimated to potentially cause a very minor increase in boron concentrations in Shay Pond and downstream in Shay Creek, but concentrations are estimated to remain well below the 0.75 mg/L Santa Ana Basin Plan objective for boron, and consume less than 10% of the assimilative capacity. As with the Stanfield Marsh/Big Bear Lake discharge, boron is not predicted to exceed the WQO. This is because the request to permit a new discharge to Shay Pond is consistent with Federal and state antidegradation policies in that the minor lowering of water quality for boron in Shay Pond (see **Table 4.11-10**) is necessary to accommodate important economic or social development,<sup>68</sup> will not unreasonably affect beneficial uses, will not cause further exceedances of applicable WQOs, and is consistent with the maximum benefit to the people of the State. Furthermore, **MM HYD-1** would monitor the boron levels of the Program Water discharge, and if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs and minimizing water quality impacts to a level of less than significant.

Additional coordination with CDFW would need to be conducted to ensure the Stickleback located in Shay Pond are protected before discharge of a new water source is implemented. As mentioned in this DPEIR, this Program Component is not planned for the near future. Should the Program Team ultimately decide to modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**, below. Furthermore, should the impacts to the Stickleback fall outside the scope of that which has been analyzed in this DPEIR, preparation of a project-specific subsequent CEQA documentation would be required. **MM BIO-6** would be required to ensure the preparation of the additional studies that will be necessary to ensure that the product water is suitable to support Stickleback at Shay Pond. Therefore, should the Program Team decide to modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**.

**BIO-6** *In order to change the water source at Shay Pond, an AMMP shall be developed by BBARWA. The implementing agency—BBARWA, in association with BBCCSD—shall coordinate with USFWS and CDFW to obtain verbal agreement on the approach to forecast impacts to the Stickleback. Then, the implementing agency or biologist familiar with the Stickleback contracted to the implementing agency shall draft a MOU (that would be between BBARWA and/or BBCCSD and USFWS and/or CDFW) to lay a solid framework for the development of an AMMP. The MOU will determine if additional permitting will be required from both the state and Federal government for the take of an endangered species.*

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<sup>68</sup> Maintain and improve recreation and tourism in the Big Bear Lake region which in turn stimulates the local and regional economies.

*The AMMP shall identify a sampling and monitoring program for the lifespan of the Program. This will include any triggers or adaptive management strategies that could be implemented to improve conditions for the Stickleback, including alterations to water temperature, inclusion of bubblers to increase dissolved oxygen or other techniques to be identified. The AMMP must be approved by USFWS and CDFW in order to carry out a pilot study in which it will be determined whether the change in water source for the Stickleback is feasible.*

Therefore, the potential for the Program to violate water quality standards would be less than significant with the implementation of **MM BIO-6 and HYD-1**

The proposed discharge to Shay Pond would occur at a rate of up to 80 AFY, would comprise best practicable treatment and control imposed on BBARWA in order to support the Stickleback species, and would be consistent with State and Federal antidegradation policies for the following reasons:

- The proposed discharge to Shay Pond will not adversely affect existing or probable beneficial uses of either receiving water or downstream receiving waters, nor will the discharges cause water quality to not meet applicable WQOs. This is because while the proposed project is estimated to potentially cause a very minor increase in boron concentrations in Shay Pond and downstream in Shay Creek, the concentrations are estimated to remain well below the 0.75 mg/L Santa Ana Basin Plan objective for boron and consume less than 10% of the assimilative capacity. Thus, boron is not predicted to exceed the WQO. The request to permit a new discharge to Shay Pond is consistent with Federal and state antidegradation policies in that the minor lowering of water quality for boron in Shay Pond (see **Table 4.11-10**) is necessary to accommodate important economic or social development, will not unreasonably affect beneficial uses, will not cause further exceedances of applicable WQOs, and is consistent with the maximum benefit to the people of the State.
- Overall, the proposed BBARWA discharge is estimated to have a very minor impact on Shay Pond water quality and Shay Creek water quality downstream of the pond because similar water quality would be maintained or improved. This is shown on **Table 4.11-10**, above, which indicates that for ammonia as N, chloride, fluoride, total hardness, MBAS, sulfate, TDS, TN, cadmium, copper, lead, aluminum, and specific conductance, the projected Program Water quality is below the ambient and most stringent WQO or criterion. The proposed discharge to Shay Pond is anticipated to lower the concentrations of the constituents analyzed compared to existing ambient concentrations that are largely influenced by the groundwater currently discharged by BBCCSD to Shay Pond to maintain water levels for the endangered Stickleback.
- Based on the above, the request to permit new discharge to Shay Pond is consistent with the Porter-Cologne Act in that the resulting water quality will constitute the highest water quality that is reasonable, considering all demands placed on the waters, economic and social considerations, and other public interest factors.

Based on the above discussion, the proposed discharge of Program Water would have a less than significant impact to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality through the implementation of **MMs HYD-1 and BIO-6**. **MMs HYD-1 and BIO-6** are required to ensure that this Program Component is carried forth prior to any alteration in water source resulting from Program implementation. It would require monitoring of the boron levels of the Program Water discharge, and if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions



would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs and minimizing water quality impacts to a level of less than significant.

### **Sand Canyon Groundwater Recharge – Impacts on Bear Valley Basin Water Quality**

As part of the Program, up to 380 AFY of Program Water stored in Big Bear Lake will be used for groundwater recharge at the Sand Canyon Recharge Area over a six-month dry weather period. The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake and discharging it into Sand Canyon, which serves as a flood control channel (refer to **Figure 1-6**). The Program Water will be discharged at the top of the Sand Canyon Recharge Area. No channel modifications to the channel bottom are anticipated since it is expected that the Program Water stored in Big Bear Lake will percolate within the defined Sand Canyon Recharge Area (**Figure 3-32**). The discharge will consist of a pipe outlet at the top of the channel bank that discharges down the side slope of the channel into the channel bottom. The channel slope will be protected from erosion using rip rap or similar erosion control methods.

In addition, Program Water stored in Big Bear Lake can also be extracted to irrigate Bear Mountain Golf Course and for dust control of the Snow Summit Bike Park. It is estimated that about 120 AFY of Program Water stored in Big Bear Lake could be utilized at each location under the Program. Based on current recycled water regulations, the use of the Program Water stored in Big Bear Lake would be regulated under the Statewide Water Reclamation Requirements for Recycled Water Use (Order WQ 2016-0068-DDW). This Order sets rules for recycled water users to avoid the overapplication of recycled water that would result in runoff or groundwater recharge. Therefore, it can be assumed that these proposed uses will not impact water quality of the Big Bear Valley Basin. This section evaluates whether the use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Area has the potential to cause violations of any water quality standards in the Bear Valley Basin, violations of expected WDRs or otherwise degrade surface or groundwater quality.

Per the Santa Ana Basin Plan, the Bear Valley Basin has a TDS objective of 300 mg/L, a hardness objective of 225 mg/L, a sodium objective of 20 mg/L, a chloride objective of 10 mg/L, a nitrate as N objective of 5 mg/L, and a sulfate objective of 20 mg/L. As shown in **Table 4.11-11**, Big Bear Lake has more stringent WQOs, so the proposed discharge of Program Water is estimated to improve water quality in Big Bear Lake via Stanfield Marsh and is estimated to improve water quality in Big Bear Lake for TDS, TN, and maintain similar water quality for TIN as demonstrated above and in the Antidegradation Analysis for Proposed Discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (WSC/LWA, 2022). **Tables 4.11-7** and **4.11-8** demonstrate that the Big Bear Lake discharge is predicted to improve Big Bear Lake water quality for TDS, TP, TN, and chlorophyll-a as compared to modeled baseline (i.e. existing) conditions, and result in similar water quality for TIN as compared to the modeled baseline. For boron, concentrations in Big Bear Lake are anticipated to increase as compared to baseline conditions, but remain well below the most stringent WQO of 0.75 mg/L, and consume less than the 10% assimilative capacity. Furthermore, as previously stated, the request to permit a new discharge to Big Bear Lake/Stanfield Marsh is consistent with Federal and state antidegradation policies in that the minor lowering of water quality for boron in to Big Bear Lake/Stanfield Marsh (see **Table 4.11-7**) is necessary to accommodate important economic or social development, will not unreasonably affect beneficial uses, will not cause further exceedances of applicable water quality objectives, and is consistent with the maximum benefit to the people of the State.

**Table 4.11-11**  
**WATER QUALITY OBJECTIVES FOR RECEIVING WATERS**

Water Quality Objective (WQO)	Big Bear Lake	Bear Valley Basin
Total Dissolved Solids (TDS), mg/L	175	300
Hardness, mg/L	125	225
Sodium, mg/L	20	20
Chloride, mg/L	10	10
Total Inorganic Nitrogen, mg/L	0.15	--
Nitrate as N	--	5
Sulfate, mg/L	10	20
Total Phosphorus, mg/L (TMDL Objective)	0.035	--
Chlorophyll-a, mg/L (TMDL Objective)	0.014	--

**Table 4.11-11** demonstrates that the Big Bear Lake objectives are more stringent than the WQOs for the Bear Valley Basin. Per conversations with DDW, Big Bear Lake may be designated as a non-restricted recycled water impoundment, and the future use of Big Bear Lake water for groundwater recharge via surface application would be subject to recycled water regulations. For possible non-potable recycled water uses for landscape irrigation, dust control, snowmaking, and nonrestricted impoundment, these uses would be regulated Order WQ 2016-0068-DDW.

To permit the Sand Canyon Recharge Area project via surface application, BBLDWP, the lead proponent of the Sand Canyon Recharge Area Program Component, will need to submit a Report of Waste Discharge (ROWD) and technical studies to the Santa Ana Regional Board to obtain a WDR permit to implement the proposed uses in the Sand Canyon Recharge Area. As part of the WDR permit process, an antidegradation analysis will be prepared to evaluate the water quality impacts in more detail than this technical memorandum to demonstrate that the project is consistent with State antidegradation policy. An antidegradation analysis is robust and is used by regulators to set permit conditions. Another study that will be completed as part of the ROWD is a Title 22 Engineering Report. This report will describe how the permittee will comply with the regulations applicable to a surface application groundwater recharge project. Overall, the WDR permitting process ensures that the beneficial uses of the Bear Valley Basin are protected by setting permit requirements to mitigate and/or avoid impacts. These studies will be completed once the design of the AWPf and Sand Canyon Recharge Area facilities are more developed to provide the necessary information.

To evaluate the potential impacts that the Program Water stored in Big Bear Lake will have on the Bear Valley Basin, the same model used for the Big Bear Lake Analysis (Dr. Anderson 2021 and 2022) was used to simulate the water quality of the blended Program Water and natural water in Big Bear Lake at the proposed extraction point. The extraction point is located near Rathbun Creek, and Program Water would be extracted using an existing pump station and pipeline used by the Bear Mountain and Snow Summit Resorts to extract Lake water for snowmaking (refer to **Figures 3-3 and 3-29**). The model simulated the extraction of Program Water stored in Big Bear Lake for groundwater recharge (380 AFY) and possible landscape irrigation (120 AFY). The model showed that Big Bear Lake extractions improved water quality (at least for TDS), so this scenario is more conservative as additional extraction would yield better water quality results. This simulation evaluated predicted conditions for a 41-year time period using available meteorological and hydrologic data for 2009-2019 and a probability-based forward forecast using the median hydrologic scenario with about 2,200 AFY of Program Water being discharged into

Big Bear Lake. These assumptions are consistent with the assumptions used to evaluate the impacts to Big Bear Lake without the extractions. This simulation and narrative data therein are described in **Appendix 18** to this DPEIR, which is a Memorandum prepared by WSC and Dr. Anderson, dated October 1, 2023.

Based upon the data compiled by WSC, Program Water withdrawn from Big Bear Lake and used for recharge of Sand Canyon and possible landscape irrigation is predicted to have mean concentrations of 18.2, 13.3 and 8.3 mg/L for sodium, chloride and sulfate, respectively, and a mean hardness value of about 97.8 mg/L CaCO<sub>3</sub> (**Table 4.11-12**). The approach to estimate these concentrations are described in **Appendix 18**. The maximum concentrations of these ions that would be present in recharge water under protracted drought were on the order of about 50% higher than mean values, but were similarly on the order of 50% lower during extreme wet conditions. The Program Team will work with the Regional Board during development of the WDR permit for Sand Canyon recharge to consider the possibility of using extended averaging periods (such as a 5-year or 10-year average) for compliance for some constituents, recognizing that variable local hydrology may result in short term changes in recharge water quality that may balance out over a longer period and still maintain compliance with water quality objectives. In addition, the recharge operation will be operated adaptively based on groundwater levels and water quality trends and can be paused if needed to ensure compliance with permitted water quality limits.

**Table 4.11-12**  
**MODEL-PREDICTED (TDS AND NITRATE AS N) AND PROJECTED (SODIUM, CHLORIDE, SULFATE, AND HARDNESS) CONCENTRATIONS (mg/L) IN RECHARGE AND IRRIGATION PROGRAM WATER WITHDRAWN FROM BIG BEAR LAKE UNDER THE MEDIAN HYDROLOGIC SCENARIO SUPPLEMENTED WITH ABOUT 2,200 AFY OF PROGRAM WATER**

Parameter	TDS	Nitrate as N	Sodium	Chloride	Sulfate	Hardness <sup>a</sup>
Mean ± sd	165.8 ± 37.7	0.029 ± 0.059	18.2 ± 4.1	13.3 ± 3.0	8.3 ± 1.9	97.8 ± 22.2
Median	159.7	<0.001	17.6	12.8	8.0	94.2
Minimum	105.4	<0.001	11.6	8.4	5.3	62.2
Maximum	258.2	0.3	28.4	20.7	12.9	152.4

<sup>a</sup> Hardness presented as mg/L CaCO<sub>3</sub>

**Table 4.11-12** presents the Program Water quality stored in Big Bear Lake that would be used for groundwater recharge at Sand Canyon and irrigate the Bear Mountain Golf Course. The mean values from **Table 4.11-12**, the Bear Valley Basin WQOs, and the ambient water quality of the Bear Valley Basin in the Sand Canyon Recharge Area, which were estimated by averaging water quality data from five drinking water wells near the Sand Canyon Recharge Area are shown in **Table 4.11-13**. The water quality data was collected in 2014, 2017, and 2021.

The projected Program Water stored in Big Bear Lake for subsequent Lake uses and the ambient water quality near the Sand Canyon Recharge Area were assessed to determine if the proposed future uses of Program Water stored in Big Bear Lake would result in concentrations that exceed existing ambient water quality and/or relevant WQOs or criteria. In order to determine whether the Sand Canyon Recharge Area Project would violate water quality standards, the model predicted mean concentrations for the Program Water stored in Big Bear Lake that would be used for groundwater recharge and possible irrigation were compared against the following:

- If the Program Water stored in Big Bear Lake is below the ambient and most stringent WQO or criterion, no degradation is anticipated.

- If the Program Water stored in Big Bear Lake is above the ambient water quality, but below the most stringent WQO or criterion, there is assimilative capacity available, which would indicate that the WQO would not be violated.
- If the Program Water stored in Big Bear Lake is above the most stringent WQO or criterion, but below the ambient water quality, there is a possibility of water quality improvements, which would provide benefit by improving conditions and help improve conditions to help attain the WQO.
- Finally, if the Program Water stored in Big Bear Lake is above ambient water quality and the most stringent WQO or criterion degradation is anticipated, a complete analysis may be required.

**Table 4.11-13**  
**COMPARISON OF MOST STRINGENT WATER QUALITY OBJECTIVE OR CRITERION TO THE SAND CANYON RECHARGE GENERAL AREA WATER QUALITY AND PROJECTED PROGRAM WATER IN RECHARGE AND IRRIGATION WITHDRAWN FROM BIG BEAR LAKE UNDER THE MEDIAN HYDROLOGIC SCENARIO SUPPLEMENTED WITH ABOUT 2,200 AFY**

Parameter	TDS	Nitrate as N	Sodium	Chloride	Sulfate	Hardness
Bear Valley Basin WQO	300	5	20	10	20	225
Bear Valley Basin Average Concentration	324	4	17	15	35	277
Model Predicted Program Water Mean for Recharge/Irrigation ± sd	165.8 ± 37.7	0.029 ± 0.059	18.2 ± 4.1	13.3 ± 3.0	8.3 ± 1.9	97.8 ± 22.2

**Note:**

**Blue** – Projected Program Water stored in the Lake is below the ambient **and** most stringent WQO.

**Bold** – Projected Program Water stored in the Lake is above the ambient, but below the most stringent WQO or criterion. Further analysis may be needed to determine impacts on water quality.

As shown in **Table 4.11-13**, the ambient conditions reflect that the existing water quality of the Bear Valley Basin near the Sand Canyon Recharge Area exceeds the WQOs for TDS, chloride, sulfate, and hardness. The Program Water stored in Big Bear Lake is estimated to be of better quality than ambient and the most stringent WQO for TDS, nitrate as N, sulfate, and hardness, so no further analysis is needed because the Program Water is predicted to improve water quality conditions and comply with WQOs. The sodium concentration in the Program Water stored in Big Bear Lake is estimated to be above the ambient water quality but below the WQO. Therefore, there is some limited assimilative capacity. The estimated chloride concentration in the Program Water stored in Big Bear Lake is estimated to be below the ambient water quality, but above the WQO. Therefore, the project has the potential to improve or maintain the existing water quality conditions of the Bear Valley Basin near the Sand Canyon Recharge Area because the Bear Valley Basin is currently exceeding the WQO.

Per the Santa Ana Basin Plan, the presence of sodium in drinking water may be harmful to persons suffering from cardiac, renal, and circulatory diseases. As noted in the Santa Ana Basin Plan, the California Department of Health Services and the EPA have not established a limit on the concentration of sodium in drinking water, but recommend for sodium concentrations to not exceed 180 mg/L in groundwaters designated MUN as a result of controllable water quality factors. As shown in **Table 4.11-13**, the sodium concentration in the Program Water stored in Big Bear Lake is less than 20 mg/L, well below this threshold and therefore would not be harmful to the MUN use of the Bear Valley Basin. Further, for informational purposes, excess concentrations of sodium in irrigation water reduce soil permeability to water and air. Under the Santa Ana Basin Plan, groundwaters designated as AGR must not exceed a sodium absorption ratio of 9 as a result of controllable water quality factors. The groundwater basin is not designated as an AGR

therefore, this threshold is not applicable. For informational purposes, the sodium absorption rate for Program Water stored in Big Bear Lake is 0.8, so the possible use of the Program Water for irrigation is not expected to be problematic.

Per the Santa Ana Basin Plan, excess chloride concentrations lead primarily to economic damage rather than public health hazards. For informational purposes, excess chlorides can significantly affect the corrosion rate of steel and aluminum and can be toxic to plants. Per the Santa Ana Basin Plan, a safe value for irrigation is considered to be less than 175 mg/L of chloride. Excess chlorides affect the taste of potable water, so drinking water standards are generally based on potability rather than on health. The secondary maximum contaminant upper limit for chloride is 500 mg/L (CCR, Division 4, Chapter 15, Article 16, § 64449), so chloride concentrations should not exceed this limit in groundwaters designated as MUN. As shown in **Table 4.11-13**, the chloride concentrations in the Bear Valley Basin and the Program Water stored in Big Bear Lake are approximately 15 mg/L, far below the 500 mg/L and 175 mg/L thresholds discussed above, and therefore the Program Water stored in Big Bear Lake would not be harmful to the MUN use of the Bear Valley Basin and would be suitable for possible use for irrigation.

The Program Water stored in Big Bear Lake is estimated to be of better quality than ambient and the most stringent WQO for TDS, nitrate as N, sulfate, and hardness and is therefore predicted to improve water quality conditions in the Bear Valley Basin. Although the Program Water stored in Big Bear Lake is projected to have a higher concentration than the established chloride WQO objective, the discharge is necessary to provide important economic and social benefits, the discharge may help reduce current ambient chloride concentrations in the Bear Valley Basin, and the beneficial uses of the Bear Valley Basin would be protected. Therefore, as this exceedance for chloride is below the ambient water quality of the Bear Valley Basin, and is necessary to accommodate important economic or social development, will not unreasonably affect beneficial uses, will not cause further exceedances of applicable WQOs, and is consistent with the maximum benefit to the people of the State, the Sand Canyon Recharge Area Project would not violate water quality standards and impacts would be less than significant. However, **MM HYD-1** is intended to prevent Program Water stored in Big Bear Lake from exceeding any of the limits set in the Sand Canyon Recharge Area WDR permit. Furthermore, the use of Program Water for Sand Canyon Recharge Area groundwater recharge will be paused until permit conditions are met.

#### **LV Site – Impacts on Lucerne Valley Basin Groundwater Quality**

With the implementation of the Program, only the flows in excess of the 2.2 MGD treatment capacity will be sent to the LV Site. The wastewater flows sent to the LV Site will vary based on the hydrologic conditions. For example, in a dry year, no water would be sent to the LV Site, and in a wet year, a significant volume could be sent to the LV Site, such as in a year like 2011, where approximately 1,050 AFY could have been sent to the LV Site. The 2012-2022 period that was used to characterize current conditions was very dry and did not include wet years like 2005, 2011, and 2023. Therefore, a longer period (2005-2023) was used to estimate the average future flow to the LV Site to account for wet years. Based on this period, an average of about 340 AFY of secondary effluent discharge could be sent to the LV Site, assuming similar hydrology occurs in the future. This volume was estimated by evaluating and averaging daily flows between 2005-2023 that exceeded the 2.2 MGD capacity. The projected average monthly discharge volumes to the LV Site, which would primarily occur in the winter and spring months, are shown in Error! Reference source not found.. The future flows discharged to the LV Site would continue to receive the same or better level of treatment under the Program so the discharge water quality would be similar to the current operation, but may have slightly lower concentrations of nitrate as N due to planned upgrades to the existing oxidation ditch process. On average, the current BBARWA

effluent contains a nitrate as N and TDS concentrations of about 4 mg/L and 432 mg/L, respectively (TH&Co, 2023).

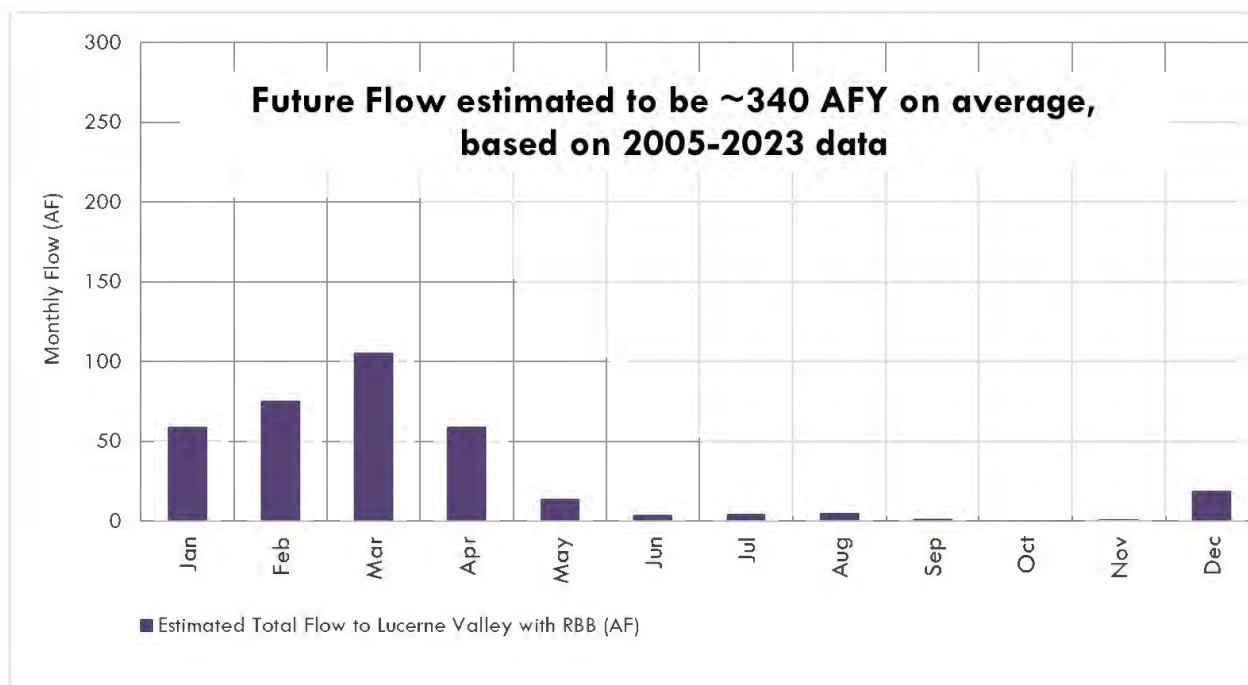


Exhibit 4.11-15: PROJECT FLOWS TO LUCERNE VALLEY

The LV Site is located within the Lucerne Hydrologic Unit, and the Colorado Basin Plan designates this groundwater basin as MUN, Industrial Supply (IND), and AGR. Per the Colorado Basin Plan, the establishment of numerical objectives for groundwater involves complex considerations since the quality of groundwater varies significantly with the depth of well perforations, existing water levels, geology, hydrology and several other factors. Until the Colorado Regional Board can complete investigations for the establishment of specific groundwater quality objectives and management practices, the objective will be to maintain the existing water quality where feasible. The Colorado Basin Plan also specifies that groundwaters designated as MUN shall not contain concentrations of chemical constituents in excess of the MCLs specified in Title 22 of the California Code of Regulations, unless more stringent limits are applied by the Colorado Regional Board.

BBARWA’s current WDR permit sets average monthly effluent limits for TN and TDS of 10 mg/L and 500 mg/L, respectively, which are the recommended MCLs. Through this permit, the Colorado Regional Board is protecting the water quality of the Lucerne Valley Basin.

As part of the WDR requirements, BBARWA installed three (3) groundwater monitoring wells upgradient and downgradient of the LV Site in 1991 and routinely samples effluent discharge quality and groundwater quality for TDS and nitrate as N to monitor for changes in the groundwater quality as a result of the discharge. As discussed under **Subsection 4.11.6.3** above, and outlined in the Groundwater Quality Evaluation at the Lucerne Valley Land Discharge Location prepared by Thomas Harder & Co (**Appendix 6**), TDS and nitrate concentrations in BBARWA effluent sent to the LV Site have historically been lower than the TDS and nitrate concentrations detected in samples from the downgradient monitoring wells at the LV Site (MW-2 and MW-3) and the upgradient monitoring well (MW-1). The average concentrations measured



in the discharge as well as the upgradient and downgradient monitoring wells are shown in **Table 4.11-14**, along with the MCLs for these constituents.

**Table 4.11-14**  
**BBARWA EFFLUENT AND LV SITE TDS AND NITRATE AS N DATA**

Monitoring Location	Nitrate as N (mg/L)	TDS (mg/L)
MCLs	10	500 (recommended) 1,000 (upper limit)
BBARWA WDR Limits	10 (Total Nitrogen)	500
BBARWA Average Effluent Discharge	4 (1980-2/2023)	432 (1991-12/2022)
LV Site Upstream (MW-1)	9 (Oct 1991-Dec 2022)	417 (2004-2016)
LV Site Downstream (MW-2)	19 (Oct 1991-Dec 2022)	714 (2004-2016)
LV Site Downstream (MW-3)	17 (Oct 1991-Dec 2022)	653 (2004-2016)

Based on the review of historical data BBARWA effluent water quality, it was concluded that although the downgradient concentrations of TDS and nitrate as N are higher than the upgradient concentrations, the BBARWA discharge is not the source of the high TDS and nitrate. TDS concentrations in BBARWA effluent since 2017 show a slightly decreasing trend, while TDS concentrations in the groundwater from downgradient Monitoring Wells MW-2 and MW-3 show an increasing trend (see **Exhibit 4.11-**), which suggests that the two are not correlated. Furthermore, the downgradient concentrations are higher than the BBARWA effluent concentrations, therefore, from a mass balance standpoint, the recharge of BBARWA effluent cannot be the source of the higher groundwater TDS concentrations. Potential sources of high TDS in the groundwater basin could include historical farming operations by farmers in the Lucerne Valley Basin and evaporative concentration of salts beneath the Lucerne Dry Lake.

Nitrate as N concentrations in groundwater from upstream and downstream monitoring wells are higher than concentrations in the BBARWA effluent (see **Exhibit 4.11-13** and **Table 4.11-14**). Thus, while the detection of low concentrations of nitrate in the BBARWA effluent contributes to nitrate in groundwater and there is minimal fertilizer application at the site, the significantly higher nitrate concentrations detected in groundwater beneath the site indicates the BBARWA effluent is only a minor contributor and not the primary source of degradation. This trend is similar to that observed for TDS and suggests that there are upgradient sources of the nitrate that are contributing to the concentrations observed.

As the BBARWA effluent is of better quality for nitrate and TDS than the downgradient groundwater, the continued discharge would not degrade the water quality of the Lucerne Valley Basin. However, because the BBARWA effluent is of better quality than the downgradient groundwater for nitrate and TDS, it may be currently acting as a minor source of dilution.

The Program will result in reduced recharge of higher quality water (for TDS and N) than that which exists in the underlying groundwater basin downgradient of the site, which has a potential to result in less dilution of the existing groundwater, so the Lucerne Valley Basin may continue to an increasing trend for TDS and N over time, due to other contributors outside BBARWA's control.

Based on the above discussion, the continued, but reduced, discharge of BBARWA's secondary effluent to the LV Site under the Program will have the potential to contribute to the degradation of water quality in the Lucerne Valley Basin by removing a dilution source, but is not the direct

cause of degradation because BBARWA effluent is only a minor contributor and not the primary source of degradation. The Lucerne Valley Basin currently exceeds the MCLs for TDS (recommended) and nitrate at the downgradient monitoring wells, so the reduced flows would not cause the Basin to violate a water quality standard, WDRs or otherwise substantially degrade surface or groundwater quality, but may result in a further exceedance of TDS and Nitrate, which is a potentially significant and unavoidable impact.

### **Summary of Impacts to Water Quality from Program Operations**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**HYD-1** *BBARWA, in collaboration with BBMWD and BBCCSD, will collect samples at the pertaining locations. That is BBARWA will monitor the Program Water, BBMWD will collect samples in the Stanfield Marsh and Big Bear Lake, and BBCCSD will collect samples in Shay Pond. BBARWA will develop the AAMP and will coordinate with BBMWD and BBCCSD to implement the AMMP for the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (when implemented). The AMMP will consist of the following;*

- *Conduct a monitoring plan to:*
  - *Collect quarterly boron samples of Program Water (i.e., purified water before it is discharged to Stanfield Marsh or Shay Pond (when implemented)), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented);*
  - *Monitor the dissolved oxygen and pH of the Program Water, in Stanfield Marsh (if permitted), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented) during and after re-wetting of Stanfield Marsh or Shay Pond;*
  - *Continuously monitor temperature of the Program Water, Stanfield Marsh, and Shay Pond (when implemented); and*
  - *Collect quarterly chloride samples of Program Water stored in Big Bear Lake at the existing TMDL Sampling Station MWDL9 to assess the impacts on the Bear Valley Basin.*
  - *Collect nutrient (i.e., TIN, TP, TN, ammonia, nitrate as N, nitrite as N) samples of the Program Water at the frequency stated in the NPDES permit.*
- *Implement a TP Offset Program, expected to be stipulated in BBARWA's future NPDES permit;*
- *Monitor the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake on at least a bi-yearly basis. If observed, mitigative actions, such as invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions shall be undertaken to remove the invasive species present as a result of introduction of the Program Water. An account of invasive species within Stanfield Marsh and Big Bear Lake shall be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program.*

*If temperature, dissolved oxygen, boron, or pH levels exceed the NPDES permit requirements, BBARWA shall pursue mitigation actions which may include, but are not limited to the following:*

- *Introduction of chemical or mechanical intervention to stabilize pH levels and dissolved oxygen.*
- *Introduction of native plants to absorb boron at Stanfield Marsh or Shay Pond (when implemented).*
- *Introduction of a temperature cooling mechanism to lower the temperature of the Program Water before being introduced to the Stanfield Marsh or Shay Pond (when implemented).*

***If recharging Program Water stored in Big Bear Lake would result in exceedance of any of the limits set in the future Sand Canyon Recharge Area WDR permit, the discharge of Program Water to the Sand Canyon Recharge Area would be paused until permit conditions are met.***

***The AMMP shall be aligned with the future requirements of the NPDES and WDR permits.***

*Level of Significance After Mitigation: Significant and Unavoidable*

The proposed Stanfield Marsh/Big Bear Lake and Shay Pond Discharges would have a less than significant potential to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality as BBARWA is investing in the best available technologies to produce Program Water that meets State and Federal limits and thereby a less than significant impact under this issue. The use of Program Water stored in Big Bear Lake for groundwater recharge has the potential to violate the chloride WQO of the Bear Valley Basin, as the Program Water stored in Big Bear Lake may exceed the chloride WQO. However, the Program Water stored in Big Bear Lake is estimated to be better quality than ambient so it would help improve or maintain ambient water quality conditions. In addition, the use of Program Water for recharge would help improve the water quality of TDS, nitrate as N, sulfate, and hardness, and maintain sodium concentrations. The benefit that the Program Water stored in Big Bear Lake will bring to the Bear Valley Basin exceeds the slight chloride WQO exceedance. However, **MM HYD-1** is intended to ensure that monitoring and adaptive management and mitigation are implemented to protect to beneficial uses of Stanfield Marsh, Big Bear Lake, and the Bear Valley Basin.

The reduced discharge to the LV Site under as a result of the Program will have the potential to contribute to the degradation of water quality in the Lucerne Valley Basin by removing a dilution source. The Lucerne Valley Basin currently exceeds the MCLs, so the reduced flows would have a significant potential to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality. Thus, as no mitigation is available to minimize the degradation of water quality in the Lucerne Valley Basin, a significant and unavoidable impact to the water quality of the Lucerne Valley Basin is projected to occur.

**Cumulative Impact Analysis**

Concurrent construction of development within the Big Bear Valley and Lucerne Valley could result in temporary impacts to surface hydrology and water quality. All other related projects would be subject to the same Federal, State, and local regulations regarding the implementation of BMPs under the CGP, SWPPP, and San Bernardino County MS4 Permits. Therefore, cumulative development would not result in a violation of water quality standards, WDRs, or otherwise substantially degrade water quality. Because the Program would result in a significant water quality impact, the Program's contribution to cumulative impacts associated with violation of water quality standards, WDRs, or degradation of water quality would be cumulatively considerable, and therefore cumulatively significant and unavoidable.

*Mitigation Measures: No mitigation is available to reduce the significant and unavoidable conflict with the water quality standards set forth in the Colorado Basin Plan that may result from Program implementation, and furthermore, no mitigation is available to reduce the potentially substantial degradation of the groundwater quality of the Lucerne Valley Basin. However, **MM HYD-1** would reduce the potential for the proposed Program to conflict with the beneficial uses of Stanfield Marsh, Big Bear Lake, and the Bear Valley Basin.*

*Level of Significance After Mitigation: Significant and Unavoidable*

**b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?**

This section evaluates potential impacts to groundwater supply as a result of implementation of Program. The information presented herein is abstracted from the following reports:

- Michael A. Anderson, 2021. Big Bear Lake Analysis: Replenish Big Bear Final Report. **(Appendix 2)**
- Michael A. Anderson, 2022. Replenish Big Bear: Modeling of Higher Flows and with Zero TP Loads. **(Appendix 10)**
- Thomas Harder & Company, 2022. Bear Valley Basin Groundwater Sustainability Plan. **(Appendix 8)**
- Thomas Harder & Company, 2017. Groundwater Quality Evaluation at the Lucerne Valley Land Discharge Location. Dated December 22, 2017. **(Appendix 6)**
- Thomas Harder & Company, 2017. Sand Canyon Recharge Evaluation Technical Memorandum. Dated November 29, 2017. **(Appendix 4)**

**Standfield Marsh/Big Bear Lake Discharge – Impacts on Groundwater Sustainability**

As part of the Program, BBARWA will discharge Program Water to the east end of Stanfield Marsh, then flow into Big Bear Lake. Stanfield Marsh and Big Bear Lake are connected through a set of culverts under the Stanfield Cutoff. This Program Component does not impact groundwater supplies, so it was not evaluated.

**Shay Pond Discharge – Impacts on Groundwater Sustainability**

As part of the Program, up to 80 AFY of Program Water is proposed to be discharged to Shay Pond. Please note that this Program Component is not planned for the near future. When implemented, the Shay Pond Discharge will replace potable water currently discharged to the water body to maintain the water flow through Shay Pond, which is shown on **Figure 3-19**. Up to 80 AFY of Program Water will be sent to Shay Pond. Based on the average volumes of discharges between 2012 and 2022, BBCCSD discharges approximately 50 AFY of potable water into Shay Pond to maintain the Stickleback population. The Shay Pond Discharge will help the groundwater supply by adding a new source of water and allowing for more water to stay in the Bear Valley Basin. Therefore, the Shay Pond Discharge will also help with groundwater sustainability. The impacts to the groundwater quality are discussed in the Shay Pond Discharge – Impacts on Surface Water Quality section. Because Shay Pond would help keep approximately 50 AFY of groundwater in the Bear Valley Basin by changing the water source used to support the Stickleback at Shay Pond to Program Water, the Shay Pond Discharge would have a less than significant potential to substantially decrease groundwater supplies or interfere/impede with sustainable groundwater management, as it will help the Bear Valley Basin by adding a new source of water and offsetting the potable use, resulting in more water staying in the Bear Valley Basin. Impacts would be less than significant.

**Sand Canyon Groundwater Recharge – Impacts on Bear Valley Basin Groundwater Sustainability**

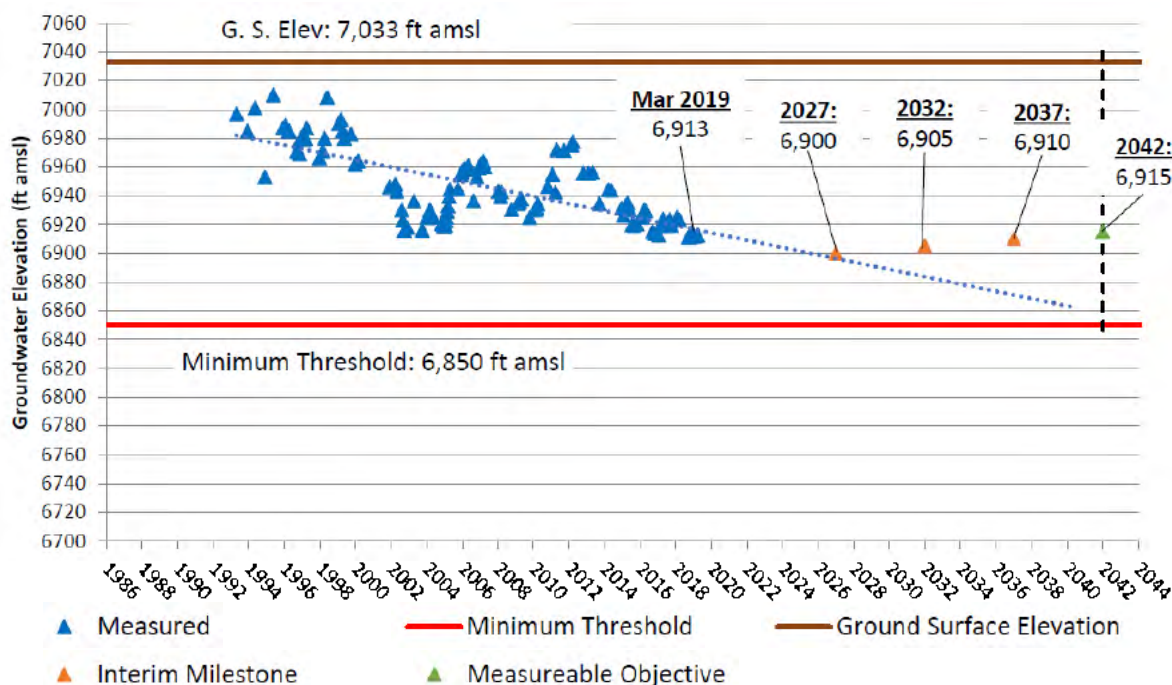
As part of the Program, up to 380 AFY of Program Water stored in Big Bear Lake will be used for groundwater recharge at the Sand Canyon Recharge Area over a six-month dry weather period. In addition, Program Water stored in Big Bear Lake can also be extracted to irrigate Bear Mountain Golf Course and for dust control of the Snow Summit Bike Park. It is estimated that about 120 AFY of Program Water stored in Big Bear Lake could be utilized at each location under the

Program. Based on current recycled water regulations, the use of the Program Water stored in Big Bear Lake would be regulated under the Statewide Water Reclamation Requirements for Recycled Water Use (Order WQ 2016-0068-DDW). This Order sets rules for recycled water users to avoid the overapplication of recycled water that would result in runoff or groundwater recharge. This section evaluates whether the use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Area or other uses, such as irrigation, has the potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management.

Overall, the Sand Canyon Recharge Area component will help the groundwater supply by adding a new source of water and recharge of the Bear Valley Basin. The landscape irrigation use will help offset the use of potable water for irrigation, resulting in more groundwater staying in the Bear Valley Basin.

To date, annual groundwater production in the Bear Valley Basin has never exceeded the perennial yield estimate, and groundwater levels periodically recover to historical high conditions during wet periods. However, due to relatively limited aquifer storage in the Bear Valley Basin, groundwater levels can vary widely between periods of relatively high precipitation and periods of low precipitation. As such, it is critical to monitor and manage groundwater levels to ensure adequate supplies during periods of prolonged drought. Since 2003, local agencies have implemented groundwater monitoring and management programs that have been successful at managing groundwater supplies to address periodic drought conditions, including the recent dry period between 2011 and 2017.

The Program will provide substantial benefits to help mitigate localized imbalances in the Bear Valley Basin. While the Bear Valley Basin as a whole is sustainable, there are localized areas that show persistent groundwater level declines, which may exceed established sustainability criteria if allowed to continue. One such area is in the vicinity of the Bear Mountain Golf Course. The landscape for the course is irrigated, in part, from private wells located on or near the property. As shown in **Exhibit 4.11-46**, groundwater levels in the monitoring well Sand Canyon No. 1, which were evaluated for the Bear Valley GSP (**Appendix 8**), have shown an overall decline since 1992, despite periodic recovery during wet years. Without a change in groundwater management in the area, groundwater levels in this well could drop below the minimum threshold by 2042 (see **Exhibit 4.11-46**).



**Exhibit 4.11-16: GROUNDWATER ELEVATION HYDROGRAPH, SAND CANYON WELL #1**

The Program would facilitate groundwater recharge at Sand Canyon by way of utilizing an existing pump station and pipeline from Big Bear Lake to Bear Mountain Ski Resort, and constructing a new pipeline from a new pump station at the existing Resort Storage Pond located at Bear Mountain Ski Resort that would reach the recharge point at Sand Canyon. No new infrastructure is needed to extract the Sand Canyon Recharge Area water from the Bear Valley Basin. The Sand Canyon Recharge Area water will become potable groundwater and will be extracted using BBLDWP’s existing potable wells located downstream of the Sand Canyon Recharge Area. The wells are located at least six months of travel time from the Sand Canyon Recharge Area, as required by groundwater recharge regulations.

Groundwater recharge at Sand Canyon was evaluated by Thomas Harder & Co to assess the feasibility of recharging the groundwater aquifer at Sand Canyon using surface water from Big Bear Lake and estimate the annual recharge capacity. This study can be found in the “Sand Canyon Recharge Evaluation” prepared by Thomas Harder & Co, dated November 29, 2017 (**Appendix 4**). The Sand Canyon Recharge Evaluation found that the recharge potential at Sand Canyon is approximately 380 AFY over a 6-month period, based on a recharge area of approximately 4.2 acres and a recharge rate of 2.1 ft/day.

As described in Chapter 3, Program Description, the following are operation strategies for the Sand Canyon Recharge Area Project are recommended so the Program Water stored in Big Bear Lake can percolate and still meet the travel time required to the nearest downstream well; these components shall be adhered to as part of Program implementation:

- Recharge will occur within the defined Sand Canyon Recharge Area.
- Recharge will not occur during periods where natural surface flows occur in the channel.
- Recharge will occur over a 6-month dry weather period (April-October).
- Flows will be reduced or stopped if Program Water does not fully percolate within the defined



recharge area. This shall be reinforced through the implementation of **MM HYD-2** provided below.

- BBLDWP will monitor the discharge and percolation performance as needed to comply with permit requirements for the Sand Canyon Recharge Area Project operation. This shall be reinforced through the implementation of **MM HYD-3** provided below.

Through the above operational scenario, the Sand Canyon Recharge Area Project can be implemented without significantly impacting the Bear Valley Basin, and would therefore have a less than significant potential to substantially decrease groundwater supplies or interfere/impede with sustainable groundwater management. Based on the analysis presented in the “Sand Canyon Recharge Evaluation” (**Appendix 4**), the Sand Canyon Recharge Area Project would enhance groundwater recharge, and increase groundwater supplies. Furthermore, through the implementation of **MMs HYD-2 and HYD-3**, sustainable groundwater management of the Bear Valley Basin will be maintained. Impacts would be less than significant through the implementation of **MMs HYD-2 and HYD-3**.

**HYD-2:** *The Sand Canyon Recharge Project shall occur within the defined Sand Canyon Recharge Area shown on Figure 3-32, and shall not occur during periods where natural surface flows occur in the channel (i.e. the channel is completely dry). If the water discharged into Sand Canyon as a result of Program implementation does not fully percolate within the defined Sand Canyon Recharge Area, discharge to Sand Canyon will be modified (reduced or stopped) to a point at which full percolation occurs within the limits of the defined Sand Canyon Recharge Area.*

**HYD-3:** *BBLDWP shall monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Area Project operation. The terms of the permit will be defined by the Santa Ana Regional Board and the DDW.*

Based on the above discussion, the proposed use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Area and possible landscape irrigation would have a less than significant potential to substantially decrease groundwater supplies or interfere/impede with sustainable groundwater management, as these proposed uses will help the Bear Valley Basin by adding a new source of water and offsetting the potable use, resulting in more water staying in Bear Valley Basin. Therefore, impacts would be less than significant with mitigation.

#### **LV Site – Impacts on Lucerne Valley Basin Groundwater Sustainability**

BBARWA plans to maintain the existing Lucerne Valley discharge location (**Figure 3-35**). All WWTP process water in excess of the new treatment train’s 2.2 MGD capacity will continue to be treated to undisinfected secondary levels and conveyed to the existing LV Site, consistent with the current permitted discharge requirements of the existing BBARWA WWTP. This section evaluates whether the reduced flows to the LV Site has the potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management.

**Exhibit 4.11-9** shows the historical data of disinfected secondary effluent discharge to the LV Site from 2005-2022, which shows the decrease in flows. **Exhibit 4.11-10** shows the average monthly BBARWA flows sent to LV Site from 2012-2022. Based on this data, between 2012-2022, BBARWA sent about 2,190 AFY of water to the LV Site, of which 1,330 AFY were used for crop irrigation and 860 AFY were discharged into the unlined basin. It is estimated that of the 1,330 AFY used for irrigation, about 560 AFY are used by alfalfa or grain, and the remaining 770 AFY is applied in excess. Thus, in total, about 1,610 AFY are assumed to percolate the Lucerne Valley Basin under the current operational conditions of the LV Site (see **Exhibit 4.11-6**). Note that the

MBA Watermaster assumes that the BBARWA discharge of undisinfected secondary effluent to the LV Site contributes 2,000 AFY to the Este Subbasin (which encompasses the Lucerne Valley Basin) water supply. Based on the Water Balance conducted by WSC utilizing data from actual BBARWA discharge operations to the LV Site, it is assumed that the actual amount of water recharged to the Lucerne Valley Basin is less than the amount assumed by the MBA Watermaster, at 1,610 AFY.

As discussed under **Subsection 4.11.6.2**, above, the total water supply for the Este Subbasin was 4,706 AF, while the outflow and consumptive use was 4,706 AF. To maintain proper water balances within each Subarea of the MBA, the 1996 Judgment establishes a decreasing FPA in each Subarea. According to the MBA Watermaster Annual Report for Water Year 2021-2022, the PSY for Este Subbasin will be reevaluated within the next year and a recommendation provided to MBA Watermaster and the Riverside County Superior Court during the 2023-24 Water Year. The 2022-2023 FPA is 12,523 AFY, which is greater than the PSY of 4,728. As the FPA remains higher than PSY in Este Subbasin, the MBA Watermaster determined that additional rampdown is warranted. It is recommended that Este Subbasin FPA be reduced by 5% to 55% for Water Year 2023-24. This is relevant because the proposed reduction in discharge to the Lucerne Valley Basin would have the potential to further decrease the PSY of the Este Subbasin.

With the implementation of the Program, the flows BBARWA will send to the LV Site will vary based on the hydrologic conditions. For example, in a dry year, no water would be sent to the LV Site, and in a wet year a significant volume could be sent to the LV Site, such as in a year like in 2011, up to 1,050 AFY could have been sent to the LV Site. The 2012-2022 period that was used to characterize current conditions was very dry and did not include wet years like 2005, 2011, and 2023. Therefore, a longer period (2005-2023) was used to estimate the average future monthly and annual flows to the LV Site to account for wet years. Based on this period, an average of about 340 AFY of secondary effluent discharge could be sent to the LV Site. This volume was estimated by evaluating and averaging daily flows between 2005-2023 that exceeded the 2.2 MGD capacity. The projected monthly volumes are shown in **Exhibit 4.11-14**.

The reduction in discharge would limit the ability to continue the use of the site (currently using 190 acres of the 480-acre site to grow crops). Based on discussions with the farmer, it may be possible to grow grain on approximately 40 acres of the LV Site during the winter month. To estimate the amount of water that would recharge the Lucerne Valley Basin as a result of Program implementation, it was assumed that the average 340 AFY that would be discharged to the LV Site would continue to be utilized by the farmer from December through May of each year to grow grain. Flows between June and November would be sent to the unlined discharge ponds.

For the water used for irrigation, it was assumed that average monthly flows applied in excess of crop (i.e., grain) needs percolate into the Lucerne Valley Basin. Excess water was estimated by calculating the total water depth applied to the farmed acreage (irrigation plus precipitation), subtracting the water demand for the crops irrigated. The crop irrigation requirements were estimated using average evapotranspiration and rainfall data from 2005-2023 gathered from the CIMIS Station 117 in Victorville, CA, which is based on grass as the reference crop. Crop specific demand was estimated using Equation 1, where  $K_c$  is a seasonal crop coefficient specific to each crop. This  $K_c$  value was determined using the FAO Grass-Based Crop Coefficients method outlined in *ASCE Manual No. 70: Evaporation, Evapotranspiration, and Irrigation Water Requirements*.<sup>69</sup>

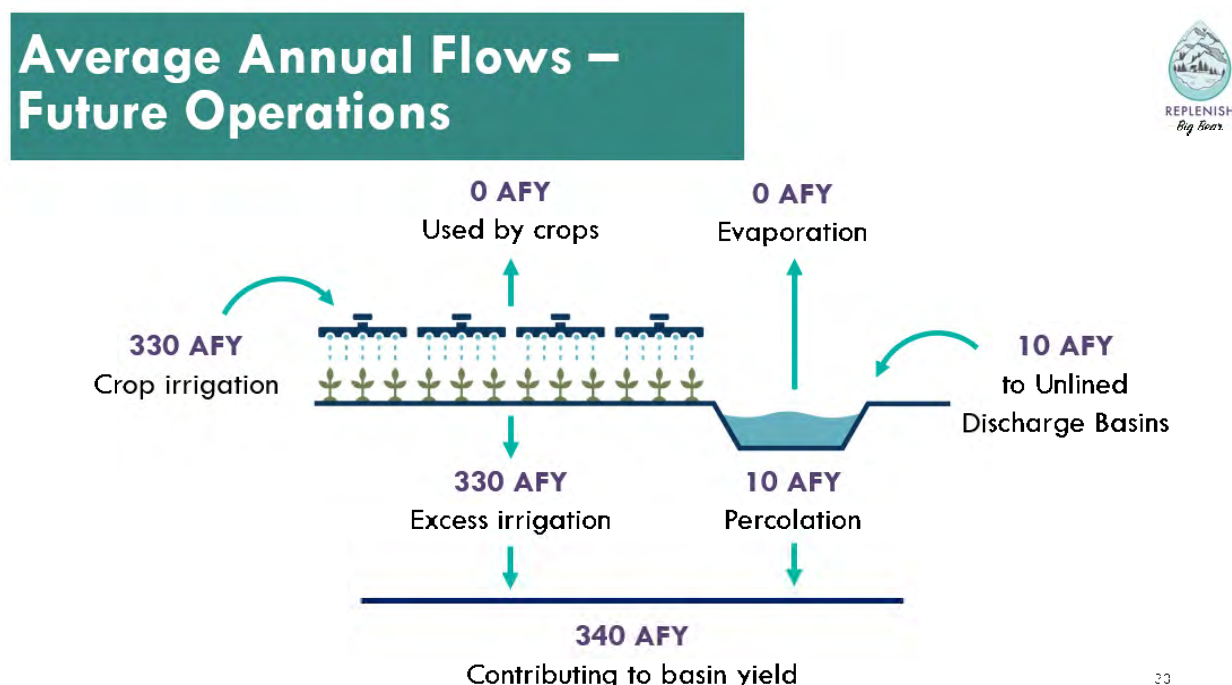
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<sup>69</sup>  $ET_c = K_c * ET_o$

Equation 1: Crop-Specific Evapotranspiration Rate

It is estimated that between December and May about 330 AFY would be available to irrigate 40 acres of grain. Since the grains have a very low crop coefficient demand in winter months, most of the 330 AFY will percolate.

Between June and November, about 10 AFY will be sent to the unlined discharge basins for disposal. Due to the small volumes and rapid percolation rates of the unlined discharge basins it is assumed that most of the water will percolate with minimal evaporation. In total, about 340 AFY are assumed to percolate the Lucerne Valley Basin under the future operational conditions of the LV Site (see **Exhibit 4.11-17**). Given this, the Program has a potential to result in a decrease in recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to 340 AFY under future BBARWA operations.



**Exhibit 4.11-17: PROJECTED LV SITE WATER BALANCE – AVERAGE ANNUAL FLOWS FUTURE OPERATIONS**

The LV Site would continue to be owned by BBARWA, and BBARWA would ensure that the LV Site is maintained. However, if the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to the cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) to handle the excess flows of undisinfected secondarily treated effluent or could make the treated effluent available to another party for an alternative use. Additionally, under the Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the LV Site. Enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and eco-conscious weed killing applications;
- Planting cover crops, such as sorghum to prevent dust migration; and/or

- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

Based on the above discussion, the implementation of the Program has a potential to interfere with groundwater recharge of the Lucerne Valley Basin due to the reduction in discharge to the LV Site. The Program intends to retain the water supply generated in the Big Bear Valley rather than continuing to send this supply generated in the Big Bear Valley to the LV Site. The Program would create a new and sustainable water supply that can be utilized in the Big Bear Valley through the full advanced treatment facility upgrades at the existing BBARWA WWTP that would result in a Program Water supply. The effect of retaining this water supply in the Big Bear Valley is that the water that the MBA Watermaster and Stakeholders of the Este Subbasin/Lucerne Valley Basin would no longer be able to rely on the recharge of the average of 1,610 AFY from BBARWA operations. Instead, only an average of about 340 AFY may be recharged to the Este Subbasin/Lucerne Valley Basin under the Program, which has a potential to impact the MBA Watermaster's calculation of Physical Safe Yield of the Lucerne Valley Basin based on the reduction in recharge from BBARWA reaching the Lucerne Valley Basin. Additionally, the Program may result in a further reduction in FPA, which impacts stakeholders of the Este Subbasin/Lucerne Valley Basin's pumpage allowance, thereby further reducing the available water supply to stakeholders of the Lucerne Valley Basin. It is outside of the purview of this DPEIR to determine the actions of the MBA Watermaster in response to the anticipated reduction in supply of the Este Subbasin/Lucerne Valley Basin, as the Program Team have no authority to make such a determination. Regardless, this decrease in recharge to the Este Subbasin/Lucerne Valley Basin would be significant and unavoidable. Therefore, the Program would have a significant and unavoidable potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the Lucerne Valley Basin. No mitigation is available to reduce the potential for this significant and unavoidable impact to occur; however, BBARWA and the Program Team are working with the MBA Watermaster and MWA to find an alternative use for the excess secondary effluent discharged to the LV Site, should there be a desire to do so.

### **Summary of Impacts to Groundwater from Replenish Big Bear Program Operations**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**HYD-2:** *The Sand Canyon Recharge Area Project shall occur within the defined Sand Canyon Recharge Area shown on Figure 3-32, and shall not occur during periods where natural surface flows occur in the channel (i.e. the channel is completely dry). If the water discharged into Sand Canyon as a result of Program implementation does not fully percolate within the defined Sand Canyon Recharge Area, discharge to Sand Canyon will be modified (reduced or stopped) to a point at which full percolation occurs within the limits of the defined Sand Canyon Recharge Area.*

**HYD-3:** *BBLDWP shall monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Project operation. The terms of the permit will be defined by the Santa Ana Regional Board and DDW.*

*Level of Significance After Mitigation: Significant and Unavoidable*

Mitigation measures are required to reduce impacts from the Sand Canyon Recharge Area Project operations on the underlying groundwater basin. **MM HYD-2** would ensure that the Sand Canyon

Recharge Area Project operations occur within the defined area on **Figure 3-32**, and that operations would be modified if the recharge was not to fully percolate. **MM HYD-3** would require BBLDWP to monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Area Project operation. When combined with **MM HYD-2**, monitoring the discharge and percolation performance would ensure that operations of the Sand Canyon Recharge Area Project would continue to enable the Bear Valley Basin to operate sustainably.

As discussed above, no mitigation is available to reduce the potential for a significant and unavoidable impact to occur to the Lucerne Valley Basin as a result of Program Implementation. This is because the Program would reduce the amount of water that would be discharged to the Lucerne Valley Basin, which has a potential to impact the amount of water that could be expected to be recharged to the Lucerne Valley Basin on an annual basis. Therefore, the Program would have a significant and unavoidable potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the Lucerne Valley Basin.

However, it is important to note that BBARWA's wastewater flow to the LV Site is not considered an adjudication water right or claim to the LV Basin, but only considered to be an accounting for that supply (**Appendix 23**). Since BBARWA's wastewater is not included in the LV Basin's annual yield calculation or claim to that supply, BBARWA is not bound by the LV Basin's adjudication and its wastewater can be diverted to be reused in Big Bear Valley at BBARWA's discretion (**Appendix 24**).

### **Cumulative Impact Analysis**

For the Big Bear Valley, the Program would enhance Bear Valley Basin groundwater supplies through the recharge component of the Program proposed at the Sand Canyon Recharge Area. The proposed groundwater recharge is being considered as part of the Program in response to the potential for cumulative demand on groundwater supplies. The Sand Canyon Recharge Area Project would require **MMs HYD-2 and HYD-3** to ensure that the operation of the Sand Canyon Recharge Area Project is regulated. As such, with implementation of the above mitigation, the Program Team would be able to minimize impacts on the Bear Valley Basin, thereby reducing any potential for the Program to contribute cumulatively considerable impacts on the Bear Valley Basin.

Cumulative development within the Lucerne Valley area could result in a decrease in groundwater supplies or interference with groundwater recharge, thereby impeding sustainable groundwater management. For the Lucerne Valley Basin, the Program would have a potential to reduce groundwater recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to an average of 340 AFY under future BBARWA operations. Cumulative development in the Lucerne Valley could result in greater demand for water supplies, thereby further contributing to the need for water supplies that are currently being utilized at a higher rate than the Lucerne Valley Basin is being replenished. As the Program would contribute to impairing groundwater recharge in the Lucerne Valley Basin, the Program would result in a cumulatively considerable impact on sustainable management of the Lucerne Valley Basin.

However, it is important to note that BBARWA's wastewater flow to the LV Site is not considered an adjudication water right or claim to the LV Basin, but only considered to be an accounting for that supply (**Appendix 23**). Since BBARWA's wastewater is not included in the LV Basin's annual yield calculation or claim to that supply, BBARWA is not bound by the LV Basin's adjudication

and its wastewater can be diverted to be reused in Big Bear Valley at BBARWA's discretion (**Appendix 24**).

*Mitigation Measures: **MMs HYD-2 and HYD-3** are necessary to reduce cumulative impacts.*

*Level of Significance After Mitigation: Significant and Unavoidable*

**c(i). Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation onsite or offsite?**

### **Program Category 1: Conveyance Pipelines**

**Construction:** The proposed Conveyance Pipelines could alter the existing drainage patterns of the pipeline alignments. Development of Conveyance Facilities within roadways would result in minimal changes in the roadway drainage pattern once installed as the roadways will be returned to their original or better condition and no operational impact would occur. However, the pipeline alignments may traverse through compacted dirt easements and ROW, which may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed conveyance pipeline alignments would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or the San Bernardino MS4 Permit, where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential onsite and offsite erosion would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

**Operation:** Development of Conveyance Facilities within roadways would result in minimal changes in the roadway drainage pattern once installed as the roadways will be returned to their original or better condition, which would minimize the potential for substantial erosion or siltation onsite or offsite. Operational impacts would be less than significant.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

**Construction:** The proposed Ancillary Facilities could alter the existing drainage patterns at each project site. The majority of the proposed Ancillary Facilities would be installed within disturbed sites, but it is possible that monitoring wells at the Solar Evaporation Ponds and the pipe outlet and erosion control at Sand Canyon would be installed within undeveloped areas. However, given the small area (less than one half acre) within which the proposed Ancillary Facilities will be installed, it is not anticipated that substantial changes in drainage would occur. The construction of proposed facilities would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or the San Bernardino MS4 Permit, where applicable, would be required. However, given the small size area in which the Ancillary Facilities would be developed, mitigation (**MM HYD-4**) is necessary to enforce BMPs is provided below to minimize potentially significant impacts at sites that are less than an acre and are therefore not subject to the CGP or SWPPP. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, thereby avoiding a potentially significant impact under this



issue. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

With implementation of such BMPs and compliance with conditions of required permits governing storm water runoff from construction sites, potential onsite and offsite erosion would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

Operation: During operation of the proposed Ancillary Facilities, the presence of new facilities at each project site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the San Bernardino County MS4 Permit. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for erosion on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. Operation of the proposed Ancillary Facilities would require mitigation (**MMs HYD-5 and HYD-6**) to minimize the potential for these changes resulting in a less than significant impact.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Impacts would be the same as those identified under Program Category 1 and 2. The proposed Solar Evaporation Ponds could alter the existing drainage patterns of the Solar Evaporation Ponds area. The Solar Evaporation Ponds would be installed within the compacted dry lakebed of Baldwin Lake, which has been previously disturbed by BBARWA operations, and the evaporation pond installation may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed Solar Evaporation Ponds would require activities such as excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or the San Bernardino MS4 Permit, where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential onsite and offsite erosion would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems.

Operation: During operation of the proposed Solar Evaporation Ponds, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential for erosion on- or off-site could occur. Thus, in order to avoid a potentially significant impact, and in accordance with the San Bernardino County MS4 Permit, mitigation to address this issue is required. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and

implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for erosion on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. Impacts would be less than significant with the implementation of mitigation (**MMs HYD-5** and **HYD-6**) to address implementation of a drainage management plan or otherwise retain runoff onsite.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Impacts would be the same as those identified under Program Category 1, 2, and 3. The proposed BBARWA WWTP Upgrades could alter the existing drainage patterns of the BBARWA WWTP site. The BBARWA WWTP Upgrades would be installed within the existing BBARWA WWTP, which has been previously disturbed by BBARWA operations, but the AWP and associated infrastructure and facilities may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed BBARWA WWTP Upgrades would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or the San Bernardino MS4 Permit, where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential onsite and offsite erosion would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems.

Operation: During operation of the proposed BBARWA WWTP Upgrades, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential for erosion on- or off-site could occur. Thus, in order to avoid a potentially significant impact, and in accordance with the San Bernardino County MS4 Permit, mitigation to address this issue is required. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for erosion on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. Impacts would be less than significant with the implementation of mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite is required to reduce the potential for erosion on- or off-site impacts to a level of less than significant (**MMs HYD-5** and **HYD-6**).

#### **Other Physical Changes to the Environment**

The Program would also result in other physical changes to the environment, including future release of Program Water into Big Bear Lake by way of Stanfield Marsh, and possible utilization of Program Water in place of the existing water source—groundwater—in support of the

Stickleback at Shay Pond, and a decrease of up to 2,200 AFY less discharge to the LV Site, for a total estimated annual discharge to Lucerne Valley averaging about 340 AFY.

These other physical changes to the environment would not involve construction or operation of any new facilities beyond those facilities associated with the Program designed to support this expansion as discussed herein. Big Bear Lake discharge as a result of Program implementation would provide additional water to Big Bear Lake that would not otherwise be present. However, the existing drainage patterns within Big Bear Lake would not be altered beyond that which could naturally occur from runoff and rainfall. Furthermore, based on Big Bear Lake discharge points, no erosion or siltation would be anticipated to occur outside of the ordinary high-water mark of Big Bear Lake and Stanfield Marsh.

The change in water source at Shay Pond would not result in a change in flow to Shay Pond, and therefore, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation onsite or offsite is anticipated to occur.

While the discharge to the LV Site would be reduced as a result of Program implementation, the discharge locations are two unlined discharge basins within the LV Site that would not be altered by receipt of less water. Thus, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation onsite or offsite is anticipated to occur.

### **Combined Project Categories**

The majority of the proposed facilities would not result in the addition of impervious surfaces that would result in substantial erosion or siltation onsite or offsite. The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, San Bernardino County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts to less than significant levels.

The presence of new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential erosion and siltation impacts to a level of less than significant.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**HYD-4: *Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:***

- ***The use of silt fences or coir rolls;***
- ***The use of temporary stormwater desilting or retention basins;***
- ***The use of water bars to reduce the velocity of stormwater runoff;***

- *The use of wheel washers on construction equipment leaving the site;*
- *The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;*
- *The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and*
- *Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.*

**HYD-5:** *Prior to commencement of construction of project facilities, the implementing agency shall be required to either:*

- (1) *Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall:*
- (2) *Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.*

**HYD-6:** *For long-term mitigation of site disturbances at Program facility locations, all areas not covered by structures shall be covered with hardscape (concrete, asphalt, gravel, etc.), native vegetation and/or man-made landscape areas (for example, grass). Revegetated or landscaped areas shall provide sufficient cover to ensure that, after a two-year period, erosion will not occur from concentrated flows (rills, gully, etc.) and sediment transport will be minimal as part of sheet flows.*

*Level of Significance After Mitigation: Less Than Significant*

**MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects.

During project design, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the San Bernardino County MS4 Permit. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur. Impacts would be less than significant with mitigation.

**MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for erosion on- or off-site to an insignificant level.

### **Cumulative Impact Analysis**

Concurrent construction of cumulative development within the Big Bear Valley could result in temporary impacts to drainage patterns that may result in erosion or siltation, flooding, or insufficient capacity of drainage systems. All related projects within the service area would be subject to the same Federal, State, and local regulations regarding implementation of BMPs under the CGP, SWPPP, and San Bernardino County MS4 Permits. Therefore, cumulative development would not result in significant impacts related to drainage during construction.

However, cumulative projects could result in significant impacts to local drainage systems after rapid development of structures. The Program projects could result in potentially significant impacts associated with the alteration of drainage patterns that result in erosion or siltation. Since the project could result in potential significant impacts, the project's contribution to cumulative impacts is considered cumulatively considerable, and therefore, would require mitigation as identified above, which would reduce the project's contribution to less than cumulatively considerable, therefore reducing the project's contribution to cumulative impacts under this issue to a level of less than significant.

*Mitigation Measures: **MMs HYD-4 through HYD-6** are necessary to reduce cumulative impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less Than Significant*

**c(ii). Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?**

### **Program Category 1: Conveyance Pipelines**

Construction: The proposed Conveyance Pipelines could alter the existing drainage patterns of the pipeline alignments. However, the pipeline alignments may traverse through compacted dirt easements and ROW, which may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed conveyance pipeline alignments would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP), where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential on- or off-site flooding would be minimized to a less than significant level.

Operation: Development of Conveyance Facilities within roadways would result in minimal changes in the roadway drainage pattern once installed as the roadways will be returned to their original or better condition, which would minimize the potential for flooding on- or off-site. Operational impacts would be less than significant.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The proposed Ancillary Facilities could alter the existing drainage patterns at each project site. The majority of the proposed Ancillary Facilities would be installed within disturbed sites, but it is possible that monitoring wells at the Solar Evaporation Ponds and the pipe outlet and erosion control at Sand Canyon would be installed within undeveloped areas. However, given the small area (less than one half acre) within which the proposed Ancillary Facilities will be installed, it is not anticipated that substantial changes in drainage would occur. The construction of proposed facilities would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns, and could ultimately provide flooding on- or off-site without preventative measures in place. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP), where applicable, would be required; these plans would ensure that drainage and stormwater will not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.

However, as stated under question c(i) above, given the small size of the site in which the Ancillary Facilities would be developed, mitigation (**MM HYD-4**) to enforce BMPs is provided below to minimize impacts at sites that are less than an acre and are therefore not subject to the CGP or SWPPP. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, thereby avoiding a potentially significant impact under this issue. This measure would control urban runoff and thereby reduce potential on- and off-site flooding. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets. With implementation of such BMPs, compliance with conditions of required permits governing storm water runoff from construction sites, and retention of runoff on site where feasible, the potential for on- or off-site flooding would be reduced to less than significant levels and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant with mitigation incorporated.

Operation: During operation of the proposed Ancillary Facilities, the presence of new facilities at each project site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential for on- or off-site flooding could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, on- and off-site flooding is minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in flooding onsite or offsite would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for flooding on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. Thus, **MMs HYD-5 and HYD-6** are required to minimize the potential for significant impacts to the drainage patterns on- and off-site. Impacts would be less than significant through the implementation of mitigation.



### **Program Category 3: Solar Evaporation Ponds**

**Construction:** Impacts would be the same as those identified under Program Category 1 and 2. The proposed Solar Evaporation Ponds could alter the existing drainage patterns of the Solar Evaporation Ponds area. The Solar Evaporation Ponds would be installed within the compacted dry lakebed of Baldwin Lake, which has been previously disturbed by BBARWA operations, and the evaporation pond installation may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed Solar Evaporation Ponds would require activities such as excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or the San Bernardino County MS4 Permits (WQMP), where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

**Operation:** During operation of the proposed Solar Evaporation Ponds, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential for on- or off-site flooding could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, on- and off-site flooding is minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in flooding onsite or offsite would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for flooding on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. **MMs HYD-5 and HYD-6** are required to minimize the potential for significant impacts to the drainage patterns on- and off-site. Impacts would be less than significant through the implementation of mitigation.

### **Program Category 4: BBARWA WWTP Upgrades**

**Construction:** Impacts would be the same as those identified under Program Category 1, 2, and 3. Impacts would be the same as those identified under Program Category 1, 2, and 3. The proposed BBARWA WWTP Upgrades could alter the existing drainage patterns of the BBARWA WWTP site. The BBARWA WWTP Upgrades would be installed within the existing BBARWA WWTP, which has been previously disturbed by BBARWA operations, but the AWP and associated infrastructure and facilities may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed BBARWA WWTP Upgrades would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP), where applicable, would be required. Each of these permits and plans would require the

implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would result in flooding on- or off-site would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

Operation: During operation of the proposed BBARWA WWTP Upgrades, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential for on- or off-site flooding could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, on- and off-site flooding is minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for erosion on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. **MMs HYD-5 and HYD-6** are required to minimize the potential for significant impacts to the drainage patterns on- and off-site. Impacts would be less than significant through the implementation of mitigation.

### **Other Physical Changes to the Environment**

Other physical changes to the environment would not involve construction or operation of any new facilities beyond those facilities associated with the Program designed to support this expansion as discussed herein. Big Bear Lake discharge as a result of Program implementation would provide additional water to Big Bear Lake that would not otherwise be present. However, the existing drainage patterns within Big Bear Lake would not be altered beyond that which could naturally occur from runoff and rainfall. Furthermore, based on Big Bear Lake discharge points, no flooding on- or off-site would be anticipated to occur outside of the ordinary high-water mark of Big Bear Lake and Stanfield Marsh. This is particularly the case because the Program would operate in such a manner that unplanned spills at the dam would be controlled.

The change in water source at Shay Pond would not result in a change in flow to Shay Pond, and therefore, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial flooding on- or off-site is anticipated to occur.

While the discharge to the LV Site would be reduced as a result of Program implementation, the discharge locations are two unlined discharge basins within the LV Site that would not be altered by receipt of less water. Thus, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite.

### **Combined Project Categories**

The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, San Bernardino County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts below significance thresholds to a level of less than significant.

The presence of new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential on- and off-site impacts to a level of less than significant.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: MMs HYD-4 through HYD-6 are required to minimize potential on- and off-site flooding impacts in addition to the mitigation provided below.*

**HYD-4:** *Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:*

- *The use of silt fences or coir rolls;*
- *The use of temporary stormwater desilting or retention basins;*
- *The use of water bars to reduce the velocity of stormwater runoff;*
- *The use of wheel washers on construction equipment leaving the site;*
- *The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;*
- *The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and*
- *Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.*

**HYD-5:** *Prior to commencement of construction of project facilities, the implementing agency shall be required to either:*

- (1) *Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall:*
- (2) *Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all*

*new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.*

**HYD-6:** *For long-term mitigation of site disturbances at Program facility locations, all areas not covered by structures shall be covered with hardscape (concrete, asphalt, gravel, etc.), native vegetation and/or man-made landscape areas (for example, grass). Revegetated or landscaped areas shall provide sufficient cover to ensure that, after a two-year period, erosion will not occur from concentrated flows (rills, gully, etc.) and sediment transport will be minimal as part of sheet flows.*

*Level of Significance After Mitigation: Less Than Significant*

**MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects. This measure would control urban runoff and thereby reduce potential on- and off-site flooding.

During project design, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the San Bernardino County MS4 Permit. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential on- or off-site flooding would occur. Impacts would be less than significant with mitigation.

**MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for on- or off-site flooding to an insignificant level.

### **Cumulative Impact Analysis**

Concurrent construction of cumulative development within the Big Bear Valley could result in temporary impacts to drainage patterns that may result in erosion or siltation, flooding, or insufficient capacity of drainage systems. All related projects within the service area would be subject to the same Federal, State, and local regulations regarding implementation of BMPs under the CGP, SWPPP, and San Bernardino County MS4 Permits. Therefore, cumulative development would not result in significant impacts related to drainage during construction.

However, cumulative projects could experience significant impacts to local drainage systems after rapid development of structures. The Program projects could result in potentially significant impacts associated with the alteration of drainage patterns that result in flooding on- or off-site. Since the project could result in potential significant impacts, the project's contribution to cumulative impacts is considered cumulatively considerable, and therefore, would require mitigation as identified above, which would reduce the project's contribution to less than cumulatively considerable, therefore reducing cumulative impacts under this issue to a level of less than significant.

*Mitigation Measures: **MMs HYD-4 through HYD-6** are necessary to reduce cumulative impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less Than Significant*

- c(iii). Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

**Program Category 1: Conveyance Pipelines**

Construction: The proposed Conveyance Pipelines could alter the existing drainage patterns of the pipeline alignments. However, the pipeline alignments may traverse through compacted dirt easements and ROW, which may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed conveyance pipeline alignments would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits, where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

Operation: Development of Conveyance Facilities within roadways would result in minimal changes in the roadway drainage pattern once installed as the roadways will be returned to their original or better condition, which would minimize the potential to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Operational impacts would be less than significant.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Impacts would be the same as those discussed under questions c(i) and c(ii) above. The proposed Ancillary Facilities could alter the existing drainage patterns at each project site. The majority of the proposed Ancillary Facilities would be installed within disturbed sites, but it is possible that monitoring wells at the Solar Evaporation Ponds and the pipe outlet and erosion control at Sand Canyon would be installed within undeveloped areas. However, given the small area (less than one half acre) within which the proposed Ancillary Facilities will be installed, it is not anticipated that substantial changes in drainage would occur. The construction of proposed facilities would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns, and could ultimately provide flooding on- or off-site without preventative measures in place. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP) where applicable would be required; these plans would ensure that drainage and stormwater will not substantially increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

However, as stated under question c(i) above, given the small size of the site in which the Ancillary Facilities would be developed, mitigation (**MM HYD-4**) to enforce BMPs is provided below to

minimize impacts at sites that are less than an acre and are therefore not subject to the CGP or SWPPP. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, thereby avoiding a potentially significant impact under this issue. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets. With implementation of such BMPs, compliance with conditions of required permits governing storm water runoff from construction sites, and retention of runoff on site where feasible, the potential to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would be reduced to less than significant levels and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant through the implementation of mitigation.

Operation: During operation of the proposed Ancillary Facilities, the presence of new facilities at each project site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential to increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, no substantial increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would occur, and impacts are minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial contribution of runoff to area drainage systems would occur. Mitigation (**MM HYD-5**) is required to address the potential for Program facilities to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant with mitigation incorporated.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Impacts would be the same as those discussed under questions c(i) and c(ii) above. Impacts would be the same as those identified under Program Category 1 and 2. The proposed Solar Evaporation Ponds could alter the existing drainage patterns of the Solar Evaporation Ponds area. The Solar Evaporation Ponds would be installed within the compacted dry lakebed of Baldwin Lake, which has been previously disturbed by BBARWA operations, and the evaporation pond installation may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed Solar Evaporation Ponds would require activities such as excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.



Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would therefore be less than significant.

Operation: During operation of the proposed the Solar Evaporation Ponds, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential to increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, no substantial increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would occur, and impacts are minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial contribution of runoff to area drainage systems would occur. Mitigation (**MM HYD-5**) is required to address the potential for Program facilities to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant with mitigation incorporated.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Impacts would be the same as those discussed under questions c(i) and c(ii) above. Impacts would be the same as those identified under Program Category 1, 2, and 3. Impacts would be the same as those identified under Program Category 1, 2, and 3. The proposed BBARWA WWTP Upgrades could alter the existing drainage patterns of the BBARWA WWTP site. The BBARWA WWTP Upgrades would be installed within the existing BBARWA WWTP, which has been previously disturbed by BBARWA operations, but the AWPf and associated infrastructure and facilities may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed BBARWA WWTP Upgrades would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would therefore be less than significant.

**Operation:** During operation of the proposed the BBARWA WWTP Upgrades, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential to increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, no substantial increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would occur, and impacts are minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial contribution of runoff to area drainage systems would occur. Mitigation (**MM HYD-5**) is required to address the potential for Program facilities to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant with mitigation incorporated.

#### **Other Physical Changes to the Environment**

Other physical changes to the environment would not involve construction or operation of any new facilities beyond those facilities associated with the Program designed to support this expansion as discussed herein. Based on Big Bear Lake discharge water quality, no polluted discharge would be anticipated to occur outside.

The change in water source at Shay Pond would not result in a change in flow to Shay Pond, and based on the Program Water quality, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

While the discharge to the LV Site would be reduced as a result of Program implementation, the discharge locations are two unlined discharge basins within the LV Site that would not be altered by receipt of less water. Thus, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

#### **Combined Project Categories**

The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns, which could result in excess runoff. Compliance with the CGP, SWPPP, San Bernardino County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts such that a significant impact would not occur.

The presence of all new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential for Program facilities to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff and reduce impacts to a less than significant level.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: MMs HYD-4 and HYD-5 are required to minimize potential for Program facilities to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.*

**HYD-4:** *Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:*

- *The use of silt fences or coir rolls;*
- *The use of temporary stormwater desilting or retention basins;*
- *The use of water bars to reduce the velocity of stormwater runoff;*
- *The use of wheel washers on construction equipment leaving the site;*
- *The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;*
- *The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and*
- *Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.*

**HYD-5:** *Prior to commencement of construction of project facilities, the implementing agency shall be required to either:*

- (1) *Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall:*
- (2) *Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.*

*Level of Significance After Mitigation: Less Than Significant*

**MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects. This measure would control urban runoff and thereby reduce potential for substantial polluted runoff.

During project design, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the San Bernardino County MS4 Permit. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial contribution of runoff to area drainage systems would occur. Impacts would be less than significant with mitigation.

**Cumulative Impact Analysis**

Concurrent construction of cumulative development within the Big Bear Valley could result in temporary impacts to drainage patterns that may result in insufficient capacity of drainage systems. All related projects within the service area would be subject to the same Federal, State, and local regulations regarding implementation of BMPs under the CGP, SWPPP, and the San Bernardino Counties MS4 Permit. Therefore, cumulative development would not result in significant impacts related to drainage during construction.

However, cumulative projects could result in significant impacts to local drainage systems after rapid development of structures. The Program projects could result in potentially significant impacts associated with the alteration of drainage patterns that result in substantial contribution of runoff to area drainage systems. Since the project could result in potential significant impacts, the project's contribution to cumulative impacts is considered cumulatively considerable, and therefore, would require mitigation as identified above, which would reduce the project's contribution to less than cumulatively considerable, therefore reducing the project's contribution to cumulative impacts to a level of less than significant.

*Mitigation Measures: **MMs HYD-4 through HYD-5** are necessary to reduce cumulative impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less Than Significant*

**c(iv). Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows?**

**Program Category 1: Conveyance Pipelines**

**Construction:** The construction activities associated with subsurface facilities, such as pipelines, could temporarily impact flows and would require coordination with SBCFCD and other applicable regulatory agencies before implementation if proposed facilities cross or are within jurisdictional waters or adjacent to flood control channels and easements. However, all other impacts would be the same as those discussed under questions c(i), c(ii), and c(iii). The construction of proposed conveyance pipeline alignments would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits, where applicable, would be required. Each of these permits and plans would require

the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, the potential for exceeding the capacity of local stormwater drainage systems and thereby impeding or redirecting flows would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

Operation: Development of Conveyance Facilities within roadways would result in minimal changes in the roadway drainage pattern once installed as the roadways will be returned to their original or better condition, which would minimize the potential to impede or redirect flood flows. Operational impacts would be less than significant.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Impacts would be the same as those discussed under questions c(i) and c(ii) above. The proposed Ancillary Facilities could alter the existing drainage patterns at each project site. The majority of the proposed Ancillary Facilities would be installed within disturbed sites, but it is possible that monitoring wells at the Solar Evaporation Ponds and the pipe outlet and erosion control at Sand Canyon would be installed within undeveloped areas. However, given the small area (less than one half acre) within which the proposed Ancillary Facilities will be installed, it is not anticipated that substantial changes in drainage would occur. The construction of proposed facilities would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns, and could ultimately provide flooding on- or off-site without preventative measures in place. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP) where applicable would be required; these plans would ensure that drainage and stormwater will not substantially increase the rate or amount of surface runoff in a manner that would impede or redirect flood flows.

However, as stated under question c(i) above, given the small size of the site in which the Ancillary Facilities would be developed, mitigation (**MM HYD-4**) to enforce BMPs is provided below to minimize impacts at sites that are less than an acre and are therefore not subject to the CGP or SWPPP. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, thereby avoiding a potentially significant impact under this issue. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets. With implementation of such BMPs, compliance with conditions of required permits governing storm water runoff from construction sites, and retention of runoff on site where feasible, the potential to impede or redirect flood flows would be reduced to less than significant levels and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant with the implementation of mitigation.

Operation: Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), a majority of the Ancillary Facilities would be installed mostly outside of flood hazard areas. However, the proposed Sand Canyon pipe outlet and erosion control would be installed within a 1% annual chance flood area. Additionally, much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. These facilities would be installed to withstand flooding, and erosion control would require ongoing maintenance to ensure continued

efficacy in the event of any future flooding events. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential to impede or redirect flows could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. **MM HYD-5** requires that either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential for impeding or redirecting flood flows would occur, which would avoid a potentially significant impact related to creation or contribution of runoff that would impede or redirect flood flows. Thus, this Program Component would have no potential to impede or redirect flood flows, as the alterations to the Sand Canyon channel will be extremely limited, and would continue to enable runoff to flow in a controlled manner. Therefore, with the implementation of mitigation required to address the potential for Program facilities to create or contribute runoff that would impede or redirect flood flows, impacts would be less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Impacts would be both the same as those discussed under Project Categories 1 and 2 above. Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), the Solar Evaporation Ponds would be installed mostly within a 1% annual chance flood area in Baldwin Lake. Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. Impacts would be the same as those discussed under questions c(i) and c(ii) above. Impacts would be the same as those identified under Program Category 1 and 2. The proposed Solar Evaporation Ponds could alter the existing drainage patterns of the Solar Evaporation Ponds area. The Solar Evaporation Ponds would be installed within the compacted dry lakebed of Baldwin Lake, which has been previously disturbed by BBARWA operations, and the evaporation pond installation may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed Solar Evaporation Ponds would require activities such as excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would impede or redirect flood flows would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would therefore be less than significant.

Operation: Impacts would be both the same as those discussed under Project Categories 1 and 2 above. Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), the Solar Evaporation Ponds would be installed mostly within a 1% annual chance flood area in Baldwin Lake. Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. These facilities would be installed to withstand flooding, and erosion control would require ongoing maintenance to ensure continued efficacy in the event of any future flooding events. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net



increase in runoff would occur, a significant potential to impede or redirect flows could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. **MM HYD-5** requires that either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential for impeding or redirecting flood flows would occur, which would avoid a potentially significant impact related to creation or contribution of runoff that would impede or redirect flood flows. Thus, this Program Component would have no potential to impede or redirect flood flows, as the alterations to the Solar Evaporation Ponds would continue to enable runoff to flow in a controlled manner. Therefore, with the implementation of mitigation (**MM HYD-5**) required to address the potential for Program facilities to create or contribute runoff that would impede or redirect flood flows, impacts would be less than significant.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Impacts would be the same as those discussed under questions c(i) and c(ii) above. Impacts would be the same as those identified under Program Category 1, 2, and 3. The proposed BBARWA WWTP Upgrades could alter the existing drainage patterns of the BBARWA WWTP site. The BBARWA WWTP Upgrades would be installed within the existing BBARWA WWTP, which has been previously disturbed by BBARWA operations, but the AWP and associated infrastructure and facilities may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed BBARWA WWTP Upgrades would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would impede or redirect flood flows would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Thus, impacts would be less than significant.

Operation: Impacts would be both the same as those discussed under Project Categories 1, 2, and 3 above. Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), the BBARWA WWTP Upgrades would be installed mostly within a 1% annual chance flood area in Baldwin Lake. Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP site has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential to impede or redirect flows could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. **MM HYD-5** requires that either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential for impeding or redirecting flood flows would occur, which would avoid a potentially significant impact related to creation or contribution of runoff that would impede or redirect flood flows. Thus, this Program Component would have no potential to impede or redirect flood flows, as the alterations to the BBARWA WWTP Upgrades would continue to enable runoff to flow in a controlled manner. Therefore, with the implementation of mitigation (**MM HYD-5**) required to

address the potential for Program facilities to create or contribute runoff that would impede or redirect flood flows, impacts would be less than significant.

### **Other Physical Changes to the Environment**

Impacts would be both the same as those discussed under questions c(i), c(ii), and c(iii), above.

Big Bear Lake discharge as a result of Program implementation would provide additional water to Big Bear Lake that would not otherwise be present. Big Bear Lake is within a 1% annual chance flood area. However, the existing drainage patterns within Big Bear Lake would not be altered beyond that which could naturally occur from runoff and rainfall. Furthermore, based on Big Bear Lake discharge points and that no new physical Program Components would be installed within Big Bear Lake itself, no potential to impede or redirect flood flows would be anticipated to occur.

The change in water source at Shay Pond would not result in a change in flow to Shay Pond, and therefore, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows is anticipated to occur.

While the discharge to the LV Site would be reduced as a result of Program implementation, the discharge locations are two unlined discharge basins within the LV Site that would not be altered by receipt of less water. Thus, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would impede or redirect flood flows.

### **Combined Project Categories**

The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns, which could result in impeding or redirecting flood flows. Compliance with the CGP, SWPPP, San Bernardino County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts to less than significant levels.

The presence of all new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential for Program facilities to impede or redirect flood flows. While there are a few Program facilities that would be located within flood hazard zones, the potential to impede or redirect flows would be less than significant, as discussed above.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: **MMs HYD-4 and HYD-5** is required to minimize the potential for Program facilities to impede or redirect flows.*

**HYD-4: Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program**

*facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:*

- *The use of silt fences or coir rolls;*
- *The use of temporary stormwater desilting or retention basins;*
- *The use of water bars to reduce the velocity of stormwater runoff;*
- *The use of wheel washers on construction equipment leaving the site;*
- *The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;*
- *The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and*
- *Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.*

**HYD-5:** *Prior to commencement of construction of project facilities, the implementing agency shall be required to either:*

- (1) *Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall:*
- (2) *Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.*

*Level of Significance After Mitigation: Less Than Significant*

During project design, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the San Bernardino County MS4 Permit. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential for impeding or redirecting flood flows would occur. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, such that no substantial increased potential for impeding or redirecting flood flows would occur. Impacts would be less than significant with mitigation.

### **Cumulative Impact Analysis**

Concurrent construction of cumulative development within the Big Bear Valley could result in temporary impacts to drainage patterns that may result in erosion or siltation, flooding, or insufficient capacity of drainage systems. All related projects within the service area would be

subject to the same Federal, State, and local regulations regarding implementation of BMPs under the CGP, SWPPP, and the San Bernardino County MS4 Permit. Therefore, cumulative development would not result in significant impacts related to drainage during construction.

However, cumulative projects could result in significant impacts to local drainage systems after rapid development of structures. The Program could result in potentially significant impacts associated with the alteration of drainage patterns that result in flooding that may be impeded or redirected by future projects. Since the project could result in potential significant impacts, the project's contribution to cumulative impacts is considered cumulatively considerable, and therefore, would require mitigation as identified above, which would reduce the project's contribution to less than cumulatively considerable, therefore reducing cumulative impacts under this issue to a level of less than significant.

*Mitigation Measures: MMs HYD-4 and HYD-5 is necessary to reduce cumulative impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less Than Significant*

**d. Would the project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?**

**Program Category 1: Conveyance Pipelines**

Construction: Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil. Big Bear Lake and Stanfield Marsh are bodies of water that could cause localized flooding next to their shores due to a seiche. According to the San Bernardino Countywide Plan EIR, the largest seiche ever recorded in San Francisco Bay—a much larger water body than either Big Bear Lake and Stanfield Marsh—was four inches high, after the 1906 San Francisco Earthquake (Corps 2000). Thus, the likelihood of a seiche that would pose substantial risk of injuries or major property damage to life or property next to Big Bear Lake and Stanfield Marsh was considered to be low in the San Bernardino Countywide Plan EIR, and would therefore result in a less than significant seiche and tsunami related construction impact.

Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits, where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets, thereby minimizing the risk of release of pollutants due to flooding. Thus, impacts would be less than significant.

Operation: The Conveyance Pipelines will be located underground; underground pipelines within floodplains are common and are often constructed further underground to avoid future negative impacts in the event of flood or inundation events. No housing or structures are proposed as part of this pipeline replacement project. Therefore, given that pipelines are generally not susceptible to significant adverse effects associated with flooding, and though damage to pipelines can occur, a pipeline can be repaired and placed back into operation with no loss of human life. Additionally, once constructed, the roadways, easements, and access roads within which the pipeline will be installed will be returned to their original condition, and therefore the project would not risk release of pollutants due to project inundation from flooding or seiche during operation. Thus, impacts would be less than significant.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: No Ancillary Facilities would be installed near Big Bear Lake, therefore seiche impacts would not be expected to occur. Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil. Thus, the likelihood of a seiche that would pose substantial risk of injuries or major property damage to life or property next to Big Bear Lake and Stanfield Marsh was considered to be low in the San Bernardino Countywide Plan EIR, and would therefore result in a less than significant seiche and tsunami related construction impact.

Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), a majority of the Ancillary Facilities would be installed mostly outside of flood hazard areas. However, the proposed Sand Canyon pipe outlet and erosion control would be installed within a 1% annual chance flood area. Additionally, much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site for the Ancillary Facilities installed therein. The construction of proposed facilities would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns, and could risk of release of pollutants to due flooding without preventative measures in place. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP) where applicable would be required; these plans would ensure that risk of release of pollutants to due flooding is minimized to a level of less than significant.

However, as stated under question c(i) above, given the small size of the site in which the Ancillary Facilities would be developed, mitigation (**MM HYD-4**) to enforce BMPs is provided below to minimize impacts at sites that are less than an acre and are therefore not subject to the CGP or SWPPP. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, thereby avoiding a potentially significant impact under this issue. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets, thereby minimizing risk of release of pollutants to due flooding. With implementation of such BMPs, compliance with conditions of required permits governing storm water runoff from construction sites, and retention of runoff on site where feasible, the potential to risk of release of pollutants during construction to due flooding on or offsite is less than significant with the implementation of mitigation.

Operation: The Ancillary Facilities would be installed to withstand flooding, and erosion control would require ongoing maintenance to ensure continued efficacy in the event of any future flooding or inundation events. Should inundation occur, most pollutants, including hazardous materials, would be stored inside of structures and the potential for pollutants or contaminants to be incorporated and transported due to inundation is considered to be a less than significant impact. As stated under Program Category 1, above, seiche at Big Bear Lake could occur; however, due to the distance and the difference in elevation of the proposed Ancillary Facilities, it is not anticipated that seiche could post an impact that would result in inundation and thereby risk release of pollutants. No Program Category 2 seiche impacts would occur. However, during project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant risk of release of pollutants could occur where these issues are not addressed. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Thus, release of pollutants due to inundation impacts would be less than significant with the

implementation of **MM HYD-5**. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and risk of release of pollutants to due flooding would be reduced to a level of less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Impacts would be both the same as those discussed under Project Categories 1 and 2 above. Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), the Solar Evaporation Ponds would be installed mostly within a 1% annual chance flood area in Baldwin Lake. Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil. Thus, the likelihood of a seiche that would pose substantial risk of injuries or major property damage to life or property next to Big Bear Lake and Stanfield Marsh was considered to be low in the San Bernardino Countywide Plan EIR, and would therefore result in a less than significant seiche and tsunami related construction impact.

The construction of proposed Solar Evaporation Ponds would require activities such as excavation and demolition, which would require the use of petroleum products necessary to complete construction. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets, thereby minimizing the risk of release of pollutants to due flooding. Thus, impacts would be less than significant.

Operation: Impacts would be the same as those discussed under Project Categories 1 and 2 above. The Solar Evaporation Ponds would not be installed near Big Bear Lake, therefore seiche impacts would not be expected to occur. Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil.

Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site for the Solar Evaporation Ponds installed therein. These facilities would be installed to withstand flooding, and erosion control would require ongoing maintenance to ensure continued efficacy in the event of any future flooding or inundation events. However, during project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant risk of release of pollutants could occur where these issues are not addressed. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Should inundation occur, most pollutants, including hazardous materials, would be stored inside of structures and the potential for pollutants or contaminants to be incorporated and transported due to inundation is considered to be a less than significant impact through the implementation of **MM HYD-5**. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and risk of release of pollutants to due flooding would be reduced to a level of less than significant.



#### **Program Category 4: BBARWA WWTP Upgrades**

**Construction:** Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), the Solar Evaporation Ponds would be installed mostly within a 1% annual chance flood area in Baldwin Lake. Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil. Thus, the likelihood of a seiche that would pose substantial risk of injuries or major property damage to life or property next to Big Bear Lake and Stanfield Marsh was considered to be low in the San Bernardino Countywide Plan EIR, and would therefore result in a less than significant seiche and tsunami related construction impact.

The construction of proposed BBARWA WWTP Upgrades would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets, thereby minimizing the risk of release of pollutants to due flooding. Thus, impacts would be less than significant.

**Operation:** Impacts would be the same as those discussed under Project Categories 1, 2, and 3 above. The BBARWA WWTP Upgrades would not be installed near Big Bear Lake, therefore seiche impacts would not be expected to occur. Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil.

Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site for the AWPf and other facility upgrades installed therein. These facilities would be installed to withstand flooding, and erosion control would require ongoing maintenance to ensure continued efficacy in the event of any future flooding or inundation events. However, during project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant risk of release of pollutants could occur where these issues are not addressed. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Should inundation occur, most pollutants, including hazardous materials, would be stored inside of structures and the potential for pollutants or contaminants to be incorporated and transported due to inundation is considered to be a less than significant impact through the implementation of **MM HYD-5**. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and risk of release of pollutants to due flooding would be reduced to a level of less than significant.

#### **Other Physical Changes to the Environment**

Impacts would be the same as those discussed under Project Categories 1 through 4, above.

Big Bear Lake discharge as a result of Program implementation would provide additional water to Big Bear Lake that would not otherwise be present. Big Bear Lake is located within the delineated 1% annual chance flood area. However, Big Bear Lake levels would not be altered beyond that

which could naturally occur from runoff and rainfall. Furthermore, the Program would operate in such a manner that unplanned spills at the dam would be controlled. As such, the Program operations would not cause a naturally occurring seiche to be exacerbated by higher Lake levels than that which could occur naturally given the existing circumstances regarding Lake management.

The change in water source at Shay Pond would not result in a change in flow to Shay Pond, and therefore, no significant potential to risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones is anticipated to occur.

As discussed under Subsection 4.11.7, Environmental Setting: Lucerne Valley Flood Hazards, LV Site been mapped within the DWR 100-year flood awareness zone, but is not located within any other delineated flood hazard zone by FEMA or San Bernardino County. While the discharge to the LV Site would be reduced as a result of Program implementation, the discharge locations are two unlined discharge basins within the LV Site that would not be altered by receipt of less water, nor would the water quality of the discharge change. Thus, no significant potential to risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones is anticipated to occur.

### **Combined Project Categories**

The presence of all new facilities at each project site could create a new risk for pollutants within a given site to be released as a result of inundation. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential for Program facilities to risk release of pollutants from inundation. Furthermore, given that the Bear Valley Basin contains areas that are located within flood hazard zones, the development of several facilities in a given area may, when combined, result in a substantial potential to release pollutants as a result of inundation; as such, mitigation is required to minimize impacts thereof.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: MM HYD-4 and HYD-5 are required to minimize the potential for Program facilities to release pollutants as a result of inundation.*

**HYD-4: Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:**

- **The use of silt fences or coir rolls;**
- **The use of temporary stormwater desilting or retention basins;**
- **The use of water bars to reduce the velocity of stormwater runoff;**
- **The use of wheel washers on construction equipment leaving the site;**
- **The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;**
- **The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and**

- **Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.**

**HYD-5:** *Prior to commencement of construction of project facilities, the implementing agency shall be required to either:*

- (1) *Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall:*
- (2) *Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.*

*Level of Significance After Mitigation: Less Than Significant*

**MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects. This measure would minimize risk of release thereof due to flooding inundation.

As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure that pollutants are managed on site and the potential for risk of release thereof due to inundation is minimized. Impacts would be less than significant with mitigation.

### **Cumulative Impact Analysis**

Concurrent construction of cumulative development within the Big Bear Valley could result in temporary impacts to drainage patterns that may result in flooding. All related projects within the service area would be subject to the same Federal, State, and local regulations regarding implementation of BMPs under the CGP, SWPPP, and San Bernardino County MS4 Permits. Therefore, cumulative development would not result in significant impacts related to flooding or inundation.

However, cumulative projects could experience significant impacts related to release of pollutants due to flooding and inundation. Since the project could result in potential significant impacts, the project's contribution to cumulative impacts is considered cumulatively considerable, and therefore, would require mitigation as identified above, which would reduce the project's contribution to less than cumulatively considerable, therefore reducing the project's contribution to cumulative impacts under this issue to a level of less than significant.

*Mitigation Measures: MMs HYD-4 and HYD-5 is necessary to reduce cumulative impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less Than Significant*

- e. **Does the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

**Big Bear Valley Basin – Program Components**

As part of the Program, BBARWA will discharge up to 2,200 AFY of Program Water to the east end of Stanfield Marsh, which then flow into Big Bear Lake, and to up to 80 AFY of Program Water to Shay Pond a separate discharge location. Please note that the Shay Pond Discharge Program Component is not planned for the near future, so for the near future, all the Program Water will be sent to Stanfield Marsh. After the Program Water enters Big Bear Lake, up to 380 AFY of Program Water stored in Big Bear Lake will be used for groundwater recharge at the Sand Canyon Recharge Area over a six-month dry weather period. In addition, Program Water stored in Big Bear Lake can also be extracted to irrigate Bear Mountain Golf Course and for dust control of the Snow Summit Bike Park. It is estimated that about 120 AFY of Program Water stored in Big Bear Lake could be utilized at each location under the Program. All these dischargers and water uses will occur within the Big Bear Valley. Therefore, water quality is protected by the WQCP for the Santa Ana Basin Plan. The Santa Ana Basin Plan Region includes the upper and lower Santa Ana River watersheds, the San Jacinto River watershed, and several other small drainage areas. The Santa Ana Region covers parts of southwestern San Bernardino County, western Riverside County, and northwestern Orange County. The Santa Ana Basin Plan establishes water quality standards for the ground and surface waters of the region. The Santa Ana Basin Plan includes an implementation plan describing the actions by the Santa Ana Regional Board and others that are necessary to achieve and maintain the water quality standards.

The Santa Ana Basin Plan contains the Santa Ana Regional Board's policies for managing the Santa Ana region's water quality. The Santa Ana Basin Plan includes the water quality standards (WQO, beneficial uses, and anti-degradation policy) for the Santa Ana Region, regionally important water quality management and improvement initiatives, policies and practices for implementing water quality standards, and implementation plans. The CWA requires review of WQMPs every three years, and the California Water Code, basin plans are reviewed periodically for areas where improvements or updates are needed.

The proposed Stanfield Marsh/Big Bear Lake and Shay Pond Dischargers will be regulated under an NPDES permit, which will be issued by the Santa Ana Regional Board to protect the water quality of these receiving surface waters. The proposed use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Project will be regulated by a WDR permit to protect the Bear Valley Basin water quality. The proposed use of Program Water stored in Big Bear Lake to irrigate Bear Mountain Golf Course and for dust control of Snow Summit Bike Park will be regulated under Order WQ 2016-0068-DDW, which regulates the use and application of recycled water. The Stanfield Marsh/Big Bear Lake and Shay Pond Dischargers and use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Area Project and possible use for landscape irrigation do not conflict or obstruct the implementation of the Santa Ana Basin Plan because these dischargers will comply with their respective permit limits. In addition, as discussed in issue (a), the proposed discharge of Program Water to Stanfield Marsh/Big Bear Lake and Shay Pond and subsequent Program Water stored in Big Bear Lake would have a less than significant potential to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality. Thus, impacts would be less than significant.

The Program would be implemented within the Bear Valley Basin, which has been designated very low priority by the SGMA. The SGMA empowers local agencies to form GSAs to manage

basins and requires GSAs to adopt GSPs for crucial groundwater basins in California.<sup>70</sup> The SGMA “requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For critically over-drafted basins, that will be 2040. For the remaining high and medium priority basins, 2042 is the deadline.”<sup>71</sup> Even though the Bear Valley Basin is considered very low priority, the Bear Valley Basin GSP has been prepared, and is provided as **Appendix 8** to this DPEIR. The GSP provides the geographical and managerial context of the Bear Valley Basin, summarizes the groundwater basin setting (including groundwater conditions, water budget, and management areas), describes the criteria used to measure and demonstrate sustainability, reviews the existing groundwater monitoring and management programs, and defines how those actions will be incorporated into the Bear Valley Basin GSP to achieve and maintain sustainability in the future.

The Bear Valley Basin GSA Stakeholders (BVBGSA Stakeholders)<sup>72</sup> identified two projects or types of projects for inclusion in the GSP because they support efforts to maintain long term groundwater sustainability. The Program was included in the GSP as one of these projects, in addition to any projects that provide new or maintain existing groundwater pumping facilities. In terms of groundwater sustainability, the Shay Pond Discharge proposed use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Area Project and possible landscape irrigation would have a less than significant impact to substantially decrease groundwater supplies or interfere/impede with sustainable groundwater management, as these proposed uses will help the Bear Valley Basin by adding a new source of water and offsetting the potable use, resulting in more water staying in Bear Valley Basin. The use of Program Water stored in Big Bear Lake for dust control would have no impact since it would not add or remove water from the Bear Valley Basin.

Sustainable groundwater management was evaluated in the context of the sustainability goal for the Bear Valley Basin and the absence of undesirable results. The GSP identified Sustainable Management Criteria, which are the conditions that constitute sustainable groundwater management for the Bear Valley Basin, which included:

1. Chronic Lowering of Groundwater Levels
2. Reductions of Groundwater in Storage
3. Degraded Groundwater Quality
4. Land Subsidence
5. Depletion of Interconnected Surface Water

Of the above Sustainable Management Criteria, the Program would address the chronic lowering of groundwater levels and reductions of groundwater in storage criteria. As such, as an identified project within the Bear Valley Basin GSP, the Program would not obstruct the implementation of the GSP, and in fact it would aid in its implementation. Therefore, there is no potential to conflict with or obstruct implementation of sustainable groundwater management plan in the Bear Valley Basin, and therefore no impacts would occur.

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<sup>70</sup> Big Bear Area Regional Wastewater Agency, Bear Valley Basin Groundwater Sustainability Agency. <https://www.bbarwa.org/bear-valley-basin-groundwater-sustainability-agency/> (accessed 04/06/23).

<sup>71</sup> California Department of Water Resources, Sustainability Groundwater Management Act (SGMA). <https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management> (accessed 04/06/23).

<sup>72</sup> BBCCSD, BBMWD, BBARWA, and BBLDWP are the BVBGSA Stakeholders who make up the Bear Valley Basin Groundwater Sustainability Agency

Furthermore, by controlling water quality during construction and operations through implementation of both short-term (SWPPP) and long-term (WQMP) BMPs at the site, no potential for conflict or obstruction of the Santa Ana Regional Board's WQCP has been identified as a part of implementation of the proposed project facilities. However, in order to discharge Program Water to the proposed locations (Big Bear Lake, Stanfield Marsh, and Shay Pond), the treated effluent must meet the WQOs set by the Santa Ana Basin Plan. The nutrient limits for an NPDES permit to Stanfield Marsh/Big Bear Lake and Shay Pond are expected to align with the Santa Ana Basin Plan WQOs and the TMDL numeric targets to protect the beneficial uses of Big Bear Lake and Shay Pond, respectively, as described and analyzed under issue (a), above. The Program Team will continue to work with the Santa Ana Regional Board and DDW to protect the MUN beneficial use of Big Bear Lake. As a reflection of that commitment, the Program Team is proposing to implement full advanced treatment and will conduct additional monitoring to ensure that the proposed NPDES discharge is protective of the MUN beneficial use. Based on the fact that the Program is not anticipated to violate any provisions of the Santa Ana Basin Plan, and as a matter of operating under the Santa Ana Regional Board, the Program must adhere to the WDR that is ultimately issued to operate the Program as proposed, the Program is anticipated to adhere to the Santa Ana Basin Plan, and therefore, the proposed project would not conflict with or obstruct implementation of a WQCP in the Bear Valley Basin.

Based on the above discussion, the Program Components in the Big Bear Valley would have a less than significant impact to conflict with or obstruct with the implementation Santa Ana Basin Plan or sustainable groundwater management plan.

#### **Lucerne Valley Basin – LV Site Discharge**

BBARWA plans to maintain the existing Lucerne Valley discharge location (**Figure 3-35**). All WWTP process water in excess of the new treatment train's 2.2 MGD capacity will continue to be treated to undisinfected secondary levels and conveyed to the existing LV Site, consistent with the current permitted discharge requirements of the existing BBARWA WWTP. The LV Site discharge occurs within the Lucerne Valley. Therefore, water quality is protected by the WQCP in the Colorado Basin Plan. The Colorado River Basin Region covers approximately 13 million acres (20,000 square miles) in the southeastern portion of California. It includes all of Imperial County and portions of San Bernardino, Riverside, and San Diego Counties. Geographically, the Colorado region represents only a small portion of the total Colorado River drainage area, which includes portions of Arizona, Nevada, Utah, Wyoming, Colorado, New Mexico, and Mexico. The Colorado Basin Plan establishes water quality standards for the ground and surface waters of the region. The Colorado Basin Plan includes an implementation plan describing the actions by the Colorado Regional Board and others that are necessary to achieve and maintain the water quality standards.

The Colorado Basin Plan contains the Colorado Regional Board's policies for managing the Colorado River region's water quality. The Colorado Basin Plan includes the water quality standards (WQO, beneficial uses, and anti-degradation policy) for the Colorado River region, regionally important water quality management and improvement initiatives, policies and practices for implementing water quality standards, and implementation plans. The CWA requires review of water quality management plans every three years, and the California Water Code, basin plans are reviewed periodically for areas where improvements or updates are needed.

However, the MCLs for TDS and nitrate (as N) are 500 and 10 mg/L, respectively under the Colorado Regional Board. As described in the Regulatory Setting, the Colorado Basin Plan Objective for TDS and nitrate is to maintain the water quality to existing historical conditions where possible and to keep the chemical and physical groundwater quality close to or otherwise below



the MCLs (RWQCB, 2006). Specific concentration limits for TDS and nitrate have not been established. Based on the evaluation presented under issue (a), above, the potential for the Program to result in reduced recharge of higher quality water (for TDS and N) than that which exists in the underlying groundwater basin, has a potential to result in less dilution of the existing groundwater, so the Lucerne Valley Basin will likely see an increasing trend for TDS and N over time. This action has a potential to result in a significant and unavoidable conflict with or obstruction of the implementation of the Colorado Basin Plan as a result of the Program's potential to indirectly cause an increase in TDS and nitrate in the Lucerne Valley Basin, by which the present water quality already exceeds the MCLs for each contaminant.

The Mojave River Basin is under very low priority and is not required to implement or form a GSA or GSP. The Mojave River Basin is exempt from this requirement due to the adjudication. As the Mojave River Basin is under very low priority, it is currently not required to prepare a sustainable groundwater management plan because it is adjudicated and is therefore exempt from the requirement. The MBA Watermaster must still report to DWR as required by the SGMA, which includes submitting groundwater elevation, groundwater extraction, surface water supply, total water use, change in groundwater storage, and the annual report submitted to the Court that administered the Judgement.<sup>73</sup> As discussed under issue (b), above, the Program would result in a decrease in discharge to the LV Site, which in turn, would have a potential to reduce recharge of disinfected secondary effluent to the underlying Lucerne Valley Basin. The Mojave River Basin has several sub-basins that have experienced overdraft in the last 10 years<sup>74</sup>, and the MBA Watermaster replaces overdrafts through fees collected from water users that is used to purchase additional water supplied through the SWP. The users in the Lucerne Valley Basin do not presently have access to the SWP, and therefore, the use of the underlying groundwater is the main source of water for users in the area. As such, while the Program would reduce the overall recharge to the Lucerne Valley Basin, this would not conflict with the implementation of sustainable groundwater management plan, as none are applicable to the Lucerne Valley Basin/Mojave River Basin area. The MBA Watermaster would formulate a response to address management of the Lucerne Valley Basin as a result of the reduction in recharge to the Lucerne Valley Basin. As this is the MBA Watermaster's responsibility, the Program would not result in a significant impact in this regard.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: No mitigation is available to reduce the significant and unavoidable conflict with the Colorado Basin Plan that may result from Program implementation.*

*Level of Significance After Mitigation: Significant and Unavoidable.*

### **Cumulative Impact Analysis**

Cumulative impacts that would conflict with or obstruct implementation of a WQCP or sustainable groundwater management plan would result from cumulative development and water management in Big Bear Valley. In regards to the potential to cumulatively impact the Bear Valley Basin, which, as stated above, the Program would aid in GSP implementation, the impacts discussion under this issue are inherently cumulative. Therefore, by implementing the Program, the Program Team (BBARWA, BBCCSD, BBLDWP, and BBMWD) will ensure that the Program

<sup>73</sup> Mojave Water Agency, 2023. Sustainable Groundwater Management Act. <https://www.mojavewater.org/basin-management/regional-planning/sgma/> (accessed 07/06/23)

<sup>74</sup> Mojave Water Agency, May 1, 2023. Watermaster Annual Report for Water Year 2021-22. <https://www.mojavewater.org/wp-content/uploads/2023/03/29AR2122.pdf> (accessed\_06/07/23)

will not contribute to cumulatively considerable impacts on the Bear Valley Basin resulting in the obstruction of implementation of the GSP.

However, cumulative development in the Lucerne Valley Basin could result in greater demands for groundwater or greater contributions of higher TDS or nitrate water sources, such that the Colorado Basin Plan would be further obstructed. Given that the Program would result in a significant and unavoidable impact on the water quality of the Lucerne Valley Basin, thereby conflicting with the Colorado Basin Plan, the Programs would result in a cumulatively considerable contribution to cumulative impacts under this issue in the Lucerne Valley Basin.

*Mitigation Measures: No mitigation is available to reduce the cumulatively significant and unavoidable conflict with the Colorado Basin Plan that may result from Program implementation.*

*Level of Significance After Mitigation: Significant and Unavoidable.*

#### **4.11.11 Significant and Unavoidable Impacts**

As determined in the preceding evaluation, the Program would result in significant and unavoidable impacts under several hydrology and water quality issues, each of which pertains only to the reduction in discharge of disinfected secondary effluent to the LV Site. The Big Bear Valley components of the proposed project, which includes discharging Program Water to Big Bear Lake via Stanfield Marsh and to Shay Pond, in addition to utilizing blended Lake water to provide groundwater recharge in Sand Canyon, have been determined to be less than significant with the implementation of mitigation for all hydrology and water quality issues.

The reduced discharge to the LV Site under as a result of the Program will have the potential to contribute to the degradation of water quality in the Lucerne Valley Basin by removing a dilution source, but is not the direct cause of degradation because BBARWA effluent is only a minor contributor and not the primary source of degradation. The groundwater at the monitoring wells downgradient of the LV Site currently exceeds the MCLs for TDS (recommended) and nitrate, so the reduced flows would not cause the Basin to violate a water quality standard, WDRs or otherwise substantially degrade surface or groundwater quality, but may result in a further exceedance of TDS and Nitrate, which is a potentially significant and unavoidable impact. The Program has a potential to interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the Lucerne Valley Basin as a result of the reduction in discharge to the LV Site. Finally, the Program has a potential to conflict with or obstruct the Colorado Basin Plan for the same reasons the Program has a potential to substantially degrade groundwater quality of the Lucerne Valley Basin discussed above. Thus, the Program would result in cumulatively significant and significant and unavoidable impacts under hydrology and water quality. No feasible **MMs** exist to avoid these significant and unavoidable impacts.

## 4.12 LAND USE AND PLANNING

### 4.12.1 Introduction

This section assesses potential impacts related to land use and planning from the implementation of the Replenish Big Bear Program (Program).

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Land Use and Planning
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to land use and planning were received at the Scoping Meeting held on behalf of the Program. One comment letter specific to this topic was received in response to the NOP. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

### 4.12.2 Environmental Setting: Land Use and Planning

The Program Area includes the following one incorporated City—the City of Big Bear Lake, though the majority of the proposed facilities would be installed within unincorporated San Bernardino County.

#### San Bernardino County

The San Bernardino County Countywide Plan establishes 11 land use designations within 528,027 acres of the Mountain Region. Nearly 91 percent, or 481,661 acres, of the Mountain Regions' total unincorporated acreage is devoted to open space uses. Land use designations within the Mountain Region of the General Plan are provided in **Table 4.12-1**.

San Bernardino County is the largest county in the contiguous U.S. Only 4 percent of the land in San Bernardino County is in incorporated jurisdictions and 96 percent of the land area is unincorporated. However, of the unincorporated areas, most (87 percent) is under Federal, State, or tribal jurisdiction and outside of San Bernardino County's administrative control.<sup>75</sup> While San Bernardino County influences a certain degree of development activity within the 24 cities within San Bernardino County (primarily administrative buildings, criminal justice facilities, and certain limited infrastructure, including County-maintained roads and flood control facilities), the city councils of these cities directly regulate land use and planning therein.

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<sup>75</sup> San Bernardino County, 2020. San Bernardino Countywide Plan, Final Environmental Impact Report. <https://countywideplan.com/resources/document-download/> (accessed 04/12/23)

**Table 4.12-1  
 UNINCORPORATED SAN BERNARDINO COUNTY LAND USE DESIGNATIONS  
 IN THE MOUNTAIN REGION PLANNING AREA**

Land Use Designation	Acres
Resource & Land Management	596
Open Space	481,661
Rural Living	20,956
Very Low Density Residential	2,609
Low Density Residential	13,967
Medium Density Residential	343
Commercial	947
Commercial Industrial	88
Regional Industrial	0
Public Facilities	6,351
Special Development	508
<b>TOTAL</b>	<b>528,027</b>
SOURCE: San Bernardino County, 2020. San Bernardino Countywide Plan, Final Environmental Impact Report. <a href="https://countywideplan.com/resources/document-download/">https://countywideplan.com/resources/document-download/</a> (accessed 04/12/23)	

**City of Big Bear Lake**

The City of Big Bear Lake and the communities that surround it historically have served as a natural resource area for the populations in the San Bernardino Valley and beyond, below the mountain areas. The Big Bear Valley is now a weekend and second home retreat for the San Bernardino, Riverside, and Los Angeles metropolitan areas. The communities surrounding Big Bear Lake were traditionally small and rural, and didn't face urbanization pressures to the same extent as other cities in the Inland Empire. Tourism increased the size of the community, but the City of Big Bear Lake and its residents desire to preserve the natural environment in balance with growth.<sup>76</sup>

BBARWA's 2010 Sewer Master Plan (2010 SMP) estimated that the full-time residential rate is about 38% of the overall customer population within the area. The tourism season is largely concentrated in the months of December through April due the local Resorts; additionally, the months of June and July also see a slight rise in tourism due to Lake and other summer recreation activities.

The City of Big Bear Lake has developed along the south side of Big Bear Lake in a linear pattern that extends west to east for about 7 miles. The City of Big Bear Lake General Plan emphasizes single family dwelling units and includes larger areas devoted to commercial, open space, and public use, with lesser emphasis on multi-family housing and industrial uses. Land use designations are identified in the City of Big Bear Lake General Plan and included below in **Table 4.12-2**.

<sup>76</sup> City of Big Bear Lake, 1999. City of Big Bear Lake General Plan. [https://www.citybigbearlake.com/images/downloads/city\\_departments/business/plan\\_checks/general\\_plan\\_elements/and%20use%20element.pdf](https://www.citybigbearlake.com/images/downloads/city_departments/business/plan_checks/general_plan_elements/and%20use%20element.pdf) (accessed 05/12/23)

**Table 4.12-2  
 CITY OF BIG BEAR LAKE LAND USE DESIGNATIONS**

<b>Land Use Designation</b>	<b>Acres</b>
Single Family Residential	2,328*
Multiple Family Residential	337**
Commercial, including retail services, lodging, camps, and recreation	739**
Industrial and Business Park	12.1
Public Use	152**
Open Space	369
<b>TOTAL</b>	<b>3,927***</b>
* Excludes camp overlay areas, which are included in Commercial category ** Includes acreage from the Village Specific Plan Area *** Excludes 518 acres of roads in planning area (city and sphere) SOURCE: City of Big Bear Lake, 1999. City of Big Bear Lake General Plan. <a href="https://www.citybigbearlake.com/images/downloads/city_departments/business/plan_checks/general_plan_elements/land%20use%20element.pdf">https://www.citybigbearlake.com/images/downloads/city_departments/business/plan_checks/general_plan_elements/land%20use%20element.pdf</a> (accessed 05/12/23)	

**4.12.3 Regulatory Setting**

State and local laws, regulations, plans, or guidelines that are applicable to the proposed project are summarized below.

**4.12.3.1 State**

**California Government Code Section 53091**

California Government Code Section 53091 specifies that water supply facilities such as those associated with the proposed project, are exempt from zoning restrictions. Specifically, Section 53091 states (State of California Legislative Council, 2003):

- (d) Building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.
- (e) Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water.

**Government Code Section 65302**

Subdivision (a) of California Government Code Section 65302 requires a Land Use Element to be a component of every city and county General Plan. A land use element designates the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal facilities, greenways, and other categories of public and private uses of land. The land use elements include the standards of population, density and building intensity recommended for the various land use districts and other territory covered by the general plan.

#### 4.12.3.2 Regional

##### **Southern California Association of Governments**

SCAG is the Federally mandated MPO representing six counties: Los Angeles, Imperial, Orange, Riverside, San Bernardino, and Ventura. On September 3, 2020, SCAG adopted its Connect SoCal: The 2020-2045 RTP/SCS/Connect SoCal, which is an update to the previous 2016 RTP/SCS. Using growth forecasts and economic trends, the RTP/SCS provides a vision for transportation throughout the region for the next 25 years that achieves the statewide reduction targets and in so doing identifies the amount and location of growth expected to occur within the region.

##### **San Bernardino County Transportation Commission**

In 2016, the San Bernardino County Transportation Commission sponsored SB 1305, consolidating the County Transportation Commission, local transportation authority, service authority for freeway emergencies and local congestion management agency into a single entity, SBCTA. The bill passed through both houses and was signed by the Governor in August 2016; it became effective January 1, 2017. (San Bernardino Associated Governments continues as a Joint Powers Authority functioning as a Council of Governments [SBCOG]).

Serving more than 2.1 million residents of San Bernardino County, the SBCTA is responsible for cooperative regional planning and furthering an efficient multi-modal transportation system countywide. The SBCTA administers Measure I, the half-cent transportation sales tax approved by San Bernardino County voters in 1989, and supports freeway construction projects, regional and local road improvements, train and bus transportation, railroad crossings, call boxes, ridesharing, congestion management efforts, and long-term planning studies.<sup>77</sup>

##### **Airport Land Use Compatibility Plans**

The California State Legislature enacted airport land use planning laws which are intended to:

- Provide for the orderly development of each public use airport in California and the area surrounding these airports so as to promote the overall goals and objectives of the California airport noise standards adopted pursuant to California Public Utilities Code Section 21669 and to prevent the creation of new noise and safety problems; and
- Protect public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses.

The general mechanism that the statutes provided for compliance with the airport planning laws is for counties to establish an ALUCP. The purpose of an ALUCP is to effectively identify areas, located outside the airport proper, which would be influenced by the future operations of the airport. Planning boundaries are established on the perimeters of these areas, which are plotted by applying the specific operational criteria of the airport to various planning models that have been primarily developed by the Federal Aviation Administration (FAA). The only public airport within the Program Area is the Big Bear Airport.

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<sup>77</sup> SBCTA, 2023. About Us. <https://www.gosbcta.com/about-us/about-sbcta/> (05/17/23)



#### 4.12.3.3 Local

##### San Bernardino County

The Policy Plan of the San Bernardino Countywide Plan States that:

*The ability to live and prosper in the diverse physical setting of San Bernardino County is dependent on the effective provision and management of water, wastewater, stormwater, solid waste, power, and communication systems. The effective management of these systems helps fulfill the County's obligation to protect the lives and property of residents and businesses, while also protecting the natural environment from the impacts of human development.*

Furthermore, the Policy Plan States the following principles:

- Reliable and cost-effective water, stormwater, wastewater, sanitary, power, and communications systems are critical for maintaining and improving our communities, institutions, and businesses.
- Groundwater recharge, water conservation, water reclamation, and supplemental water are key components of a resilient water supply strategy. The effective management of water resources can reduce carbon emissions, energy consumption, and utility costs.
- Collaborative efforts between government agencies and other stakeholders are necessary in order to effectively plan and efficiently provide infrastructure.

The Policy Plan also include the following goals and policies that are applicable to the proposed project:

<b>Goal</b>	<b>IU-1:</b>	Water Supply. Water supply and infrastructure are sufficient for the needs of residents and businesses and resilient to drought.
<b>Policy</b>	<b>IU-1.3:</b>	Recycled water. We promote the use of recycled water for landscaping, groundwater recharge, direct potable reuse, and other applicable uses in order to supplement groundwater supplies.
	<b>IU-1.5:</b>	Agricultural water use. We encourage water-efficient irrigation and the use of non-potable and recycled water for agricultural uses.
	<b>IU-1.8:</b>	Groundwater management coordination. We collaborate with Watermaster's, groundwater sustainability agencies, water purveyors, and other government agencies to ensure groundwater basins are being sustainably managed. We discourage new development when it would create or aggravate groundwater overdraft conditions, land subsidence, or other "undesirable results" as defined in the California Water Code. We require safe yields for groundwater sources covered by the Desert Groundwater Management Ordinance.
	<b>IU-1.10:</b>	Connected systems. We encourage local water distribution systems to interconnect with regional and other local systems, where feasible, to assist in the transfer of water resources during droughts and emergencies.
	<b>IU-1.11:</b>	Water storage and conveyance. We assist in development of additional water storage and Conveyance Facilities to create a resilient regional water supply system, when it is cost effective for County-owned water and stormwater systems.
<b>Goal</b>	<b>NR-4:</b>	Scenic resources that highlight the natural environment and reinforce the identity of local communities and the county

<b>Policy</b>	<b>NR-4.1:</b>	Preservation of scenic resources. We consider the location and scale of development to preserve regionally significant scenic vistas and natural features, including prominent hillsides, ridgelines, dominant landforms, and reservoirs.
<b>Policy</b>	<b>NR-5.3:</b>	Multiple-resource benefits. We prioritize conservation actions that demonstrate multiple resource preservation benefits, such as biology, climate change adaptation and resiliency, hydrology, cultural, scenic, and community character.
<b>Goal</b>	<b>NR-7:</b>	The ability of property owners, farmers, and ranchers to conduct sustainable and economically viable agricultural operations.
<b>Policy</b>	<b>NR-7.1:</b>	Protection of agricultural land. We protect economically viable and productive agricultural lands from the adverse effects of urban encroachment, particularly increased erosion and sedimentation, trespass, and non-agricultural land development.

### **Big Bear Lake**

The Environmental Resources Element of the City of Big Bear Lake General Plan States that:

*Water resources are obviously essential elements of community planning and development. All of the City's urban land uses, ranging from single-family homes to destination resorts and recreational areas, are dependent upon an adequate and affordable source of water. Although the City of Big Bear Lake has a substantial groundwater resource, this supply is finite and has been substantially impacted by development in the City as well as the Big Bear Valley in general.*

The statements and policies outlined above are echoed throughout the City of Big Bear Lake General Plan. Applicable programs, policies and goals in the City of Big Bear Lake General Plan are provided below.

<b>Program</b>	<b>OPR 3.1.1:</b>	Support the Municipal Water District in developing and operating its Stanfield Marsh Waterfowl/Wildlife Habitat Improvement Project.
<b>Goal</b>	<b>ER 3:</b>	A dependable long-term supply of clean and healthful domestic water to meet the needs to all segments of the community.
<b>Policy</b>	<b>ER 3.3:</b>	Ensure the long-term balance of water supplies and growth through coordination of land use planning with infrastructure development.
<b>Program</b>	<b>3.3.1:</b>	Ensure coordination of long-range goals and objectives within and between City plans and programs, including General Plan, Capital Improvement Program, Water Master Plan and others, as appropriate.
	<b>3.3.2:</b>	Ensure that the water distribution system is planned and constructed to adequately serve existing and planned development, through the development review process.
	<b>3.3.3:</b>	Participate with and encourage the appropriate local water agencies to investigate all potential alternatives for Big Bear Valley-wide conjunctive use of water.
<b>Goal</b>	<b>ER 5:</b>	Comprehensive and effective watershed management to protect the water quality of Big Bear Lake.
<b>Policy</b>	<b>ER 5.1:</b>	The City shall encourage the enforcement of all Federal, State, and regional regulations and enforce local regulations regarding the preservation and

		enhancement of water quality as it relates to the Lake's watershed, and water quality within the Lake itself.
<b>Goal</b>	<b>PS 1:</b>	General Infrastructure Needs. Public services and facilities that adequately meet the immediate and long-term needs of the City providing a high level of service for the lowest reasonable cost, while minimizing impacts on the local and regional environment.
<b>Policy</b>	PS 1.1:	Assure the provision of adequate public services and facilities for all residents, businesses and visitors within the community, now and in the future.
<b>Goal</b>	<b>PS 2:</b>	A water storage and distribution system adequate to meet the community's needs, including domestic and commercial use and fire flow, and which can ultimately accommodate use of reclaimed water when such use becomes feasible within the City.
<b>Policy</b>	PS 1.4:	Assure an adequate water system and source of supply for existing and future development and maintain an adequate reserve of water in storage facilities.
<b>Program</b>	PS 2.1.2:	Develop and maintain a contingency plan for potential water shortages including ground water management, locations for additional storage facilities, and water conservation programs.
	PS 2.1.3:	Encourage conservation of groundwater resources through the following measures: <ol style="list-style-type: none"><li>1. Development standards shall be compatible with and promote the City's water conservation goals and policies;</li><li>2. Encourage the use of drought-tolerant and native plants in landscaping plans;</li><li>3. Require that new development consider and plan for water reclamation when feasible;</li><li>4. Require the utilization of reclaimed water for landscape irrigation, grading, and other non-human contact uses where appropriate and when feasible.</li></ol>
<b>Goal</b>	<b>PS 3:</b>	Sewer Facilities. A sewer system adequate to serve the long-term needs of the community, including an upgraded sewage collection system and adequate treatment plant capacity.
<b>Policy</b>	PS 3.1:	Cooperate with the Big Bear Area Regional Wastewater Agency (BBARWA) in determining future needs and developing plans for wastewater facilities.
<b>Program</b>	PS 3.1.2:	Cooperate with BBARWA in assuring that new development pays its fair share of future development, expansion, and operating costs for wastewater treatment.
	PS 3.1.3:	Provide assistance to BBARWA as needed to complete and implement that agency's Long-Range Facilities Plan.
	PS 3.1.4:	Cooperate with BBARWA as needed in that agency's plans to upgrade the secondary treatment system and to seek customers and facility upgrades needed to accommodate local use of reclaimed water.
	PS 3.1.5:	Actively encourage and support BBARWA in any future requests to change its point of discharge, as determined by the California Regional Water Quality Control Board, from Lucerne Valley to the Big Bear Valley, for local use of reclaimed water at the appropriate time.

- PS 3.1.6: Provide ongoing communication and coordination with BBARWA regarding the City's sewer system upgrades, including long-range planning, capital improvement projects, inspections and maintenance of the system, through the Utility Coordinating Committee or other means as appropriate.

### **SCAG Connect SoCal**

Applicable Goals from the SCAG RTP/SCS/Connect SoCal are as follows.

**RTP/SCS/Connect SoCal Goal 6: Support healthy and equitable communities.**

**RTP/SCS/Connect SoCal Goal 7: Adapt to a changing climate and support an integrated regional development pattern and transportation network.**

**RTP/SCS/Connect SoCal Goal 10: Promote conservation of natural resources and agricultural lands and restoration of habitats.**

#### **4.12.4 Thresholds of Significance**

According to Appendix G, Section XI, of the State CEQA Guidelines, a project would have a significant effect on mineral resources if the project would:

- a) Physically divide an established community; or
- b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

#### **4.12.5 Potential Impacts**

This section evaluates the potential impacts of the proposed Program related to land use and planning.

##### **a) Would the project physically divide an established community?**

The Program does not propose any action that could physically divide an established community. The physical division of an established community generally refers to the construction of features such as an interstate highway, railroad tracks, or permanent removal of a means of access, such as a local road or bridge, that would impact mobility within an existing community or between a community and outlying area.

##### **Program Category 1: Conveyance Pipelines**

Construction: As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban areas, and the presence of construction would not physically divide an established community, particularly that access to any community within a proposed facility is installed would be maintained for the duration of construction. Thus, construction activities associated with implementation of the proposed Program would not physically divide an established community. No impacts are anticipated.

Operation: The proposed Conveyance Pipelines would be installed mostly within ROW, within compacted dirt pathways (Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option traversing from the BBARWA WWTP west through Baldwin Lake and Shay Pond Replacement

Pipeline and new Shay Pond Conveyance Pipeline alignments), or within a forested easement through two residential parcels (Sand Canyon pipeline) (refer to **Figure 3-28**). Once linear pipelines are constructed, the pipelines would be located belowground, and therefore would have no potential to physically divide an established community, as the roadways and dirt pathways would be returned to their original conditions for use. While the Sand Canyon pipeline easement between two parcels would require the easement to remain accessible, and therefore would not be fully revegetated and returned to its original condition, this would have no potential to divide the community within which the easement would be installed. This is because the two parcels would continue to serve as residences in spite of the easement, which would be located belowground. Thus, there are no features of the Conveyance Pipelines that would create a barrier or physically divide an established community. No impacts are anticipated.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban areas, and the presence of construction would not physically divide an established community, particularly that access to any community within a proposed facility is installed would be maintained for the duration of construction. Thus, construction activities associated with implementation of the proposed Ancillary Facilities would not physically divide an established community. No impacts are anticipated.

Operation: The proposed pump stations and wells at the BBARWA WWTP would be installed within an existing wastewater treatment facility that contains similar features to that which is proposed by this Program. Thus, the installation of these Ancillary Facilities within the BBARWA WWTP would have no potential to create a barrier or physically divide an established community. The Sand Canyon Booster Station would be located internally within the Resort Storage Pond site, which similar to the proposed facilities within the BBARWA WWTP site, would be consistent with that which presently exists within the Resort Storage Pond site, and, since installation would occur at existing facilities, there would be no potential to create a barrier or physically divide an established community.

The precise locations of the wells downstream of the Sand Canyon Recharge Area have not yet been determined; however, there are no features of these Ancillary Facilities that would create a barrier or physically divide an established community. This is because the Sand Canyon wells would be enclosed within small sites encompassing less than a 10' x 10' area. Such small facilities are anticipated to fit within existing sites containing water or wastewater infrastructure, or within small sites within to the monitoring wells would otherwise conform, particularly given that in many communities, Ancillary Facilities such as wells and channels are integrated into the landscape unobtrusively. As such, no impacts are anticipated.

### **Program Category 3: Solar Evaporation Ponds**

Construction: As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban areas, and the presence of construction would not physically divide an established community, particularly that access to any community within a proposed facility is installed would be maintained for the duration of construction. Thus, construction activities associated with implementation of the proposed Solar Evaporation Ponds would not physically divide an established community. No impacts are anticipated.

Operation: As with the proposed pump stations and wells at the BBARWA WWTP discussed above, the Solar Evaporation Ponds would be installed within an existing wastewater treatment facility that contains similar features to that which is proposed by this Program. Thus, the installation of these evaporation ponds within the BBARWA WWTP would have no potential to create a barrier or physically divide an established community.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban areas, and the presence of construction would not physically divide an established community, particularly that access to any community within a proposed facility is installed would be maintained for the duration of construction. Thus, construction activities associated with implementation of the proposed BBARWA WWTP Upgrades would not physically divide an established community. No impacts are anticipated.

Operation: Impacts would be the same as those identified under Program Category 2 and 3, above. As with the proposed pump stations and wells at the BBARWA WWTP, and the Solar Evaporation Ponds at the BBARWA WWTP discussed above, the AWPf upgrades and solar arrays would be installed within an existing wastewater treatment facility that contains similar features to that which is proposed by this Program. Thus, the installation of these AWPf and solar arrays within the BBARWA WWTP would have no potential to create a barrier or physically divide an established community.

#### **Other Physical Changes to the Environment**

These other physical changes would have no potential to physically divide an established community. The change in water source distributed to Shay Pond in support of the Stickleback at Shay Pond would not result in a substantial change to the environment or existing operations intended to support this species. Furthermore, the increased Lake levels that would result from future release of Program Water into Big Bear Lake by way of Stanfield Marsh would not increase Lake levels beyond those that would naturally occur through rain, snowmelt, and runoff. The decrease in discharge to the LV Site would reduce the acreage that could be farmed within the site without additional sources of water, but the LV Site would continue to be maintained, as described in Chapter 3, Program Description, and thereby as it will remain operable, even with operations modified slightly, there would be potential to create a barrier or physically divide an established community. No impacts are anticipated.

#### **Combined Program Categories**

*Level of Significance Before Mitigation: No Impact*

*Mitigation Measures: None Required.*

*Level of Significance After Mitigation: No Impact*

- b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?**



### **Project Consistency Analysis**

The City of Big Bear Lake General Plan Program PS 3.1.5 encourages BBARWA to change its point of discharge from the LV Site to the Big Bear Valley, which the proposed Program would, in part, accomplish by way of reducing the discharge to the LV Site to enable the Program Water to be discharged within the Big Bear Valley. Furthermore, Program PS 3.1.4 encourages the City of Big Bear Lake to support upgrades to the secondary treatment system, which the Program proposes to accomplish through upgrading the WWTP treatment processes to full advanced treatment and upgrades to their existing treatment system. Additionally, while the Program will enable the LV Site to remain as back up when the inflow of wastewater exceeds AWP treatment capacity, the proposed Program would enable discharge up to 2,200 AFY to the by way of Stanfield Marsh.

The City of Big Bear Lake General Plan Goal PS 3, Policy PS 3.1, Program PS 3.1.2, Program PS 3.1.3, and Program PS 3.1.6 intend that the City of Big Bear Lake supports adequate sewer systems, and contribute to long-range planning through supporting BBARWA sewer system upgrades, capital improvement projects, and expansion of BBARWA's existing facilities. The proposed Program would contribute to the implementation of a long-range plan, as the Program would provide for additional water resources to be utilized within Big Bear Valley, and would expand BBARWA's operations through cooperation with BBCCSD, BBLDWP, and BBMWD.

The City of Big Bear Lake General Plan Goal ER 3, Policy ER 3.3, Program 3.3.1, Program 3.3.2, Program 3.3.3, Goal PS 1, Policy PS 1.1, Goal PS 2, Policy PS 1.4, Program PS 2.1.2, and Program PS 2.1.3, and San Bernardino Countywide Plan Goal IU-1, Policy IU-1.3, Policy IU-1.8, Policy IU-1.10, and Policy IU-1.11 pertain to ensuring adequate water supply and adequate public services (including utilities) in the City of Big Bear Lake. The Program would provide for an additional recharge of 380 AFY to the Bear Valley Basin, amongst other Program benefits, thus, furthering resiliency of water supply for the City of Big Bear Lake and Big Bear Valley into the future. The Program benefits would also fit the parameters of RTP/SCS/Connect SoCal Goal 7, which is to adapt to a changing climate, as the Program would leverage wastewater to create an expanded water supply to further water supply resiliency into the future, as stated above. Furthermore, the provision of water is key to supporting a healthy and equitable community—to which **RTP/SCS/Connect SoCal Goal 6 pertains**—and to which the Program would further.

The City of Big Bear Lake General Plan Goal ER 5 and Policy ER 5.1 pertain to watershed management and protecting the water quality of Big Bear Lake. The Program would promote watershed management through the provision of an additional water source that can be utilized to enhance Big Bear Lake levels. The water quality of the Program Water that would be discharged into Big Bear Lake by way of Stanfield Marsh would be equal to or better than the existing Lake water quality in all cases except in the case of boron. Regardless, the treated effluent would meet the WQOs set by the Santa Ana Basin Plan, and therefore would meet the provisions of these goals and policies.

The City of Big Bear Lake General Plan Program OPR 3.1.1 pertains to supporting BBMWD in developing and operating its Stanfield Marsh Waterfowl/Wildlife Habitat Improvement Project. While the Program would not directly facilitate operations or maintenance of this project—which was implemented following filing the NOD for the Stanfield Marsh Waterfowl/Wildlife Habitat Improvement Project in 2003—the provision of additional water flow through Stanfield Marsh would enhance recreational opportunities and aquatic habitat, and support water quality improvements. Furthermore, the Program would provide continuous water supply to the Stanfield Marsh Wildlife and Waterfowl Preserve, and therefore would meet the provisions of this program.

San Bernardino Countywide Plan Goal NR-7 and Policy NR-7.1 pertains to promoting the ability of farmers to conduct sustainable and economically viable agricultural operations and to the protection of agricultural lands, particularly those that are economically viable. Additionally, RTP/SCS/Connect SoCal Goal 10 pertains to conservation of agricultural resources. The farming operations that presently occur at the LV Site would be decreased or would cease altogether due to the reduced discharge to the LV Site as a result of Program operations. According to the farmer who leases the LV Site from BBARWA, the LV Site was not planted in 2022, and may not be planted in 2023. The farmer has expressed that farming the site has not been particularly economically beneficial, particularly given that the resulting product can only be used by certain livestock due to the fact that secondary recycled water is used to grow the fodder crops.

**Subchapter 4.3**, Agricultural and Forestry Resources, determined that the proposed Program could result in up to 190 acres of Prime Farmland and Farmland of Statewide Importance under agricultural production at the LV Site to be allowed to lie fallow in the future. Removal of the source of water to support agricultural production at the LV site is an unavoidable consequence of the proposed Program. BBARWA's removal of the undisinfected secondary treated effluent would effectively remove the available water supply enabling the LV Site to remain Prime Farmland and Farmland of Statewide Importance, as an irrigated water source is needed to retain this designation based on the soils underlying the site. BBARWA does not hold any water rights in the MBA, or more specifically in the Lucerne Valley Basin, and therefore, the use of groundwater to continue agricultural production within this site, which is owned by BBARWA, is infeasible. Thus, the proposed Program would have a significant and unavoidable impact to the LV Site agricultural operations.

However, the San Bernardino Countywide Plan is clear in that, the Plan promotes conducting sustainable and economically viable agricultural operations. The existing farming operations would be considered sustainable as the farmer utilizes BBARWA's undisinfected secondary effluent to grow fodder crops, instead of potable groundwater or imported water provided by MWA. The decrease in available undisinfected secondary effluent to sustain this operation would prevent the existing acreage of agricultural land from being utilized, but this is not an unusual circumstance, as in 2012, the conservation efforts resulting from the drought reduced the discharge from the BBARWA WWTP to the LV Site, and thereby reduced the acreage that could be farmed from 330 acres to the present available acreage at 190 acres. The SCAG Connect SoCal Goal 10 pertains to conservation of agricultural resources; while the underlying soils at the LV Site require irrigation to maintain Prime Farmland status, the Program would not remove this land as part of the creation of urban sprawl, to which the Connect SoCal Plan and Goals therein pertain. BBARWA will maintain the LV Site, enabling the continued reduced farming operations within a 40-acre portion of the LV Site, or if the LV site cannot continue to be farmed due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, or, if BBARWA ultimately pursues alternative uses for the treated effluent, an estimated total of 190-acres of farmland, about 40% of the site, would be removed from production, but again, the LV Site would remain under BBARWA's control.

As stated above, the use of groundwater to continue agricultural production within this site is currently infeasible, and furthermore, given the limited available water groundwater supply from the Lucerne Valley Basin (discussed in detail under **Subchapter 4.11**, Hydrology and Water Quality), and due to the reductions in pumping allowances assessed by MWA, it would not be sustainable to maintain the LV Site in agriculture utilizing potable water. Furthermore, Policy IU-1.5 pertains to agricultural water use by encouraging water efficient irrigation, and the use of non-potable and recycled water for agricultural uses. Additionally, the Connect SoCal promotes a "Green Region" suggesting that agricultural lands should reduce consumption of resources. The

existing and past LV Site farming activities have supported this policy, and the Program would have a potential to enable the continuation of farming on a smaller (about 40 acre) area within the LV Site utilizing recycled water. This Policy furthers the concept that it would not be sustainable to pursue continued utilization of potable water in service of continuing agricultural farming operations within the existing 190-acre area. While the potential loss of agricultural operations and agricultural lands that is projected to occur as a result of Program implementation would be significant and unavoidable, given that the continued agricultural operation of the whole of the site (190 acres) would not be sustainable or feasible once the Program is implemented, the proposed Program does not conflict with this goal and policy.

San Bernardino Countywide Plan Goal NO-4, and Policies NR-4.1 and NR-5.3 pertain to the protection and preservation of scenic resources. The Program is anticipated to result in a less than significant impact to scenic resources, and furthermore, would preserve and enhance Big Bear Lake and Stanfield Marsh through the provision of additional water, which would result in higher lake levels, enhance recreational opportunities and aquatic habitat, and support water quality improvements. Therefore, the Program would meet the provisions of this goal and these policies. Impacts would be less than significant.

#### **Program Category 1: Conveyance Pipelines**

Construction: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category. Construction of these facilities is necessary to operate said infrastructure to support Big Bear Valley. Furthermore, construction is temporary in nature, and as such, the presence of construction equipment and workers supporting construction would not result in any permanent impacts beyond those that are discussed below under operation. Therefore, construction of the facilities proposed under this Program Category would have no potential to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated.

Operation: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category.

The underground pipeline facilities at the Sand Canyon Recharge Area may require permanent easements. However, in general, a majority of proposed Conveyance Pipelines would be aligned through the existing public ROW, and existing easements owned or to be acquired by BBARWA or another implementing agency to reduce the number of easements required for construction and maintenance.

As stated above, the City of Big Bear Lake and San Bernardino County each have adopted General Plans that support the provision of adequate infrastructure, and the RTP/SCS/Connect SoCal also promotes this goal. Furthermore, the City of Big Bear Lake identifies specific goals and policies intended to support BBARWA's utilization of recycled water, in this case purified water (Program Water), in Big Bear Valley. In addition, BBARWA, BBCCSD, BBLDWP, and BBMWD would coordinate directly with local and regional agencies with jurisdiction to ensure compatibility with existing adjacent land uses and consistency with adopted plans. As determined by the consistency analysis above, the proposed Program would have a less than significant potential to cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. As the pipelines would be located belowground, it is not anticipated that any land use conflicts would occur. Impacts would be less than significant.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category. Construction of these facilities is necessary to operate said infrastructure to support Big Bear Valley. Furthermore, construction is temporary in nature, and as such, the presence of construction equipment and workers supporting construction would not result in any permanent impacts beyond those that are discussed below under operation. Therefore, construction of the facilities proposed under this Program Category would have no potential to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated.

Operation: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category.

Proposed facilities include aboveground structures such as monitoring wells and pump stations. Other facilities, such as the improvements to the channel at Sand Canyon would be located either underground or at a below ground level. In general, a majority of proposed Conveyance Pipelines would be aligned through the existing public ROW, and existing easements owned or to be acquired by BBARWA or another implementing agency to reduce the number of easements required for construction and maintenance.

The proposed new wells are anticipated to be installed south of the Sand Canyon Recharge Area and pipeline alignment (refer to **Figure 3-28** in the Program Description), or within the BBARWA WWTP site. Land would likely need to be acquired for the Sand Canyon Monitoring Wells. The pump stations would be located within identified sites (BBARWA WWTP and Resort Storage Pond) that presently contain existing water or wastewater infrastructure facilities. Siting of the facilities would include determination of the most suitable locations to place facilities, taking into consideration surrounding land uses. However, because the precise locations for a few of the proposed Program facilities are presently unknown, wells may be developed across other designated land uses. Per Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, any project facilities that could potentially conflict with local General Plan land use designations would not be subject to a conditional use permit or general plan amendment.

As stated above, the City of Big Bear Lake and San Bernardino County each have adopted General Plans that support the provision of adequate infrastructure, and the RTP/SCS/Connect SoCal also promotes this goal. Furthermore, the City of Big Bear Lake identifies specific goals and policies intended to support BBARWA's utilization of recycled water, in this case Program Water, in Big Bear Valley. In addition, BBARWA, BBCCSD, BBLDWP, and BBMWD would coordinate directly with local and regional agencies with jurisdiction to ensure compatibility with existing adjacent land uses and consistency with adopted plans, otherwise a potentially significant land use incompatibility could occur. **MM LU-1** is provided below to minimize land use incompatibilities (such as lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As determined by the consistency analysis above, the proposed Program would have a less than significant potential to cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect through the implementation of **MM LU-1**. Impacts would be less than significant through the implementation of mitigation.

### **Program Category 3: Solar Evaporation Ponds**

Construction: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category. Construction of these facilities is necessary to operate said infrastructure to support Big Bear Valley. Furthermore, construction is temporary in nature, and as such, the presence of construction equipment and workers supporting construction would not result in any permanent impacts beyond those that are discussed below under operation. Therefore, construction of the facilities proposed under this Program Category would have no potential to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated.

Operation: San Bernardino Countywide Plan that pertains to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed by the Solar Evaporation Ponds Project.

The Solar Evaporation Ponds would be located at a below ground level. The entirety of these improvements would be installed within BBARWA's WWTP site, and thus no property would need to be acquired to facilitate the implementation of this project. Thus, no potential to conflict with local General Plan land use designations or land use plans exists.

As stated above, the San Bernardino County has adopted the Countywide Plan that supports the provision of adequate infrastructure, and the RTP/SCS/Connect SoCal also promotes this goal. Furthermore, the City of Big Bear Lake identifies specific goals and policies intended to support BBARWA's utilization of recycled water, in this case Program Water, in Big Bear Valley. In addition, BBARWA, BBCCSD, BBLDWP, and BBMWD would coordinate directly with local and regional agencies with jurisdiction to ensure compatibility with existing adjacent land uses and consistency with adopted plans. Mitigation is provided below to minimize land use incompatibilities (such as lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As determined by the consistency analysis above, the proposed Program would have a less than significant potential to cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. As the Solar Evaporation Ponds would be developed within BBARWA's existing WWTP site, which is designated for the proposed use, it is not anticipated that any land use conflicts would occur. Impacts would be less than significant.

### **Program Category 4: BBARWA WWTP Upgrades**

Construction: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category. Construction of these facilities is necessary to operate said infrastructure to support Big Bear Valley. Furthermore, construction is temporary in nature, and as such, the presence of construction equipment and workers supporting construction would not result in any permanent impacts beyond those that are discussed below under operation. Therefore, construction of the facilities proposed under this Program Category would have no potential to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated.

Operation: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed by this Program Category.

Proposed facilities include aboveground structures such as an upgrade to BBARWA's WWTP, monitoring wells, and pump stations at the BBARWA WWTP site. The entirety of these improvements would be installed within BBARWA's WWTP site, and thus no property would need to be acquired to facilitate the implementation of this project. Thus, no potential to conflict with local General Plan land use designations or land use plans exists.

As stated above, the San Bernardino County has adopted the Countywide Plan that supports the provision of adequate infrastructure, and the RTP/SCS/Connect SoCal also promotes this goal. Furthermore, the City of Big Bear Lake identifies specific goals and policies intended to support BBARWA's utilization of recycled water, in this case Program Water, in Big Bear Valley. In addition, BBARWA, BBCCSD, BBLDWP, and BBMWD would coordinate directly with local and regional agencies with jurisdiction to ensure compatibility with existing adjacent land uses and consistency with adopted plans. Mitigation is provided below to minimize land use incompatibilities (such as lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As determined by the consistency analysis above, the proposed Program would have a less than significant potential to cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. As the BBARWA WWTP Upgrades would be developed within BBARWA's existing WWTP site, which is designated for the proposed use, it is not anticipated that any land use conflicts would occur. Impacts would be less than significant.

### **Combined Program Categories**

**Construction:** The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category. Construction of these facilities is necessary to operate said infrastructure to support Big Bear Valley. Furthermore, construction is temporary in nature, and as such, the presence of construction equipment and workers supporting construction would not result in any permanent impacts beyond those that are discussed below under operation. Therefore, construction of the facilities proposed under this Program Category would have no potential to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated.

**Operation:** The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed by the Program.

Proposed facilities include aboveground structures such as an upgrade to BBARWA's WWTP, monitoring wells, and pump stations. Other facilities, such as pipelines, the Solar Evaporation Ponds, and improvements to the channel at Sand Canyon would be located either underground or at a below ground level. The underground pipeline facilities at the Sand Canyon Recharge Area may require permanent easements. However, in general, a majority of proposed Conveyance Pipelines would be aligned through the existing public ROW, and existing easements owned or to be acquired by BBARWA or another implementing agency to reduce the number of easements required for construction and maintenance.

The proposed new wells are anticipated to be installed south of the Sand Canyon Recharge Area and pipeline alignment (refer to **Figure 3-28** in the Program Description), or within the BBARWA WWTP site. Land would likely need to be acquired for the Sand Canyon Monitoring Wells. The pump stations would be located within identified sites (BBARWA WWTP and Resort Storage Pond) that presently contain existing water or wastewater infrastructure facilities. Siting of the facilities would include determination of the most suitable locations to place facilities, taking into



consideration surrounding land uses. However, because the precise locations for a few of the proposed Program facilities are presently unknown, wells may be developed across other designated land uses. Per Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, any project facilities that could potentially conflict with local General Plan land use designations would not be subject to a conditional use permit or general plan amendment.

As stated above, the City of Big Bear Lake and San Bernardino County each have adopted General Plans that support the provision of adequate infrastructure, and the RTP/SCS/Connect SoCal also promotes this goal. Furthermore, the City of Big Bear Lake identifies specific goals and policies intended to support BBARWA's utilization of recycled water, in this case Program Water, in Big Bear Valley. In addition, BBARWA, BCCSD, BBLDWP, and BBMWD would coordinate directly with local and regional agencies with jurisdiction to ensure compatibility with existing adjacent land uses and consistency with adopted plans. **MM LU-1** is provided below to minimize land use incompatibilities (such as lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As determined by the consistency analysis above, the proposed Program would have a less than significant potential to cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Thus, through the implementation of **MM LU-1**, impacts would be less than significant.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**LU-1:** *Following selection of sites for future Replenish Big Bear Program related facilities, each site and associated facility shall be evaluated for potential incompatibility with adjacent existing or proposed land uses. Where future facility operations can create significant incompatibilities (lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses, an alternative site shall be selected, or subsequent CEQA documentation shall be prepared that identifies the specific project design features or MMs that will be utilized to reduce potential incompatible activities or effects to below significance thresholds established in the general plan for the jurisdiction where the facility will be located.*

*Level of Significance After Mitigation: Less Than Significant Impact*

**MM LU-1** would ensure that the facilities associated with the Program are developed in appropriate areas, and conform with the surrounding land uses or are developed to minimize conflicts with adjacent land uses. This measure will minimize impacts below significance thresholds. For these reasons, the proposed project would result in a less than significant impact related to potential conflicts with land use plans, policies, or regulations.

*Level of Significance Before Mitigation: Less Than Significant*

#### **4.12.6 Cumulative Impacts**

The project would not divide an established community and would not contribute to cumulative impacts related to the physical division of an established community. Implementation of the

proposed Program would increase the resiliency and sustainability of water resources management within the Big Bear Valley area. The Program would help support water supply needs of future development within City of Big Bear Lake and unincorporated areas of San Bernardino County as envisioned in the applicable General Plans. With implementation of mitigation to ensure land use conflicts are minimized upon implementation of the Program, the Program would not conflict with any land use plan, policy, or regulation in a manner that could result in a considerable contribution to a cumulative land use impact, significant or otherwise.

#### **4.12.7 Significant and Unavoidable Impacts**

As determined in the preceding environmental evaluation, with the implementation of **MM LU-1**, no significant and unavoidable impacts relating to land use and planning would occur as a result of implementing the proposed project, and the project's potential impacts on land use and planning will be less than significant.

## 4.13 MINERAL RESOURCES

### 4.13.1 Introduction

This section assesses potential impacts to mineral resources from the implementation of the Replenish Big Bear Program (Program).

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Mineral Resources
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to mineral resources were received in response to the NOP or at the Scoping Meeting held on behalf of the Program. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

### 4.13.2 Environmental Setting: Mineral Resources

Minerals are naturally occurring chemical elements or compounds, or groups of elements or compounds that were not formed by organisms. Naturally occurring concentrations of minerals in the Earth's crust are known as mineral deposits. Mineral resources are mineral deposits from which the economic extraction of a commodity (such as gold or copper) is currently potentially feasible. In addition to metallic minerals, materials used for construction (e.g., sand and aggregate), industrial and chemical processes (e.g., salt), and fuel (e.g., crude oil) are considered mineral resources in California.

In accordance with SMARA, the DOC, Division of Mines and Geology, currently known as CGS, has mapped nonfuel mineral resources of the State to show where economically significant mineral deposits are either present or likely to occur based on the best available scientific data. These resources have been mapped using the California Mineral Land Classification System, which includes the following Mineral Resource Zones (MRZs):

- MRZ-1: Areas where the available geologic information indicates no significant mineral deposits or a minimal likelihood of significant mineral deposits.
- MRZ-2a: Areas where the available geologic information indicates that there are significant mineral deposits.
- MRZ-2b: Areas where the available geologic information indicates that there is a likelihood of significant mineral deposits.
- MRZ-3a: Areas where the available geologic information indicates that mineral deposits are likely to exist; however, the significance of the deposit is undetermined.

- MRZ-3b: Areas where the available geologic information indicates that mineral deposits are likely to exist; however, the significance of the deposit is undetermined. This class denotes areas where presence of the mineral is inferred and/or not visible from the surface geology.
- MRZ-4: Areas where there is not enough information available to determine the presence or absence of mineral deposits.

Mineral deposits in the Big Bear Valley area are limited and there are minimal mineral processing locations in the Big Bear Valley. **Figure 4.13-1** (Figure 5.11-5 of the San Bernardino County General Plan EIR) shows the locations of active mines within San Bernardino County. As illustrated in this map, there are no known active mines located within the Big Bear Valley. **Figure 4.13-2** shows the location of the MRZs in the Big Bear Valley on a more local scale. After careful review, it does not appear that any MRZ-2 areas occur within the Program APE. Limited MRZ-3 areas are located on the Baldwin Lake footprint, but this appears to be just north and south of the BBARWA WWTP site, and just east of the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipelines traverse. Also, the MRZ-3 area just south of the City of Big Bear Lake boundary (near Sand Canyon) overlaps with the Sand Canyon Recharge Conveyance Pipeline and Sand Canyon Booster Station Projects. Thus, these two projects would be located within areas that are designated for MRZ-3 use. However, none of the Replenish Big Bear Program facility site locations are currently mined for mineral resources.

The City of Big Bear Lake General Plan contains a discussion of mineral resources in its Environmental Resources Element, in Chapter 5. The following summarizes the findings in the General Plan regarding mineral resources: *“There are relatively few mineral resources in and around Big Bear Lake; however, the resources have been identified by the U. S. Forest Service Management Plan for the Big Bear Basin. The majority of the area is made up of alluvium and alluvial fans containing mostly sand and gravel with admixed silt and clay. These minerals are generally found along stream courses.”* A field review of the Replenish Big Bear Program locations did not identify any current mining activities within the Program’s area of impact.

### **4.13.3 Regulatory Setting**

The following regulations are applicable to mineral resources.

#### **4.13.3.1 Federal**

##### **Executive Order 13817, Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals**

Executive Order No. 13817 instructed the Secretaries of the Interior and Defense to identify and publish a list of critical minerals, including rare earths, then develop a strategy to reduce U.S. reliance on other countries to supply these increasingly important ingredients to America’s defensive and economic security. The United States Department of Commerce released *A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals*, an interagency report that outlines a government-wide action plan to ensure the U.S. has secure and reliable supplies of critical minerals. According to the Department of Commerce, the U.S. depends on imports for more than 50 percent of domestic demand for 29 of the 35 minerals named on the USGS critical list. In addition, the U.S. lacks any domestic production for 14 of the minerals on the critical list and does not have domestic access to processing and manufacturing capabilities for many. The Mountain Pass Mine in Nevada was once the world’s leading supplier of rare earth minerals, but China began to dominate the market in the 1990s. Mountain Pass has focused on

5 Environmental Analysis  
 Figure 5.11-5 Active Mines in San Bernardino County

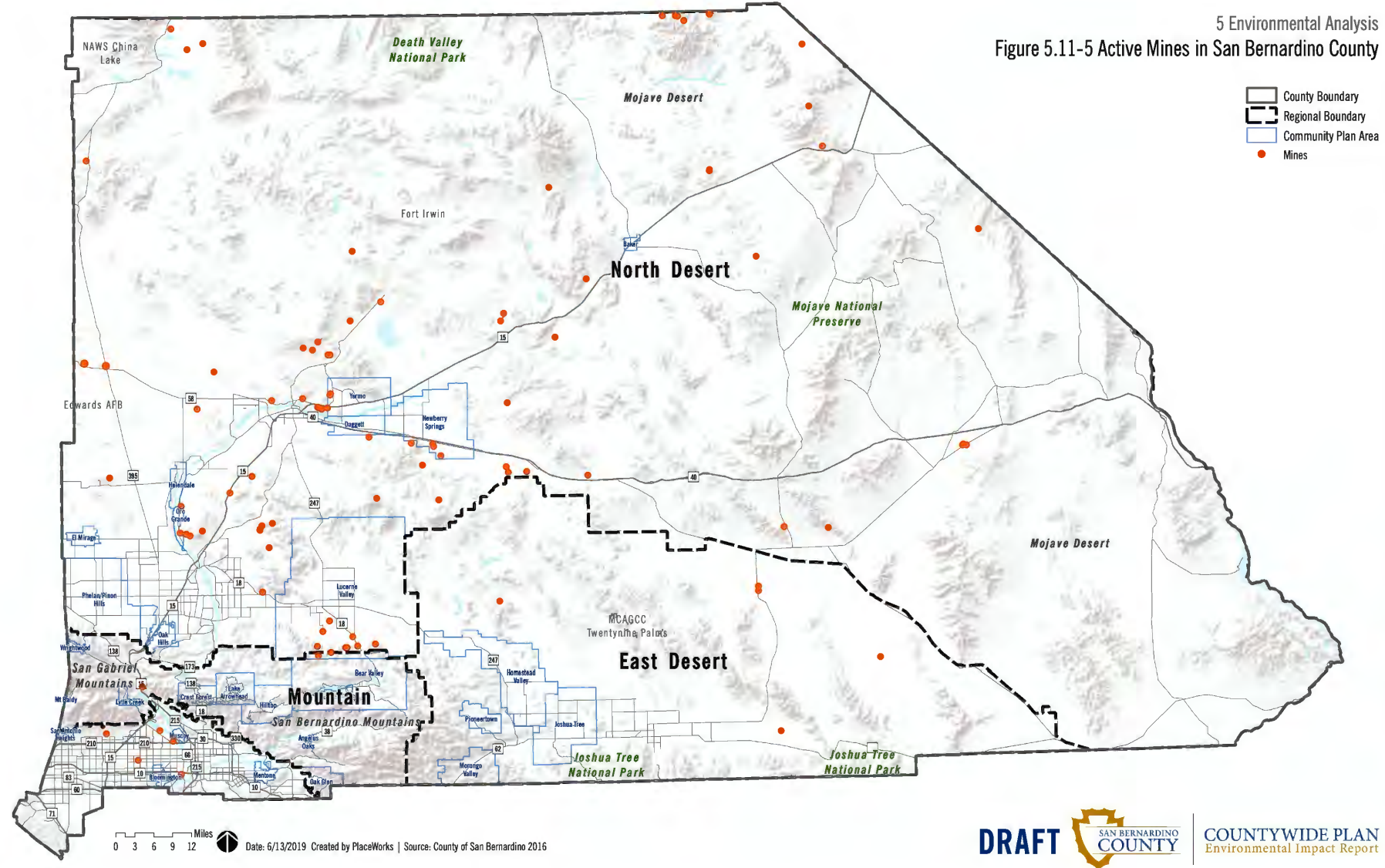


FIGURE 4.13-1



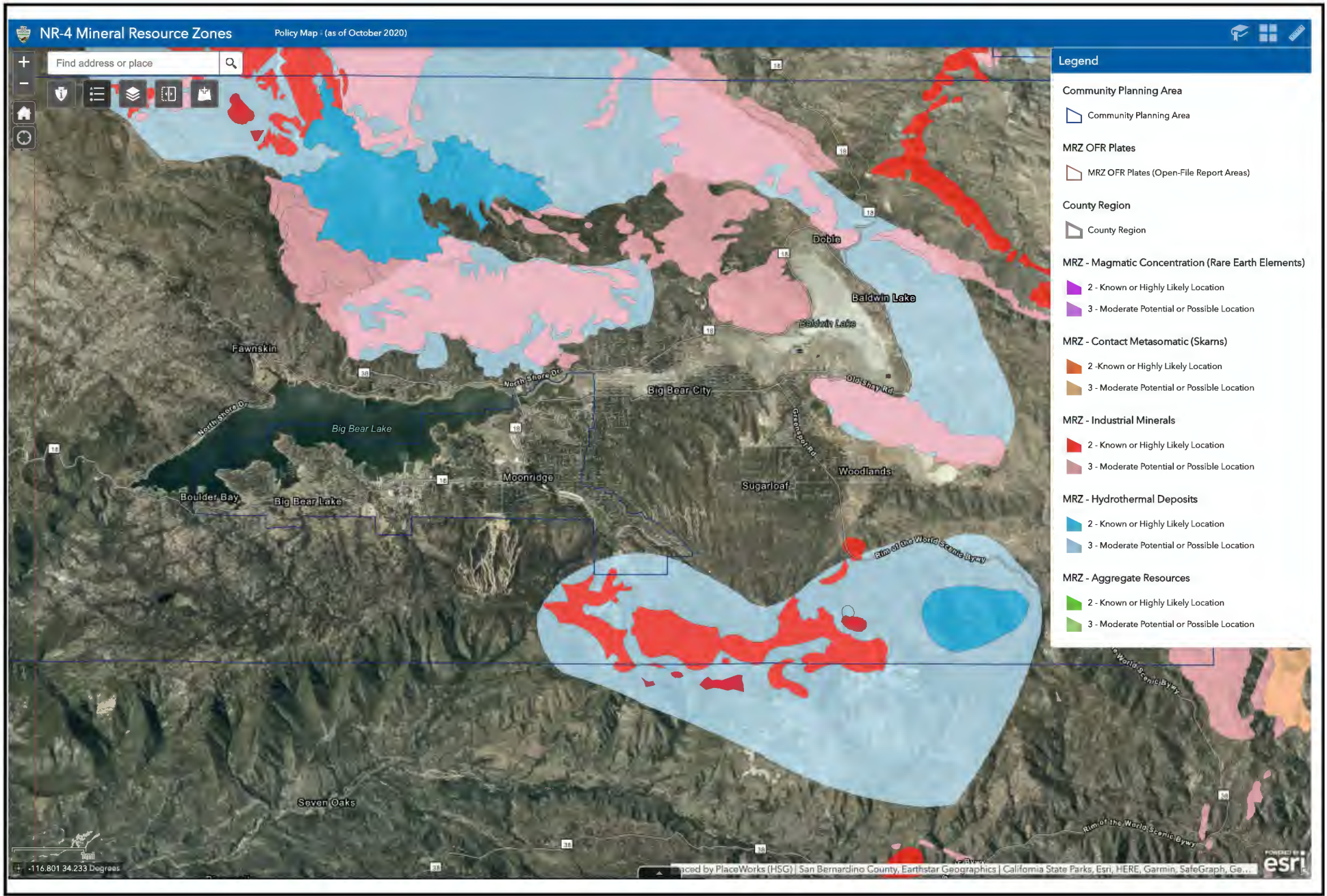


FIGURE 4.13-2



achieving greater autonomy with a \$1.7 billion separations process system that would allow it to refine and make rare earth products available for customers outside of China.

#### 4.13.3.2 State

##### **Surface Mining and Reclamation Act: California Public Resources Code Sections 2710 et seq.**

SMARA is the primary regulatory framework for mining in California. It delegates specific regulatory authority to local jurisdictions. SMARA requires the State Geologist to identify important mineral deposits in the state threatened by land uses that would be incompatible with future extraction and classify them into MRZs. Local jurisdictions are required to enact specific procedures to guide mineral conservation and extraction at identified sites and to incorporate mineral resource management policies into their general plans.

##### **California State Mining and Geology Board**

The California State Mining and Geology Board (SMGB) provides professional expertise and serves as a regulatory, policy, and hearing body representing the State's interest in the development, utilization, and conservation of mineral resources, the reclamation of mined lands, and the development and dissemination of geologic and seismic hazard information. The nine-member SMGB operates within the DOC and is granted certain autonomous responsibilities and obligations under several statutes, including the Alquist-Priolo Act, the Seismic Hazards Mapping Act, and SMARA.

##### **California Department of Conservation, Division of Mine Reclamation**

The DOC, Division of Mine Reclamation (DMR) provides a measure of oversight for local governments as they administer SMARA within their respective jurisdictions. DMR may provide comments to lead agencies on a mining operation's reclamation plan and financial assurance and, jointly with SMGB, is charged with administering actions that encourage SMARA compliance. The primary focus is on existing mining operations and reclaiming mined lands to a usable and safe condition that is readily adaptable for alternative land uses. Issues related to abandoned legacy mines are addressed in the Abandoned Mine Lands Program.

##### **California Geological Survey**

The CGS provides objective geologic expertise and information about California's diverse nonfuel mineral resources, including their related hazards, through maps, reports, and other data products to assist governmental agencies, mining companies, consultants, and the public in recognizing, developing, and protecting important mineral resources.

#### 4.13.3.3 Local

##### **San Bernardino Countywide Plan**

The Big Bear Valley encompasses the jurisdiction of unincorporated areas of San Bernardino County, including the following unincorporated communities in the vicinity of the Program: Big Bear City, Moonridge, and Fawnskin, and the City of Big Bear Lake. San Bernardino County has its own Countywide Plan that identifies goals and policies protecting mineral resource locations from land use conflicts that might make valuable resources unavailable. These goals and policies can be found in the Natural Resources Element as follows:

<b>Goal</b>	<b>NR-6</b>	Mineral resource zones that allow extraction industries to continue supporting the regional and national economy while minimizing negative impacts on the public and natural environment
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<b>Policy</b>	NR-6.1	Mineral resource areas We prioritize the conservation of land area with mineral resources by prohibiting or discouraging development of land that would substantially preclude the future development of mining facilities in areas classified as Mineral Resource Zone (MRZ) 2a, 2b, or 3a.
	NR-6.2	Mining operations and reclamation We require and monitor mineral extraction activities to ensure that the operation and reclamation of mined lands is consistent with the State Surface Mining and Reclamation Act of 1975 (SMARA).
	NR-6.3	Conservation of construction aggregate We encourage the continued operation of existing mining facilities and streamline the permitting of new mining facilities (consistent with the Policy Plan and other local, state, and federal regulations) to establish aggregate resources that are sufficient to satisfy 50 years of county demand.

### **City of Big Bear Lake Plan**

The Big Bear Valley encompasses the jurisdiction of unincorporated areas of San Bernardino County and the City of Big Bear Lake. The City of Big Bear Lake has its own General Plan that identifies goals and policies protecting mineral resource locations from land use conflicts that might make valuable resources unavailable. These goals and policies can be found in the Environmental Resources Element as follows:

<b>GOAL</b>	<b>ER 7</b>	Conservation and prudent management of energy sources and mineral deposits, assuring the long-term viability of limited and nonrenewable resources.
<b>Policy</b>	ER 7.2	If, in the future, any significant mineral resources are identified in the City which merit extraction, ensure that mining and processing activities can be carried out in a manner which minimizes disruption to adjacent land uses, regional infrastructure, and the environment.
<b>Program</b>	ER 7.2.1	Adopt policies and standards to regulate mining activities, if such regulations are needed in the future.
<b>Policy</b>	ER 7.3	Identify significant mineral resources within the planning area which have the potential to be excavated, and protect these areas for future extraction while minimizing potential land use conflicts between quarries and adjacent less intensive uses, if any are found to exist.
<b>Program</b>	7.3.1	On the land use map, ensure an adequate buffer area between mineral resource areas and adjacent residential uses.

### **4.13.4 Thresholds of Significance**

According to Appendix G, Section XII, of the State CEQA Guidelines, a project would have a significant effect on mineral resources if the project would:

- a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
- b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

### **4.13.5 Potential Impacts**

This section evaluates the potential impacts of the implementing the proposed Program to mineral resources.

- a) **Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**

### **Program Category 1: Conveyance Pipelines**

**Construction:** Construction of the Program, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for the Program Category 1 facilities in relation to delineated MRZs (**Figure 4.13-2**) indicates that the only facilities that could be installed within an MRZ, specifically MRZ-3, is the Sand Canyon Recharge Conveyance Pipeline. In Sand Canyon, a potential for hydrothermal mineral deposits may exist, but no mining development has been proposed to date. The whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but the Conveyance Facilities may be located on the Baldwin Lakebed where no mineral resources are known to occur. As construction would not conflict with existing mining, or preclude the use of the area for future mineral resource extraction, the installation of the Program Category 1 facilities has minimal potential to have a direct adverse impact on mineral resources. As such, construction of Program Category 1 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

**Operation:** Operation of Program Category 1, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for the Program Category 1 facilities in relation to delineated MRZs (**Figure 4.13-2**) indicates that the only facilities that could be installed within an MRZ, specifically MRZ-3, is the Sand Canyon Recharge Conveyance Pipeline. In Sand Canyon, a potential for hydrothermal mineral deposits may exist, but no mining development has been proposed to date, and the installation of the pipeline would occur almost entirely within road ROW, or within an easement that contains forestry on residential property, and as such, these are not uses that would preclude future mining activities or be anticipated to be within a site that would be suitable for future mining activities as a result of existing uses of the pipeline alignment footprint. The whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but the Conveyance Facilities may be located on the Baldwin Lakebed where no mineral resources are known to occur. Therefore, the operation of the Program Category 1 facilities has minimal potential to have a direct adverse impact on mineral resources. As such, implementation of Program Category 1 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

**Construction:** Construction of the Program, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for the Program Category 2 facilities in relation to delineated MRZs (**Figure 4.13-2**) indicates that the only facilities that could be installed within an MRZ, specifically MRZ-3, is the Sand Canyon Booster Station. In Sand Canyon, a potential for hydrothermal mineral deposits may exist, but no mining development has been proposed to date; the pump station would be located within the existing developed Resort Storage Pond site, and as such, these are not uses that would preclude future mining activities or be anticipated to be within a site that would be suitable for future mining activities as a result of existing uses. The whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. As construction would not conflict with existing mining, or preclude the use of the area for future mineral resource extraction, the installation of the Program Category 2 facilities has minimal

potential to have a direct adverse impact on mineral resources. As such, construction of Program Category 2 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

Operation: Operation of Program Category 2, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for the Program Category 2 facilities in relation to delineated MRZs (**Figure 4.13-2**) indicates that the only facilities that could be installed within an MRZ, specifically MRZ-3, is the Sand Canyon Booster Station. In Sand Canyon, a potential for hydrothermal mineral deposits may exist, but no mining development has been proposed to date; the pump station would be located within the existing developed Resort Storage Pond site, and as such, these are not uses that would preclude future mining activities or be anticipated to be within a site that would be suitable for future mining activities as a result of existing uses. The whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. Therefore, the operation of the Program Category 2 facilities has minimal potential to have a direct adverse impact on mineral resources. As such, implementation of Program Category 2 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Construction of the Program, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for Program Category 3 facilities in relation to delineated MRZs (**Figure 4.13-2**) indicates that the whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. As such, construction of Program Category 3 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

Operation: Operation of Program Category 3, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for Program Category 3 facilities in relation to delineated MRZs (**Figure 4.13-2**) indicates that the whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. Therefore, the operation of the Program Category 3 facilities has minimal potential to have a direct adverse impact on mineral resources. As such, implementation of Program Category 3 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Construction of the Program, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the

potential locations for Program Category 4 facilities in relation to delineated MRZs (**Figure 4.13-2**) indicates that the whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. As such, construction of Program Category 4 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

Operation: Operation of Program Category 4, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for Program Category 4 facilities in relation to delineated MRZs (**Figure 4.13-2**) indicates that the whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. Therefore, the installation and operation of the Program Category 4 facilities have minimal potential to have a direct adverse impact on mineral resources. As such, implementation of Program Category 4 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

#### **Other Physical Changes**

While the proposed Program would result in a reduction in discharge to BBARWA's LV Site, this site is not presently, nor has it in the past, been used for mining purposes. Thus, the altered discharge operations of the Program would have no potential to cause the loss of a known mineral resource of value to the region or residents of the state.

*Level of Significance Before Mitigation: No Impact*

*Mitigation Measures: None required.*

- b) **Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?**

#### **Program Category 1: Conveyance Pipelines**

Construction: Construction of the Program Category 1 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1**, indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the construction of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 1 footprint are designated for mineral extraction, the construction of the proposed Conveyance Facilities would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

Operation: Operation of the Program Category 1 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review

of mining operations shown on **Figure 4.13-1**, indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the implementation of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 1 footprint are designated for mineral extraction, the proposed Conveyance Facilities would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

**Construction:** Construction of the Program Category 2 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1**, indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the construction of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 2 footprint are designated for mineral extraction, the construction of the proposed Ancillary Facilities would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

**Operation:** Operation of the Program Category 2 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1**, indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the implementation of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 2 footprint are designated for mineral extraction, the proposed Ancillary Facilities would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

### **Program Category 3: Solar Evaporation Ponds**

**Construction:** Construction of the Program Category 3 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1**, indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as



discussed above, the construction of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 3 footprint are designated for mineral extraction, the construction of the proposed Solar Evaporation Ponds would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

Operation: Operation of the Program Category 3 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1**, indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the implementation of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 3 footprint are designated for mineral extraction, the proposed Solar Evaporation Ponds would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Construction of the proposed Program Category 4 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1**, indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the construction of the facilities proposed under this Program would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 4 footprint are designated for mineral extraction, the construction of the proposed BBARWA WWTP Upgrades would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

Operation: Operation of the proposed Program Category 4 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1**, indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the implementation of the facilities proposed under this Program would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 4 footprint are designated for mineral extraction, the proposed

BBARWA WWTP Upgrades would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

**Other Physical Changes**

While the proposed Program would result in a reduction in discharge to BBARWA's LV Site, this site is not presently, nor has it in the past, been used for mining purposes. Thus, the altered discharge operations of the Program would have no potential to cause the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

*Level of Significance Before Mitigation: No Impact*

*Mitigation Measures: None required.*

**4.13.6 Cumulative Impacts**

The Program has a minimal potential to result in the loss of availability of mineral resources. Future cumulative development could be located in areas known to contain locally important mineral resources. However, given that the Program would not preclude future mining activities, and the overall lack of mineral resources in the Big Bear Valley, implementation of the proposed Program will not contribute to cumulative loss of mineral resources or mineral resource values. As such, the Program's contribution to cumulative impacts would be less than cumulatively considerable. Therefore, the proposed Program's cumulative impact on mineral resources is less than significant.

**4.13.7 Significant and Unavoidable Impacts**

As determined in the preceding environmental evaluation, no significant and unavoidable impacts relating to mineral resources would occur as a result of implementing the proposed Program.

## 4.14 NOISE

### 4.14.1 Introduction

This section assesses potential impacts related to noise from the implementation of the Replenish Big Bear Program (Program). This Subchapter is informed by the Noise Impact Analysis (NIA) prepared by Urban Crossroads, which is provided as Appendix 21 of Volume 2 to this DPEIR.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Noise and Vibration
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to noise were received in response to the NOP. No comments pertaining to noise were received at the Scoping Meeting held on behalf of the Program. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

### 4.14.2 Environmental Setting: Noise and Vibration

#### 4.14.2.1 Environmental Noise

Noise is simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud.<sup>78</sup> The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA at approximately 100 ft, which can cause serious discomfort.<sup>79</sup> Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

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<sup>78</sup> California Department of Transportation Environmental Program, September 2013. *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol*. Sacramento, CA : s.n..

<sup>79</sup> Environmental Protection Agency Office of Noise Abatement and Control, March 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. EPA/ONAC 550/9/74-004.

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level ( $L_{eq}$ ). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in dBA. The equivalent sound level ( $L_{eq}$ ) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period (typically one hour) and is commonly used to describe the “average” noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Day-Night Average Noise Level (LDN) and the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The LDN and CNEL are weighted averages of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The LDN time of day corrections include the addition of 10 decibels to dBA  $L_{eq}$  sound levels at night between 10:00 p.m. and 7:00 a.m. The CNEL time of day corrections require the addition of 5 decibels to dBA  $L_{eq}$  sound levels in the evening from 7:00 p.m. to 10:00 p.m., in addition to the corrections for the LDN. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. LDN and CNEL do not represent the actual sound level heard at any time, but rather represent the total sound exposure. San Bernardino County relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

### **Land Use Compatibility with Noise**

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area’s desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The Federal Highway Administration (FHWA) encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized.<sup>80</sup>

### **Community Response to Noise**

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone’s susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity; and/or
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Twenty-five percent of the population will not complain even in very severe noise

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<sup>80</sup> U.S. Department of Transportation, Federal Highway Administration, April 2000. *Highway Traffic Noise in the United States, Problem and Response*. p. 3.

environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. <sup>81</sup>Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA is considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*.

#### 4.14.2.2 Vibration

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual*, vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

Additionally, in contrast to airborne noise, ground-borne vibration outdoors is not a common environmental problem and annoyance from ground-borne vibration is almost exclusively an indoor phenomenon.<sup>82</sup> Therefore, the effects of vibrations should only be evaluated at a structure and the effects of the building structure on the vibration should be considered. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. In contrast, large masonry buildings with spread footings have a low response to ground vibration. In general, the heavier a building is, the lower the response will be to the incident vibration energy. However, all structures reduce vibration levels due to the coupling of the building to the soil.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square. The root mean square amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. However, the root mean square amplitude and PPV are related mathematically, and the root mean square amplitude of equipment is typically calculated from the PPV reference level. The root mean square amplitude is approximately 70% of the PPV.<sup>83</sup> Thus, either can be used on the description of vibration impacts.

While not universally accepted, vibration decibel notation (VdB) is another vibration notation developed and used by the FTA in their guidance manual to describe vibration levels and provide

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<sup>81</sup> U.S. Environmental Protection Agency Office of Noise Abatement and Control, October 1979 (revised July 1981). *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise*. EPA 550/9/82/106.

<sup>82</sup> U.S. Department of Transportation, Federal Transit Administration, September 2018. *Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123*.

<sup>83</sup> California Department of Transportation, April 2020. *Transportation and Construction Vibration Guidance Manual*.

a background of common vibration levels and set vibration limits.<sup>84</sup> Decibel notation (VdB) serves to reduce the range of numbers used to describe vibration levels and is used in this report to describe vibration levels.

As stated in the FTA guidance manual, the background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

#### 4.14.2.3 Existing Noise Level Measurements

To assess the existing noise level environment, 24-hour noise level measurements were taken at six locations in the Program study area. The receiver locations were selected to describe and document the existing noise environment within the Program study area. **Figures 4.14-1 and 4.14-2** provide the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads on Wednesday, July 12, 2023. Appendix 5.1 of the NIA includes study area photos.

#### Measurement Procedure and Criteria

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the equivalent daytime and nighttime hourly noise levels. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013.<sup>85</sup>

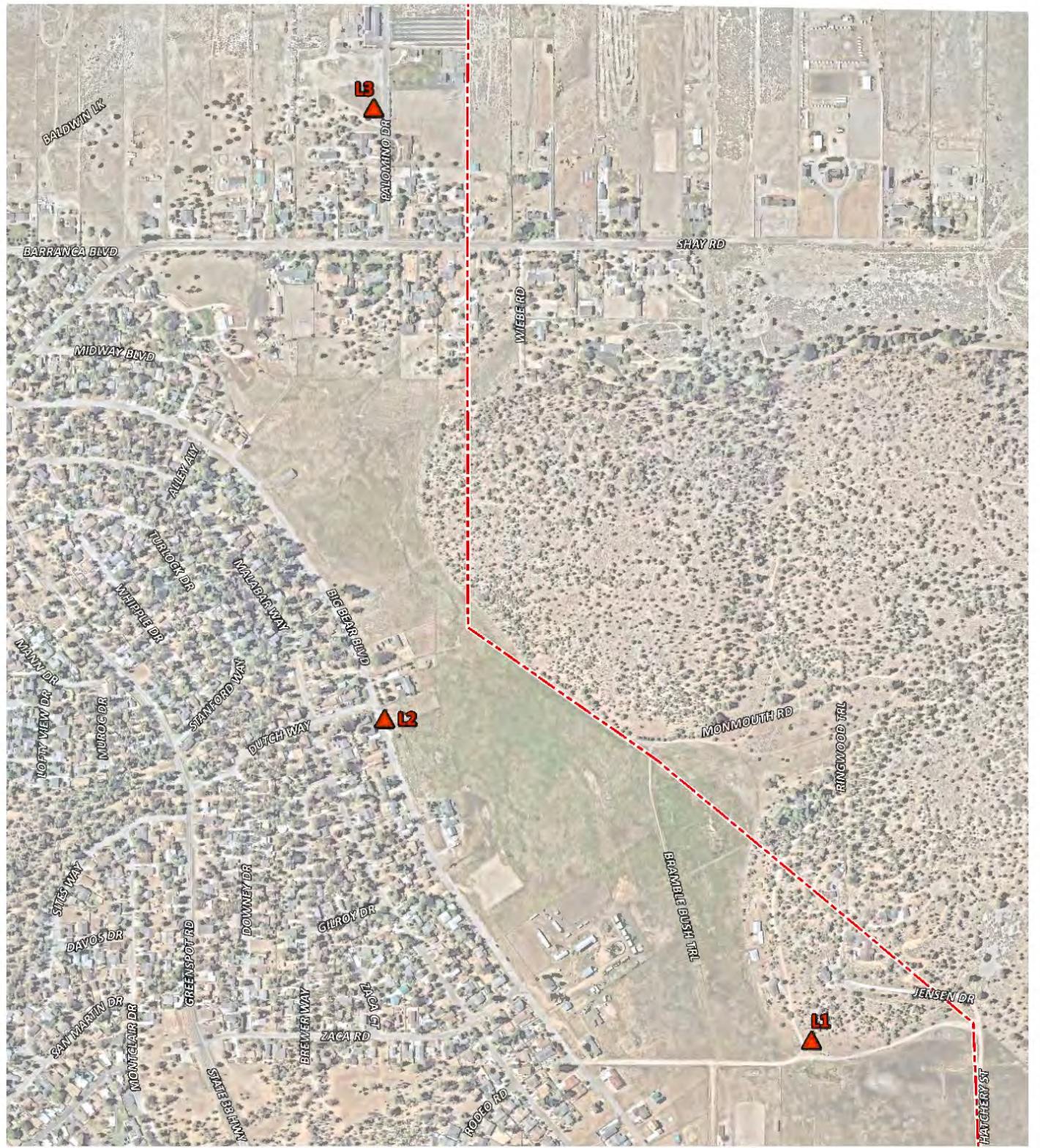
#### Noise Measurement Locations

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Program sites. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources.* Further, FTA guidance states, *that it is not necessary nor recommended that existing noise exposure be determined by measuring at*

<sup>84</sup> U.S. Department of Transportation, Federal Transit Administration, May 2006. *Transit Noise and Vibration Impact Assessment Manual, FTA-VA-90-1003-06.*

<sup>85</sup> American National Standards Institute (ANSI). *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*





**LEGEND:**

- Measurement Locations
- Site Boundary

**FIGURE 4.14-1**



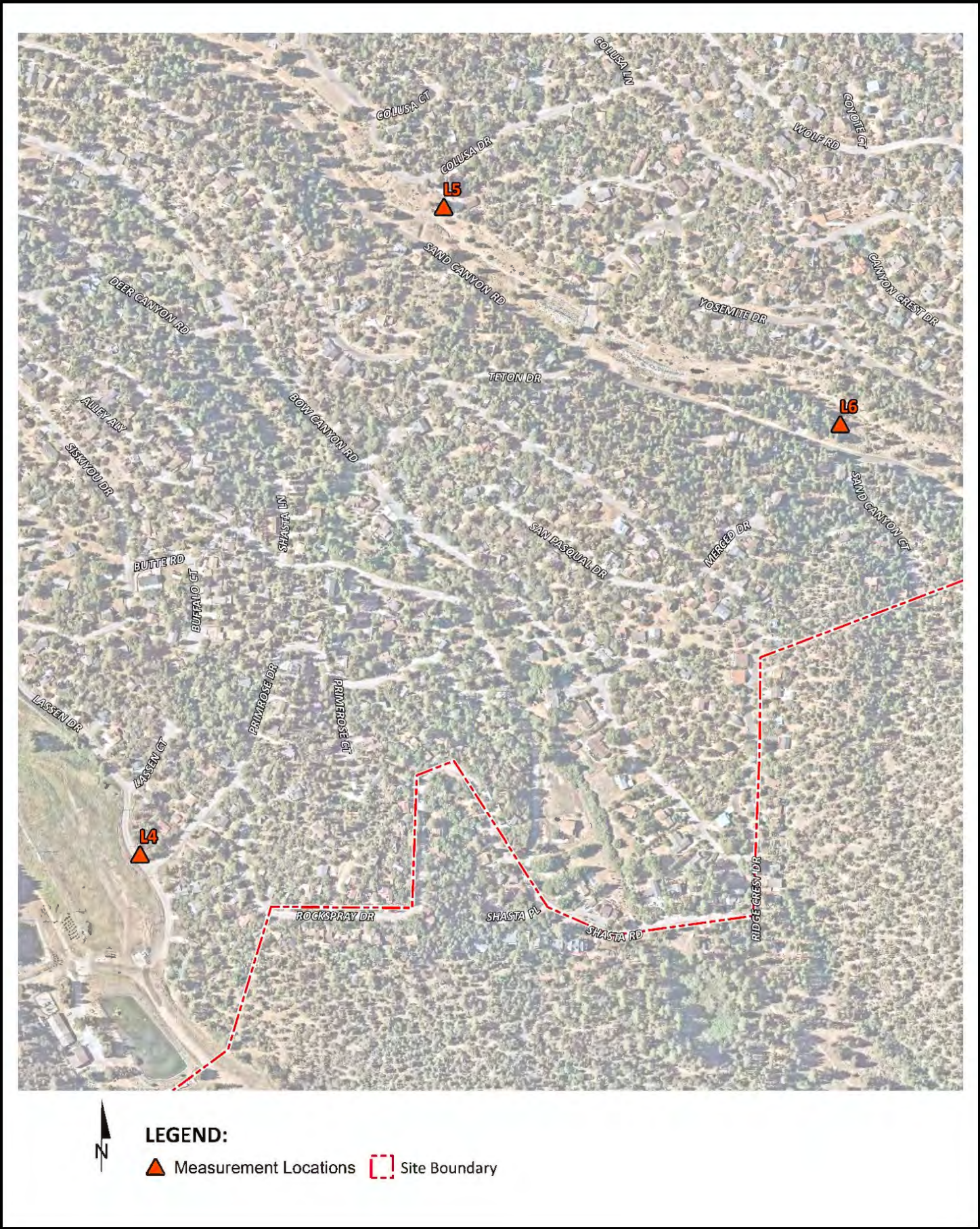


FIGURE 4.14-2



every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community.<sup>86</sup>

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. Collecting reference ambient noise level measurements at the nearest sensitive receiver locations allows for a comparison of the before and after Program noise levels and is necessary to assess potential noise impacts due to the Program's contribution to the ambient noise levels.

### Background Noise Measurement Results

The noise measurements presented below focus on the average or equivalent sound levels ( $L_{eq}$ ). The equivalent sound level ( $L_{eq}$ ) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. **Table 4.14-1** identifies the hourly daytime (8:00 a.m. to 10:00 p.m.) and nighttime (10:01 p.m. to 7:59 a.m.) noise levels at each noise level measurement location during typical weekday Friday conditions and weekend Saturday conditions. Appendix 5.2 of the NIA provides a summary of the existing hourly ambient noise levels described below:

**Table 4.14-1**  
**24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS**

Location <sup>1</sup>	Description	Energy Average Noise Level (dBA $L_{eq}$ ) <sup>2</sup>	
		Daytime	Nighttime
L1	Northwest of Shay Pond near 2025 Garnet Street	46.7	42.7
L2	Located near 1485 E Big Bear Blvd	51.6	43.0
L3	Located near 109 Palomino Drive	46.9	44.3
L4	Located near 1467 Lassen Drive	42.1	46.9
L5	Located near 43652 Sand Canyon Road	48.3	38.3
L6	Located near 43485 Colusa Drive	42.9	40.5

<sup>1</sup> See **Figures 4.14-1 and 4.14-2** for the noise level measurement locations.

<sup>2</sup> Energy (logarithmic) equivalent levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2 of the NIA.

"Daytime" = 8:00 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:59 a.m.

**Table 4.14-1** provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 of the NIA provides summary worksheets of the noise levels for each hour as well as the minimum, maximum,  $L_1$ ,  $L_2$ ,  $L_5$ ,  $L_8$ ,  $L_{25}$ ,  $L_{50}$ ,  $L_{90}$ ,  $L_{95}$ , and  $L_{99}$  percentile noise levels observed during the daytime and nighttime periods. The background ambient noise levels in the Program study area are dominated by the transportation-related noise associated with surface streets.

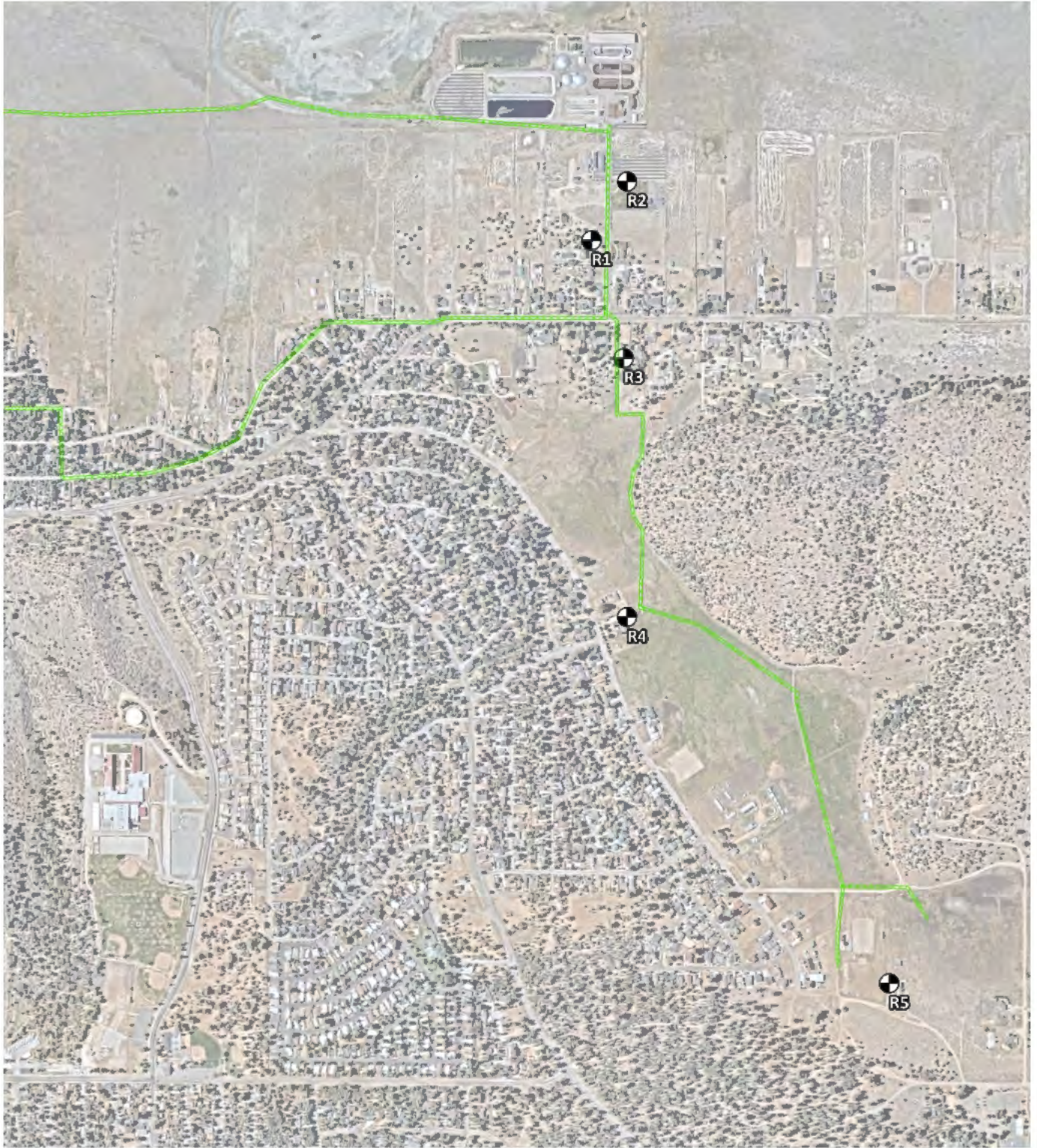
<sup>86</sup> U.S. Department of Transportation, Federal Transit Administration, September 2018. *Transit Noise and Vibration Impact Assessment Manual*.

#### 4.14.2.4 Sensitive Receiver Locations

To assess the potential for operational and construction noise impacts, the following receiver locations, as shown on **Figure 4.14-3 through 4.14-6** were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive uses are residences, hospitals, convalescent and day care facilities, schools, and libraries. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Program noise levels, seven receiver locations in the vicinity of the Program sites were identified. All distances are measured from the Program site boundaries to the outdoor living areas (e.g., private backyards), Program site boundary line, or at the building façade, whichever is closer to the Program site. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA. Other sensitive land uses in the Program study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

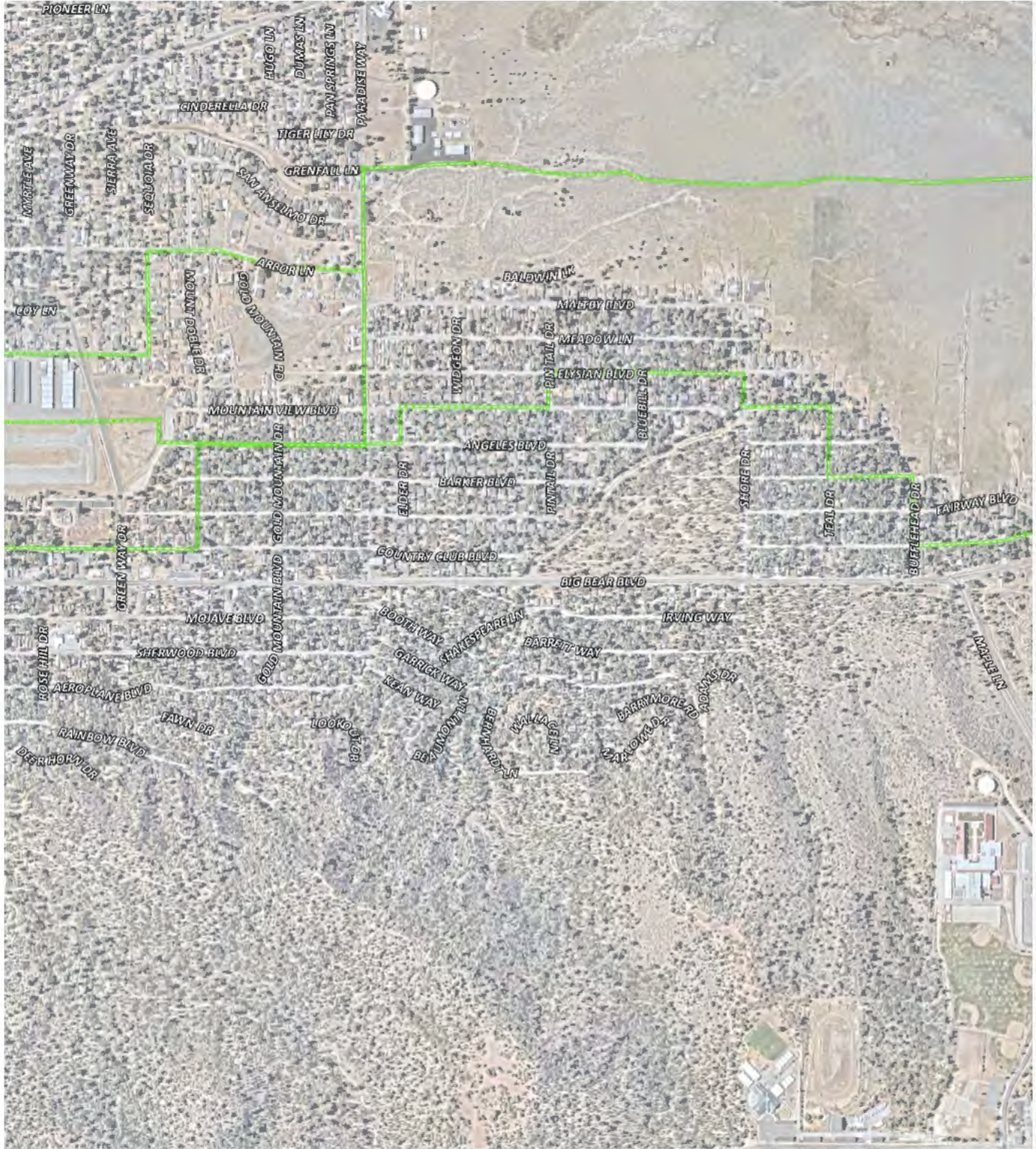
- R1: Location R1 represents the backyard of existing noise sensitive residence located at 109 Palomino Drive located south of the BBARWA WWTP. R1 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L3, to describe existing ambient noise level.
- R2: Location R2 represents the backyard existing noise sensitive residence located at 116 Palomino Drive, south of the BBARWA WWTP. R2 is placed in the private outdoor living areas (backyard) facing the project site.
- R3: Location R3 represents an existing noise sensitive residence located at 1458 Shay Road. This residence is located east of the Shay Pond Conveyance Pipelines. Since there are no private outdoor living areas (e.g. backyards) facing the project site, receiver R3 is placed at the building façade.
- R4: Location R4 represents an existing noise sensitive residence located at 1485 E. Big Bear Boulevard west of the Shay Pond Conveyance Pipelines. R4 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L2, to describe existing ambient noise level.
- R5: Location R5 represents an existing noise sensitive residence located at 2025 Garnet Street east of the Shay Pond Conveyance Pipelines and west of Shay Pond. Receiver R5 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L1, to describe existing ambient noise level.
- R6: Location R6 represents an existing noise sensitive residence located at 1467 Lassen Drive northeast of the Sand Canyon Conveyance Pipeline and Pump Station of the project site. Receiver R6 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L4, to describe existing ambient noise level.
- R7: Location R7 represents an existing noise sensitive residence located at 43861 Mendocino Drive northeast of the Sand Canyon Recharge Area. Receiver R7 is placed in the private outdoor living areas (backyard) facing the project site.
- R8: Location R8 represents an existing noise sensitive residence located at 43817 Sand Canyon Road southwest of the Sand Canyon Recharge Area. Receiver R8 is placed in the private outdoor living areas facing the project site.




**LEGEND:**

- Receiver Locations
- Pipeline Receivers






**LEGEND:**  
 Pipeline Receivers

**FIGURE 4.14-4**





**LEGEND:**

 Pipeline Receivers

**FIGURE 4.14-5**





**LEGEND:**

● Receiver Locations

**FIGURE 4.14-6**



- R9: Location R9 represents an existing noise sensitive residence located at 43652 Sand Canyon Road south of the Sand Canyon Recharge Area. Receiver R9 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L5, to describe existing ambient noise level.
- R10: Location R10 represents an existing noise sensitive residence located at 43485 Colusa Drive northeast of the Sand Canyon Recharge Area. Receiver R10 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L6, to describe existing ambient noise level.

Conveyance Pipeline Receivers: Receivers located along pipeline routes occur along nearly all off-site pipeline alignments. For purposes of analysis, and based on a survey of project alignments, the majority of roadways and potential ROW are the width of 2 lane roadways (approximately 24 feet), thus receivers (e.g. residential buildings) are evaluated as close as 20 feet from the centerline of the pipeline construction activities.

#### **4.14.3 Regulatory Setting**

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the Federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

##### **4.14.3.1 Federal**

###### **Noise Control Act of 1972**

Under the authority of the Noise Control Act of 1972, the EPA established noise emission criteria and testing methods published in Parts 201 through 205 of Title 40 of the CFR that apply to some transportation equipment (e.g., interstate rail carriers, medium trucks, and heavy trucks) and construction equipment. In 1974, the EPA issued guidance levels for the protection of public health and welfare in residential land use areas.<sup>87</sup> The guidance levels specified an outdoor  $L_{dn}$  of 55 dBA and an indoor  $L_{dn}$  of 45 dBA. These guidance levels are not considered as standards or regulations and were developed without consideration of technical or economic feasibility. There are no Federal noise standards that directly regulate environmental noise related to the construction or operation of the proposed program.

##### **4.14.3.2 State**

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's OPR. The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*.

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<sup>87</sup> EPA, EPA Identifies Noise Levels Affecting Health and Welfare. April 12, 1974.

In addition, CEQA requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

### **California Noise Act**

The California Noise Control Act of 1973 gave cities and communities the power to set noise ordinances and enforce them as necessary. The goal of the state and local governments is to prohibit unnecessary, annoying, intrusive, or dangerous noise. California Government Code Section 65302 encourages each local government entity to implement a noise element as part of its general plan. In addition, the Governor's OPR has developed guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.<sup>88</sup>

#### **4.14.3.3 Local**

### **BBARWA**

BBARWA does not have specific noise ordinances or standards and while BBARWA is not subject to local noise standards under CEQA, for purposes of this project BBARWA considers the San Bernardino County noise standards in the determination of impacts. The County noise standards and ordinances are summarized in the following discussion.

### **San Bernardino Countywide Plan**

The San Bernardino Countywide Plan has adopted a Countywide Plan Hazards Element, in part, to limit the exposure of the community to excessive noise levels. In most cases, no single goal, policy, or implementation program is expected to completely avoid or reduce an identified potential environmental impact. However, the collective, cumulative mitigating benefits of the policies listed below are intended to reduce noise-related impacts.

Policy	HZ-2	<b>Human Generated Hazards:</b> People and the natural environment protected from exposure to hazardous materials, excessive noise, and other human-generated hazards.
	HZ-2.6	<b>Coordination with Transportation Authorities:</b> We collaborate with airport owners, FAA, Caltrans, SBCTA, SCAG, neighboring jurisdictions, and other transportation providers in the preparation and maintenance of, and updates to transportation-related plans and projects to minimize noise impacts and provide appropriate mitigation measures.
	HZ-2.7	<b>Truck Delivery Areas:</b> We encourage truck delivery areas to be located away from residential properties and require associated noise impacts to be mitigated.
	HZ-2.8	<b>Proximity to Noise Generating Uses:</b> We limit to restrict new noise sensitive land uses in proximity to existing conforming noise generating uses and planned industrial areas.
	HZ-2.9	<b>Control Sound at the Source:</b> We prioritize noise mitigation measures that control sound at the source before buffers, soundwalls and other perimeter measures.

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<sup>88</sup> California Office of Planning and Research. 2017. *State of California 2017 General Plan Guidelines – Appendix D: Noise Element Guidelines*. July 2017. [https://opr.ca.gov/docs/OPR\\_Appendix\\_D\\_final.pdf](https://opr.ca.gov/docs/OPR_Appendix_D_final.pdf) (accessed September 2021).

HZ-2.10 **Agricultural Operations:** We require new development adjacent to existing conforming agricultural operations to provide adequate buffers to reduce the exposure of new development to operational noise, odor, and the storage or application of pesticides or other hazardous materials.

**San Bernardino County Development Code**

While the San Bernardino Countywide Plan Hazards Element provides guidelines and criteria to assess transportation noise on sensitive land uses, San Bernardino County Code, Title 8 Development Code contains the noise level limits for mobile, stationary, and construction-related noise sources.

***Transportation Noise Standards***

Section 83.01.080(d), Table 83-3, contains San Bernardino County’s mobile noise source-related standards, shown on Table 4.14-2. Based on San Bernardino County’s mobile noise source standards, there are no exterior noise level standards for the commercial land use. Exterior transportation (mobile) noise level standards for residential land uses in the Program study area are shown to be 60 dBA CNEL, while non-noise-sensitive land uses, such as office uses, require exterior noise levels of 65 dBA CNEL per San Bernardino County’s Table 83-3 mobile noise source standards.

**Table 4.14-2  
 SAN BERNARDINO COUNTY MOBILE NOISE LEVEL STANDARDS**

<i>Noise Standards for Adjacent Mobile Noise Sources</i>			
<i>Land Use</i>		<i>Ldn (or CNEL) dB(A)</i>	
<i>Categories</i>	<i>Uses</i>	<i>Interior (1)</i>	<i>Exterior (2)</i>
Residential	Single and multi-family, duplex, mobile homes	45	60(3)
Commercial	Hotel, motel, transient housing	45	60(3)
	Commercial retail, bank, restaurant	50	N/A
	Office building, research and development, professional offices	45	65
	Amphitheater, concert hall, auditorium, movie theater	45	N/A
Institutional/Public	Hospital, nursing home, school classroom, religious institution, library	45	65
Open Space	Park	N/A	65

Notes:  
 (1) The indoor environment shall exclude bathrooms, kitchens, toilets, closets and corridors.  
 (2) The outdoor environment shall be limited to:  
 · Hospital/office building patios  
 · Hotel and motel recreation areas  
 · Mobile home parks  
 · Multi-family private patios or balconies  
 · Park picnic areas  
 · Private yard of single-family dwellings  
 · School playgrounds  
 (3) An exterior noise level of up to 65 dB(A) (or CNEL) shall be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB(A) (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level shall necessitate the use of air conditioning or mechanical ventilation.  
 CNEL = (Community Noise Equivalent Level). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m.

Source: County of San Bernardino County Code, Title 8 Development Code, Table 83-3.

**Operational Noise Standards**

To analyze noise impacts originating from a designated fixed location or private property are typically evaluated against standards established under a jurisdiction’s Municipal Code. San Bernardino County Code, Title 8 Development Code, Section 83.01.080(c) establishes the noise level standards for stationary noise sources. Since the Program’s land uses will potentially impact adjacent noise-sensitive uses in the Program study area, this noise study relies on the more conservative residential noise level standards to describe potential operational noise impacts.

For residential properties, the exterior noise level shall not exceed 55 dBA  $L_{eq}$  during the daytime hours (8:00 a.m. to 10:00 p.m.) and 45 dBA  $L_{eq}$  during the nighttime hours (10:01 p.m. to 7:59 a.m.) for both the whole hour, and for not more than 30 minutes in any hour. The exterior noise level standards shall apply for a cumulative period of 30 minutes in any hour, as well as the standard plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes in any hour, or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour, or the standard plus 15 dBA for a cumulative period of more than 1 minute in any hour, or the standard plus 20 dBA for any period of time. Further, Section 83.01.080(e) indicates that if the existing ambient noise level already exceeds any of the exterior noise level limit categories, then the standard shall be adjusted to reflect the ambient conditions. San Bernardino County operational noise level standards are shown on **Table 4.14-3** and included in Appendix 3.1 of the NIA.

**Table 4.14-3  
 OPERATIONAL NOISE LEVEL STANDARDS**

Affected Land Uses (Receiving Noise)	7:00 a.m. - 10:00 p.m. (dBA $L_{eq}$ )	10:00 p.m. - 7:00 a.m. (dBA $L_{eq}$ )
Residential	55	45
Professional Services	55	55
Other Commercial	60	60
Industrial	70	70

$L_{eq}$  = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically one, eight or 24 hours.

dB(A) = (A-weighted Sound Pressure Level). The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear.

The percentile noise descriptors are provided to ensure that the duration of the noise source is fully considered. However, due to the relatively constant intensity of the Program operational activities, the  $L_{50}$  or average  $L_{eq}$  noise level metrics best describe the pumps, compressors, and the drilling rig. In addition, the  $L_{eq}$  noise level metric accounts for noise fluctuations over time by averaging the louder and quieter events and giving more weight to the louder events. In addition, due to the mathematical relationship between the median ( $L_{50}$ ) and the mean ( $L_{eq}$ ), the  $L_{eq}$  will always be larger than or equal to the  $L_{50}$ . The more variable the noise becomes, the larger the  $L_{eq}$  becomes in comparison to the  $L_{50}$ . Therefore, this noise study conservatively relies on the average  $L_{eq}$  sound level limits to describe the Program operational noise levels.

**Construction Noise Standards**

Section 83.01.080(g)(3) of the San Bernardino County Development Code, provided in Appendix 3.1, indicates that construction activity is considered exempt from the noise level standards



between the hours of 7:00 a.m. to 7:00 p.m. except on Sundays and Federal holidays.<sup>89</sup> However, neither the San Bernardino County General Plan or Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes a substantial temporary or periodic noise increase. Therefore, a numerical construction threshold based on FTA Transit Noise and Vibration Impact Assessment Manual is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Program construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA  $L_{eq}$  as a threshold for noise sensitive residential land use, a noise level of 85 dBA  $L_{eq}$  for commercial locations, and 90 dBA  $L_{eq}$  for industrial locations.

### ***Construction Vibration Standards***

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration.

The San Bernardino County Development Code, Section 83.01.090(a) states that vibration shall be no greater than or equal to two-tenths inches per second measured at or beyond the lot line. Therefore, to determine if the vibration levels due to the operation and construction of the Program, the PPV vibration level standard of 0.2 inches per second is used.

### **City of Big Bear Lake General Plan**

The Big Bear Lake General Plan has adopted a Noise Element, in part, to limit the exposure of the community to excessive noise levels. Applicable Goals and Policies are listed below.

<b>Goal</b>	N 1	Protection of the community from excessive noise levels and maintenance of a low-level noise environment complementary to and consistent with the City's role as a resort and vacation destination and high-quality residential environment.
<b>Policy</b>	N 1.1	Utilize appropriate land use and transportation planning to achieve noise compatibility between adjacent land uses and noise sources.
	N 1.2	Ensure that existing and potential noise impacts are identified and mitigated to non-significant levels through environmental review and assure compliance with mitigation measures for new development projects.
	N 1.3	Coordinate with other agencies having jurisdiction over noise sources which impact the City, to seek cooperation on reasonable mitigation of these impacts.

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<sup>89</sup> State of California, 2019. California Environmental Quality Act, Appendix G.

#### 4.14.4 Thresholds of Significance

According to Appendix G, Section XIII, of the State CEQA Guidelines, a noise impact from the project would be significant if the project would result in:

- a) The generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- b) The generation of excessive groundborne vibration or groundborne noise levels.
- c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, the exposure of people residing or working in the project area to excessive noise levels.

While the San Bernardino Countywide Plan and City of Big Bear Lake General Plan, and the respective development code and municipal code thereof provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts, they do not define the levels at which increases are considered substantial for use under Guideline A. CEQA Appendix G Guideline C applies to nearby public and private airports, if any, and the Program's land use compatibility.

##### 4.14.4.1 Significance Criteria Summary

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. **Table 4.14-4** shows the significance criteria summary matrix that includes the allowable criteria used to identify potentially significant incremental noise level increases.

**Table 4.14-4  
 SIGNIFICANCE CRITERIA SUMMARY**

Analysis	Land Use	Condition(s)	Significance Criteria <sup>2</sup>	
			Daytime	Nighttime
Construction	Noise-Sensitive	Permitted between 7:00 a.m. to 7:00 p.m.; except Sundays and Federal holidays. <sup>3</sup>		
		Noise Level Threshold <sup>1</sup>	80 dBA Leq	n/a
		Vibration Level Threshold <sup>4</sup>	0.2 PPV in/sec	n/a

<sup>1</sup> Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.

<sup>2</sup> County of San Bernardino Development Code, Title 8, Section 83.01.080 (Appendix 3.1 of the NIA)

<sup>3</sup> Section 83.01.080(g)(3) of the County of San Bernardino County Code.

<sup>4</sup> Section 83.01.090(a) of the County of San Bernardino County Code.

"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m. "n/a" = construction activities are not planned during the nighttime hours; "PPV" = peak particle velocity.

#### 4.14.5 Potential Impacts

##### 4.14.5.1 Existing Noise Level Measurements

To assess the existing noise level environment, 24-hour noise level measurements were taken at six locations in the Program study area representative of the various locations at which the Program facilities would be implemented. The receiver locations were selected to describe and document the existing noise environment within the Program study area. **Figures 4.14-1 and 4.14-2** provide the noise level measurement locations. To fully describe the existing noise

conditions, noise level measurements were collected by Urban Crossroads on Wednesday, July 12, 2023. Appendix 5.1 of the NIA includes study area photos.

#### **4.14.5.2 Impact Analysis**

This section evaluates the potential noise and vibration impacts associated with the proposed Program.

- a) **Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

### **OPERATIONAL NOISE IMPACTS**

#### **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

##### ***Operational Noise***

The Program will include several improvements at the BBARWA WWTP; however, all new noise sources would be housed inside the new building and the two pumps at the BBARWA WWTP would be housed in CMU buildings. The proposed structures would achieve between 40 and 50 dBA in noise reduction from pump noise to exterior locations. The proposed pumps are anticipated to generate up to 60 dBA at 32 feet. Based on the anticipated reduction, pump noise would be 30 dBA  $L_{eq}$  less outside the building, which is a less than significant noise impact. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases, i.e., operational noise levels will not rise to a level of a significant impact and impacts would therefore be less than significant.

##### ***Off-Site Traffic Noise***

Once infrastructure is installed, an anticipated five new employees would be required to support Program facilities. These additional traffic volumes would be dispersed throughout the Big Bear Valley on local and regional roadways in proximity to the BBARWA WWTP site. The limited number of trips would not have the potential to double traffic volumes even on low-volume local roadways. Thus, it is unlikely that individual projects implemented under this Program Component would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

#### **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

##### ***Operational Noise***

The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options will not generate any operational noise, except in the instance of repairs which would result in the same level of noise as constructing the pipelines (discussed under Construction Noise Impacts, below), which was determined to be less than significant. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases, i.e., operational noise levels will not rise to a level of a significant impact and impacts would therefore be less than significant.

##### ***Off-Site Traffic Noise***

Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Program's facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event,

with an anticipated two maintenance trips per Program facility per month. Thus, it is unlikely that individual projects implemented under this Program Component would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

### **Replenish Big Bear Component 3: Shay Pond Discharge Project**

#### ***Operational Noise***

The Shay Pond Conveyance Pipelines will not generate any operational noise, except in the instance of repairs which would result in the same level of noise as constructing the pipelines (discussed under Construction Noise Impacts, below), which was determined to be less than significant. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases, i.e., operational noise levels will not rise to a level of a significant impact and impacts would therefore be less than significant.

#### ***Off-Site Traffic Noise***

Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Program's facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per Program facility per month. Thus, it is unlikely that individual projects implemented under this Program Component would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

### **Replenish Big Bear Component 4: Solar Evaporation Ponds**

#### ***Operational Noise***

The Solar Evaporation Ponds will not generate any operational noise, except in the instance of repairs which would result in the same level of noise as constructing the solar evaporation ponds (discussed under Construction Noise Impacts, below), which was determined to be less than significant. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases, i.e., operational noise levels will not rise to a level of a significant impact and impacts would therefore be less than significant.

#### ***Off-Site Traffic Noise***

Once infrastructure is installed, an anticipated five new employees would be required to support Program facilities. These additional traffic volumes would be dispersed throughout the Big Bear Valley on local and regional roadways in proximity to the BBARWA WWTP/Solar Evaporation Ponds site. The limited number of trips would not have the potential to double traffic volumes even on low-volume local roadways. Thus, it is unlikely that individual projects implemented under this Program Component would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

### **Replenish Big Bear Component 5: Sand Canyon Recharge Project**

#### ***Operational Noise***

The following paragraph analyzes operational impacts for each of the facilities proposed under the Program. The proposed Sand Canyon Booster Station would be housed in a CMU building. The proposed structures would achieve between 40 and 50 dBA in noise reduction from pump noise to exterior locations. The proposed pumps are anticipated to generate up to 60 dBA at 32 feet. Based on the anticipated reduction, pump noise would be 30 dBA  $L_{eq}$  less outside the

building, which is a less than significant noise impact. The Sand Canyon Recharge Conveyance Pipeline and Sand Canyon Conveyance Pipeline Discharge Outlet will not generate any operational noise, except in the instance of repairs which will be the same as constructing these facilities. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases, i.e., operational noise levels will not rise to a level of a significant impact and impacts would therefore be less than significant.

### ***Off-Site Traffic Noise***

Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Program's facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per Program facility per month. Thus, it is unlikely that individual projects implemented under this Program Component would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

## **CONSTRUCTION NOISE IMPACTS**

### **Construction Noise Sources**

Noise generated by the Program construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The Program construction noise sources are expected to include a combination of loaders, cranes, welders, drill rigs, diesel generators, concrete pumps and mixture of other construction equipment.

As discussed under the Description, Program construction activities are expected to occur in the following phases:

- Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project
  - 2 pump stations: 20 gpm and 1,520 gpm
  - 1,350 LF of brine pipeline
  - Total building area: 40,000 SF total on site
  - Installation of 2 MW of solar on existing BBARWA property

Construction of the BBARWA WWTP Upgrades would include typical demolition, site preparation, grading, building construction, and architectural coatings activities. It is anticipated that BBARWA WWTP Upgrades could be constructed while the Solar Evaporation Ponds are being constructed and have been modeled as simultaneous construction. **Figure 4.14-7** shows the construction noise source locations and receiver locations used to assess the construction noise levels from the BBARWA WWTP Upgrades.

- Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project
  - 19,940 LF of pipeline (this is the maximum amount of pipeline that would be installed for any of the pipeline options, and as such, for modeling purposes, the maximum pipeline length that could be installed is utilized)

Construction of Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignments would include roadway demolition, pipeline installation, roadbed backfilling, grading, and paving activities. It is anticipated that Lake Discharge Pipelines would be constructed with multiple teams, however, pipeline construction would not physically overlap, rather improvements





**LEGEND:**  
 N  
 [Red Hatched Box] Construction Activity    [Black Circle with Center Dot] Receiver Locations    —●— Distance from receiver to BBARWA WTP construction (in feet)

**FIGURE 4.14-7**



would occur in multiple locations along the alignment and represent individual events at multiple locations. For locations within existing paved ROW, pipeline construction is anticipated to extend 200-300 LF per day, while construction along unpaved areas would extend 400-500 LF per day. Pipeline construction is modeled as a single 200-foot-long moving point source along the alignment.

Receiver locations used to assess the construction noise levels from the Stanfield Marsh/Big Bear Lake Discharge Project would occur at various locations all along the pipeline alignment, with receivers as close as 30 feet from potential construction locations. The potential pipeline alignments are Shown in **Figure 4.14-8**. Receivers are assumed to occur approximately 30 feet from the center of all alignments in public ROW.

- Replenish Big Bear Component 3: Shay Pond Discharge Project
  - 6,310 LF of pipeline on unpaved area

Construction of the Shay Pond Discharge Project would include roadway demolition, pipeline installation, backfilling, and grading, activities along Shay Road. It is anticipated that Shay Pond Discharge Project would be constructed with multiple teams. Construction along unpaved areas pipeline construction activities would extend 400-500 LF per day. **Figure 4.14-9** shows the construction noise source locations and receiver locations used to assess the construction noise levels from the Shay Pond Discharge Project.

- Replenish Big Bear Component 4: Solar Evaporation Pond
  - 57 acres of evaporation ponds
  - 2 monitoring wells

The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

Construction of the evaporation pond improvements would include typical site preparation, grading, and well drilling activities. It is anticipated that evaporation pond improvements could be constructed while the BBARWA WWTP Upgrades are being constructed and both these activities have been modeled as simultaneous construction. **Figure 4.14-7** shows the construction noise source locations and receiver locations used to assess the construction noise levels from the evaporation pond improvements.

- Replenish Big Bear Component 5: Sand Canyon Recharge Project
  - 1 pump station
  - 2 monitoring wells
  - 7,210 LF of conveyance pipeline
  - Erosion control/rip rap at pipeline discharge

Construction of the Sand Canyon Recharge Area component would include roadway demolition, pipeline installation, roadbed backfilling, grading, paving activities, and well drilling activities. It is anticipated that Sand Canyon Recharge Area improvements would be constructed with multiple teams. For locations within existing paved ROW, pipeline construction is anticipated to extend 200-300 LF per day, while construction along unpaved areas would extend 400-500 LF per day. **Figure 4.14-10** shows the pipeline

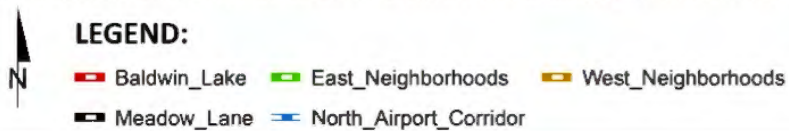
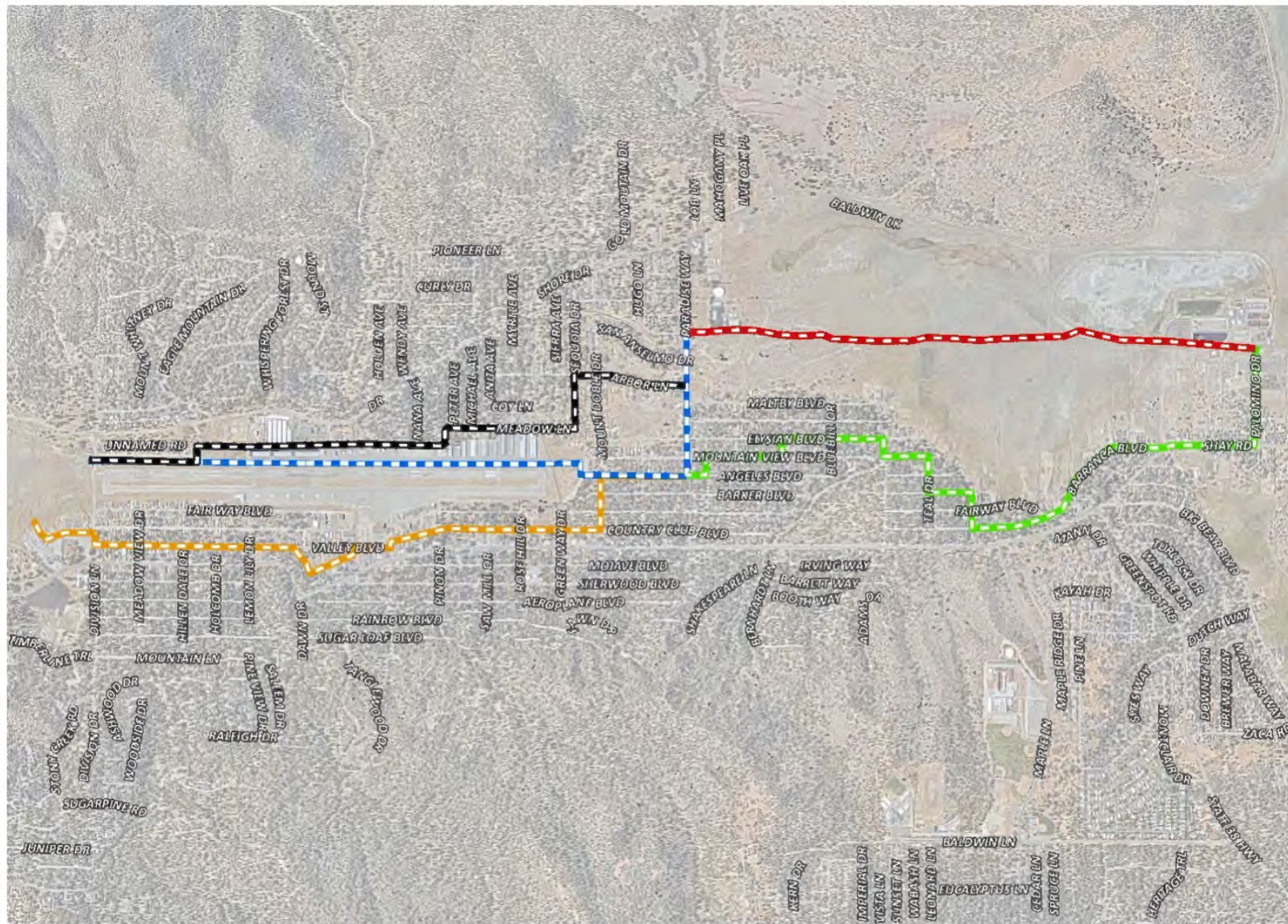
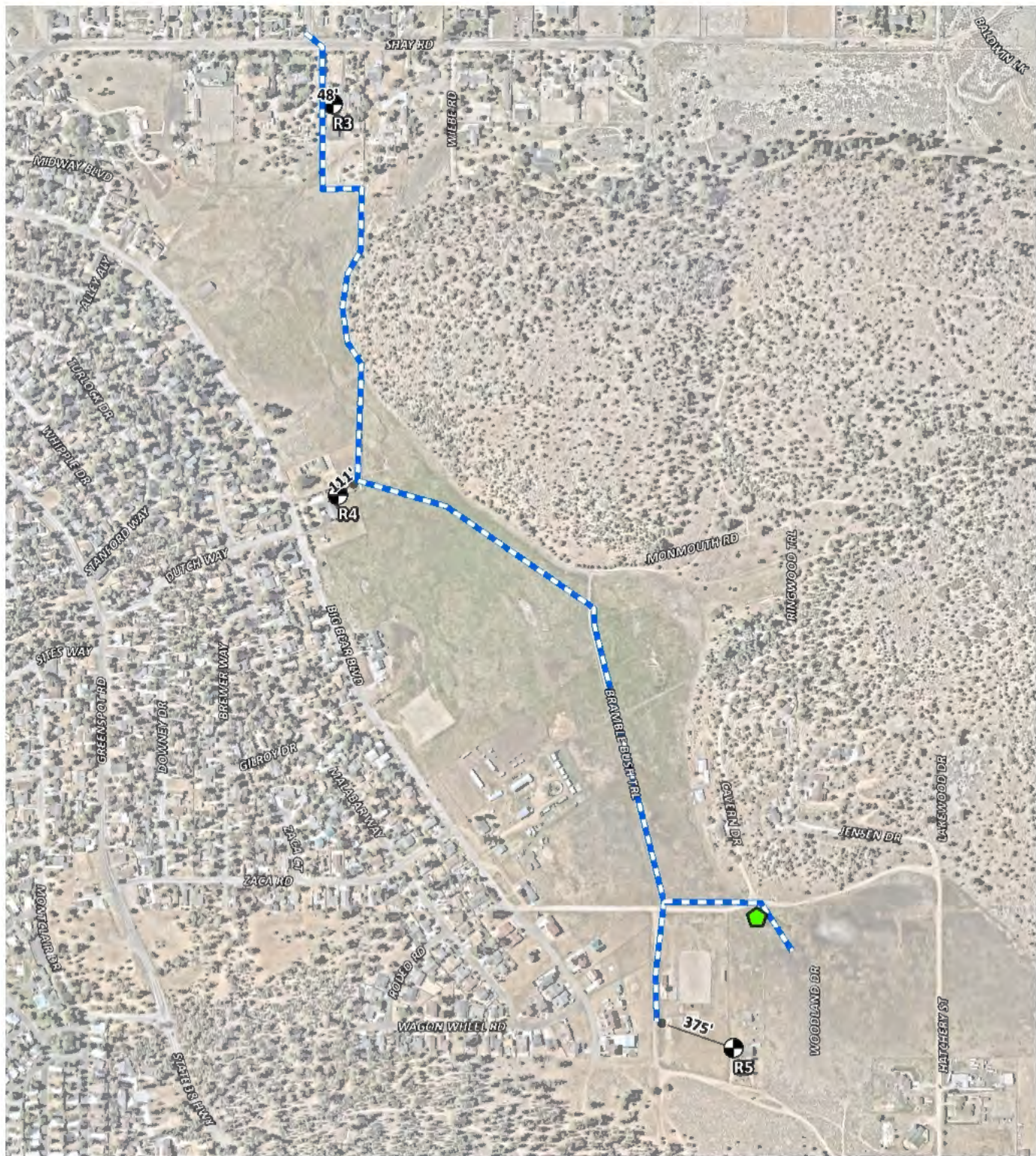


FIGURE 4.14-8





**LEGEND:**

- Shay Pond Discharge Location
- Receiver Locations
- Shay Pond Pipelines
- Distance from receiver to Project site boundary (in feet)

**FIGURE 4.14-9**





**FIGURE 4.14-10**



locations and receiver locations used to assess the construction noise levels from the Sand Canyon Recharge Area improvements.

**Reference Construction Noise Levels**

This construction noise analysis was prepared using reference construction equipment noise levels from the FHWA published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels.<sup>90</sup> The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. The usage factor is a key input variable of the RCNM noise prediction model that is used to calculate the average  $L_{eq}$  noise levels using the reference  $L_{max}$  noise levels measured at 50 feet. **Table 4.14-5** provides a summary of the reference average  $L_{eq}$  noise levels used to describe each stage of construction.

Because few details are known at this time regarding construction of specific components of the Program, it is assumed that construction of any Program component may occur simultaneously. As a conservative measure, and in order to identify a reasonable worst-case scenario, this analysis assumes that the Program would construct the certain features simultaneously.

**Table 4.14-5  
 CONSTRUCTION REFERENCE NOISE LEVELS**

Construction Stage	Reference Construction Equipmnet <sup>1</sup>	Reference Noise Level @ 50 Feet (dBA $L_{eq}$ )	Composite Reference Noise Level (dBA $L_{eq}$ )	Reference Power Level (dBA $L_w$ )
Demolition	Concrete Saw	83	86.3	118.0
	Impact Hammer (hoe ram)	83		
	Front End Loader	75		
Site Preparation	Tractor	80	84.0	115.6
	Backhoe	74		
	Grader	81		
Grading	Scraper	80	83.3	114.9
	Excavator	77		
	Dozer	78		
Building Construction	Crane	73	80.6	112.2
	Generator	78		
	Front End Loader	75		
Paving	Paver	74	77.8	109.5
	Dump Truck	72		
	Roller	73		
Architectural Coating	Man Lift	68	76.2	107.8
	Compressor (air)	74		
	Generator (<25kVA)	70		
	Excavator	77	79.6	111.3

<sup>90</sup> U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, January, 2006. *FHWA Roadway Construction Noise Model*.

Construction Stage	Reference Construction Equipmnet <sup>1</sup>	Reference Noise Level @ 50 Feet (dBA L <sub>eq</sub> )	Composite Reference Noise Level (dBA L <sub>eq</sub> )	Reference Power Level (dBA L <sub>w</sub> )
Pipeline Construction	Front End Loader	75		
	Welder/Torch	70		
Monitoring Well Drilling	Auger Drill Rig	77	81.6	113.3
	Generator	78		
	Front End Loader	75		

<sup>1</sup> FHWA Road Construction Noise Model.

Noise levels generated by heavy construction equipment can range from approximately 68 dBA to more than 80 dBA when measured at 50 ft. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 80 dBA measured at 50 ft from the noise source to the receiver would be reduced to 74 dBA at 100 ft from the source to the receiver and would be further reduced to 68 dBA at 200 ft from the source to the receiver. A default ground attenuation factor of 0.0 was used in the Computer Aided Noise Abatement (CadnaA) noise prediction model to account for hard site conditions.

### Construction Noise Levels

#### **Construction Activities at the BBARWA WWTP Site: AWP, Monitoring Wells, Solar Evaporation Ponds, and Pump Stations**

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Program construction noise level impacts at the nearby sensitive receiver locations were completed for the construction of facilities that would be installed at the BBARWA WWTP site, which includes the BBARWA WWTP Upgrades Project and Solar Evaporation Ponds Project. Refer to **Figure 4.14-7**, which shows all sensitive receiver locations, and shows that the nearest sensitive receiver to the BBARWA WWTP site is 433' to the southeast. To assess a reasonable worst-case construction scenario and account for the dynamic nature of construction activities, the construction noise analysis models the equipment combination with the highest reference level as a moving point source within the construction area (site boundary). As shown on **Table 4.14-6**, the highest construction noise levels during the BBARWA WWTP, evaporation pond and monitoring wells construction activities noise levels are expected to range from 60.5 to 63.5 dBA L<sub>eq</sub> at the nearest receiver locations shown on **Figure 4.14-7**. Appendix 8.1 of the NIA includes the detailed CadnaA construction noise model inputs. These noise levels would not exceed the applicable daytime noise level limit of 80 dBA L<sub>eq</sub>. Therefore, no mitigation is required for daytime construction activities at the BBARWA WWTP site as the noise levels experienced as the nearest sensitive received locations will below the daytime noise significance threshold, and therefore less than significant.



**Table 4.14-6  
 BBARWA WWTP UPGRADES AND EVAPORATION POND – CONSTRUCTION EQUIPMENT NOISE LEVELS**

Receiver Location <sup>1</sup>	Construction Noise Levels (dBA L <sub>eq</sub> )						
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels <sup>2</sup>
R1	58.9	56.6	55.8	54.4	50.4	55.0	58.9
R2	62.5	60.2	59.4	58.0	54.0	58.6	62.5

<sup>1</sup> Noise receiver locations are shown on **Figure 4.14-7**

<sup>2</sup> CadnaA construction noise model inputs are included in Appendix 8.1 of the NIA.

**Construction Activities at the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options**

Refer to **Figures 4.14-3** through **4.14-5**, which show all sensitive receiver locations. All other pipeline activities were modeled based on 200-foot and 400-foot lengths of pipeline installation activities, but due to the distances associated with the pipelines and the number of receiver locations, noise levels are predicted at a common distance of 30 ft from these activities for the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options.

As indicated Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option construction would occur within 30 ft of noise sensitive residential receivers along the majority of the Lake Discharge Pipeline and Sand Canyon alignments, at 30 feet pipeline construction activity is estimated to generate noise levels up to 79.1 dBA L<sub>eq</sub> for segments with paving and 75.6 dBA L<sub>eq</sub> for the segments without paving. Appendix 8.4 of the NIA includes the CadnaA construction noise model inputs. These noise levels would not exceed the applicable daytime noise level limit of 80 dBA L<sub>eq</sub>. Therefore, construction noise impacts would be less than significant.

**Construction Activities at the Shay Pond Discharge Project**

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Program construction noise level impacts at the nearby sensitive receiver locations were completed for the Shay Pond Conveyance Pipeline construction. Refer to **Figure 4.14-3**, which shows all sensitive receiver locations.

As shown on **Table 4.14-7**, the highest construction noise levels during the Shay Pond Discharge Project construction activities noise levels are expected to range from 62.6 to 68.3 dBA L<sub>eq</sub> at the nearest receiver locations, estimated at 20-feet from the pipeline centerline. Appendix 8.2 of the NIA includes the detailed CadnaA construction noise model inputs. These noise levels would not exceed the applicable daytime noise level limit of 80 dBA L<sub>eq</sub>. Therefore, no mitigation is required for daytime construction activities along the Shay Pond Discharge Project as the noise levels experienced as the nearest sensitive receiver locations will below the daytime noise significance threshold, and therefore less than significant.

**Table 4.14-7**  
**SHAY POND DISCHARGE PROJECT – CONSTRUCTION EQUIPMENT NOISE LEVELS**

Receiver Location <sup>1</sup>	Construction Noise Levels (dBA L <sub>eq</sub> )			
	Site Preparation	Grading	Pipeline Construction	Highest Levels <sup>2</sup>
R1	68.3	67.6	63.9	68.3
R2	62.6	61.9	58.2	62.6
R3	63.1	62.4	58.7	63.1

<sup>1</sup> Noise receiver locations are shown on **Figure 4.14-9**

<sup>2</sup> CadnaA construction noise model inputs are included in Appendix 8.2 of the NIA.

**Construction Activities at the Sand Canyon Recharge Project**

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Program construction noise level impacts at the nearby sensitive receiver locations were completed for the Sand Canyon Recharge Project. Refer to **Figure 4.14-6**, which show all sensitive receiver locations. To assess a reasonable worst-case construction scenario and account for the dynamic nature of construction activities, the Program construction noise analysis models the equipment combination with the highest reference level as a moving point source within the construction area (Program site boundary or alignment).

As shown on **Table 4.14-8**, simultaneous construction of the Sand Canyon Recharge Conveyance Pipeline improvements, the Sand Canyon Booster Station, and the Sand Canyon Conveyance Pipeline Discharge Outlet, the highest construction noise levels are expected to be 65.5 to 72.8 dBA L<sub>eq</sub> at the nearest receiver locations, estimated at 20-feet from the pipeline centerline. Appendix 8.3 of the NIA includes the detailed CadnaA construction noise model inputs. These noise levels would not exceed the applicable daytime noise level limit of 80 dBA L<sub>eq</sub>. Therefore, no mitigation is required for daytime construction activities at the Sand Canyon Recharge Conveyance Pipeline improvements, the Sand Canyon Booster Station, and the Sand Canyon Conveyance Pipeline Discharge Outlet as the nearest sensitive receiver locations will be below the daytime noise significance threshold, and therefore less than significant.

As indicated pipeline construction would occur within 30 ft of noise sensitive residential receivers along the majority of the Sand Canyon Recharge Conveyance Pipeline, at 30 feet pipeline construction activity is estimated to generate noise levels up to 79.1 dBA L<sub>eq</sub> for segments with paving and 75.6 dBA L<sub>eq</sub> for the segments without paving. Appendix 8.4 of the NIA includes the CadnaA construction noise model inputs. These noise levels would not exceed the applicable daytime noise level limit of 80 dBA L<sub>eq</sub>. Therefore, no mitigation is required for daytime construction activities at the Sand Canyon Recharge Area, as the nearest sensitive receiver locations will be below the daytime noise significance threshold, and therefore less than significant.

The highest construction noise levels during the evaporation pond and Sand Canyon Monitoring Well drilling activities noise levels are expected to exceed the daytime and nighttime noise level limit at the nearest receiver locations within 125 ft and 325 ft, respectively, utilizing the Composite Reference Noise Level (dBA L<sub>eq</sub>) and Reference Power Level (dBA L<sub>w</sub>) shown in **Table 4.14-5** to determine reference noise levels for well drilling. Since the exact locations of these activities are unknown, and these activities would occur for

24 hours a day for up to two weeks, thus without mitigation these activities will exceed the applicable noise level limit during the day and nighttime if located within 325 ft of residences. This would be considered a significant impact. Therefore, mitigation is required for nighttime well drilling activities that are a part of the Sand Canyon Monitoring Well.

With implementation of the barrier, enforced through **MM NOI-1**, noise levels would be reduced to a maximum noise level of 69 dBA  $L_{eq}$  at 50 ft. None of the potential monitoring well locations would be located within 50 ft of residences.

**Table 4.14-8  
 SAND CANYON RECHARGE PROJECT – CONSTRUCTION EQUIPMENT NOISE LEVELS**

Receiver Location <sup>1</sup>	Construction Noise Levels (dBA $L_{eq}$ )					
	Site Preparation	Grading	Building Construction	Paving	Pipeline Construction	Highest Levels <sup>2</sup>
R6	72.8	72.1	70.6	66.7	68.4	72.8
R7	65.5	64.8	--	--	61.1	65.5
R8	71.9	71.2	--	--	67.5	71.9
R9	65.5	64.8	--	--	61.1	65.5
R10	66.0	65.3	--	--	61.6	66.0

-- Recharge area would not include any building or paving activities.

<sup>1</sup> Noise receiver locations are shown on Figure 4.14-10

<sup>2</sup> CadnaA construction noise model inputs are included in Appendix 8.3 of the NIA.

**Conclusion: Combined Program Categories**

To evaluate whether the Program will generate potentially significant short-term (construction) noise levels at nearby receiver locations, a construction related daytime noise level limit of 80 dBA  $L_{eq}$ , a nighttime noise level limit of 70 dBA  $L_{eq}$  (FTA Transit Noise and Vibration Impact Assessment Manual, 2018). The construction noise analysis shows that with **MM NOI-1**, the nearby receiver locations will satisfy the daytime and nighttime significance thresholds during Program construction activities. Therefore, the noise impacts due to Program construction noise is considered *less than significant* at all receiver locations.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**NOI-1:** *To comply with the day- and nighttime noise level limit during the whole of well drilling activities, noise barriers with a minimum height of 14 ft shall be erected surrounding the drilling rig monitoring well locations such that the pumps, compressors, and the drilling rig are completely shielded from nearby residential areas. An effective barrier requires a weight of at least 2 pounds per square foot of face area with no decorative cutouts, perforations, or line-of-sight openings between shielded areas and the source. Examples of temporary barrier material includes 5/8-inch plywood, 5/8 inch oriented-strand board, or sound blankets capable of providing a minimum sound transmission loss (STC) of 27 or a NRC of 0.85.*

*Level of Significance After Mitigation: Less Than Significant*

### **Cumulative Impact Analysis**

The geographic scope for cumulative noise impacts is generally within 0.5 mile of the locations of individual projects that may be implemented under the proposed Program. This geographic scope is appropriate for noise because the proposed program's noise impacts are localized and site-specific. Beyond this distance, typical construction and operational noise would be indistinguishable from the background noise level due to distance attenuation and interference from environmental conditions (e.g., topography and air disturbance).

### ***Construction Noise***

The Program specific noise impact analysis presented above assumed that concurrent construction activities would occur, but it was determined that the combined construction noise would not have the potential to impact the same sensitive receivers and result in cumulative construction noise levels that exceed the applicable thresholds of significance. The severity of the impacts would vary depending upon the intensity of construction activities for cumulative projects and the proximities of residential, commercial, and industrial land uses to each construction site. Therefore, cumulative construction noise impacts may be potentially significant. Nevertheless, per **MM NOI-1**, the monitoring well drilling and related construction activities with the potential to generate construction noise in proximity to sensitive receivers and other concurrent construction activities would be required to incorporate noise reduction measures to reduce noise levels to the FTA daytime and nighttime construction noise standards. As a result, regardless of whether a significant cumulative construction noise impact is occurring, the proposed Program's noise contribution would not be cumulatively considerable with incorporation of **MM NOI-1**.

### ***Operational Noise***

Cumulative operational noise impacts may be potentially significant if, when combined with regional operational noise, Program facility contributions to noise levels in the area exceed the established noise regulations of the jurisdiction within which the facility(s) are located. Based on the anticipated reduction of noise that would result from enclosure of the noisiest equipment proposed to be installed as part of the Program—pumps, AWP equipment—operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases. As a result, the proposed Program's noise contribution would not be cumulatively considerable.

### ***Off-site Traffic Noise***

Cumulative growth in the Big Bear Valley would result in increased traffic volumes on local and regional roadways during construction, with minor contributions during operations. However, as discussed above, due to the relatively low number of anticipated operation and maintenance trips associated with individual Replenish Big Bear Program projects, impacts related to off-site roadway noise would be incremental and likely imperceptible when compared to the surrounding background traffic noise; therefore, the proposed Program would not have a cumulatively considerable contribution to this potential cumulative impact, significant or otherwise.

*Mitigation Measures: Implementation of **MM NOI-1** is required.*

*Level of Significance After Mitigation: Less than Significant*

**(b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?**

**Construction Vibration**

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized on **Table 4.14-9**. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the Caltrans. To describe the vibration impacts Caltrans provides the following equation:  $PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$ .

**Table 4.14-9  
 VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT**

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded trucks	0.076
Large bulldozer/Caisson drilling	0.089

Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018, p. 184.

**Construction Vibration Levels**

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from typical Program construction activities would cause only intermittent or transient, localized intrusion. The proposed Program’s construction activities most likely to cause vibration impacts are:

Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to building, the vibration is usually short-term (transient) and is not of enough magnitude to cause building damage.

Trucks: Trucks hauling building materials to construction sites can be sources of transient vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

To assess the Program construction vibration levels, this analysis describes both the transient vibration levels associated with typical construction equipment activities and the continuous vibration levels associated with the well drilling activities.

**Program Construction Activity Vibration Levels**

***Construction Vibration at the BBARWA WWTP Site: AWPf, Monitoring Wells, Solar Evaporation Ponds, and Pump Stations***

**Table 4.14-10** presents the expected Program related typical construction activity vibration levels at each of the receiver locations. At distances ranging from 433’ to 871’ from construction activities at the BBARWA WWTP Site: AWPf, Monitoring Wells, Solar Evaporation Ponds, and Pump Stations activities, including well drilling, the continuous construction vibration velocity levels are estimated to be less than 0.00 PPV (in/sec), as shown on **Table 4.14-10** for each of the individual

Program components at the BBARWA WWTP Site. Based on the vibration standards outlined in **Table 4.14-4**, the typical Program construction vibration levels will satisfy the transient human annoyance and building damage thresholds. Therefore, the vibration impacts due to Program typical construction activities are considered *less than significant*.

**Table 4.14-10  
 CONSTRUCTION EQUIPMENT VIBRATION LEVELS**

Receiver Location <sup>1</sup>	Distance to Const. Activity (Feet) <sup>2</sup>	Typical Construction Vibration Levels PPV (in/sec) <sup>3</sup>					Thresholds PPV (in/sec) <sup>4</sup>	Thresholds Exceeded? <sup>5</sup>
		Small bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level		
R1	817'	0.00	0.00	0.00	0.00	0.00	0.30	No
R2	433'	0.00	0.00	0.00	0.00	0.00	0.30	No

R1: Location R1 represents the backyard of existing noise sensitive residence located at 109 Palomino Drive located south of the BBARWA WWTP. R1 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L3, to describe existing ambient noise level.

R2: Location R2 represents the backyard existing noise sensitive residence located at 116 Palomino Drive, south of the BBARWA WWTP. R2 is placed in the private outdoor living areas (backyard) facing the project site.

<sup>1</sup> Construction receiver locations are shown on **Figures 4.14-7 through 4.14-10**

<sup>2</sup> Distance from receiver location to Program construction boundary.

<sup>3</sup> Based on the Vibration Source Levels of Construction Equipment (**Table 4.14-9**).

<sup>4</sup> Caltrans, Transportation and Construction Vibration Guidance Manual, 2020.

<sup>5</sup> Does the peak vibration exceed the acceptable vibration thresholds?

"PPV" = Peak Particle Velocity

**Construction Vibration at the Shay Pond Discharge Project**

**Table 4.14-11** presents the expected Program related typical construction activity vibration levels at each of the receiver locations. At distances ranging from 48' to 375' from construction activities at the Shay Pond Discharge Project activities, the continuous construction vibration velocity levels are estimated to be less than 0.00 to 0.03 PPV (in/sec), as shown on **Table 4.14-11** for each of the Shay Pond Discharge Project. Based on the vibration standards outlined in **Table 4.14-4**, the typical Program construction vibration levels will satisfy the transient human annoyance and building damage thresholds. Therefore, the vibration impacts due to Program typical construction activities are considered *less than significant*.

**Table 4.14-11  
 CONSTRUCTION EQUIPMENT VIBRATION LEVELS**

Receiver Location <sup>1</sup>	Distance to Const. Activity (Feet) <sup>2</sup>	Typical Construction Vibration Levels PPV (in/sec) <sup>3</sup>					Thresholds PPV (in/sec) <sup>4</sup>	Thresholds Exceeded? <sup>5</sup>
		Small bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level		
R3	48'	0.00	0.01	0.03	0.03	0.03	0.30	No
R4	111'	0.00	0.00	0.01	0.01	0.01	0.30	No
R5	375'	0.00	0.00	0.00	0.00	0.00	0.30	No

R3: Location R3 represents an existing noise sensitive residence located at 1458 Shay Road. This residence is located east of the Shay Pond Conveyance Pipelines. Since there are no private outdoor living areas (e.g. backyards) facing the project site, receiver R3 is placed at the building façade.

R4: Location R4 represents an existing noise sensitive residence located at 1485 E Big Bear Boulevard west of the Shay Pond Conveyance Pipelines. R4 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L2, to describe existing ambient noise level.



R5: Location R5 represents an existing noise sensitive residence located at 2025 Garnet Street east of the Shay Pond Conveyance Pipelines and west of Shay Pond. Receiver R5 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L1, to describe existing ambient noise level.

<sup>1</sup> Construction receiver locations are shown on **Figures 4.14-7 through 4.14-10**

<sup>2</sup> Distance from receiver location to Program construction boundary.

<sup>3</sup> Based on the Vibration Source Levels of Construction Equipment (**Table 4.14-9**).

<sup>4</sup> Caltrans, Transportation and Construction Vibration Guidance Manual, 2020.

<sup>5</sup> Does the peak vibration exceed the acceptable vibration thresholds?

"PPV" = Peak Particle Velocity

### Construction Vibration at the Sand Canyon Recharge Project

**Table 4.14-12** presents the expected Program related typical construction activity vibration levels at each of the receiver locations. At distances ranging from 28' to 141' from the Sand Canyon Recharge Project construction activities, including well drilling, the continuous construction vibration velocity levels are estimated to range from less than 0.00 to 0.12 PPV (in/sec), as shown on **Table 4.14-12** for each of the individual Sand Canyon Recharge Project components. Based on the vibration standards outlined in **Table 4.14-4**, the typical Program construction vibration levels will satisfy the transient human annoyance and building damage thresholds. Therefore, the vibration impacts due to Program typical construction activities are considered *less than significant*.

**Table 4.14-12  
 CONSTRUCTION EQUIPMENT VIBRATION LEVELS**

Receiver Location <sup>1</sup>	Distance to Const. Activity (Feet) <sup>2</sup>	Typical Construction Vibration Levels PPV (in/sec) <sup>3</sup>					Thresholds PPV (in/sec) <sup>4</sup>	Thresholds Exceeded? <sup>5</sup>
		Small bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level		
R6	141'	0.00	0.00	0.01	0.01	0.01	0.30	No
R7	20'	0.00	0.05	0.11	0.12	0.12	0.30	No
R8	89'	0.00	0.01	0.01	0.01	0.01	0.30	No
R9	44'	0.00	0.01	0.03	0.04	0.04	0.30	No
R10	28'	0.00	0.03	0.06	0.08	0.08	0.30	No

R6: Location R6 represents an existing noise sensitive residence located at 1467 Lassen Drive northeast of the Sand Canyon Conveyance Pipeline and Pump Station of the project site. Receiver R6 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L4, to describe existing ambient noise level.

R7: Location R7 represents an existing noise sensitive residence located at 43861 Mendocino Drive northeast of the Sand Canyon Recharge Area. Receiver R7 is placed in the private outdoor living areas (backyard) facing the project site.

R8: Location R8 represents an existing noise sensitive residence located at 43817 Sand Canyon Road southwest of the Sand Canyon Recharge Area. Receiver R8 is placed in the private outdoor living areas facing the project site.

R9: Location R9 represents an existing noise sensitive residence located at 43652 Sand Canyon Road south of the Sand Canyon Recharge Area. Receiver R9 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L5, to describe existing ambient noise level.

R10: Location R10 represents an existing noise sensitive residence located at 43485 Colusa Drive northeast of the Sand Canyon Recharge Area. Receiver R10 is placed in the private outdoor living areas (backyard) facing the project site. A 24-hour noise measurement was taken near this location, L6, to describe existing ambient noise level.

<sup>1</sup> Construction receiver locations are shown on **Figures 4.14-7 through 4.14-10**

<sup>2</sup> Distance from receiver location to Program construction boundary.

<sup>3</sup> Based on the Vibration Source Levels of Construction Equipment (**Table 4.14-9**).

<sup>4</sup> Caltrans, Transportation and Construction Vibration Guidance Manual, 2020.

<sup>5</sup> Does the peak vibration exceed the acceptable vibration thresholds?

"PPV" = Peak Particle Velocity

**Construction Vibration at the Pipelines**

**Table 4.14-13** presents the expected Program related typical construction activity vibration levels at each of the receiver locations. At distances beginning at 20' from the pipeline construction activities, including well drilling, the continuous construction vibration velocity levels are estimated to range from less than 0.00 to 0.12 PPV (in/sec), as shown on **Table 4.14-13** for each of the individual pipeline alignments. Based on the vibration standards outlined in **Table 4.14-4**, the typical Program construction vibration levels will satisfy the transient human annoyance and building damage thresholds. Therefore, the vibration impacts due to Program typical construction activities are considered *less than significant*.

**Table 4.14-13  
 CONSTRUCTION EQUIPMENT VIBRATION LEVELS**

Receiver Location <sup>1</sup>	Distance to Const. Activity (Feet) <sup>2</sup>	Typical Construction Vibration Levels PPV (in/sec) <sup>3</sup>					Thresholds PPV (in/sec) <sup>4</sup>	Thresholds Exceeded? <sup>5</sup>
		Small bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level		
Pipeline	20'	0.00	0.05	0.11	0.12	0.12	0.30	No

<sup>1</sup> Construction receiver locations are shown on **Figures 4.14-7 through 4.14-10**

<sup>2</sup> Distance from receiver location to Program construction boundary.

<sup>3</sup> Based on the Vibration Source Levels of Construction Equipment (**Table 4.14-9**).

<sup>4</sup> Caltrans, Transportation and Construction Vibration Guidance Manual, 2020.

<sup>5</sup> Does the peak vibration exceed the acceptable vibration thresholds?

"PPV" = Peak Particle Velocity

**Operational Vibration**

**Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

Operational activities associated with individual projects implemented under this Program Component would not include sources of vibration, such as heavy machinery. Components such as monitoring wells, pump stations, the AWPf, and solar arrays, do not generate substantial vibration. Therefore, no operational vibration impact would occur, and no mitigation is required.

**Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

Operational activities associated with individual projects implemented under this Program Component would not include sources of vibration, such as heavy machinery. Components such as pipelines do not generate substantial vibration. Therefore, no operational vibration impact would occur, and no mitigation is required.

**Replenish Big Bear Component 3: Shay Pond Discharge Project**

Operational activities associated with individual projects implemented under this Program Component would not include sources of vibration, such as heavy machinery. Components such as pipelines do not generate substantial vibration. Therefore, no operational vibration impact would occur, and no mitigation is required.

**Replenish Big Bear Component 4: Solar Evaporation Ponds**

Operational activities associated with individual projects implemented under this Program Component would not include sources of vibration, such as heavy machinery. Components such as solar evaporation ponds do not generate substantial vibration. Therefore, no operational vibration impact would occur, and no mitigation is required.

### ***Replenish Big Bear Component 5: Sand Canyon Recharge Project***

Operational activities associated with individual projects implemented under this Program Component would not include sources of vibration, such as heavy machinery. Components such as monitoring wells, pump stations, and pipelines, do not generate substantial vibration. Therefore, no operational vibration impact would occur, and no mitigation is required.

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant*

### **Cumulative Impact Analysis**

The geographic scope for cumulative vibration impacts is generally within 0.5 mile of the locations of individual projects that may be implemented under the proposed Program. This geographic scope is appropriate for vibration because the proposed Program's vibration impacts are localized and site-specific. Beyond this distance, typical construction and operational vibration would be indistinguishable from the background vibration level due to distance attenuation and interference from environmental conditions. If concurrent construction activities occur in close proximity to proposed Program activities, combined construction vibration would have the potential to impact the same sensitive receivers and result in cumulative construction vibration levels that exceed the applicable thresholds of significance. However, given that the proposed Program would not contribute to a significant vibration impact at nearby sensitive receptors, it is anticipated that the proposed Program's vibration contribution would be less than cumulatively considerable, and therefore less than significant.

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less than Significant*

- c) **For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

There is only one airport located within Big Bear Valley: Big Bear Airport. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Alternatives (shown on **Figure 3-2**) traverse either side of the Big Bear Airport boundaries. No other physical components of the Program would be located within either the Airport Noise Contours or Airport Safety Review Areas shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas (**Figure 4.10-7**).

### **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

There is only one airport located within Big Bear Valley: Big Bear Airport. The BBARWA WWTP Site is not located within the Airport Noise Contours or Airport Safety Review Areas shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas (**Figure 4.10-7**). Thus, it is not anticipated that persons working or residing in the project area would be exposed to excessive airport noise levels. Furthermore, BBARWA and the Program Team would be required to comply with Cal/OSHA regulations related to worker exposure to noise. These regulations ensure that employees would not be exposed to excessive noise levels. Therefore, impacts related to aircraft noise would be less than significant, and no mitigation is required.

### **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

Construction of Conveyance Pipelines has a potential to be located adjacent to the Big Bear Airport and could be installed within the Big Bear Airport's noise contours. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options have been overlaid on the Big Bear Airport Layout Map (**Figure 4.10-14**) and the Big Bear Airport Safety Review Area Map (**Figure 4.10-15**). These Maps indicate that, regardless of the alignment selected by BBARWA for the Stanfield Marsh/Big Bear Lake Discharge Project, a portion of the alignment will be constructed within one of the three airport safety review areas. During construction of facilities in close proximity to the Big Bear Airport, there is a potential for workers at the site to be exposed to substantial noise from the Big Bear Airport. Construction contractors would be required to comply with Cal/OSHA regulations related to worker exposure to noise. Section 5096 of these regulations sets duration-based noise exposure limits for construction workers that require provision of personal protective equipment should exposure exceed the specified limits. The requisite adherence to these regulations would reduce construction worker exposure to high noise levels such that proposed Program construction activities would not expose employees to excessive noise levels. Therefore, construction workers would not be exposed to excessive noise levels from aircraft noise. Furthermore, construction noise, when combined with existing aircraft noise levels, would fall within the scope of the analysis provided under issue "a" as impacts were modeled against the existing noise environment, which includes aircraft noise. Construction impacts related to aircraft noise and related to construction noise when combined with the ambient aircraft noise, would be less than significant, and no mitigation is required.

During operation, the Conveyance Facilities are anticipated to be unmanned and therefore would not put any workers at risk, except where maintenance is required. Furthermore, as previously stated, BBARWA and the Program Team would be required to comply with Cal/OSHA regulations related to worker exposure to noise. These regulations would reduce employee exposure to high noise levels such that operational activities would not expose employees to excessive noise levels. Therefore, operational impacts related to aircraft noise would be less than significant, and no mitigation is required.

### **Replenish Big Bear Component 3: Shay Pond Discharge Project**

There is only one airport located within Big Bear Valley: Big Bear Airport. The Shay Pond Discharge Project footprint is not located within the Airport Noise Contours or Airport Safety Review Areas shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas (**Figure 4.10-7**). Thus, it is not anticipated that persons working or residing in the project area would be exposed to excessive airport noise levels. During operation, the Shay Pond Conveyance Facilities are anticipated to be unmanned and therefore would not put any workers at risk, except where maintenance is required. Furthermore, BBARWA and the Program Team would be required to comply with Cal/OSHA regulations related to worker exposure to noise. These regulations ensure that employees would not be exposed to excessive noise levels. Therefore, impacts related to aircraft noise would be less than significant, and no mitigation is required.

### **Replenish Big Bear Component 4: Solar Evaporation Ponds**

There is only one airport located within Big Bear Valley: Big Bear Airport. The BBARWA WWTP Site is not located within the Airport Noise Contours or Airport Safety Review Areas shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas (**Figure 4.10-7**). Thus, it is not anticipated that persons working or residing in the project area would be exposed to excessive airport noise levels. Furthermore, BBARWA and the Program Team would be required to comply with Cal/OSHA regulations related to worker exposure to noise. These regulations ensure that employees would not be exposed to excessive noise levels. Therefore, impacts related to aircraft noise would be less than significant, and no mitigation is required.

### **Replenish Big Bear Component 5: Sand Canyon Recharge Project**

There is only one airport located within Big Bear Valley: Big Bear Airport. The Sand Canyon Recharge Project footprint is not located within the Airport Noise Contours or Airport Safety Review Areas shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas (**Figure 4.10-7**). Thus, it is not anticipated that persons working or residing in the project area would be exposed to excessive airport noise levels. During operation, the Sand Canyon Recharge Project facilities are anticipated to be unmanned and therefore would not put any workers at risk, except where maintenance is required. Furthermore, BBARWA and the Program Team would be required to comply with Cal/OSHA regulations related to worker exposure to noise. These regulations ensure that employees would not be exposed to excessive noise levels. Therefore, impacts related to aircraft noise would be less than significant, and no mitigation is required.

*Level of Significance Before Mitigation: Less than Significant*

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less than Significant*

### **Cumulative Impact Analysis**

As discussed above, there is only one airport located within Big Bear Valley: Big Bear Airport. Individual projects and cumulative projects would be required to comply with the applicable airport land use plan, Federal and State OSHA regulations, and applicable CBC standards related to the protection of residents and workers from exposure to excessive aircraft noise. As a result, regardless of whether a significant cumulative noise impact related to airport operations exists, the proposed program would not have a cumulatively considerable contribution to this potential cumulative impact, significant or otherwise, and no mitigation is required.

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less than Significant*

### **4.14.6 Unavoidable Adverse Impacts**

The programmatic evaluation of noise and vibration presented in the preceding analysis demonstrates that neither construction nor operation of individual projects under the proposed Program would result in the exceedance of the identified noise and vibration thresholds after implementation of the recommended **MMs**. Furthermore, although individual projects implemented under the Program may be located in close proximity to the Big Bear Airport, compliance with existing regulations and the infrequent nature of operation and maintenance activities would minimize to a level of less than significant the potential for the exposure of future employees to excessive noise levels from airport operations. Therefore, no unavoidable significant impact to noise and vibration would result from implementing the proposed Program.

## 4.15 POPULATION AND HOUSING

### 4.15.1 Introduction

This section assesses potential impacts on population and housing from the implementation of the Replenish Big Bear Program (Program).

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Population and Housing
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

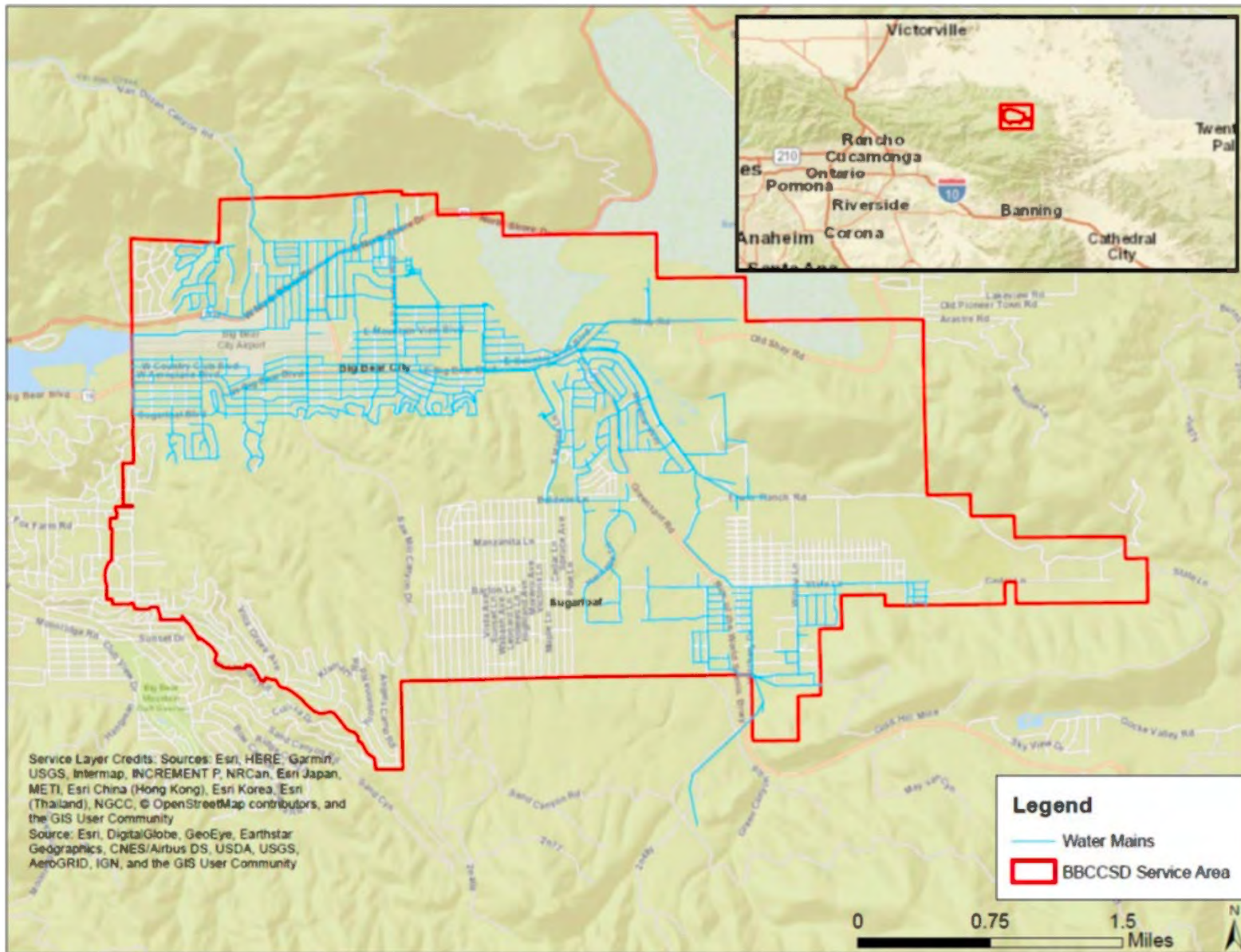
One comment pertaining to population and housing was received in response to the NOP, but no comments were made at the Scoping Meeting held on behalf of the Program. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

### 4.15.2 Environmental Setting: Population and Housing

A variety of sources were consulted for the population and housing information presented in this section of the DPEIR. WSC calculated the 2020 service area population for BBARWA at 18,480 persons. Furthermore, additional current and detailed examinations of population in the Big Bear Valley are the two recently completed 2020 UWMPs compiled by the BBLDWP and BBCCSD. In fact, the BBCCSD chose to use its recent annual connection rate in its UWMP as the basis for its population growth rate (0.35% per year) rather than SCAG's forecast growth rate for the Big Bear Valley (0.02% per year). This document relies on the BBCCSD's forecast methodology based on a more specific involvement in the local community.

Error! Reference source not found. below outlines the current estimated and future population within the BBCCSD's service area. **Figure 4.15-1** shows the BBCCSD service area, and the 2020 estimated population in the service area was 11,679 persons. Over the 25-year planning period the population in the service area is forecast to grow to 12,751, an increase over the 20+ year planning period of 1,072 residents. Based on these values, annual growth is forecast to be about 54-55 new residents. SCAG forecasts that the current number of households (residences) is approximately 5,440 in the BBCCSD's service area.





**Figure 3-1. BCCSD Service Area**

**FIGURE 4.15-1**

**Table 4.15-1**  
**BBCCSD CURRENT AND PROJECTED POPULATION**

Population Served	2020	2025	2030	2035	2040	2045
BBCCSD Service Area	11,679	11,886	12,097	12,311	12,529	12,751

Source: BBCCSD 2020 UWMP

**Table 4.15-2** outlines the current estimated and future population within the BBLDWP’s service area.

**Table 4.15-2**  
**BBLDWP CURRENT AND PROJECTED POPULATION**

Population Served	2020	2025	2030	2035	2040	2045
Full Time Residents <sup>1,2,4</sup>	13,155	17,068	14,145	18,297	15,164	15,701
Average Temporary Population <sup>3,4</sup>	13,662	29,589	14,646	31,817	18,945	19,616
Average Annual Population <sup>4</sup>	16,434	30,730	17,672	32,943	34,109	35,317

Source: BBCCSD 2020 UWMP

Notes: (1) Based on 2019 American Community Survey (ACS), approximately 32.9% of the BBLDWP’s households are occupied and assumed to be permanent.

(2) Assumed average household is 2.45 persons (2019 ACS) year-round.

(3) Temporary population assumed to equate to 4 times the full-time population during the holidays and weekends (114 days out of the year).

(4) Assumes a 0.7% annual growth rate beginning in 2020. In addition, 50 units at 2.45 persons per unit has been added to the population.

**Figure 4.15-2** shows the BBLDWP service areas and the 2020 estimated population in the service area was 13,155 persons. BBLDWP’s service area includes the City of Big Bear Lake and several other service areas throughout the Big Bear Valley. This situation is a result of the City of Big Bear Lake’s acquisition of a private water company soon after incorporating with the BBLDWP continuing to ensure service to these outlying areas shown on **Figure 4.15-2**. The BBLDWP approach to estimating future growth in water demand is slightly different than that of the BBCCSD. The demand for water is divided into two population segments: full time residents and temporary population. As shown on **Table 4.15-2** the full-time residential population within the service area is estimated to be 15,701 in 2045. This is based on an annual growth of 0.7% over the next 20+ years and represents an increase of over the 20+ year planning period of 2,546 residents. Based on these values, annual growth is forecast to be about 127 new residents. SCAG forecasts that the current number of households (residences) is approximately 5,670 persons in the BBLDWP’s service area.

BBLDWP also calculated the average temporary population with the goal of defining total actual demand on its water system. The method of calculating the average temporary population is discussed in the BBLDWP UWMP (Chapter 3). **Table 4.15-2** shows that currently, an average temporary population of 16,434 persons can be found in the Big Bear Valley. By 2045, the average temporary population is forecast to be 19,616, or an increase of 3,182 persons relative to the present. **Table 4.15-2** also presents data regarding “average annual population,” again allowing a better forecast of future water consumption.



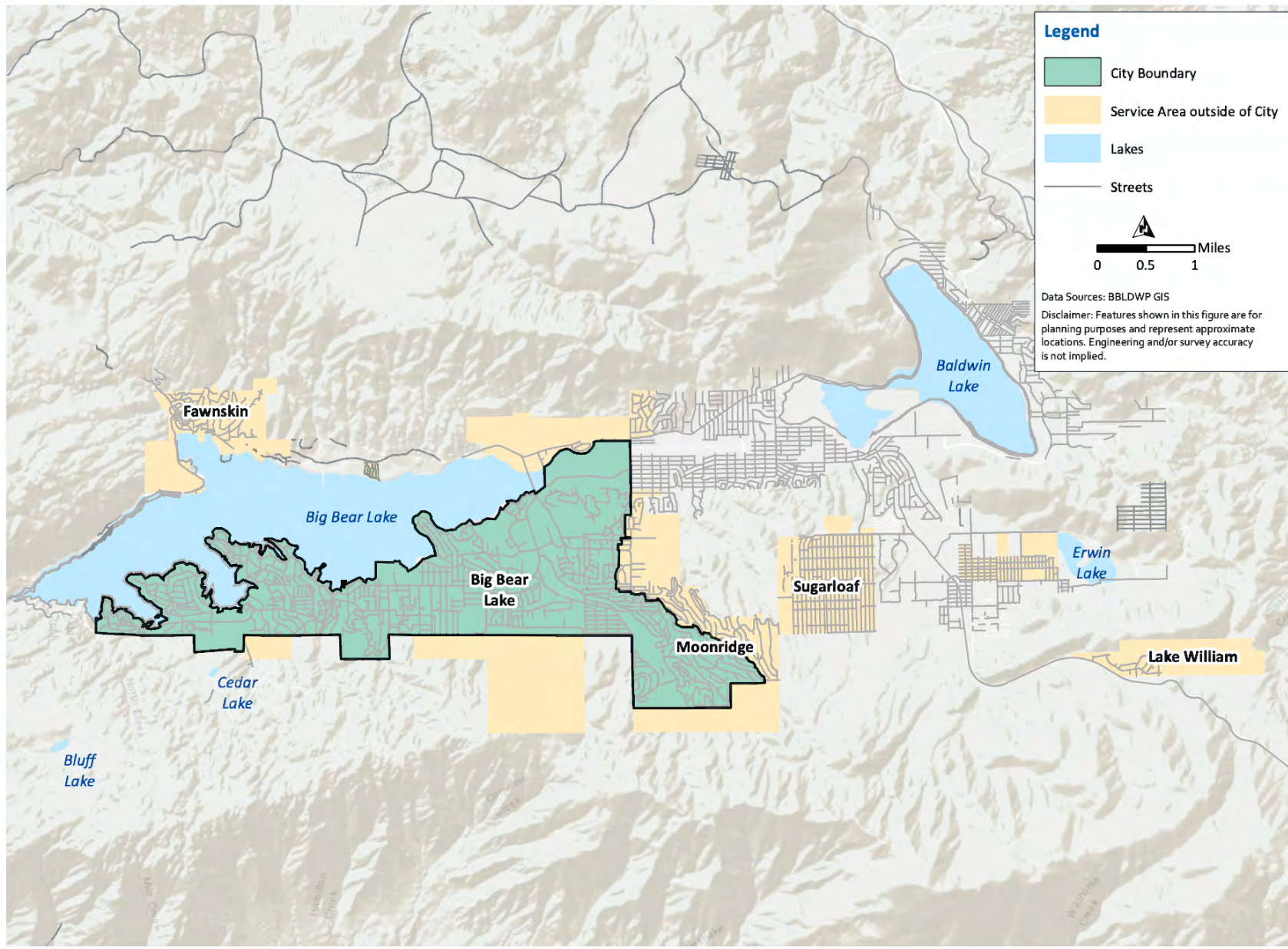


Figure 3-1 Water Service Area

FIGURE 4.15-2

Please note that all the population forecasts summarized above have been made without assuming the Program would be in place. Both of the referenced UWMPs indicate that sufficient water supplies are available to meet forecast demand for water without being dependent on the Program. Thus, the Program is designed to create resilience in the future water supply, not to become the basis for future growth in the Big Bear Valley.

#### **4.15.3 Regulatory Setting**

The following regulations are applicable to population and housing.

##### **4.15.3.1 State**

###### **Housing Element Law: California Government Code Section 65584(a)(1)**

Pursuant to California Government Code Section 65584(a)(1), the California Department of Housing and Community Development (HCD) is responsible for determining the regional housing needs assessment (segmented by income levels) for each region's planning body known as a "council of governments" (COG), SCAG being the COG serving the Southern California area, except for San Diego County. HCD prepares an initial housing needs assessment and then coordinates with each COG to arrive at the final regional housing needs assessment.

###### **The Sustainable Communities and Climate Protection Act of 2008**

The Sustainable Communities and Climate Protection Act of 2008 (SB 375, Steinberg) focuses on aligning transportation, housing, and other land uses to achieve regional GHG emission reduction targets established under the California Global Warming Solutions Act, also known as AB 32. SB 375 requires MPOs to develop a SCS as part of the RTP, with the purpose of identifying policies and strategies to reduce per capita passenger vehicle-generated GHG emissions. As set forth in SB 375, the SCS must: (1) identify the general location of land uses, residential densities, and building intensities within the region; (2) identify areas within the region sufficient to house all the population of the region, including all economic segments of the population, over the course of the planning period; (3) identify areas within the region sufficient to house an eight-year projection of the regional housing need; (4) identify a transportation network to service the regional transportation needs; (5) gather and consider the best practically available scientific information regarding resource areas and farmland in the region; (6) consider the state housing goals; (7) establish the land use development pattern for the region that, when integrated with the transportation network and other transportation measures and policies, will reduce GHG emissions from automobiles and light-duty trucks to achieve GHG emission reduction targets set by CARB, if there is a feasible way to do so; and (8) comply with air quality requirements established under the CAA.

###### **Housing Crisis Act of 2019**

The Housing Crisis Act of 2019 (SB 330, Skinner) seeks to speed up housing production in the next half decade by eliminating some of the most common entitlement impediments to the creation of new housing, including delays in the local permitting process and cities enacting new requirements after an application is complete and undergoing local review—both of which can exacerbate the cost and uncertainty that sponsors of housing projects face. In addition to speeding up the timeline to obtain building permits, the bill prohibits local governments from reducing the number of homes that can be built through down-planning or down-zoning or the introduction of new discretionary design guidelines. The bill is in effect as of January 1, 2020, and expires on January 1, 2025.

### **Fair Employment and Housing Act (FEHA)**

The Fair Employment and Housing Act (FEHA) of 1959 (Government Code § 12900 et seq.) prohibits housing discrimination on the basis of race, color, religion, sexual orientation, marital status, national origin, ancestry, familial status, disability, or source of income.

### **Unruh Civil Rights Act**

The Unruh Civil Rights Act of 1959 (California Civil Code § 51) prohibits discrimination in “all business establishments of every kind whatsoever.” The provision has been interpreted to include businesses and persons engaged in the sale or rental of housing accommodations.

### **AB 1763**

AB 1763, effective January 1, 2020, amends the State Density Bonus Law (California Government Code § 65915) to allow for taller and denser 100 percent affordable housing developments, especially those near transit, through the creation of an enhanced affordable housing density bonus.

### **Housing Element Law**

California Government Code Section 65583 requires cities and counties to prepare a housing element, as one of the seven state-mandated elements of the General Plan, with specific direction on its content.

### **Relocation Assistance Law: California Government Code Section 7261(a)**

Section 7261(a) of the California Government Code requires programs or projects undertaken by a public entity must be planned in a manner that (1) recognizes, at an early stage in the planning of the programs or projects and before the commencement of any actions which will cause displacements, the problems associated with the displacement of individuals, families, businesses, and farm operations, and (2) provides for the resolution of these problems to minimize adverse impacts on displaced persons and to expedite program or project advancement and completion. The displacing agency must ensure the relocation assistance advisory services are made available to all persons displaced by the public entity. If the agency determines that any person occupying property immediately adjacent to the property where the displacing activity occurs is caused substantial economic injury as a result of the displacement, the agency may also make the advisory services available to that person.

#### **4.15.3.2 Local**

### **Southern California Association of Governments**

As the designated MPO for the six-county subregion that includes, but is not limited to, Riverside, San Bernardino, and Los Angeles Counties, SCAG prepares several plans to address regional growth, including the RTP/SCS/Connect SoCal). On September 3, 2020, SCAG adopted its Connect SoCal: The 2020-2045 RTP/SCS, which is an update to the previous 2016 RTP/SCS. Using growth forecasts and economic trends, the RTP/SCS provides a vision for transportation throughout the region for the next 25 years that achieves the statewide reduction targets and in so doing identifies the amount and location of growth expected to occur within the region.

The regional growth forecasts undertaken by SCAG are developed through the 2045 planning horizon. SCAG is mandated by Federal and State law to research and draw up plans for transportation, growth management, hazardous waste management, and a regional growth forecast that is the foundation for these plans and regional air quality plans developed by SCAQMD. SCAG prepares several plans to address regional growth, including the RHNA, the RTP/SCS/Connect SoCal), the Federal Transportation Improvement Program (FTIP), and the

annual State of the Region reports to measure progress toward achieving regional planning goals and policies. The projected growth in population, household, and employment is the data relied upon during development of SCAG's RTP, SCS, and RHNA. Consistency with the growth forecast at the subregional level is one criterion that SCAG uses in exercising its Federal mandate to review "regionally significant" development projects for conformity with regional plans.

### **Regional Housing Needs Assessment**

SCAG prepares the RHNA mandated by State law so that local jurisdictions can use this information during their periodic updates of each General Plan Housing Element. The RHNA identifies the housing needs for very low income, low income, moderate income, and above moderate-income groups, and allocates these targets among the local jurisdictions that comprise SCAG. The RHNA addresses existing and future housing needs based on the most recent United States Census data on forecasted household growth, historical growth patterns, job creation, household formation rates, and other factors. The need for new housing is distributed among the four income groups so that each community moves closer to the regional average income distribution, referred to as a "social equity adjustment."

The most recent RHNA allocation, the 6th Cycle Final RHNA Allocation Plan, was adopted by SCAG's Regional Council on March 4, 2021 and modified on July 1, 2021. This allocation identifies housing needs for the projection period of June 30, 2021 through October 15, 2029. Local jurisdictions are required by State law to update their General Plan Housing Elements based on the most recently adopted RHNA allocation and to plan a method of meeting the RHNA requirements of each local jurisdiction.

### **San Bernardino Countywide Plan**

The San Bernardino Countywide Plan, include Housing Elements. A Housing Element is required by State law to be a component of every County's General Plan because housing needs are recognized as a statewide concern. As such, the Housing Element of a local jurisdiction's General Plan is the only element that is subject to approval by the State. Pursuant to State law, the Housing Element must identify the city's/county's housing needs, the sites that can accommodate these needs, and the policies and programs to assure that the housing units necessary to meet these needs can be provided. The primary goal of a Housing Element is to provide a range of housing opportunities for all income groups. The goals of the San Bernardino Countywide Plan include the following:

- |             |            |   |
|-------------|------------|---|
| <b>Goal</b> | <b>H-1</b> | A broad range of housing types in sufficient quantity, location, and affordability levels that meet the lifestyle needs of current and future residents, including those with special needs.                          |
| <b>Goal</b> | <b>H-2</b> | An efficient administrative process that recognizes the need for efficient and timely review of residential projects while also ensuring and valuing the need for quality design, environmental review, and planning. |
| <b>Goal</b> | <b>H-3</b> | Neighborhoods that protect the health, safety, and welfare of the community, and enhance public and private efforts in maintaining, reinvesting in, and upgrading the existing housing stock.                         |
| <b>Goal</b> | <b>H-4</b> | The development, maintenance, modernization, and preservation of affordable housing; and the provision of assistance, where feasible, for residents to rent or purchase adequate housing in San Bernardino County.    |



**Goal H-5** Equal housing opportunities for all persons regardless of race, age, religion, sex, marital status, disability status, ancestry, national origin, or color.

**City of Big Bear Lake General Plan**

The City of Big Bear Lake General Plan include Housing Elements. A Housing Element is required by State law to be a component of every City's General Plan because housing needs are recognized as a statewide concern. As such, the Housing Element of a local jurisdiction's General Plan is the only element that is subject to approval by the State. Pursuant to State law, the Housing Element must identify the city's/county's housing needs, the sites that can accommodate these needs, and the policies and programs to assure that the housing units necessary to meet these needs can be provided. The primary goal of a Housing Element is to provide a range of housing opportunities for all income groups. The goals of the City of Big Bear Lake General Plan include the following:

- Goal H1** Provide Adequate Sites to Accommodate Projected Housing Needs.
- Goal H2** Encourage and Support Development of Adequate Housing to Meet the Needs of Low- And Moderate-Income Households.
- Goal H3** Facilitate Housing Development with Minimal Governmental Constraints
- Goal H4** Maintain and Conserve the Existing Affordable Housing Stock in a Sound, Safe, and Sanitary Condition
- Goal H5** Promote Equal Housing Opportunities for all City of Big Bear Residents
- Goal H6** Increase Access to Decent and Suitable Housing for Persons with Special Needs Including Homeless Persons
- Goal H7** Promote Energy Conservation in Residential Development

**4.15.4 Thresholds of Significance**

According to Appendix G, Section XIV, of the State CEQA Guidelines, a project would have a significant effect on population and housing if the project would:

- a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure); or
- b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

**4.15.5 Potential Impacts**

This section evaluates the potential impacts of the Program on population and housing.

- a) **Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

**Program Category 1: Conveyance Pipelines**

This Program Category includes permitting, design, and construction of more than seven miles of pipeline for Program Water and RO brine minimization. This Program Category and the Program

as a whole would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley.

Construction: Construction of the proposed infrastructure would require temporary employment. It is reasonable to assume that the majority of the construction employment opportunities would be filled by workers living within Southern California. They would become part of the Big Bear Valley's temporary population over a period of one to two years of construction. Locally available temporary housing for about 40 construction employees would be required during this period of time for this Program Category. Adequate temporary housing resources are available within the Big Bear Valley that can accommodate a temporary housing population of over 16,000 on an average daily basis ( $40/16,000 = 0.25\%$ ). Therefore, the potential temporary increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing Program Team personnel, with perhaps a maximum of five new permanent employees that will be spread across the agencies that make up the Program Team; none would be specifically dedicated to pipeline maintenance. The number of new employees required would be minimal relative to the existing resident population in the Big Bear Valley of about 23,000 persons. Therefore, the potential increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

The final population question at issue is the potential for the successful implementation of the Program to cause substantial unplanned growth within the Big Bear Valley. Based on past experience, this analysis concludes that such unplanned growth, beyond that already forecast, is not likely for the following reasons:

- For the past two years, the Big Bear Valley has had some constraints in the use of water, but an adequate water supply has clearly been identified (the two 2020 UWMPs) to meet future population growth forecasts.
- Implementation of the Program would increase the resiliency and sustainability of regional water resources management within the Big Bear Valley; however, it is not forecast to change land uses or otherwise create activities that could increase population or employment beyond that which is anticipated in the local jurisdictions' General Plans (City of Big Bear Lake and San Bernardino County).

Thus, based on the historic growth pattern in the Big Bear Valley communities and future forecast of growth in the 2020 UWMPs, implementation of this Program Category is not forecast to cause the less than 1% growth forecast for the Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in climate is considered growth accommodating, not growth inducing. As such, and as stated above, the Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of this Program Category would result in less than significant impacts related to the inducement of substantial population growth.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

This Program Category includes permitting, design, and construction of three pump station and up to four monitoring wells, and the pipe outlet and erosion control in Sand Canyon. This Program

Category and the Program as a whole would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley.

Construction: Construction of the proposed infrastructure would require temporary employment. It is reasonable to assume that the majority of the construction employment opportunities would be filled by workers living within Southern California. They would become part of the Big Bear Valley's temporary population over a period of one to two years of construction. Locally available temporary housing for about 40 construction employees would be required during this period of time for this Program Category. Adequate temporary housing resources are available within the Big Bear Valley that can accommodate a temporary housing population of over 16,000 on an average daily basis ( $40/16,000 = 0.025\%$ ). Therefore, the potential temporary increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing Program Team personnel, with perhaps a maximum of five new permanent employees that will be spread across the agencies that make up the Program Team; none would be specifically dedicated to maintenance of Ancillary Facilities. The number of new employees required would be minimal relative to the existing resident population in the Big Bear Valley of about 23,000 persons. Therefore, the potential increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Based on the historic growth pattern in the Big Bear Valley communities and future forecast of growth in the 2020 UWMPs, implementation of this Program Category is not forecast to cause the less than 1% growth forecast for the Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in climate is considered growth accommodating, not growth inducing. As such, and as stated above, the Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of this Program Category would result in less than significant impacts related to the inducement of substantial population growth.

### **Program Category 3: Solar Evaporation Ponds**

This Program Category includes permitting, design, and construction of Solar Evaporation Ponds. This Program Category and the Program as a whole would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley.

Construction: Construction of the proposed infrastructure would require temporary employment. It is reasonable to assume that the majority of the construction employment opportunities would be filled by workers living within Southern California. They would become part of the Big Bear Valley's temporary population over a period of one to two years of construction. Locally available temporary housing for about 10 construction employees would be required during this period of time for this Program Category. Adequate temporary housing resources are available within the Big Bear Valley that can accommodate a temporary housing population of over 16,000 on an average daily basis ( $10/16,000 = 0.0625\%$ ). Therefore, the potential temporary increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing Program Team personnel, with perhaps a maximum of five new permanent employees that will be spread across the agencies that make up the Program Team; it is anticipated that these employees would primarily support BBARWA's operations, and as the Solar Evaporation Ponds would be located at BBARWA, these employees may be dedicated to operating the Solar Evaporation Ponds, amongst other facility operations. The number of new employees required would be minimal relative to the existing resident population in the Big Bear Valley of about 23,000 persons. Therefore, the potential increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Based on the historic growth pattern in the Big Bear Valley communities and future forecast of growth in the 2020 UWMPs, implementation of this Program Category is not forecast to cause the less than 1% growth forecast for the Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in climate is considered growth accommodating, not growth inducing. As such, and as stated above, the Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of this Program Category would result in less than significant impacts related to the inducement of substantial population growth.

#### **Program Category 4: BBARWA WWTP Upgrades**

This Program Category includes permitting, design, and construction of an AWPf at the existing BBARWA WWTP. This Program Category and the Program as a whole would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley.

Construction: Construction of the proposed infrastructure would require temporary employment. It is reasonable to assume that the majority of the construction employment opportunities would be filled by workers living within Southern California. They would become part of the Big Bear Valley's temporary population over a period of one to two years of construction. Locally available temporary housing for about 50 construction employees would be required during this period of time for this Program Category. Adequate temporary housing resources are available within the Big Bear Valley that can accommodate a temporary housing population of over 16,000 on an average daily basis ( $50/16,000 = 0.3125\%$ ). Therefore, the potential temporary increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing Program Team personnel, with perhaps a maximum of five new permanent employees that will be spread across the agencies that make up the Program Team; it is anticipated that these employees would primarily support BBARWA's operations, and as the AWPf would be located at BBARWA, these employees may be dedicated to operating the AWPf, amongst other facility operations. The number of new employees required would be minimal relative to the existing resident population in the Big Bear Valley of about 23,000 persons. Therefore, the potential increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Based on the historic growth pattern in the Big Bear Valley communities and future forecast of growth in the 2020 UWMPs, implementation of this Program Category is not forecast to cause

the less than 1% growth forecast for the Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in climate is considered growth accommodating, not growth inducing. As such, and as stated above, the Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of this Program Category would result in less than significant impacts related to the inducement of substantial population growth.

### **Combined Program Categories**

The Program includes permitting, design, and construction of an AWPf at the existing BBARWA WWTP, more than seven miles of pipeline for Program Water and RO brine minimization, three pump stations, a groundwater recharge facility, and up to four monitoring wells. The Program would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley.

Construction: Construction of the proposed infrastructure would require temporary employment. It is reasonable to assume that the majority of the construction employment opportunities would be filled by workers living within Southern California. They would become part of the Big Bear Valley's temporary population over a period of one to two years of construction. Locally available temporary housing for up to 140 construction employees would be required during this period of time. Adequate temporary housing resources are available within the Big Bear Valley that can accommodate a temporary housing population of over 16,000 on an average daily basis ( $140/16,000 = 0.875\%$ ). Therefore, the potential temporary increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing Program Team personnel, with perhaps a maximum of five new permanent employees that will be spread across the agencies that make up the Program Team. However, the number of new employees required would be minimal relative to the existing resident population in the Big Bear Valley of about 23,000 persons. Therefore, the potential increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Based on the historic growth pattern in the Big Bear Valley communities and future forecast of growth in the 2020 UWMPs, implementation of the Program is not forecast to cause the less than 1% growth forecast for the Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in climate is considered growth accommodating, not growth inducing. As such, and as stated above, the Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of the Program would result in less than significant impacts related to the inducement of substantial population growth.

*Level of Significance Before Mitigation: Less Than Significant Impact*

*Mitigation Measures: None required.*

- b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

**Program Category 1: Conveyance Pipelines**

Construction: This Program Category includes permitting, design, and construction of more than seven miles of pipeline for Program Water and RO brine minimization. A review of all of these locations indicates that based on current designs, only the Sand Canyon pipeline could impact any existing residential property. However, only a minimal number of residential properties (two) might be impacted by installing this pipeline, as almost all such alignments will follow existing dedicated public ROW; refer to **Figure 3-31**, which depicts the area in which an easement will be required to install the Sand Canyon pipeline. It is anticipated that, while the proposed Sand Canyon Recharge Conveyance Pipeline will be required to traverse through a residential property, it will not impact the residential structure. The effort to install the proposed pipeline alignments would not displace any persons or housing. Thus, the potential for adverse impacts on housing and potential relocation of people during construction is considered a less than significant impact. No mitigation is required.

Operation: Operation of this Program Category would not result in impacts to any persons or housing, as once the facilities are installed belowground, they would operate belowground. Thus, the operation of the proposed pipeline alignments would not displace any persons or housing. Thus, the potential for adverse impacts on housing and potential relocation of people is considered a less than significant impact. No mitigation is required.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: This Program Category includes permitting, design, and construction of three pump stations, a pipe outlet and discharge, and up to four monitoring wells. A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of Ancillary Facilities. While the locations of the Sand Canyon Monitoring Wells are not presently known, the Program Team intends to avoid impacting any housing as a matter of site selection. Thus, there is no potential for adverse impacts on housing and potential relocation of people during construction and no impacts would occur. No mitigation is required.

Operation: A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of Ancillary Facilities. While the locations of the Sand Canyon Monitoring Wells are not presently known, the Program Team intends to avoid impacting any housing as a matter of site selection. As such, operation of the Ancillary Facilities is not anticipated to impact persons or housing, as each will operate within its own facility intended for water and/or wastewater infrastructure. Thus, there is no potential for adverse impacts on housing and potential relocation of people during construction and no impacts would occur. No mitigation is required.

**Program Category 3: Solar Evaporation Ponds**

Construction: This Program Category includes permitting, design, and construction of Solar Evaporation Ponds. A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of Solar Evaporation Ponds at the BBARWA WWTP Site. Thus, there is no potential for adverse impacts on housing and potential relocation of people and no impacts would occur. No mitigation is required.



Operation: A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of Solar Evaporation Ponds at the BBARWA WWTP Site. As such, operation of the Solar Evaporation Ponds is not anticipated to impact persons or housing, as each will operate within its own facility intended for water and/or wastewater infrastructure. Thus, there is no potential for adverse impacts on housing and potential relocation of people and no impacts would occur. No mitigation is required.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: This Program Category includes permitting, design, and construction of an AWPF at the existing BBARWA WWTP. A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of AWPF at the BBARWA WWTP Site. Thus, there is no potential for adverse impacts on housing and potential relocation of people during construction and no impacts would occur. No mitigation is required.

Operation: A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of AWPF at the BBARWA WWTP Site. As such, operation of the BBARWA WWTP Upgrades is not anticipated to impact persons or housing, as each will operate within its own facility intended for water and/or wastewater infrastructure. Thus, there is no potential for adverse impacts on housing and potential relocation of people and no impacts would occur. No mitigation is required.

#### **Combined Program Categories**

*Level of Significance Before Mitigation: Less Than Significant Impact*

*Mitigation Measures: None required.*

#### **4.15.6 Cumulative Impacts**

As previously described, the Program would not result in a cumulatively considerable contribution to population growth within the Big Bear Valley. The Program is not forecast to cause significant growth inducement in the community or to cause the elimination of a substantial number of homes with the subsequent relocation of a substantial population. Thus, the Program would have a less than cumulatively considerable potential to impact the local population or housing and would therefore not result in a considerable contribution to cumulative impacts to population and housing.

#### **4.15.7 Unavoidable Adverse Impacts**

As determined in the preceding environmental evaluation, no significant and unavoidable impacts relating to population and housing would occur as a result of implementing the Program, and the Program's potential impacts on population and housing will be less than significant.

## 4.16 PUBLIC SERVICES

### 4.16 Introduction

This section assesses the potential impacts to public services from implementation of the Program.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Public Services
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to Public Services were received in response to the NOP, and no comments were received at the Scoping Meeting held on behalf of the Program. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

### 4.16.2 Environmental Setting: Public Services

#### 4.16.2.1 Fire/Emergency Protection Services

##### State

CAL FIRE is responsible for fire protection within State Responsibility Areas, including 31 million acres throughout California.<sup>91</sup> In most cases, State Responsibility Areas are protected directly by CAL FIRE. However, in some counties, such as San Bernardino County, fire protection within the State Responsibility Area is provided by San Bernardino County under response agreements with CAL FIRE. Nonetheless, depending on the scale and circumstances of the fire, CAL FIRE responds with firefighting resources to assist San Bernardino County. In addition, CAL FIRE has cooperative agreements to provide fire protection services to several cities within San Bernardino County.<sup>92</sup> CAL FIRE serves the Big Bear Valley area by way of a fire station at 45360 Lucky Baldwin Ranch Rd, Big Bear, CA 92314, which is located at the northern portion of Baldwin Lake.

##### Local

##### ***San Bernardino County Fire Department (SBCFD)***

The San Bernardino County Fire Protection District is a community-based, all hazard emergency services provider. SBCFD provides fire and emergency response services to more than 60 communities/cities and all unincorporated areas of the County. SBCFD's Office of Emergency Services (OES) serves as the Operational Area Lead Agency, coordinating the provision of

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<sup>91</sup> CAL FIRE, 2023. Fire Protection. <https://www.fire.ca.gov/what-we-do/fire-protection> (accessed 07/14/23)

<sup>92</sup> CAL FIRE, 2023. Cooperative Efforts. <https://www.fire.ca.gov/what-we-do/fire-protection/cooperative-efforts/> (accessed 07/14/23)

emergency services with the 24 cities and towns in San Bernardino County.<sup>93</sup> SBCFD has 48 professionally staffed fire stations within its service area and eight paid-call/volunteer fire stations, and covers 19,278 square miles. There are 1,043 County fire personnel and 640 fire suppression personnel.<sup>94</sup> Within the Big Bear Valley, the only SBCFD outpost is located in Fawnskin at 39188 Rim of the World Dr, Fawnskin, CA 92333. This is located outside of the Program Area, but is noted herein because the Program serves the Big Bear Valley region as a whole.

The San Bernardino County Fire Chief's Association compiled a *Fire and Rescue Mutual Aid Operational Plan* to integrate their operational plan as part of the current State of California Fire and Rescue Emergency Plan. The plan provides for the systematic mobilization, organization, and operation of fire and rescue resources within each zone of San Bernardino County to reduce and minimize effects of emergencies and disasters. The plan provides updated fire and rescue service inventory of personnel, apparatus, and equipment amongst all local, regional, and State fire officials. The plan indicates which fire agencies participate in each zone and the specialized equipment available to each agency.<sup>95</sup>

### **Big Bear Fire Department**

The Big Bear Fire Department is located in San Bernardino County along the shores of Big Bear Lake and surrounded by SBNF and serves a population of approximately 23,000 permanent residents. The fire protection and emergency medical service system is provided by the Big Bear Fire Department for the City of Big Bear Lake and the BBCCSD. Big Bear Fire Department also provides ambulance transport services to the surrounding areas of Big Bear Valley. The Department is a combination of a Community Services District and a Fire Protection District with a Joint Powers Agreement to operate both as a single unit. There is a Board of Directors for each district with both boards combining to make up the Board for the JPA operating as the Big Bear Fire Authority.

The Big Bear Valley is a large three season resort destination with populations upwards of 100,000 on the weekends during ski season and holidays. The City of Big Bear Lake is a Charter City and operates under a Council/Manager form of government with a five-member council elected at large. The City Council is also the governing board of the Big Bear Lake Fire Protection District that is a subsidiary district of the City of Big Bear Lake. BBCCSD is a California Special District that provides fire protection, water, sanitation, and solid waste services.

Within the Big Bear Valley, the Big Bear Fire Department serves the entire Program Area, as shown on **Figure 4.16-1**. Stations within the Big Bear Valley area are listed below in **Table 4.16-1**. Station equipment can be found at the Big Bear Fire Department website.<sup>96</sup>

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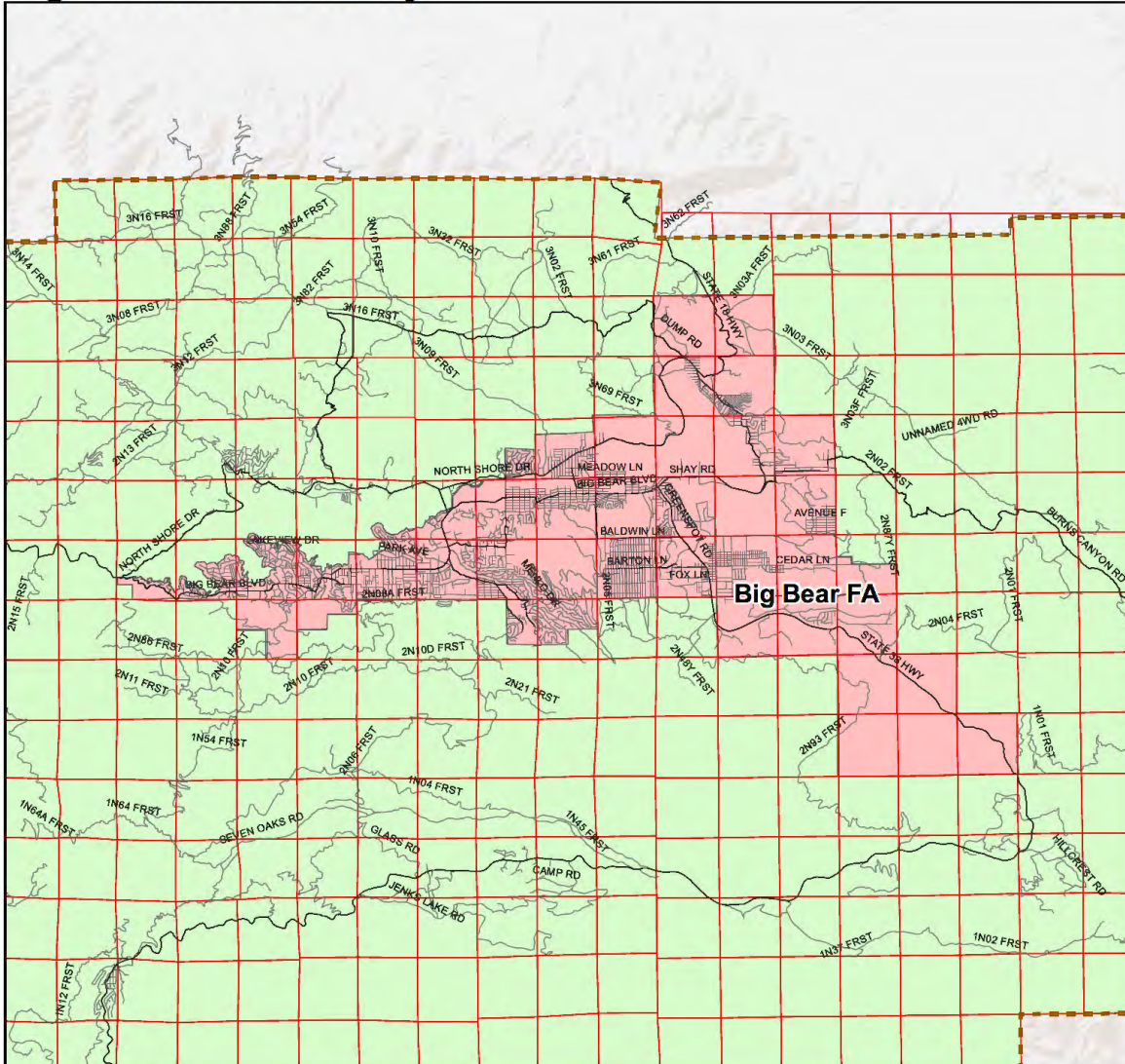
<sup>93</sup> San Bernardino County Fire Protection District, 2023. About the San Bernardino County Fire Protection District. <https://sbcfire.org/about/> (accessed 07/14/23)

<sup>94</sup> San Bernardino County Fire Protection District, 2023. San Bernardino County Fire Statistics (FY 2020-21). <https://sbcfire.org/statistics-fy-2020-21/#district-facts-anchor> (accessed 07/14/23)

<sup>95</sup> San Bernardino County Fire Chiefs' Association. 2014. <http://www.sbcounty.gov/Uploads/SBCFire/content/pdf/Mutual-Aid-Manual-with-Zone11.pdf> (accessed 07/14/23)

<sup>96</sup> Big Bear Fire Department, 2023. Station Equipment. <https://bigbearfire.com/about-us/station-equipment> (accessed 07/14/23)

# Big Bear Fire Authority



Principal Act	California Government Code §6502	Year Formed	2012	Governance	Board of Directors
Area	36.3 sq mi	Population	19,103 (2019)	Website	<a href="http://www.bigbearfire.com">www.bigbearfire.com</a>
LAFCO Fiscal Indicators	<a href="http://www.sbclafco.org/FiscalIndicators/JPA/BigBearFireAuthority.aspx">http://www.sbclafco.org/FiscalIndicators/JPA/BigBearFireAuthority.aspx</a>				
<b>LAFCO Service Reviews</b>					
Round 1, by agency	<a href="http://www.sbclafco.org/Proposals/ServiceReviews/MountainRegion.aspx">http://www.sbclafco.org/Proposals/ServiceReviews/MountainRegion.aspx</a>				
Round 2, water	N/A				
Round 2, sewer	N/A				
				<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f8d7da; border: 1px solid #c3e6cb;"></span> Big Bear Fire Authority</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d4edda;"></span> San Bernardino County Fire Protection District Mountain Service Zone</li> <li><span style="display: inline-block; width: 15px; height: 10px; border-top: 2px dashed #ffc107;"></span> Mountain Region</li> </ul>	
		Disclaimer: The information shown is intended to be used for general display only and is not to be used as an official map.		Agency service area shown, not jurisdiction boundary	

Author: Jeffrey Lum Map Created: 11/20/2019

FIGURE 4.16-1



**Table 4.16-1  
 BIG BEAR FIRE AUTHORITY FIRE STATIONS**

Station Number	Full Address
281	41090 Big Bear Blvd, Big Bear Lake, CA 92315
282	301 W Big Bear Blvd, Big Bear City, CA 92314
283	550 Maple Ln, Sugarloaf, CA 92386
284	45360 Lucky Baldwin Ranch Road, Big Bear City, CA 92314
<b>Paid Call Stations</b>	
Boulder Bay Station	39690 Big Bear Blvd, Big Bear Lake, CA 92315
Moonridge Station	42610 Rathbun Dr., Moonridge, CA 92315
SOURCE: Big Bear Fire Department, 2023. Stations. <a href="https://bigbearfire.com/about-us/stations">https://bigbearfire.com/about-us/stations</a> (accessed 07/14/23)	

#### 4.16.2.2 Police Protection Services

##### State

The California Highway Patrol (CHP) is a law enforcement agency created in 1929 to provide uniform traffic law enforcement for the State of California. The CHP has jurisdiction over all Interstates and State Routes in the Big Bear Valley service area including SR-18 and SR-38. The San Bernardino County Mountain Region is served by the CHP Inland Division, which has one facility in the area located at 31230 CA-18, Running Springs, CA 92382.

The Arrowhead Area is part of the statewide highway patrol agency. The office is located in Running Springs in the San Bernardino Mountains. The San Bernardino Mountains are approximately one hour east of Los Angeles, and are comprised of the resort communities of; Crestline, Lake Arrowhead, Running Springs, Big Bear City, Angelus Oaks and many more, in addition to the City of Big Bear Lake.

Within the Arrowhead Area jurisdiction, there are over 500 miles of unincorporated mountainous rural roadways. In addition to these roadways, hundreds more off highway vehicle trails and San Bernardino National Forest service roads are also patrolled by Arrowhead personnel. The patrol vehicle fleet is made up of SUVs and Ford Crown Victoria Interceptors. With the different types of vehicles, the officers have the ability to catch speeding motorists on the mountainous roads, or respond to critically injured off-road victims that could be miles from any pavement.

The Arrowhead Area is deeply embedded in the diverse communities it serves. The officers do not only write citations, but have ongoing community policing, public meetings and other programs that allow for open communication with residents and visitors.<sup>97</sup>

##### Local

##### ***San Bernardino County Sheriff's Department***

The San Bernardino County Sheriff's Department (SBCSD), in collaboration with various cities and other agencies that have jurisdiction in San Bernardino County, provides law enforcement services to the incorporated cities and the unincorporated communities in San Bernardino County.

<sup>97</sup> CHP, 2023. (865) Arrowhead. [https://www.chp.ca.gov/Find-an-Office/Inland-Division/Offices/\(865\)-Arrowhead](https://www.chp.ca.gov/Find-an-Office/Inland-Division/Offices/(865)-Arrowhead) (accessed 07/14/23)

Many cities have contracted police protection services to the SBCSD, including the City of Big Bear Lake. Personnel of the SBCSD provide law enforcement services to 1.2 million residents through eight County and 14 contract patrol stations and retain approximately 3,600 employees.<sup>98</sup>

SBCSD covers the entire Program Area, and the Big Bear Valley. The Big Bear Sheriff’s Station is located at 477 Summit Boulevard, Big Bear Lake, California 92315. The Station polices 258 square miles of unincorporated area to include the communities of Big Bear City, Sugarloaf, Erwin Lake, Baldwin Lake, Lake Williams and Fawnskin, in addition to serving the City of Big Bear Lake. In general, the mountain area has a low crime rate, which can be attributed to an increased law enforcement staff that includes both Sheriff personnel and an active Citizen Patrol with about 50 to 60 volunteer members funded by donations.

**4.16.2.3 Schools**

**San Bernardino County Superintendent of Schools**

With a County-wide kindergarten through 12th grade (K-12) student population of approximately 407,268 students attending 558 schools in the 2019-2020 school year, the San Bernardino County Superintendent of Schools (SBCSS) office, located at 601 North East Street in San Bernardino, is a regional agency that provides vital and necessary service, leadership, and advocacy to the 34 K-12 school districts in San Bernardino County.<sup>99</sup>

The Big Bear Valley area within San Bernardino County is made up of only one K-12 school district—Bear Valley Unified School District—and has a student population of approximately 2,166 students attending six schools.

**Table 4.16-2** shows the Bear Valley Unified School District, schools, and student population. This table represents the student population of Bear Valley Unified School District, of which the only school not located within the Big Bear Valley is Fallsvale Elementary School, which serves students kindergarten through 8<sup>th</sup> grade (K-8) in the unincorporated community of Forest Falls.

**Table 4.16-2  
 BEAR VALLEY UNIFIED SCHOOL DISTRICT, SCHOOLS, AND STUDENT POPULATION**

City	District	Number of Schools	Student Population (2021-2022)
Big Bear Lake & Unincorporated Big Bear Valley Communities	Bear Valley Unified School District	6	<b>Total: 2,166</b>
	Schools: Baldwin Lane Elementary School		402
	Big Bear High School		639
	Big Bear Middle School		478
	Fallsvale Elementary School		70
	North Shore Elementary School		540
	Chautauqua Continuation School		37
SOURCE: Education Data Partnership, 2023. District Summary. <a href="https://www.ed-data.org/district/San-Bernardino/San-Bernardino-County-Office-of-Education">https://www.ed-data.org/district/San-Bernardino/San-Bernardino-County-Office-of-Education</a> (accessed 07/14/23)			

<sup>98</sup> San Bernardino County Sheriff’s Department, 2023. About Us. <https://wp.sbcounty.gov/sheriff/about-us/> (accessed 07/14/23)

<sup>99</sup> Education Data Partnership, 2023. San Bernardino County – County Summary. <http://www.ed-data.org/County/San-Bernardino> (accessed 07/14/23)



#### **4.16.2.4 Parks**

Please refer to **Subsection 4.17.1, Setting**, in **Subchapter 4.17, Recreation**, for a discussion of parks within the Big Bear Valley.

#### **4.16.2.5 Library Services**

Like parks, open space, recreational facilities, and cultural opportunities, libraries contribute to the quality of life in a community. These community facilities can enhance a region's character as a good place to live and raise a family. In addition, a good library system contributes to the quality of educational opportunities in the area. The only public library located within the Big Bear Valley is the Big Bear Lake Branch Library, which is part of the San Bernardino County Library system. The Big Bear Lake Branch is located at 41930 Garstin Drive, Big Bear Lake, CA 92315.

#### **4.16.3 Regulatory Setting**

The following regulations are applicable to public services. See **Subchapter 4.17, Recreation**, for a discussion of regulations governing parks, and see **Subchapter 4.21, Wildfire**, for a discussion of regulations related to wildfire.

##### **4.16.3.1 Federal**

###### **Fire**

###### ***Disaster Mitigation Act (2000-Present)***

Section 104 of the Disaster Mitigation Act of 2000 (Public Law 106-390) requires a state mitigation plan as a condition of disaster assistance. There are two different levels of state disaster plans: "Standard" and "Enhanced." States that develop an approved Enhanced State Plan can increase the amount of funding available through the Hazard Mitigation Grant Program. The Disaster Mitigation Act has also established new requirements for local mitigation plans.

###### ***National Fire Plan 2000***

The National Fire Plan (NFP) was developed under Executive Order 11246 in August 2000, following a landmark wildland fire season. Its intent is to actively respond to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity for the future. The plan addresses firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability.

###### **Police, Schools, and Libraries**

There are no applicable Federal regulations related to police protection, schools, or library services.

##### **4.16.3.2 State**

###### **Fire**

###### ***California Fire Code***

The California Fire Code is a series of building, property, and lifeline codes outlined in Title 24, Part 9 of the California Code of Regulations. The California Fire Code is based on the International Fire Code, which is a collection of best practices agreed upon by professional fire agencies and

organizations. The California Fire Code uses a hazards classification system to outline the measures to take to protect life and property. It also regulates hazardous materials at fixed facilities. The California Fire Code, along with the CBC, is updated every three years to incorporate recommendations by the International Code Council.

### ***California Fire Plan***

The Strategic California Fire Plan is the State's road map for reducing the risk of wildfire. The plan was updated in 2020 and directs each CAL FIRE unit to prepare a locally specific Fire Management Plan. In compliance with the Strategic California Fire Plan, individual CAL FIRE units are required to develop fire management plans for their areas of responsibility. These documents assess the fire situation within each of CAL FIRE's 21 units and six contract counties. The plans include stakeholder contributions and priorities, and identify strategic areas for pre-fire planning and fuel treatment as defined by the people who live and work with the local fire problem. The plans are required to be updated annually.

### ***California State Multi-Hazard Mitigation Plan, draft (updated 2013)***

The purpose of the State Multi-Hazard Mitigation Plan (SHMP) is to substantially reduce deaths, injuries, and other losses attributed to natural and human-caused hazards in California. The SHMP provides guidance for hazard mitigation activities emphasizing partnerships among local, State, and Federal agencies as well as the private sector. Cal OES prepares the California SHMP. The SHMP identifies hazard risks and includes a vulnerability analysis and a hazard mitigation strategy. The SHMP is Federally required under the Disaster Mitigation Act of 2000 in order for the State to receive Federal funding. The Disaster Mitigation Act of 2000 requires a State mitigation plan as a condition of disaster assistance.

### ***California Fire and Building Code (2019)***

The 2019 California Fire and Building Code establishes the minimum requirements consistent with nationally recognized good practices to safeguard the public health, safety, and general welfare for the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. The provisions of this code apply to the construction, alteration, movement enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout California.

### ***Government Code Section 65302.5: General Plan Fire Safety Element Review***

This statute requires the State Board of Forestry and Fire Protection to provide recommendations to a local jurisdiction's General Plan fire safety element at the time that the General Plan is amended. While not a direct and binding fire prevention requirement for individuals, General Plans that adopt the State Board of Forestry and Fire Protection's recommendations will include goals and policies that provide for contemporary fire prevention standards for the jurisdiction.

## **Police**

### ***California Commission on Peace Officer Standards and Training***

The California Commission on Peace Officer Standards and Training (POST) advocates for, exchanges information with, sets selection and training standards for, and works with law enforcement and other public and private entities. POST was established by the California Legislature in 1959 to identify common needs that are shared by representatives of law enforcement.

## **School**

### ***California Code of Regulations***

Title 5 of the California Code of Regulations, Education Code, governs all aspects of education within the State.

AB 2926 – School Facilities Act of 1986 – was enacted by the State of California in 1986 and added to the California Government Code as Section 65995. It authorizes school districts to collect development fees, based on demonstrated need, and generate revenue for school districts for capital acquisitions and improvements. It also initially established that the maximum fees which may be collected under this and any other school fee authorization are \$1.50 per square foot for residential development and \$0.25 per square foot for commercial and industrial development.

AB 2926 was expanded and revised in 1987 through the passage of AB 1600, which added Sections 66000 et seq. of the Government Code. Under these statutes, payment of statutory fees by developers serves as total mitigation under CEQA to satisfy the impact of development on school facilities. However, subsequent legislative actions have alternatively expanded and contracted the limits placed on school fees by AB 2926.

### ***California Senate Bill 50***

As part of the further refinement of the legislation enacted under AB 2926, the passage of SB 50 in 1998 defined the needs analysis process in Government Code Sections 65995.5-65998. Under the provisions of SB 50, school districts may collect fees to offset the costs associated with increasing school capacity as a result of development. The fees (Level One fees) are addressed based upon the proposed square footage of residential, commercial/industrial, and/or parking structure uses. Level Two fees require the developer to provide one-half of the costs of accommodating students in new schools, while the state would provide the other half. Level Three fees require the developer to pay the full cost of accommodating the students in new schools and would be implemented at the time the funds available from Proposition 1A (approved in 1998) are expended. School districts must demonstrate to the State their long-term facilities' needs and costs based on long-term population growth in order to qualify for this source of funding. However, voter approval of Proposition 55 in 2004 precludes the imposition of the Level Three fees for the foreseeable future. Therefore, once qualified, districts may impose only Level Two fees, as calculated according to SB 50 (Greene 1998).

## **Libraries**

There are no applicable state regulations related to library services.

### **4.16.3.3 Local**

The general plans and municipal codes of each jurisdiction within the Big Bear Valley include policies and ordinances to maintain adequate staff and facilities to ensure adequate public service are provided.

### **4.16.4 Thresholds of Significance**

According to Appendix G, Section XV, of the State CEQA Guidelines, a project would have a significant effect on public services if the project would:

- a) Result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities, or the need for new or physically altered fire protection facilities, the

- construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives;
- b) Result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, or the need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives;
  - c) Result in substantial adverse physical impacts associated with the provision of new or physically altered schools, or the need for new or physically altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives;
  - d) Result in substantial adverse physical impacts associated with the provision of new or physically altered parks, or the need for new or physically altered parks, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives; or
  - e) Result in substantial adverse physical impacts associated with the provision of new or physically altered public facilities, or the need for new or physically altered public facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives.

#### 4.16.5 Potential Impacts

The proposed Program would result in a decrease about 2,200 AFY less discharge to the LV Site, for a total discharge to Lucerne Valley of about 340 AFY. This other physical change to the environment would not involve construction or operation of any new facilities. With no introduction of new persons at the LV Site, no potential for increased demand for public services exists, and therefore, no further discussion of the LV Site is necessary, as no public service impacts from this change at the LV Site would occur.

- a) **Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities, or the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?**

#### Program Category 1: Conveyance Pipelines

This Program Category would not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of new jobs that would result in new residents of the Big Bear Valley area. Therefore, this Program Category would not result in a direct need for additional fire protection services.

Construction: Construction of the Conveyance Pipelines would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity.

As discussed in **Subchapter 4.18, Transportation**, Conveyance Pipeline construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations, which could result in a potentially significant impact. **MMs TRAN-1** and **WF-1** would require implementation of transportation control

measures and coordination with emergency response providers to minimize impacts to emergency access in the project construction area(s) due to lane and/or road closures during project construction. Therefore, implementation of **MMs TRAN-1** and **WF-1** would reduce construction impacts related to fire protection and emergency response service response times to a less than significant level. Additionally, during construction, because all Conveyance Pipelines would be installed in locations designated within a very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment, which could result in a potentially significant impact on fire protection and emergency response. As such, the **MM WF-2** is required, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that construction of the proposed facilities would not significantly contribute to the need for fire protection and emergency response services. Thus, Conveyance Facility construction activities would have a less than significant impact to contribute to the need for fire protection and emergency response services with the implementation of mitigation.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees that would support BBARWA's AWPf operations. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in potential new residents within the Big Bear Valley may contribute to a minimal increased demand for fire protection services.

Implementation of this Program Category is not forecast to change land uses or otherwise create activities that could increase demand for additional fire protection services beyond that anticipated in the General Plans of the local jurisdictions within the Big Bear Valley.

Operation of the Conveyance Facilities would not result in any hazardous conditions that could involve fire protection or emergency response. Thus, there would be no impacts as a result of conveyance facility operation. As a result, no new fire protection facilities or altered facilities would be required.

#### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

This Program Category would not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of new jobs that would result in new residents of the Big Bear Valley area. Therefore, this Program Category would not result in a direct need for additional fire protection services.

Construction: Construction of the Conveyance Pipelines would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity.

As discussed in **Subchapter 4.18, Transportation**, Ancillary Facility construction activities could have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures to connect the Ancillary Facilities to the pipeline system, which would potentially impact emergency access and response times in the

Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the project construction area(s) due to lane and/or road closures during project construction. Therefore, implementation of **MMs TRAN-1** and **WF-1** would reduce construction impacts related to fire protection and emergency response service response times to a less than significant level. Additionally, during construction, because all Ancillary Facilities would be installed in locations designated within a very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment, which could result in a potentially significant impact on fire protection and emergency response. As such, the **MM WF-2** is required, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that construction of the proposed facilities would not significantly contribute to the need for fire protection and emergency response services. Thus, Ancillary Facility construction activities would have a less than significant potential to contribute to the need for fire protection and emergency response services with the implementation of mitigation.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees that would support BBARWA's AWPf operations. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in potential new residents within the Big Bear Valley may contribute to a minimal increased demand for fire protection services.

Implementation of this Program Category is not forecast to change land uses or otherwise create activities that could increase demand for additional fire protection services beyond that anticipated in the General Plans of the local jurisdictions within the Big Bear Valley.

In addition, operational activities associated with the proposed Ancillary Facilities may require fire department service in the unlikely event of a hazardous materials emergency or accident/medical emergency at a given individual project site. However, a HMBP would be required for use of chemicals during operation (i.e., sulfuric acid, sodium hypochlorite, ammonia sulfate, hydrogen peroxide, sodium bisulfite, etc.). Additionally, BBARWA and the Program Team agencies have developed safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous, which comply with all Federal, State, and local regulations, thereby minimizing the potential for the need for fire protection services. Although the Ancillary Facilities may result in an additional demand on fire protection services, the implementation of the HMBP and/or continuation of adopted safety standards and procedures would result in a nominal increase in service. Any improvements requiring structures would be required to meet applicable fire and building codes. The indirect increase in population and the use of hazardous materials associated with Ancillary Facility development would result in a nominal increase in fire protection services. As a result, no new fire protection facilities or altered facilities would be required. Impacts related to fire protection services would be less than significant.



### **Program Category 3: Solar Evaporation Ponds**

This Program Category would not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of new jobs that would result in new residents of the Big Bear Valley area. Therefore, this Program Category would not result in a direct need for additional fire protection services.

Construction: Construction of the Solar Evaporation Ponds would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity.

As the Solar Evaporation Ponds would be installed entirely within the BBARWA WWTP Site, it is not anticipated that project construction activities would have any effects on circulation, which would potentially impact emergency access and response times in the Program Area. However, during construction, because the Solar Evaporation Ponds would be installed in locations designated within a very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed project requires the **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that construction of the proposed facilities would not significantly contribute to the need for fire protection and emergency response services. Thus, Solar Evaporation Ponds construction activities would have a less than significant potential to contribute to the need for fire protection and emergency response services with the implementation of mitigation.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees that would support BBARWA's AWP operations, which includes the operation of the Solar Evaporation Ponds. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in potential new residents within the Big Bear Valley may contribute to a minimal increased demand for fire protection services.

Implementation of this Program Category is not forecast to change land uses or otherwise create activities that could increase demand for additional fire protection services beyond that anticipated in the General Plans of the local jurisdictions within the Big Bear Valley.

In addition, operational activities associated with the proposed upgrades to BBARWA's WWTP may require fire department service in the unlikely event of a hazardous materials emergency or accident/medical emergency at a given individual project site. However, a HMBP would be required for use of chemicals during operation (i.e., sulfuric acid, sodium hypochlorite, ammonia sulfate, hydrogen peroxide, sodium bisulfite, etc.). Additionally, BBARWA has developed safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous, which comply with all Federal, State, and local regulations, thereby minimizing the potential for the need for fire protection services. Although the Solar Evaporation Ponds may result in an additional demand on fire protection services, the implementation of the HMBP and/or continuation of adopted safety standards and

procedures would result in a nominal increase in service. Furthermore, given that the BBARWA WWTP currently operates using hazardous materials in support of the undisinfected secondary treatment operations area wastewater presently undergoes, the addition of new hazardous materials in support of the full advanced treatment train proposed to be installed at the existing WWTP is not anticipated to exacerbate circumstances such that additional fire protection services would be needed. The indirect increase in population and the use of hazardous materials associated with Solar Evaporation Ponds development would result in a nominal increase in fire protection services. As a result, no new fire protection facilities or altered facilities would be required. Impacts related to fire protection services would be less than significant.

#### **Program Category 4: BBARWA WWTP Upgrades**

This Program Category would not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of new jobs that would result in new residents of the Big Bear Valley area. Therefore, this Program Category would not result in a direct need for additional fire protection services.

Construction: Construction of the BBARWA WWTP Upgrades would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity.

As discussed in **Subchapter 4.18, Transportation**, project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the project construction area(s) due to lane and/or road closures during project construction. Therefore, implementation of **MMs TRAN-1** and **WF-1** would reduce construction impacts related to fire protection and emergency response service response times to a less than significant level. Additionally, during construction, because the BBARWA WWTP Upgrade facilities would be installed in locations designated within a very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed project requires the **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that construction of the proposed BBARWA WWTP Upgrades would not significantly contribute to the need for fire protection and emergency response services. Thus, BBARWA WWTP Upgrades construction activities would have a less than significant potential to contribute to the need for fire protection and emergency response services with the implementation of mitigation.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in potential new residents within the Big Bear Valley may contribute to a minimal increased demand for fire protection services.

Implementation of the Program would increase resiliency and sustainability of regional water resources management within the Big Bear Valley area; however, it is not forecast to change land uses or otherwise create activities that could increase demand for additional fire protection services beyond that anticipated in the General Plans of the local jurisdictions within the Big Bear Valley.

In addition, operational activities associated with the proposed upgrades to BBARWA's WWTP may require fire department service in the unlikely event of a hazardous materials emergency or accident/medical emergency at a given individual project site. However, a HMBP would be required for use of chemicals during operation (i.e., sulfuric acid, sodium hypochlorite, ammonia sulfate, hydrogen peroxide, sodium bisulfite, etc.). Additionally, BBARWA has developed safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous, which comply with all Federal, State, and local regulations, thereby minimizing the potential for the need for fire protection services. Although the BBARWA WWTP Upgrades may result in an additional demand on fire protection services, the implementation of the HMBP and/or continuation of adopted safety standards and procedures would result in a nominal increase in service. Furthermore, given that the BBARWA WWTP currently operates using hazardous materials in support of the undisinfected secondary treatment operations area wastewater presently undergoes, the addition of new hazardous materials in support of the full advanced treatment train proposed to be installed at the existing WWTP is not anticipated to exacerbate circumstances such that additional fire protection services would be needed. Any Program improvements requiring structures would be required to meet applicable fire and building codes. The indirect increase in population and the use of hazardous materials associated with Program development would result in a nominal increase in fire protection services. As a result, no new fire protection facilities or altered facilities would be required. Impacts related to fire protection services would be less than significant.

### **Combined Program Categories**

The Program would not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of new jobs that would result in new residents of the Big Bear Valley area. Therefore, the Program would not result in a direct need for additional fire protection services.

Construction: Construction of the Program facilities would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity.

As discussed in **Subchapter 4.18, Transportation**, project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, implementation of **MMs TRAN-1** and **WF-1**, which include the development and implementation of a TMP and traffic control plan, would be required to minimize impacts to fire protection and emergency service response times. Additionally, during construction, because all Program facilities would be installed in locations designated within a very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed project requires the **MM WF-2**, which would minimize fire risk during activities that would utilize spark-

producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that construction of the proposed facilities would not significantly contribute to the need for fire protection and emergency response services. Thus, project construction activities would have a less than significant potential to contribute to the need for fire protection and emergency response services with the implementation of mitigation.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in potential new residents within the Big Bear Valley may contribute to a minimal increased demand for fire protection services.

Implementation of the Program would increase resiliency and sustainability of regional water resources management within the Big Bear Valley area; however, it is not forecast to change land uses or otherwise create activities that could increase demand for additional fire protection services beyond that anticipated in the General Plans of the local jurisdictions within the Big Bear Valley.

In addition, operational activities associated with the proposed upgrades to BBARWA's WWTP may require fire department service in the unlikely event of a hazardous materials emergency or accident/medical emergency at a given individual project site. However, a HMBP would be required for use of chemicals during operation (i.e., sulfuric acid, sodium hypochlorite, ammonia sulfate, hydrogen peroxide, sodium bisulfite, etc.). Additionally, BBARWA has developed safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous, which comply with all Federal, State, and local regulations, thereby minimizing the potential for the need for fire protection services. Although the Program may result in an additional demand on fire protection services, the implementation of the HMBP and/or continuation of adopted safety standards and procedures would result in a nominal increase in service. Furthermore, given that the BBARWA WWTP currently operates using hazardous materials in support of the undisinfected secondary treatment operations area wastewater presently undergoes, the addition of new hazardous materials in support of the full advanced treatment train proposed to be installed at the existing WWTP is not anticipated to exacerbate circumstances such that additional fire protection services would be needed. Any Program improvements requiring structures would be required to meet applicable fire and building codes. The indirect increase in population and the use of hazardous materials associated with Program development would result in a nominal increase in fire protection services. As a result, no new fire protection facilities or altered facilities would be required. Impacts related to fire protection services would be less than significant.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**TRAN-1** *Prepare and Implement Construction Transportation Management Plan*  
*A construction TMP shall be developed and implemented by the implementing agency, in coordination with the respective jurisdictions, SBCTA, and/or other relevant parties during construction of the proposed project. The TMP shall conform to Caltrans' Transportation Management Plan Guidelines and shall include but is not limited to:*

**Construction Traffic Routes and Staging Locations:** *The TMP shall identify construction staging site locations and potential road closures, alternate routes for detours, and planned truck routes for construction-related vehicle trips, including but not limited to haul trucks, material delivery trucks, and equipment delivery trucks. It shall also identify alternative safe routes and policies to maintain safety along bicycle and pedestrian routes during construction. Construction vehicle routes shall avoid local residential streets and avoid peak morning and evening commute hours to the maximum extent practicable. Staging locations, alternate detour routes, and construction vehicle routes shall avoid other active construction projects within 0.25 mile of the project construction sites to the maximum extent practicable.*

**Damage Repair:** *The TMP shall include the following requirements to minimize damage to the existing roadway network:*

- *A list of precautionary measures to protect the existing roadway network, including but not limited to pavements, curbs, gutters, sidewalks, and drainage structures, shall be outlined. The construction contractor(s) shall be required to implement these measures throughout the duration of construction of the water Conveyance Pipelines.*
- *The roadway network along the proposed water distribution alignment(s) shall be surveyed prior to the start of project construction activities, and existing roadway conditions shall be summarized in a brief report.*
- *Any damage to the roadway network that occurs as a result of project construction activities shall be noted, and the implementing agency or its contractors shall repair all damage.*

**Coordination with Emergency Services:** *The TMP shall include requirements to notify local emergency response providers, including relevant police and sheriff departments, ambulance services, and paramedic services at least one week prior to the start of work within public ROW if lane and/or road closures are required. To the extent practicable, the duration of disruptions/closures to roadways and critical access points for emergency services shall be minimized.*

**Coordination with Active Transportation Facilities:** *The TMP shall require coordination with owners/operators of any affected active transportation facilities to minimize the duration of disruptions/closures to bike paths, pedestrian trails, and adjacent access points.*

**Coordination with SBCTA:** *If the proposed project affects access to existing transit stops, the TMP shall also include temporary, alternative transit stops and directional signage, as determined in coordination with Mountain Transit.*

**Coordination with Caltrans:** *If the proposed project requires lane and/or road closures of State highways or State highway ramps, the TMP shall require coordination with Caltrans to ensure the TMP conforms with Caltrans' Transportation Management Plan Guidelines.*

**Coordination with Nearby Construction Sites:** *The TMP shall identify all active construction projects within 0.25 mile of project construction sites and require coordination with the applicants and/or contractors of these projects during all phases of construction regarding the following:*

- *All temporary lane and/or roadway closures shall be coordinated to limit overlap of roadway closures;*
- *All major deliveries and haul truck trips shall be coordinated to limit the occurrence of simultaneous deliveries and haul truck trips; and*
- *The implementing agency, its contractor(s), or its representative(s) shall meet on a regular basis with the applicant(s), contractor(s) or their representative(s) of active*

*construction projects within 0.25 mile of the project construction sites during construction to address any outstanding issues related to construction vehicles.*

**Transportation Control and Safety:** *The TMP shall provide for roadway vehicle control measures including flag persons, warning signs, lights, barricades, cones, and/or detour routes to provide safe passage of vehicular, bicycle, and pedestrian circulation and access by emergency responders.*

**Plan Approval:** *The TMP shall be submitted to SBCTA for review and approval.*

**WF-1:** *Prior to initiating construction of proposed Conveyance Pipelines or other Program facilities within public ROW, BBARWA or the implementing agency shall prepare and implement a traffic control plan that contains comprehensive strategies for maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The implementing agency shall ensure that the traffic control plan and other construction activities are consistent with the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.*

**WF-2:** *Prior to construction of facilities located in areas designated as High or Very High FFHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.*

*Level of Significance After Mitigation: Less Than Significant*

**MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the project construction area(s) due to lane and/or road closures during project construction. As a result, implementation of **MMs TRAN-1** and **WF-1** would reduce construction impacts related to fire protection and emergency response service response times to a less than significant level. Furthermore, **MM WF-2** would ensure that construction of the proposed facilities would not significantly contribute for the need for fire protection and emergency response services through



ensuring the fire prevention equipment is readily available in the event of an accidental fire event during construction.

- b) **Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, or the need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?**

**Program Category 1: Conveyance Pipelines**

Construction: Construction of the Conveyance Facilities would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Similar to the discussion under issue (a) above, the development of the Conveyance Facilities would not cause a substantial temporary increase in population that would substantially increase demand for police protection services. Construction of the Program is not forecast to change land uses or otherwise create activities that could increase demand, even temporarily, for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. It is anticipated that the construction equipment and active construction areas would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the Conveyance Facilities is not forecast to require any new permanent employees, as the five new employees are anticipated to support BBARWA's AWPf operations. Similar to the discussion under issue (a) above, the development of the Conveyance Facilities would not cause a substantial increase in population that would substantially increase demand for police protection services. Implementation of the Program is not forecast to change land uses or otherwise create activities that could increase demand for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The Big Bear Valley area is currently served by SBCSD, the service area for which covers the whole of the Big Bear Valley, as discussed under the **Subsection 4.16.2.2**, above. Overall levels of police service would be increased based upon the future population growth and demands of the local agencies within the Big Bear Valley. Operational activities associated with the Conveyance Facilities, as these facilities are located belowground, are unlikely to increase the demand for police protection services, and is not anticipated to require police department service. Thus, no impacts are anticipated.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Construction of the Ancillary Facilities would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Similar to the discussion under issue (a) above, the development of the Ancillary Facilities would not cause a substantial temporary increase in population that would substantially increase demand for police protection services. Construction

of the Program is not forecast to change land uses or otherwise create activities that could increase demand, even temporarily, for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. It is anticipated that the construction equipment and active construction areas would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the proposed facilities is not forecast to require any new permanent employees, as the five new employees are anticipated to support BBARWA's AWPf operations. Similar to the discussion under issue (a) above, the development of the Ancillary Facilities would not cause a substantial increase in population that would substantially increase demand for police protection services. Implementation of the Ancillary Facilities is not forecast to change land uses or otherwise create activities that could increase demand for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The Big Bear Valley area is currently served by SBCSD, the service area for which covers the whole of the Big Bear Valley, as discussed under the **Subsection 4.16.2.2**, above. Overall levels of police service would be increased based upon the future population growth and demands of the local agencies within the Big Bear Valley. Operational activities associated with the Ancillary Facilities could require police department service in the unlikely event of an emergency or trespass at a given project site. However, it is anticipated that all sites containing above ground facilities associated with this Program Category would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues. Thus, impacts would be less than significant through the implementation of mitigation.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Construction of the Solar Evaporation Ponds would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Similar to the discussion under issue (a) above, the development of the Solar Evaporation Ponds would not cause a substantial temporary increase in population that would substantially increase demand for police protection services. Construction of the Program is not forecast to change land uses or otherwise create activities that could increase demand, even temporarily, for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan. It is anticipated that the construction equipment and active construction areas would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the proposed Solar Evaporation Ponds is not forecast to require more than five additional permanent employees. Similar to the discussion under issue (a) above, the development of the Solar Evaporation Ponds would not cause a substantial increase in population that would substantially increase demand for police protection services. Implementation of the Solar Evaporation Ponds is not forecast to change land uses or otherwise create activities that could increase demand for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan. The Big Bear Valley area is currently served by SBCSD, the service area for which covers the whole of the Big Bear Valley, as discussed under the **Subsection 4.16.2.2**, above. Overall levels of police service would be increased based upon the future population growth and demands of the local agencies within the Big Bear Valley. Operational activities associated with the Solar Evaporation Ponds could require police department service in the unlikely event of an emergency or trespass. However, the Solar Evaporation Ponds would be installed within an area that is already fenced, located within BBARWA's WWTP Site, and thus, it is not anticipated that the potential for trespass or for an emergency to occur would be greater than that which exists at present. Thus, police protection impacts are anticipated to be less than significant.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Construction of the BBARWA WWTP Upgrades would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Similar to the discussion under issue (a) above, the development of the BBARWA WWTP Upgrades would not cause a substantial temporary increase in population that would substantially increase demand for police protection services. Construction of the Program is not forecast to change land uses or otherwise create activities that could increase demand, even temporarily, for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan. It is anticipated that the construction equipment and active construction areas would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the proposed BBARWA WWTP Upgrades is not forecast to require more than five additional permanent employees. Similar to the discussion under issue (a) above, the development of the BBARWA WWTP Upgrades would not cause a substantial increase in population that would substantially increase demand for police protection services. Implementation of the BBARWA WWTP Upgrades is not forecast to change land uses or otherwise create activities that could increase demand for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The Big Bear Valley area is currently served by SBCSD, the service area for which covers the whole of the Big Bear Valley, as discussed under the **Subsection 4.16.2.2**, above. Overall levels of police service would be increased based upon the future population growth and demands of the local agencies within the Big Bear Valley. Operational activities associated with the BBARWA WWTP Upgrades could require police department service in the unlikely event of an emergency or trespass. However, the BBARWA WWTP Upgrades would be installed within an area that is already fenced, located within BBARWA's WWTP Site, and thus, it is not

anticipated that the potential for trespass or for an emergency to occur would be greater than that which exists at present. Thus, police protection impacts are anticipated to be less than significant.

### **Combined Program Categories**

**Construction:** Construction of the Program would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Similar to the discussion under issue (a) above, the development of the Program would not cause a substantial temporary increase in population that would substantially increase demand for police protection services. Construction of the Program is not forecast to change land uses or otherwise create activities that could increase demand, even temporarily, for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan. It is anticipated that the construction equipment and active construction areas would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

**Operation:** Operation of the proposed facilities is not forecast to require more than five additional permanent employees. Similar to the discussion under issue (a) above, the development of the Program would not cause a substantial increase in population that would substantially increase demand for police protection services. Implementation of the Program would increase the resiliency and sustainability of regional water resources management within the Big Bear Valley area; however, it is not forecast to change land uses or otherwise create activities that could increase demand for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The Big Bear Valley area is currently served by SBCSD, the service area for which covers the whole of the Big Bear Valley, as discussed under the **Subsection 4.16.2.2**, above. Overall levels of police service would be increased based upon the future population growth and demands of the local agencies within the Big Bear Valley. Operational activities associated with the Program could require police department service in the unlikely event of an emergency or trespass at a given project site. However, it is anticipated that all sites containing above ground facilities associated with the Program would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**PS-1: The Program facilities shall be fenced or otherwise have access controlled to prevent illegal trespass to attractive nuisances during operation and construction equipment shall be fenced or otherwise have access controlled at the close of each work day. Furthermore, the Program facilities shall include security lighting to deter illegal trespass to attractive**

***nuisances as part of both operation and construction. The security lighting shall be shielded from adjacent sensitive receptors, such as residences per MM AES-7 and AES-8.***

*Level of Significance After Mitigation: Less Than Significant*

Implementation of **MM PS-1** above would minimize the potential for trespass that could exacerbate police protection services. As such, impacts are less than significant.

- c) **Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered schools, or the need for new or physically altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?**

### **Program Category 1: Conveyance Pipelines**

**Construction:** Construction of the Conveyance Facilities would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Construction of the Conveyance Pipelines is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the construction of the Conveyance Facilities would only create a temporary workforce, and would not increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, construction impacts related to demand for school services would be less than significant.

**Operation:** Similar to the discussions under Fire and Police Protection (issues [a] and [b]), above, the development of the Conveyance Pipelines would not cause a substantial increase in demand for schools. Implementation of the Conveyance Pipelines is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. Operation of the Program as a whole is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWPf, which could result in a nominal increase in demand for school services. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the Conveyance Facilities are not forecast to consist of any of these types of land use, as it would not change land uses, increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, impacts related to demand for school services would be less than significant.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

**Construction:** Construction of the Ancillary Facilities would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable

to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Construction of the Ancillary Facilities is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the construction of the Ancillary Facilities would only create a temporary workforce, and would not increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, construction impacts related to demand for school services would be less than significant.

Operation: Similar to the discussions under Fire and Police Protection (issues [a] and [b]), above, the development of the Ancillary Facilities would not cause a substantial increase in demand for schools. Implementation of the Ancillary Facilities is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. Operation of the Program as a whole is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWP, which could result in a nominal increase in demand for school services. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the Ancillary Facilities are not forecast to consist of any of these types of land use, as it would not change land uses, increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, impacts related to demand for school services would be less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Construction of the Solar Evaporation Ponds would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Construction of the Solar Evaporation Ponds is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the construction of the Solar Evaporation Ponds would only create a temporary workforce, and would not increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, construction impacts related to demand for school services would be less than significant.

Operation: Similar to the discussions under Fire and Police Protection (issues [a] and [b]), above, the development of the Solar Evaporation Ponds would not cause a substantial increase in demand for schools. Implementation of the Solar Evaporation Ponds is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those



which are anticipated by the local jurisdictions' General Plans. Operation of the Program as a whole is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWWPF, which could result in a nominal increase in demand for school services. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the Solar Evaporation Ponds are not forecast to consist of any of these types of land use, as it would not change land uses, increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, impacts related to demand for school services would be less than significant.

#### **Program Category 4: BBARWA WWTP Upgrades**

**Construction:** Construction of the BBARWA WWTP Upgrades would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Construction of the BBARWA WWTP Upgrades is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the construction of the BBARWA WWTP Upgrades would only create a temporary workforce, and would not increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, construction impacts related to demand for school services would be less than significant.

**Operation:** Similar to the discussions under Fire and Police Protection (issues [a] and [b]), above, the development of the BBARWA WWTP Upgrades would not cause a substantial increase in demand for schools. Implementation of the BBARWA WWTP Upgrades is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. Operation of the Program as a whole is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWWPF, which could result in a nominal increase in demand for school services. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the BBARWA WWTP Upgrades are not forecast to consist of any of these types of land use, as it would not change land uses, increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, impacts related to demand for school services would be less than significant.

#### **Combined Program Categories**

**Construction:** Construction of the Program would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to

assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Construction of the Program is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the construction of the Program would only create a temporary workforce, and would not increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, construction impacts related to demand for school services would be less than significant.

Operation: Similar to the discussions under Fire and Police Protection (issues [a] and [b]), above, the development of the Program would not cause a substantial increase in demand for schools. Implementation of the Program would increase the resiliency and sustainability of regional water resources management within the Big Bear Valley area. However, implementation of the Program is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. Operation of the Program is not forecast to require more than five additional permanent employees, which could result in a nominal increase in demand for school services. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the Program is not forecast to consist of any of these types of land use, as it would not change land uses, increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, impacts related to demand for school services would be less than significant.

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None Required.*

*Level of Significance After Mitigation: Less Than Significant*

- d) **Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered parks, or the need for new or physically altered parks, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?**

#### **Program Category 1: Conveyance Pipelines**

Construction: The Program would not include construction of new homes or businesses. Therefore, the implementation of Conveyance Pipelines would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed Conveyance Pipelines would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in temporary new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. No impacts are anticipated.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees supporting the operation of BBARWA's AWP. However, the number of new employees required would be minimal and the majority of employees are expected to be drawn from existing population within the Big Bear Valley, even though one or two personnel may be drawn from outside of the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing parks.

Based on the location of the proposed Conveyance facilities, and the type of facilities proposed, no increased use of parks or disruption in the availability of area parks would occur. Thus, no impacts to parks are anticipated to occur.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The Program would not include construction of new homes or businesses. Therefore, the implementation of Ancillary Facilities would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in temporary new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. No impacts are anticipated.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees. However, the number of new employees required would be minimal and the majority of employees are expected to be drawn from existing population within the Big Bear Valley, even though one or two personnel may be drawn from outside of the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing parks.

While the location for the Sand Canyon Monitoring Wells are the only facilities without site specific locations selected as part of the Program, and therefore such facilities could conceivably be installed within area parkland, the general location of these two monitoring wells would be located downstream of Sand Canyon (refer to **Exhibit 3-29**). Per San Bernardino Countywide Plan Parks and Open Space Resources Map (**Figure 4.16-2**), there are no local or regional park facilities at which the monitoring wells could be installed that would disrupt any area parks. Thus, no increased use of parks or disruption in the availability of area parks would occur as a result of installation of Program facilities within parkland area. Impacts would, therefore, be less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: The Program would not include construction of new homes or businesses. Therefore, the implementation of Solar Evaporation Ponds would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15,**

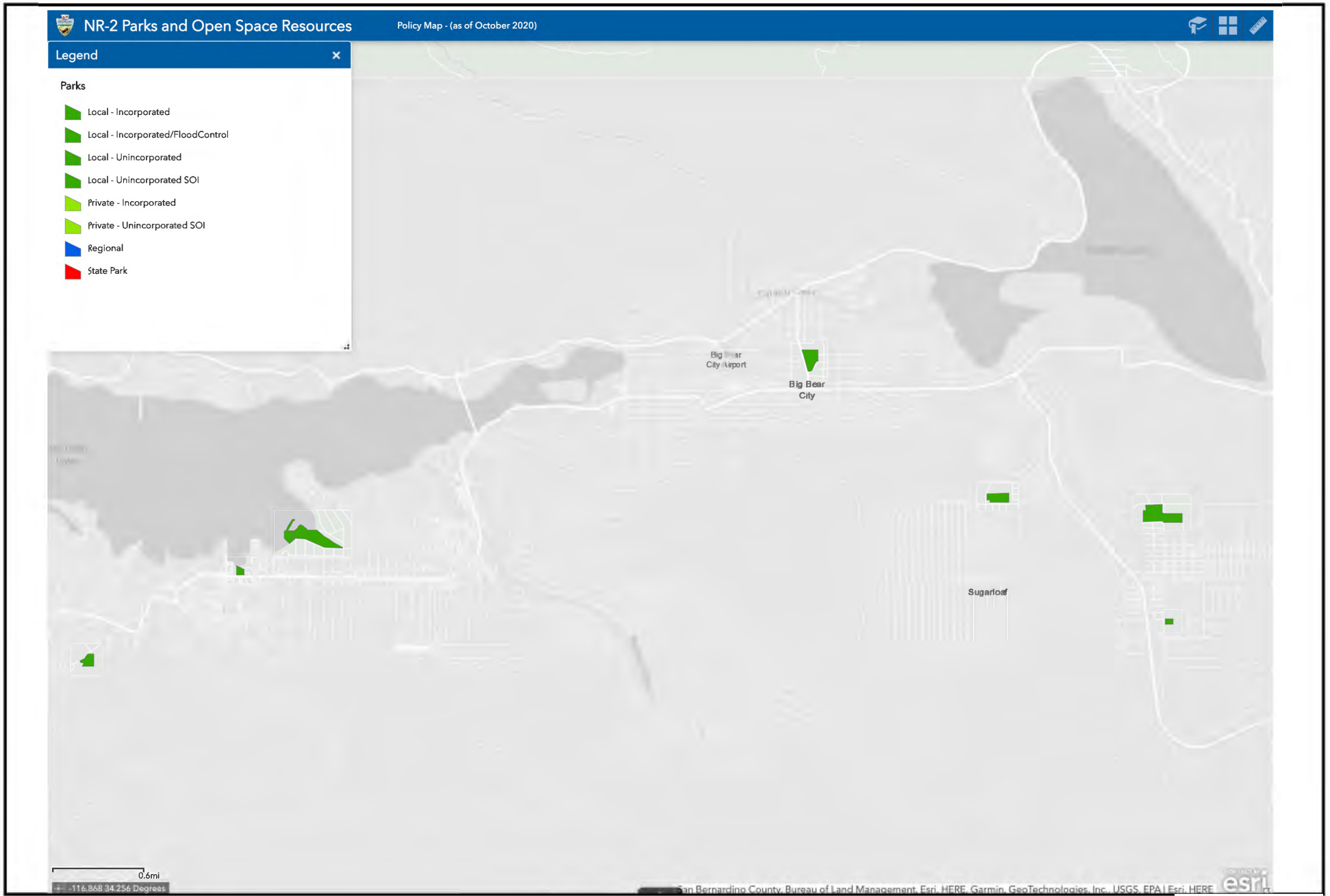


FIGURE 4.16-2

**Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in temporary new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. No impacts are anticipated.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. However, the number of new employees required would be minimal and the majority of employees are expected to be drawn from existing population within the Big Bear Valley, even though one or two personnel may be drawn from outside of the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing parks.

Based on the location of the proposed Solar Evaporation Ponds within BBARWA's WWTP site, and the type of facilities proposed, no increased use of parks or disruption in the availability of area parks would occur. Thus, no impacts to parks are anticipated to occur.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: The Program would not include construction of new homes or businesses. Therefore, the implementation of BBARWA WWTP Upgrades would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in temporary new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. No impacts are anticipated.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees. However, the number of new employees required would be minimal and the majority of employees are expected to be drawn from existing population within the Big Bear Valley, even though one or two personnel may be drawn from outside of the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing parks.

Based on the location of the proposed BBARWA WWTP Upgrades within BBARWA's WWTP site, and the type of facilities proposed, no increased use of parks or disruption in the availability of area parks would occur. Thus, no impacts to parks are anticipated to occur.

#### **Other Physical Changes**

The proposed Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. Stanfield Marsh is now a scenic 145-acre nature park that includes a gazebo, walking paths, and two boardwalks that extend out into Stanfield Marsh so that visitors can observe the wildlife in, under and around the

water. Stanfield Marsh is home to rare and diverse species of birds, fish, amphibians, and mammals. Greater provision of water in this area has a potential to support wetland/marsh habitat in a larger area than is supported on average at the present time, and thereby the nature park may be enhanced by the proposed Program. An objective of the proposed Program is to provide “a consistent water source to sustain habitat and increase education opportunities for the community and visitors.” Thus, a purpose of the proposed Program is to draw visitors to the Stanfield Marsh Wildlife and Waterfowl Preserve, which has existing facilities that can accommodate existing and new visitors that may utilize the walking paths and boardwalks as a result of the provision of greater water, and possibly enhanced habitat, at Stanfield Marsh. Therefore, the proposed enhancements at Stanfield Marsh resulting from implementation of the Program would have no potential to result in significant environmental impacts in order to maintain acceptable service ratios or other performance objectives related to the provision of parks. Impacts would, therefore, be less than significant.

### **Combined Program Categories**

**Construction:** The Program would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in temporary new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. No impacts are anticipated.

**Operation:** Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees. However, the number of new employees required would be minimal and the majority of employees are expected to be drawn from existing population within the Big Bear Valley, even though one or two personnel may be drawn from outside of the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. Nonetheless, because the Program would not substantially increase the population within the Big Bear Valley area, the Program would not substantially increase use of existing parks.

While the location for the Sand Canyon Monitoring Wells are the only facilities without site specific locations selected as part of the Program, and therefore such facilities could conceivably be installed within area parkland, the general location of these two monitoring wells would be located downstream of Sand Canyon (refer to **Exhibit 3-29**). Per San Bernardino Countywide Plan Parks and Open Space Resources Map (**Figure 4.16-2**), there are no local or regional park facilities at which the monitoring wells could be installed that would disrupt any area parks. Thus, no increased use of parks or disruption in the availability of area parks would occur as a result of installation of Program facilities within parkland area. Thus, impacts would be less than significant.

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None Required.*

*Level of Significance After Mitigation: Less Than Significant*



- e) **Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered public facilities, or the need for new or physically altered public facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?**

**Program Category 1: Conveyance Pipelines**

Construction: Similar to the discussion under Fire Protection, Police Protection, and School Services (issues [a], [b], and [c]), above, the development of the proposed Conveyance Pipelines would not cause a significant increase in demand for library or other public services. The Program as a whole would not include construction of housing that would result in any direct increase in demand for library or other public services. Therefore, the Conveyance Pipelines would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. Construction of the Conveyance Pipelines is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The nominal potential increase in temporary new residents within the Big Bear Valley as a result of construction would not contribute to a substantial increased demand for library and other services. No impacts are anticipated.

Operation: Similar to the discussion under Fire Protection, Police Protection, and School Services (issues [a], [b], and [c]), above, the development of the proposed Conveyance Pipelines would not cause a significant increase in demand for library or other public services. The Conveyance Pipelines would not include construction of housing that would result in any direct increase in demand for library or other public services. Operation of the Conveyance Pipelines is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWPF. However, new employees are anticipated to come primarily from within the Big Bear Valley area; therefore, the Program would result in only a nominal increase in demand for libraries and other public services. Implementation of the Conveyance Pipelines is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. Library services are currently provided by the San Bernardino County Library system. San Bernardino County would increase overall levels of library service based upon the future population within its jurisdiction. The implementation of the Conveyance Pipelines would not substantially increase demand for library or other public services and impacts would be less than significant.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The Ancillary Facilities would not include construction of new homes or businesses. Therefore, the Ancillary Facilities would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. Construction of the Ancillary Facilities is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The nominal potential increase in

temporary new residents within the Big Bear Valley as a result of construction would not contribute to a substantial increased demand for library and other services. No impacts are anticipated.

Operation: Similar to the discussion under Fire Protection, Police Protection, and School Services (issues [a], [b], and [c]), above, the development of the proposed Ancillary Facilities would not cause a significant increase in demand for library or other public services. The Ancillary Facilities would not include construction of housing that would result in any direct increase in demand for library or other public services. Operation of the Ancillary Facilities is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWP. However, new employees are anticipated to come primarily from within the Big Bear Valley area; therefore, the Ancillary Facilities would result in only a nominal increase in demand for libraries and other public services. Implementation of the Ancillary Facilities is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. Library services are currently provided by the San Bernardino County Library system. San Bernardino County would increase overall levels of library service based upon the future population within its jurisdiction. The implementation of the Ancillary Facilities would not substantially increase demand for library or other public services and impacts would be less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: The Solar Evaporation Ponds would not include construction of new homes or businesses. Therefore, the Solar Evaporation Ponds would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. Construction of the Solar Evaporation Ponds is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan. The nominal potential increase in temporary new residents within the Big Bear Valley as a result of construction would not contribute to a substantial increased demand for library and other services. No impacts are anticipated.

Operation: Similar to the discussion under Fire Protection, Police Protection, and School Services (issues [a], [b], and [c]), above, the development of the proposed Solar Evaporation Ponds would not cause a significant increase in demand for library or other public services. The Solar Evaporation Ponds would not include construction of housing that would result in any direct increase in demand for library or other public services. Operation of the Solar Evaporation Ponds is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWP. However, new employees are anticipated to come primarily from within the Big Bear Valley area; therefore, the Solar Evaporation Ponds would result in only a nominal increase in demand for libraries and other public services. Implementation of the Solar Evaporation Ponds is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. Library services are currently provided by the San Bernardino County Library system. San Bernardino County would increase overall levels of library service based upon the future population within its jurisdiction. The implementation of the Solar Evaporation Ponds would not substantially increase demand for library or other public services and impacts would be less than significant.

#### **Program Category 4: BBARWA WWTP Upgrades**

**Construction:** The BBARWA WWTP Upgrades would not include construction of new homes or businesses. Therefore, the BBARWA WWTP Upgrades would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. Construction of the BBARWA WWTP Upgrades is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan. The nominal potential increase in temporary new residents within the Big Bear Valley as a result of construction would not contribute to a substantial increased demand for library and other services. No impacts are anticipated.

**Operation:** Similar to the discussion under Fire Protection, Police Protection, and School Services (issues [a], [b], and [c]), above, the development of the proposed BBARWA WWTP Upgrades would not cause a significant increase in demand for library or other public services. The BBARWA WWTP Upgrades would not include construction of housing that would result in any direct increase in demand for library or other public services. Operation of the BBARWA WWTP Upgrades is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWWP. However, new employees are anticipated to come primarily from within the Big Bear Valley area; therefore, the BBARWA WWTP Upgrades would result in only a nominal increase in demand for libraries and other public services. Implementation of the BBARWA WWTP Upgrades is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan. Library services are currently provided by the San Bernardino County Library system. San Bernardino County would increase overall levels of library service based upon the future population within its jurisdiction. The implementation of the BBARWA WWTP Upgrades would not substantially increase demand for library or other public services and impacts would be less than significant.

#### **Combined Program Categories**

**Construction:** The Program would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. Construction of the Program is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The nominal potential increase in temporary new residents within the Big Bear Valley as a result of construction would not contribute to a substantial increased demand for library and other services. No impacts are anticipated.

**Operation:** Similar to the discussion under Fire Protection, Police Protection, and School Services (issues [a], [b], and [c]), above, the development of the Program would not cause a significant increase in demand for library or other public services. The Program would not include construction of housing that would result in any direct increase in demand for library or other public services. Operation of the Program is not forecast to require more than five additional permanent employees. However, new employees are anticipated to come primarily from within

the Big Bear Valley area; therefore, the Program would result in only a nominal increase in demand for libraries and other public services. Implementation of the Program would increase the resiliency and sustainability of regional water resources management within the Big Bear Valley area. However, the Program is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. Library services are currently provided by the San Bernardino County Library system. San Bernardino County would increase overall levels of library service based upon the future population within its jurisdiction. The Program would not substantially increase demand for library or other public services and impacts would be less than significant.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None Required.*

*Level of Significance After Mitigation: Less Than Significant.*

### **4.16.6 Cumulative Impacts**

As previously discussed, the Program would not result in a cumulatively considerable contribution to population growth within the region, and as such, the Program would not substantially increase demand for public services. The Program is not anticipated to create a significant new demand for fire protection services beyond that which existing facilities presently demand, and as such, it is not anticipated that the Program implementation would result in a cumulatively considerable impact to fire protection services through the implementation of **MMs TRAN-1, WF-1, and WF-2**. With the implementation of **MMs TRAN-1, WF-1, and WF-2**, fire protection and emergency response impacts would be reduced to a level of less than cumulatively considerable, and therefore would not contribute to significant cumulative impacts thereof. The Program is not anticipated to decrease parkland within the region, and as such would not impact the cumulatively available parkland within the region, thus reducing the impacts to parks to less than cumulatively considerable. Similarly, the Program is not anticipated to create a significant new demand for fire protection services beyond that which existing facilities presently demand, and as such would not impact the cumulatively available library services within the region, thus reducing the impacts to library services to less than cumulatively considerable. However, the Program has a potential to result in greater demand for police protection without **MM PS-1**, which requires all Program project sites to be fenced, to avoid attracting trespass. With the implementation of **MM PS-1**, police protection impacts would be reduced to a level of less than cumulatively considerable, and therefore would not contribute to significant cumulative impacts thereof. While cumulative development within the region may result in significant cumulative impacts related to demand for public services, the potential for the Program to contribute a cumulatively considerable contribution to such impacts has been minimized to a level of less than significant through the implementation of **MMs**.

### **4.16.7 Significant and Unavoidable Impacts**

As determined in the preceding environmental evaluation, with the implementation of **MMs PS-1, TRAN-1, WF-1, and WF-2**, no significant and unavoidable impacts relating to public services would occur as a result of implementing the Program, and the Program's potential impacts on public services will be less than significant.

## 4.17 RECREATION

### 4.17.1 Introduction

This Subchapter section assesses potential impacts to parks and recreational facilities from implementation of the Replenish Big Bear Program (Program).

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Recreation
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to Recreation were received in response to the NOP, and no comments were received at the Scoping Meeting held on behalf of the Program. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

### 4.17.2 Environmental Setting: Recreation

#### 4.17.2.1 Federal Lands

Three national parks managed by the National Park Service are located within San Bernardino County and offer a variety of recreational opportunities to residents in the local area, including Death Valley National Park, Mojave National Preserve, and Joshua Tree National Park. Also, portions of the San Gabriel Mountains National Monument, created October 10, 2014, by Presidential Proclamation 9194, and the Sand to Snow National Monument, created February 12, 2016, by Presidential Proclamation 9396, are located within San Bernardino County. However, neither those National Parks nor the Monuments lie within the Big Bear Valley.

Federal lands managed by the USFS, including the SBNF, within which the entirety of the physical components of the Program lie. The SBNF, which overlaps with Big Bear Valley, offers a variety of recreational activities to local residents. No Bureau of Land Management (BLM) lands lie within Big Bear Valley.

#### 4.17.2.2 California State Parks and Recreation Department<sup>100</sup>

The California Department of Parks and Recreation provides access to parks and open spaces and contribute to a healthier and richer quality of life for Californians and for people all over the world who visit the golden State's natural wonders.

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<sup>100</sup> California State Parks and Recreation Department, 2023. About us. [https://www.parks.ca.gov/?page\\_id=91](https://www.parks.ca.gov/?page_id=91) (accessed 07/17/23)

Equitable access to the outdoors ensures more Californians from all walks of life can reap the benefits for their hearts, minds and bodies for generations to come. California's State parks and the recreational programs supported by the California Department of Parks and Recreation and its divisions of Boating and Waterways, Off-Highway Motor Vehicle Recreation, and Office of Historic Preservation, are gateways to these benefits and to opportunities to connect with families, friends and communities.

With 280 State park units, over 340 miles of coastline, 970 miles of lake and river frontage, 15,000 campsites, 5,200 miles of trails, 3,195 historic buildings and more than 11,000 known prehistoric and historic archaeological sites, the California Department of Parks and Recreation contains the largest and most diverse recreational, natural and cultural heritage holdings of any State agency in the nation.

More than 68 million people annually visit California's State Park System. The system includes: beaches, coastal beaches, conference centers, ghost towns, historic homes, historic monuments, historic parks, lakes and reservoirs, lighthouses, marine parks, museums, natural and cultural preserves, natural reserves, off-highway vehicle recreation areas, parks, recreation areas, seashores, Spanish-era adobe buildings, and visitor centers.

#### **4.17.2.3 San Bernardino County Regional Parks Department**

The San Bernardino County Regional Parks Department manages and maintains nine regional parks throughout San Bernardino County totaling approximately 9,200 acres in diverse settings, including metropolitan areas, mountains, and deserts. Recreational opportunities found at these regional parks include lakes for fishing, sheltered group picnic facilities, RV and tent camping, and swim complexes with water slides, water play parks, and playgrounds.<sup>101</sup> There are no regional parks that are located within the Big Bear Valley area.

#### **4.17.2.4 Big Bear Valley Parks and Recreation District**

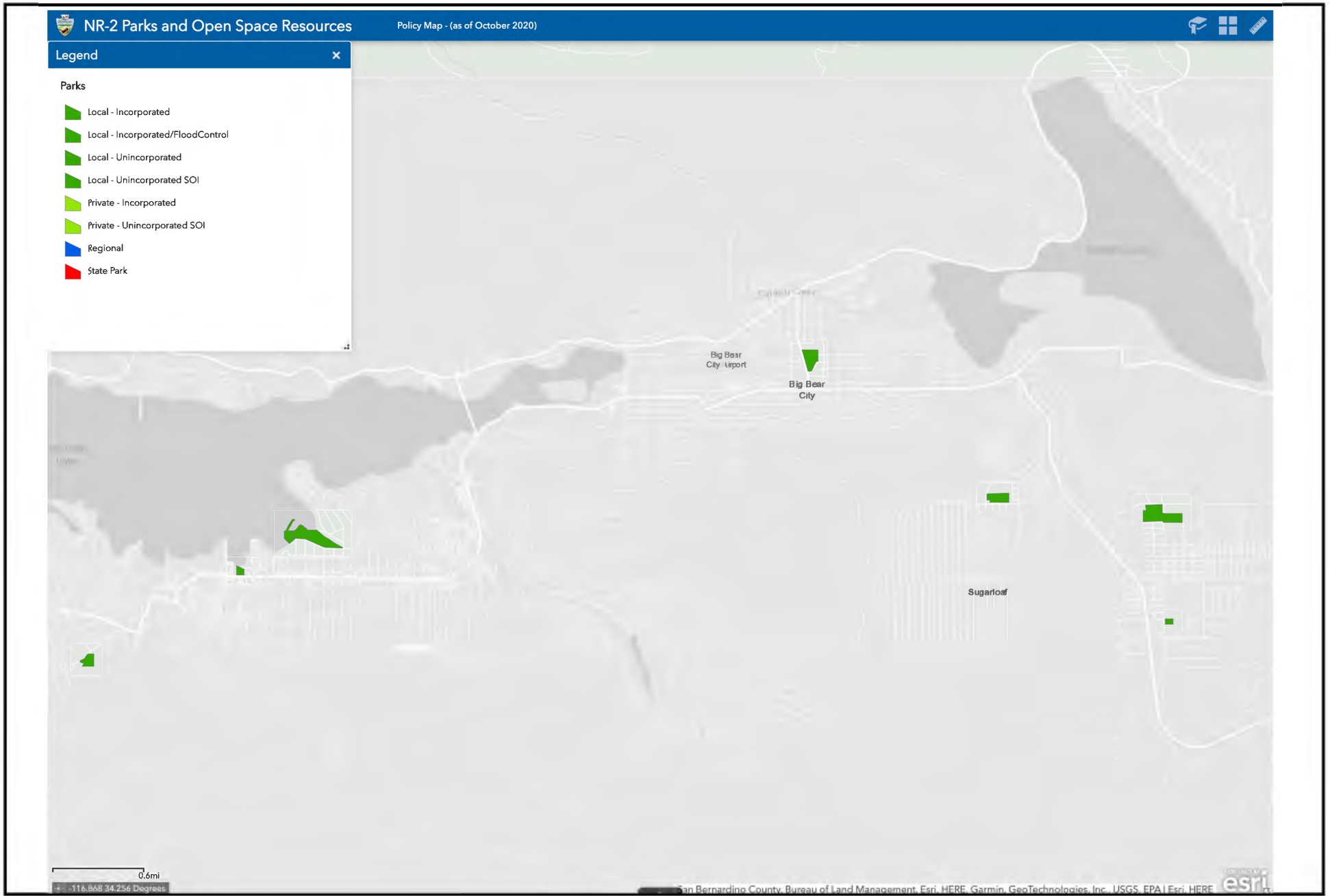
Big Bear Valley Parks and Recreation District (BBVPRD) is a special district under San Bernardino County. The BBVPRD consists of seven developed parks, two natural parks, a swimming beach, several community buildings including the Big Bear Valley Senior Center, three ball fields, and the Big Bear Alpine Zoo. The parks within the Program Area are shown on **Figure 4.17-1**.

There are no parks located within the vicinity of the Program facilities. Though there is a park mapped on **Figure 4.17-1** at 898 Greenway Dr, Big Bear, CA 92314, which is near Big Bear Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignments; this park has been demolished to provide a buffer to the Big Bear Airport Runway Zone.

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<sup>101</sup> San Bernardino County Regional Parks, 2023. About us. <https://parks.sbcounty.gov/about-us/> (accessed 07/17/23)





**FIGURE 4.17-1**

#### 4.17.2.5 City of Big Bear Lake<sup>102</sup>

The City of Big Bear Lake owns, operates, and maintains three parks within its city limits - Boulder Bay Park, Veteran's Park, and Rotary Park. All three parks are open to the public and are operated on a first come first serve; they cannot be booked for private events; however, the public is able to assemble in a large group at parks for a birthday or wedding. None of these three parks are located within the vicinity of the Program.

Additionally, the City of Big Bear Lake maintains three trails within its city limits - Happy Hills Trail, Knickerbocker Trail, and Rathbun Creek Trail. None of these three trails are located within the vicinity of the Program.

#### 4.17.2.6 Big Bear Municipal Water District

Stanfield Marsh is a scenic 145-acre nature park that includes a gazebo, walking paths, and two boardwalks that extend out into the marsh, so visitors can observe the wildlife. In 1993, the Stanfield Marsh Waterfowl Habitat Improvement Plan<sup>103</sup> was proposed for implementation by BBMWD, one of the proponents of Program. BBMWD teamed with National Heritage Foundation to restore wetlands, allowing water from the main lake to flow into the area through culverts that run under the highway. This enabled the creation of the Stanfield Marsh Wildlife and Waterfowl Preserve, including the Stanfield Marsh Boardwalk, which allows for a hike along the edge of the marsh.<sup>104</sup> Later, in 2003, Stanfield Marsh reconfigured existing levee material from historic sewer ponds to create a single habitat island for waterfowl nesting and loafing. The island creation is one of the proposed projects identified in the 1993 BBMWD's Stanfield Marsh Waterfowl Habitat Improvement Plan. Under the Program, Program Water will be discharged to the Stanfield Marsh Wildlife and Waterfowl Preserve (Stanfield Marsh), providing a consistent water source to sustain habitat and increase education opportunities for the community and visitors. The Program Water will then flow into Big Bear Lake.

Stanfield Marsh is hydrologically connected to Big Bear Lake through a set of culverts under Stanfield Cutoff. Big Bear Lake is located about 6,743 ft or 2,055 meters amsl in the San Bernardino Mountains in San Bernardino County. Together, Stanfield Marsh and Big Bear Lake have a surface area of approximately 3,000 acres, a storage capacity of 73,320 AF, and an average depth of 32 ft. Big Bear Lake's sole source of water is currently snowmelt and stormwater runoff, which are highly variable. Big Bear Lake has several sources of water loss, including evaporation, water extraction for snowmaking, dam releases for flood control, fishery protection, and water rights discharges.

Big Bear Lake was formed following the construction of the Bear Valley Dam in 1883-1884 to serve as an irrigation supply for the citrus industry in the downstream Redlands-San Bernardino communities. BBMWD was formed in 1964 to manage and help stabilize the water level in Big Bear Lake. Historically, Big Bear Lake was operated as a storage reservoir by Mutual. However, due to the drastic fluctuations in Lake levels, legal negotiations arising from disagreement between Mutual, BBMWD, and the community of Big Bear Valley regarding water rights and

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<sup>102</sup> City of Big Bear Lake, 2023. City Parks and Trails. <https://www.citybigbearlake.com/index.php/services-main/city-parks-and-city-trails> (accessed 07/17/23)

<sup>103</sup> California State Office of Planning and Research, 2023. SCH Number 1993072081 <https://ceganet.opr.ca.gov/Project/1993072081> (accessed 07/17/23)

<sup>104</sup> Discover Big Bear Lake, 2023. Hiking Trails: Serene Wetland Boardwalk Trail. <https://www.discoverbigbearlake.com/things-to-do/hiking/stanfield-marsh-wildlife-and-waterfowl-preserve> (accessed 07/17/23)

management of Big Bear Lake, a 1977 Judgment was established. Under the terms of this court judgment, Mutual retains a storage right and ownership of all water inflow into Big Bear Lake. BBMWD is required to provide Mutual with up to 65,000 AF of water from Big Bear Lake in a 10-year rolling period.

In 1996, an In-Lieu Agreement was executed that allows BBMWD to maintain higher Lake levels by delivering water to Mutual from an alternate source of water. This alternate source of water, referred to as In-Lieu Water, comes mainly from the SWP through the San Bernardino Valley Municipal Water District, a state water contractor. Under the In-Lieu Agreement, when Big Bear Lake level falls more than 6 foot below full, and during some months when Big Bear Lake is between 4 and 6 feet below full, San Bernardino Valley Municipal Water District delivers water from the SWP to meet Mutual's needs instead of BBMWD releasing water from Big Bear Lake. BBMWD pays the San Bernardino Valley Municipal Water District an annual fee that is adjusted each year based on property tax values.

Big Bear Lake is an important resource that provides extensive recreational, economic, ecological, and aesthetic benefits for the local community as well as the larger inland southern California region. The beneficial uses of Big Bear Lake and Stanfield Marsh are presented in **Table 4.11-1**, extracted from **Subchapter 4.11**, Hydrology and Water Quality.

**Table 4.11-2  
 BENEFICIAL USES OF LAKE AND STANFIELD MARSH**

<b>Beneficial Uses</b>	<b>Big Bear Lake</b>	<b>Stanfield Marsh</b>
AGR - Agricultural Supply	✓	
COLD - Cold Freshwater Habitat	✓	✓
GWR - Groundwater Recharge	✓	
MUN - Municipal and Domestic Supply	✓	✓
RARE - Rare, Threatened, or Endangered Species	✓	✓
REC1 - Water Contact Recreation	✓	✓
REC2 - Non-Contact Water Recreation	✓	✓
SPWN - Spawning, Reproduction, and/or Early Development	✓	
WARM - Warm Freshwater Habitat	✓	
WILD - Wildlife Habitat	✓	✓

### **4.17.3 Regulatory Setting**

#### **4.17.3.1 Federal**

##### **National Park Service**

The National Park system is considered to have begun in 1872 when Congress established Yellowstone National Park under exclusive control of the Secretary of the Interior. In 1916, President Woodrow Wilson signed the “Organic Act” to create the National Park Service to “promote and regulate the use of the Federal areas known as national parks, monuments and reservations” and to “conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

### **Wilderness Act of 1964**

In the Wilderness Act of 1964, Congress directed certain Federal agencies to study lands they administer for inclusion in a system of preserved wildernesses where no extractive activities can occur. Wilderness designation ensures the resources are managed to retain their “primeval character and influence, without permanent improvements or human habitation.” Wilderness areas are open to hiking and, in some cases, horseback riding, backpacking, and other nonmechanical recreation. The Wilderness Act prohibits permanent roads and commercial enterprises, except in some instances related to recreation and safety.

#### **4.17.3.2 State**

### **Quimby Act**

The Quimby Act was established by the California Legislature in 1965 to provide parks for growing communities in California. The Quimby Act authorizes cities to adopt ordinances addressing park land and/or fees for residential subdivisions for the purpose of providing and preserving open space and recreational facilities and improvements. The Quimby Act requires the provision of a minimum of three acres of park area per 1,000 persons residing within a subdivision. The Quimby Act also specifies acceptable uses and expenditures of such funds.

### **State Public Park Preservation Act**

This primary instrument for protecting and preserving parkland is the State Public Park Preservation Act of 1971. Under the Public Resource Code Section 5400, et seq., cities and counties may not acquire any real property that is in use as a public park for any non-park use unless compensation or land, or both, are provided to replace the parkland acquired. This provides no net loss of parkland and facilities.

### **State Street and Highway Code**

The State Street and Highway Code assists in providing equestrian and hiking trails within the ROW of county roads, streets, and highways.

#### **4.17.3.2 Local**

### **Municipal Codes**

Development within each of the jurisdictions within the Program Area is regulated by the respective municipal code for those jurisdictions, which contain requirements for payment of development fees to fund parks and recreational facilities in accordance with the Mitigation Fee Act (California Government Code §§ 66000-66025).

#### **4.17.4 Thresholds of Significance**

According to Appendix G, Section XVI, of the State CEQA Guidelines, a project would have a significant effect on recreation if the project would:

- a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

The proposed Program would result in a decrease about 2,200 AFY less discharge to the LV Site, for a total discharge to Lucerne Valley of about 340 AFY. This other physical change to the environment would not involve construction or operation of any new facilities. With no introduction of new persons at the LV Site, no potential for increased demand recreational exists, nor does any potential to deteriorate existing recreational facilities and therefore, no further discussion of the LV Site is necessary, as no recreational impacts from this change at the LV Site would occur.

#### **4.17.5 Potential Impacts**

- a) **Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

##### **Program Category 1: Conveyance Pipelines**

Construction: Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially temporarily increase the population within the Big Bear Valley area, construction of this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities. Thus, no impacts are anticipated.

Operation: This Program Category would not include construction of new homes or businesses. Therefore, this Program Category would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water agency personnel, with perhaps a maximum of five new permanent employees, primarily in support of operating the new BBARWA AWWPF. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities.

Furthermore, analysis contained in **Subchapter 4.16, Public Services**, under issue (d) determined whether this Program Category would increase the use of existing neighborhood and regional parks or other recreational facilities and physical deterioration thereof. As stated under issue (d) of **Subchapter 4.16**, the development of this Program Category is not anticipated to result in utilization of any park or recreation facility lands to install any of the facilities proposed as part of the Program. Thus, no impacts are anticipated.

##### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other

recreational facilities. Nonetheless, because this Program Category would not substantially temporarily increase the population within the Big Bear Valley area, construction of this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities. Thus, no impacts are anticipated.

Operation: This Program Category would not include construction of new homes or businesses. Therefore, this Program Category would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water agency personnel, with perhaps a maximum of five new permanent employees, primarily in support of operating the new BBARWA AWP. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities.

Furthermore, analysis contained in **Subchapter 4.16, Public Services**, under issue (d) determined whether this Program Category would increase the use of existing neighborhood and regional parks or other recreational facilities and physical deterioration thereof. As stated under issue (d) of **Subchapter 4.16**, the development of this Program Category is not anticipated to result in utilization of any park or recreation facility lands to install any of the proposed facilities. While the location for the Sand Canyon Monitoring Wells are the only facilities without site specific locations selected as part of the Program, and therefore such facilities could conceivably be installed within area recreational facilities, the general location of these 2 monitoring wells would be located downstream of Sand Canyon (refer to **Exhibit 3-29**). Per San Bernardino Countywide Plan Parks and Open Space Resources Map (**Figure 4.16-2**), there are no local or regional recreational facilities at which the monitoring wells could be installed that would disrupt any area recreational activities. Thus, no direct increased use of recreational facilities or disruption in the availability of area recreational facilities would occur as a result of installation of Program facilities. Impacts would be less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially temporarily increase the population within the Big Bear Valley area, construction of this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities. Thus, no impacts are anticipated.

Operation: This Program Category would not include construction of new homes or businesses. Therefore, this Program Category would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water agency personnel, with perhaps a maximum of five new permanent employees, primarily in support of operating the



new BBARWA AWPf. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities.

Furthermore, analysis contained in **Subchapter 4.16, Public Services**, under issue (d) determined whether this Program Category would increase the use of existing neighborhood and regional parks or other recreational facilities and physical deterioration thereof. As stated under issue (d) of **Subchapter 4.16**, the development of this Program Category is not anticipated to result in utilization of any park or recreation facility lands to install any of the facilities proposed as part of the Program. Thus, no impacts are anticipated.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially temporarily increase the population within the Big Bear Valley area, construction of this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities. Thus, no impacts are anticipated.

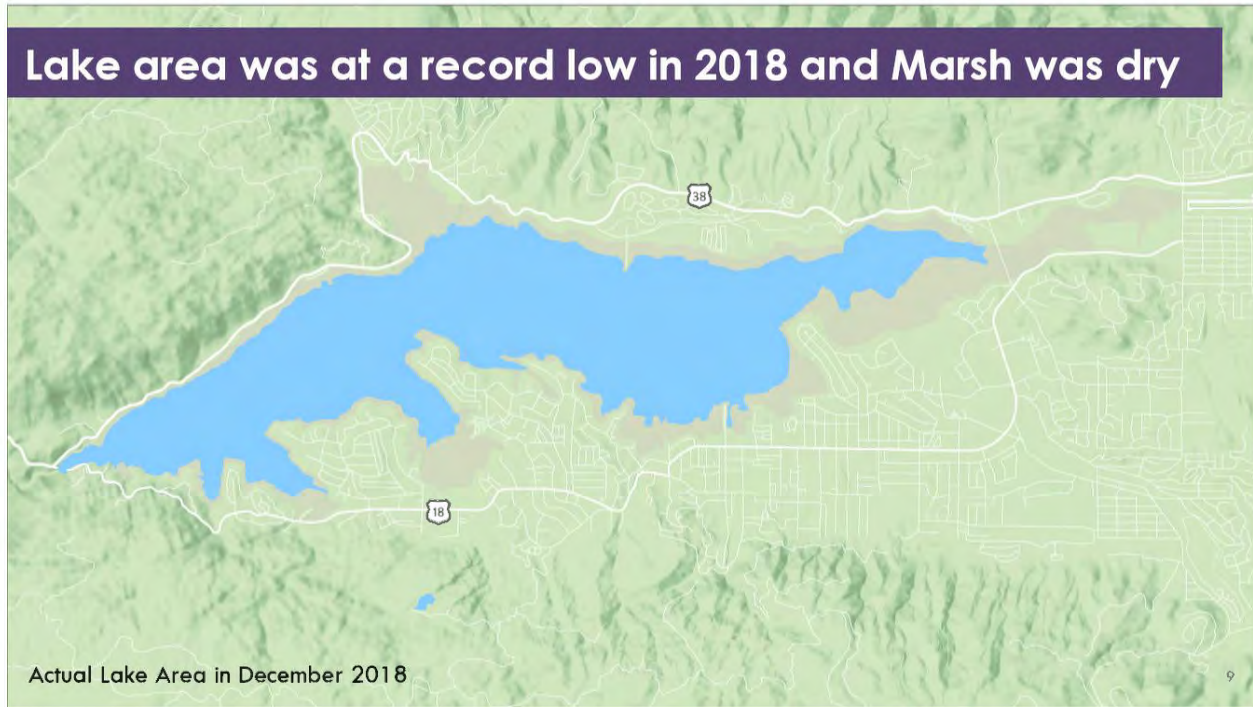
Operation: This Program Category would not include construction of new homes or businesses. Therefore, this Program Category would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water agency personnel, with perhaps a maximum of five new permanent employees, primarily in support of operating the new BBARWA AWPf. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities.

Furthermore, analysis contained in **Subchapter 4.16, Public Services**, under issue (d) determined whether this Program Category would increase the use of existing neighborhood and regional parks or other recreational facilities and physical deterioration thereof. As stated under issue (d) of **Subchapter 4.16**, the development of this Program Category is not anticipated to result in utilization of any park or recreation facility lands to install any of the facilities proposed as part of the Program. Thus, no impacts are anticipated.

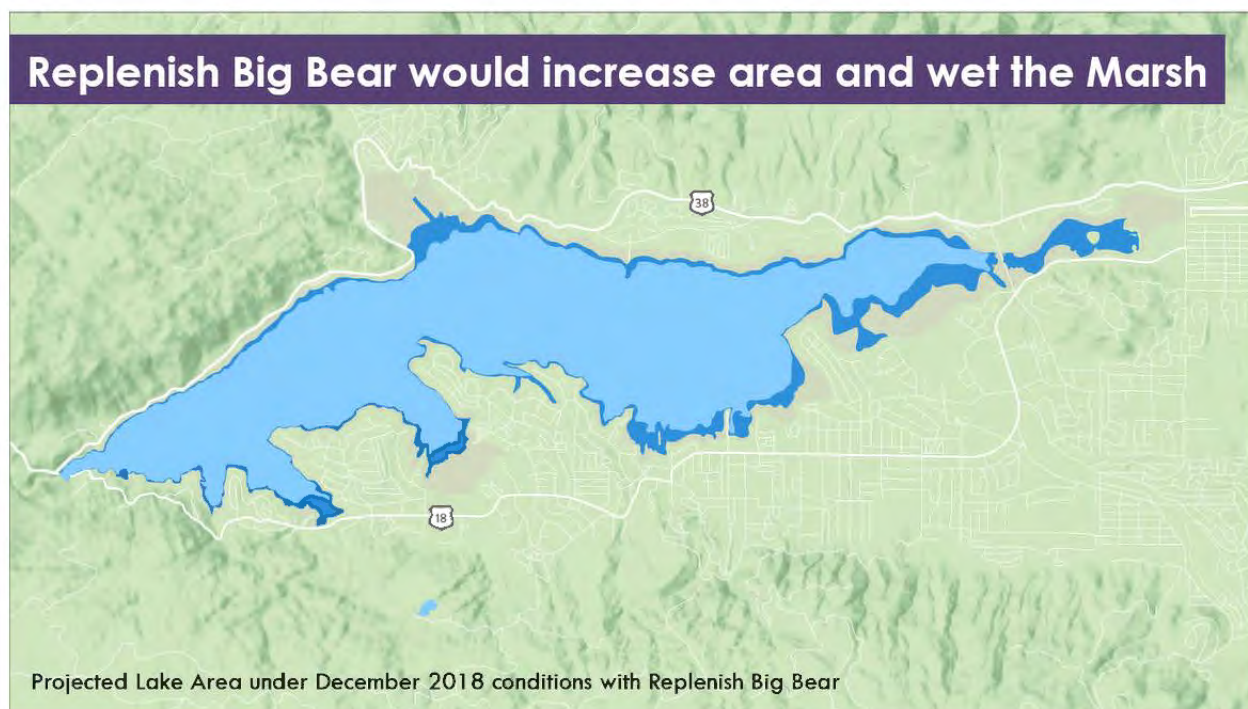
#### **Other Physical Changes**

While the proposed Program would result in the installation of several facilities, it would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would have a potential

to result in Big Bear Lake levels being higher than without the proposed project, thereby minimizing the dry habitat that occurs around Big Bear Lake's rim when Big Bear Lake levels are low, and potentially making the use of Big Bear Lake, which could be considered a recreational facility, more desirable to visitors and residents of the area. **Exhibits 4.2-1 and 4.2-2**, show an aerial view of the potential impacts on Lake area as a result of the Program. Additionally, in Stanfield Marsh, greater provision of water in this area has a potential to support wetland/marsh habitat in a larger area than is supported on average at the present time.



**Exhibit 4.2-1: Lake Area at Record Low in 2018**  
(from Subchapter 4.2)



**Exhibit 4.2-2: Lake Area with Program Implementation Under Dry Conditions  
 (from Subchapter 4.2)**

As an objective of the Program itself is to “provide new inflow to Big Bear Lake to increase inflows and Lake level, enhance recreational opportunities and aquatic habitat,” the enhanced recreation at Big Bear Lake as a result of the provision of higher Lake levels is an intended result of the proposed Program. However, enhanced recreation does not directly translate to increased recreation at Big Bear Lake, as described below. Because Big Bear Lake is formed by a dam operated by BBMWD under the terms of the 1977 Judgment, Big Bear Lake levels can never be greater than the dam height without a resulting spill, and therefore, regardless of whether the Program results in higher water levels or naturally through rainfall and snowpack during a wet year, Big Bear Lake levels can only reach the height of the Big Bear Lake dam. Furthermore, while the Program may provide some noticeable Lake level increase during dry years, Big Bear Lake level increase as a result of Program operations during wet years would be minimal, and therefore less perceptible to residents and visitors utilizing Big Bear Lake for recreational purposes. As BBMWD operates the dam under the terms stipulated in the 1977 Judgment, the same management terms would apply at Big Bear Lake with increased water at Big Bear Lake as a result of the proposed Program. Thus, even though the proposed Program may enhance Lake levels, the existing management conditions implemented by BBMWD would not be significantly altered, and as the BBMWD manages both the dam, and Big Bear Lake itself—including launch points and permits for registered and nonregistered vessels enabling access to Big Bear Lake—it is not anticipated that the proposed Program would significantly increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. In addition, at present, use of Big Bear Lake requires payment of permit fees for registered and nonregistered vessels to BBMWD, the funds for which can be directed towards addressing any deterioration of existing recreational facilities, such as marinas and docks on Big Bear Lake. In the case of increased use due to higher Lake levels drawing a greater number of visitors, the addition of new users of Big Bear Lake would require to contribution of permit fees for registered and nonregistered vessels to BBMWD, which

can be further directed toward addressing any potential deterioration of existing recreational facilities on Big Bear Lake.

In regards to the enhanced setting at Stanfield Marsh that may result from the additional provisions of water at Stanfield Marsh, an objective of the proposed Program is to provide “a consistent water source to sustain habitat and increase education opportunities for the community and visitors.” Thus, a purpose of the proposed Program is to draw visitors to the Stanfield Marsh Wildlife and Waterfowl Preserve, which has existing facilities that can accommodate existing and new visitors that may utilize the walking paths and boardwalks as a result of the provision of greater water, and possibly enhanced habitat, at Stanfield Marsh. Therefore, while the proposed Program would result in the increased use of existing recreational facilities, substantial physical deterioration and the facilities would not result or be accelerated. Impacts would, therefore, be less than significant.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None Required.*

*Level of Significance After Mitigation: Less Than Significant*

- b) Would the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

#### **Program Category 1: Conveyance Pipelines**

Construction: The development of Conveyance Pipelines will not involve the direct construction or expansion of recreational facilities. The Conveyance Pipelines would not be located within recreational facilities or sites designated for such use. Therefore, the Conveyance Pipelines would not adversely impact existing parks or recreational facilities. Because the proposed improvements would not adversely impact existing parks or recreational facilities, no new or expanded park or recreational facility would be required with the implementation of the proposed facilities. Therefore, no adverse physical effect on the environment would occur related to new or expanded park or recreational facilities because the proposed improvements would not require new or expanded park or recreational facilities. Therefore, no impacts are anticipated.

Operation: No new or expanded park or recreational facilities are proposed as part of the operation of the Conveyance Pipelines. Therefore, no adverse physical effect on the environment would occur related to the inclusion of recreational facilities as part of project operations which might have an adverse physical effect on the environment. Therefore, no impacts are anticipated.

#### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The development of Ancillary Facilities will not involve the direct construction or expansion of recreational facilities. The Ancillary Facilities would not be located within recreational facilities or sites designated for such use. Therefore, the Ancillary Facilities would not adversely impact existing parks or recreational facilities. Because the proposed improvements would not adversely impact existing parks or recreational facilities, no new or expanded park or recreational facility would be required with the implementation of the proposed facilities. Therefore, no adverse physical effect on the environment would occur related to new or expanded park or recreational facilities because the proposed improvements would not require new or expanded park or recreational facilities. Therefore, no impacts are anticipated.

Operation: No new or expanded park or recreational facilities are proposed as part of the operation of the Ancillary Facilities. Therefore, no adverse physical effect on the environment would occur related to the inclusion of recreational facilities as part of project operations which might have an adverse physical effect on the environment. Therefore, no impacts are anticipated.

### **Program Category 3: Solar Evaporation Ponds**

Construction: The development of Solar Evaporation Ponds will not involve the direct construction or expansion of recreational facilities. The Solar Evaporation Ponds would not be located within recreational facilities or sites designated for such use. Therefore, the Solar Evaporation Ponds would not adversely impact existing parks or recreational facilities. Because the proposed improvements would not adversely impact existing parks or recreational facilities, no new or expanded park or recreational facility would be required with the implementation of the proposed facilities. Therefore, no adverse physical effect on the environment would occur related to new or expanded park or recreational facilities because the proposed improvements would not require new or expanded park or recreational facilities. Therefore, no impacts are anticipated.

Operation: No new or expanded park or recreational facilities are proposed as part of the operation of the Solar Evaporation Ponds. Therefore, no adverse physical effect on the environment would occur related to the inclusion of recreational facilities as part of project operations which might have an adverse physical effect on the environment. Therefore, no impacts are anticipated.

### **Program Category 4: BBARWA WWTP Upgrades**

Construction: The development of BBARWA WWTP Upgrades will not involve the direct construction or expansion of recreational facilities. The BBARWA WWTP Upgrades would not be located within recreational facilities or sites designated for such use. Therefore, the BBARWA WWTP Upgrades would not adversely impact existing parks or recreational facilities. Therefore, no adverse physical effect on the environment would occur related to new or expanded park or recreational facilities because the proposed improvements would not require new or expanded park or recreational facilities. Therefore, no impacts are anticipated.

Operation: No new or expanded park or recreational facilities are proposed as part of the operation of the BBARWA WWTP Upgrades. Therefore, no adverse physical effect on the environment would occur related to the inclusion of recreational facilities as part of project operations which might have an adverse physical effect on the environment. Therefore, no impacts are anticipated.

### **Other Physical Changes**

As discussed under **Subsection 4.17.2.6, Big Bear Municipal Water District**, under Replenish Big Bear, Program Water will be discharged to Stanfield Marsh, providing a consistent water source to sustain habitat and increase education opportunities for the community and visitors. The Stanfield Marsh Wildlife and Waterfowl Preserve could be considered a recreational facility, and therefore, the Program is anticipated to enhance its recreational features through the provision of a new water source flowing from Stanfield Marsh to Big Bear Lake. The discharge to Stanfield Marsh would not result in any adverse physical effects on the environment. In fact, the discharge of Program Water to Stanfield Marsh would be considered a benefit to the environment when compounded with historic efforts to restore Stanfield Marsh and create the Wildlife and Waterfowl Preserve. Similarly, as discussed under issue (a), above, Big Bear Lake itself could be considered a recreational facility, and therefore, the Program is anticipated to enhance its recreational features through the provision of additional Program Water. As with the discussion



above related to Stanfield Marsh, the discharge to Big Bear Lake would not result in any adverse physical effects on the environment. Thus, impacts would be less than significant.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None Required.*

*Level of Significance After Mitigation: Less Than Significant*

#### **4.17.6 Cumulative Impacts**

As discussed above in **Subchapter 4.15**, the proposed project would not result in a cumulatively considerable contribution to population growth within the region, and as such, the project would not substantially increase demand for recreation facilities. The Big Bear Valley, within which the Program would be implemented, is expected to experience growth over the next few decades. Big Bear Lake is anticipated to grow by about 35% between 2020 and 2045, according to the SCAG Connect SoCal Demographics and Growth Forecast<sup>105</sup>, resulting in development of commercial, industrial, and residential land uses. Similarly, the growth anticipated as part of the Mountain Region of unincorporated San Bernardino County, within which the Program would also be implemented, is anticipated to grow by about 4% between 2016 and 2040, according to the San Bernardino Countywide Plan EIR. As cumulative development occurs, the Big Bear Valley may experience substantial increases in the demand for additional parks to maintain a ratio of 2.5 acres per 1,000 residents in unincorporated San Bernardino County in Big Bear Valley (San Bernardino County Standard), and three acres per 1,000 residents in Big Bear Lake (Big Bear Lake Standard). Depending on the location of the new park and recreation facilities, there could be significant impacts, such as significant air quality and GHG emissions, or significant trip generation or VMTs, from the construction and operation of new facilities. Because the proposed Program would result in minimal direct increase in demand for park and recreation facilities, and that the Program does not propose to construct or expand any recreation facilities through implementation of the Program directly, the project's contribution to cumulative environmental effects associated with the construction of any new facilities would be less than cumulatively considerable.

However, as discussed under **Subsection 4.17.5**, above, while the proposed Program would not install any recreational facilities, it would result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. Objectives of the Program itself are to “provide new inflow to Big Bear Lake to increase inflows and Lake level, enhance recreational opportunities and aquatic habitat,” and to provide “a consistent water source to sustain habitat and increase education opportunities for the community and visitors” at Stanfield Marsh. Cumulative recreational use of Big Bear Lake is limited to Big Bear Lake capacity as a result of the dam, and is accommodated through the requirement that Lake users contribute permit fees for registered and nonregistered vessels to BMWWD, which can be further directed toward addressing any potential deterioration of existing recreational facilities on Big Bear Lake. Thus, as the proposed Program would not result in a significant potential deterioration of existing recreational facilities on Big Bear Lake, the Program's contribution thereof would be less than cumulatively considerable. Furthermore, in regards to the enhanced setting at Stanfield Marsh

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<sup>105</sup> SCAG, 2020. SCAG Connect SoCal Demographics and Growth Forecast. [https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial\\_demographics-and-growth-forecast.pdf?1606001579](https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial_demographics-and-growth-forecast.pdf?1606001579) (accessed 08/07/23)



that may result from the additional provisions of water at Stanfield Marsh, a purpose of the proposed Program is to draw visitors to the Stanfield Marsh Wildlife and Waterfowl Preserve, which has existing facilities that can accommodate existing and new visitors that may utilize the walking paths and boardwalks as a result of the provision of greater water, and possibly enhanced habitat, at Stanfield Marsh. Thus, as the proposed Program would not result in a significant potential deterioration of existing recreational facilities at Stanfield Marsh, the Program's contribution thereof would be less than cumulatively considerable. Thus, the Program's contribution to cumulative environmental effects on recreational facilities would be less than cumulatively considerable. Therefore, the project would not result in a considerable contribution to cumulative impacts to recreation.

#### **4.17.7 Significant and Unavoidable Impacts**

As determined in the preceding environmental evaluation, no significant and unavoidable impacts relating to recreation would occur as a result of implementing the Program, and the project's potential impacts on recreation will be less than significant.

## 4.18 TRANSPORTATION

### 4.18.1 Introduction

This Subchapter assesses potential impacts to transportation from the implementation of the Replenish Big Bear Program (Program).

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Transportation
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to Transportation were received in response to the NOP, nor were any comments received at the Scoping Meeting held on behalf of the Program. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

### 4.18.2 Environmental Setting: Transportation

San Bernardino County contains a mixture of urban areas; rural areas; and small towns isolated due to surrounding Federal land, under both National Forest and BLM jurisdiction. Big Bear Valley is one of those small towns surrounded by the SBNF. The Big Bear Valley contains an incorporated city—City of Big Bear Lake—and a number of small unincorporated communities, including: Fawnskin, Big Bear City, Sugarloaf, and Erwin Lake. There are three primary access roads into the Big Bear Valley (shown on **Figure 4.18-1**): SR-18 from the west; SR-18 from the northeast; and SR-38 from the south-southeast. These two State highways form the backbone of the circulation system within all of the populated areas in the Big Bear Valley. The remainder of the public roadways are owned and maintained by the City of Big Bear Lake within the City's incorporated boundaries and by San Bernardino County for the remainder of Big Bear Valley. The USFS has established some roadways/trails throughout the SBNF in the Program Area, but these roadways/trails are generally established on the periphery of the populated area in Big Bear Valley, and are not established as paved public roads.

#### 4.18.2.1 Roadway Circulation System

SR-38 (North Shore Road) functions as a mountain major highway from its intersection with SR-18 at Big Bear Dam. It is primarily a two-lane State highway that provides access to the residential area on the north shore of Big Bear Lake. The highway is maintained by Caltrans. At North Greenway Drive, SR-38 turns south and extends to SR-18/Big Bear Boulevard where it turns east and continues as SR-38 through the eastern-most residential areas of Big Bear City and Erwin Lake. From there SR-38 extends south and then west to the City of Redlands where it terminates.

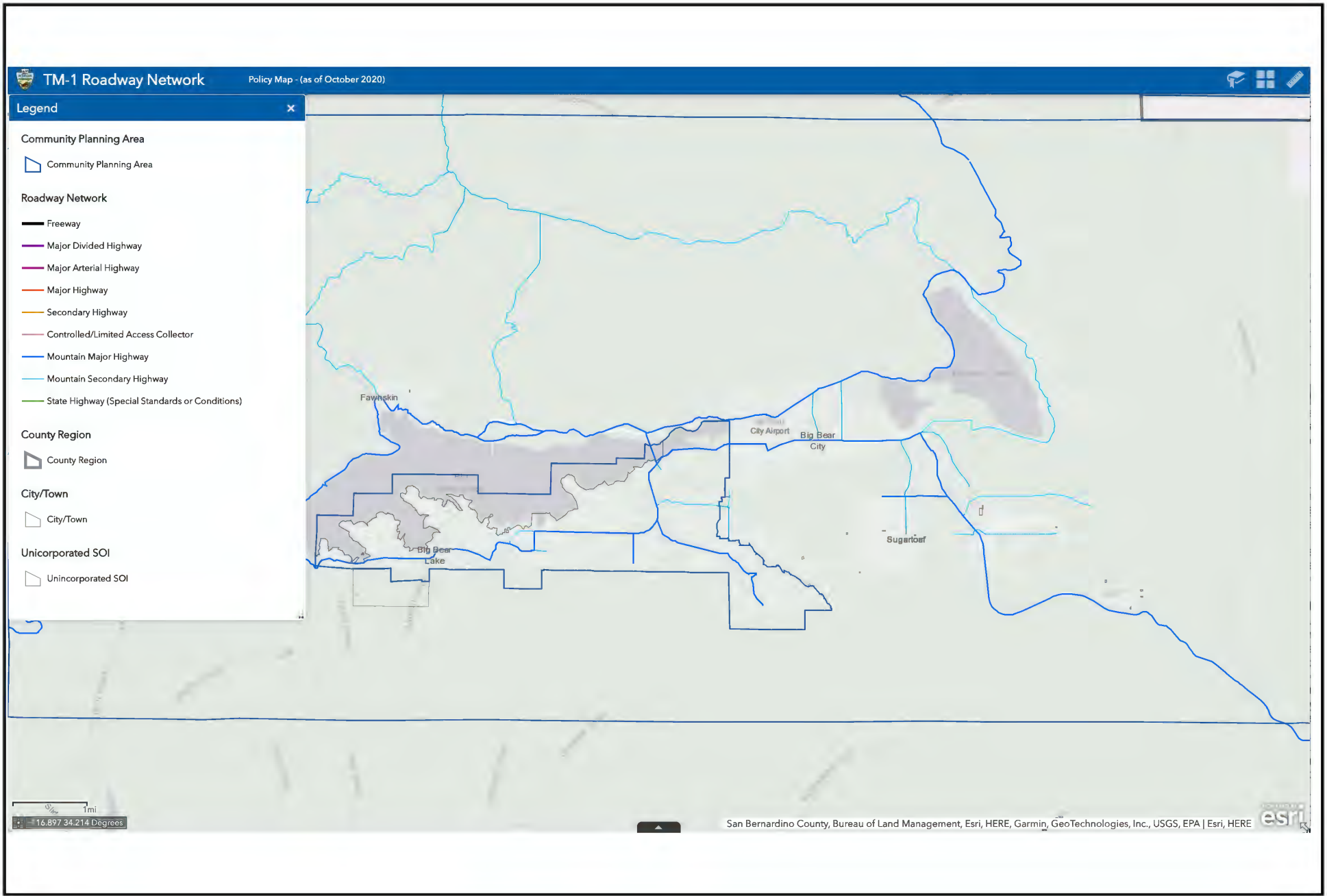


FIGURE 4.18-1

SR-18 is primarily a mountain major highway that crosses Big Bear Dam and extends through the City of Big Bear Lake east along the south side of Big Bear Lake. It has two lanes for most of its route, with four lane segments in its core commercial area. SR-18 extends east to North Greenway Drive where it turns north and assumes the North Shore Drive alignment on the north side of Baldwin Lake. From there SR-18 travels into Lucerne Valley, then west to Victorville and it terminates where SR-18 intersects SR-138. In addition to automobile travel, other transportation systems within the Big Bear Valley include an extensive bicycle trail system (refer to **Figure 4.18-2**); a bus system that connects to mass transit systems in the City of San Bernardino (refer to **Figure 4.18-3**); and a public airport that serves private small aircraft. No public commercial air service is provided in the Big Bear Valley.

### ***Local Roadways Where Pipelines are Proposed to Be Installed***

For planning purposes, there are two pipeline routes from the new AWPf to Discharge Points #1 and #2 have been considered as part of this DPEIR. This is to identify the local roadways where the pipeline(s) will be installed and locations where encroachment permits may be needed. Refer to **Figure 3-1** in Chapter 3, Program Description.

#### Discharge Point #1 Pipeline Route (Figure 4.18-4)

- Segment 1: WWTP east-west across Baldwin Lake from the WWTP (not in a roadway).
- Segment 2: South on Paradise Way to Arbor Lane.
- Segment 3: West on Arbor Lane to Sequoia Drive.
- Segment 4: South on Sequoia Drive to Meadow Lane.
- Segment 5: West on Meadow Lane until it connects with Mountain View Boulevard.
- Segment 6: West on Mountain View Boulevard to Division Drive.
- Segment 7: Discharge Point #1 is just west of Division Drive. End of pipeline.

#### Discharge Point #2 Pipeline Route

- Segment 1: WWTP South on Palomino Drive to Shay Road.
- Segment 2: West on Shay Road to Barranca Boulevard.
- Segment 3: West on Barranca to Country Club Boulevard and continue west to Bufflehead Drive.
- Segment 4: North on Bufflehead Drive to Barker Drive.
- Segment 5: West on Barker Boulevard to Teal Drive.
- Segment 6: North on Teal Drive to Mountain View Boulevard.
- Segment 7: West on Mountain View Boulevard to Shore Drive.
- Segment 8: North on Shore Drive to Elysian Boulevard.
- Segment 9: West on Elysian Boulevard to Pintail Drive.
- Segment 10: South on Pintail Drive to E. Mountain View Boulevard.
- Segment 11: West on Mountain View Boulevard to Eider Drive.
- Segment 12: South on Eider Drive to Angeles Boulevard.
- Segment 13: West on Angeles Boulevard to Mount Doble Drive.
- Segment 14: South on Mount Doble Drive to E. Country Club Boulevard.
- Segment 15: West on E. Country Club Boulevard to Big Tree Drive.
- Segment 16: South on Big Tree Drive to West Valley Boulevard.
- Segment 17: West on West Valley Boulevard to Bowles Drive.
- Segment 18: Southwest on Bowles Drive to W. Aeroplane Boulevard.
- Segment 19: Northwest on W. Aeroplane Boulevard at Keiner Drive to W. Aeroplane Boulevard.
- Segment 20: West on W Aeroplane Boulevard to Division Drive.
- Segment 21: Division Drive north to the pipeline that extends west to Discharge Point #2. End of pipeline.

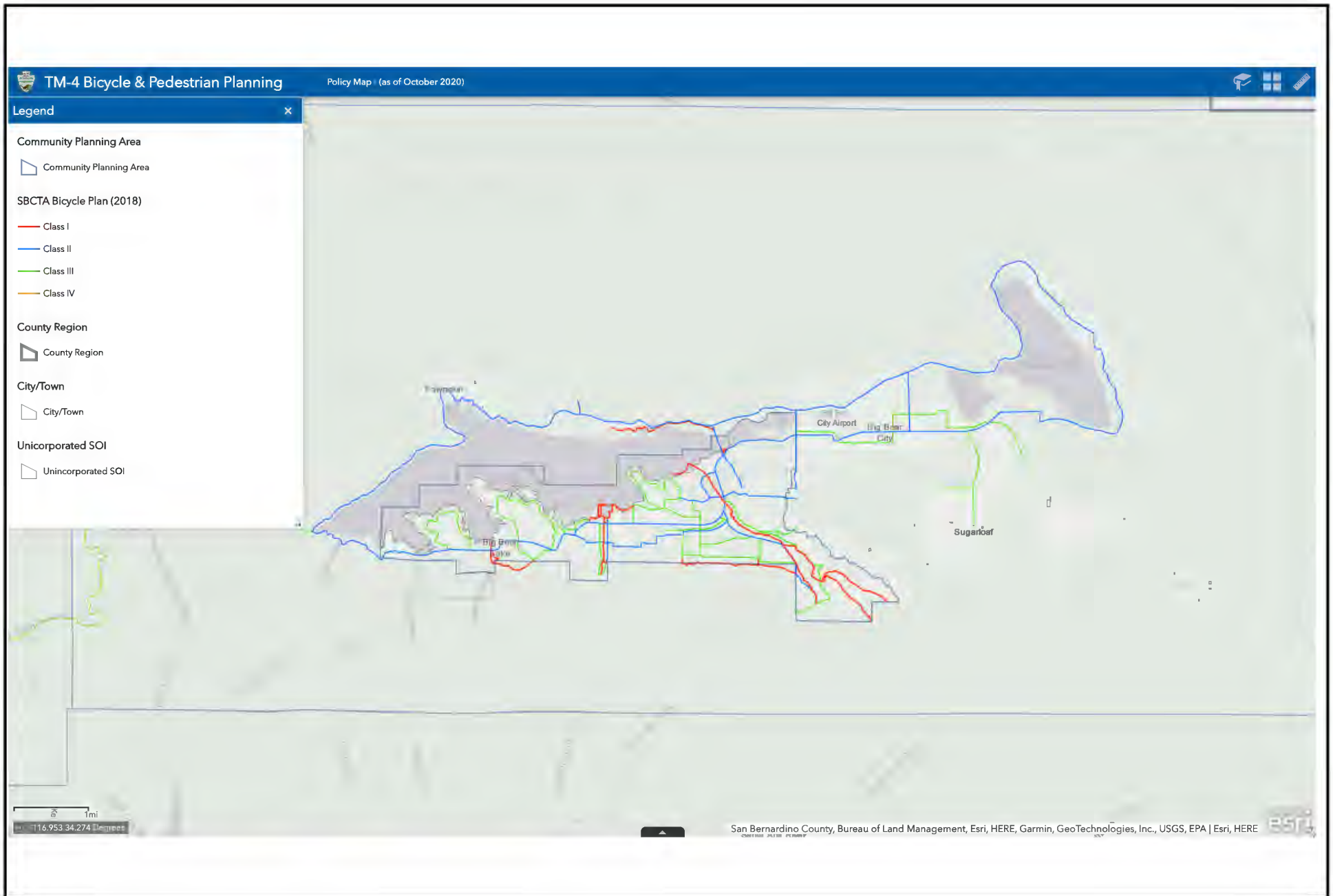


FIGURE 4.18-2



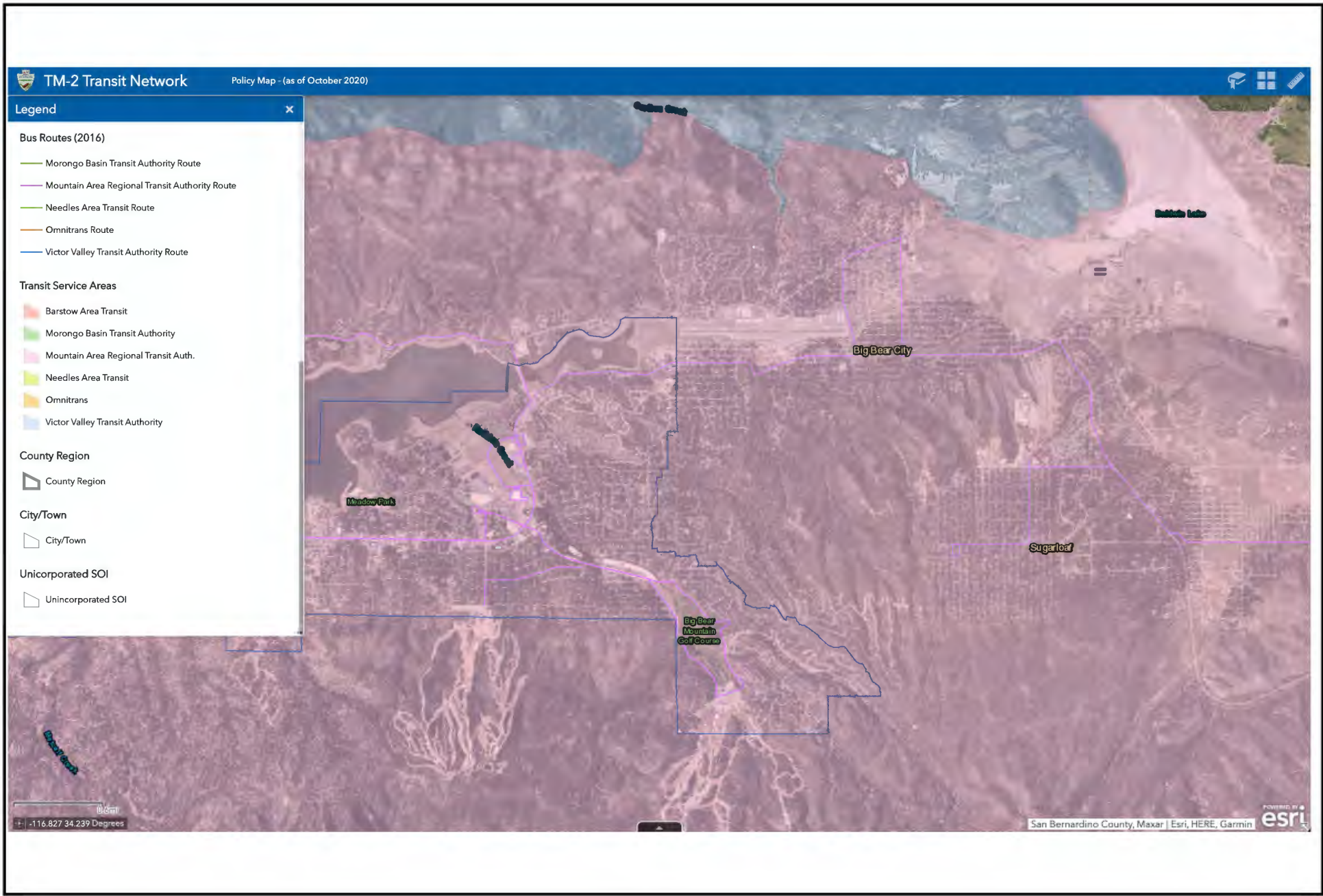
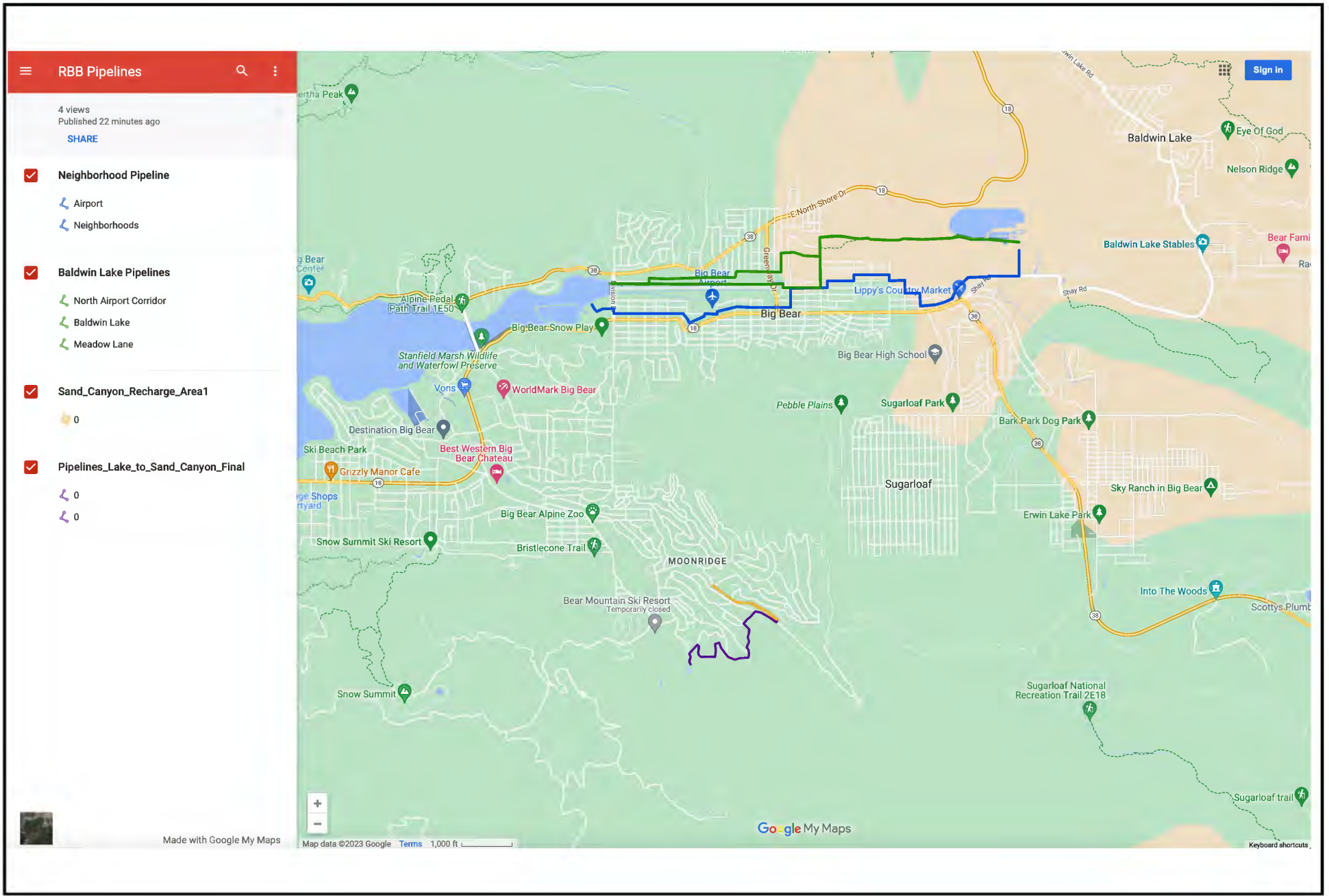


FIGURE 4.18-3





**FIGURE 4.18-4**

### Sand Canyon Recharge Area

Program Water stored in Big Bear Lake will be delivered from Big Bear Lake to the Sand Canyon Recharge Area through the Moonridge community of the City of Big Bear Lake using an existing pipeline. Refer to **Figures 3-3 and 3-29** of Chapter 3, Program Description. The first segment of the new pipeline to deliver the Program Water stored in Big Bear Lake to Sand Canyon for percolation connects to the existing pipeline at the intersection of Lassen Drive and Primrose Drive.

- Segment 1: North-West from the pipeline connection at the intersection of Lassen Drive and Primrose Drive on Primrose Drive to Rockspring Drive.
- Segment 2: Various directions on Rockspring Drive to Shasta Road.
- Segment 3: South and then east from Shasta Road to Ridgecrest Drive.
- Segment 5: North on Ridgecrest Drive to San Pasqual Drive.
- Segment 6: Northeast on San Pasqual Drive to the end of the street.
- Segment 7: Northeast from the end of San Pasqual Drive cross-country to Sand Canyon Road.
- Segment 8: Southeast on Sand Canyon Road to the discharge point in Sand Canyon. End of pipeline.

#### **4.18.2.2 Bicycle and Pedestrian Circulation System**

The Big Bear Valley has extensive existing bicycle facilities, which are shown on **Figure 4.18-2** and were compiled by San Bernardino County as part of San Bernardino County's Circulation Element in 2020. Consistent with its destination resort character, the City of Big Bear Lake and adjacent communities cater to outdoor recreation, including bicycle riding during the non-skiing season. With respect to bicycle facilities, Big Bear Valley includes three classes of bikeways: Class I (Shared Use Path or Bike Path), Class II (Designated Bike Lane), and Class III (Designated Bike Route). There are numerous bikeways throughout the Big Bear Valley. With respect to pedestrian facilities, there are many designated trails (including in SBNF) and sidewalk systems that pedestrians within the Big Bear Valley can utilize.

#### **4.18.2.3 Aviation System**

The Big Bear Valley has one public aviation facility, Big Bear Airport. It serves private airplane flights with no commercial service.

#### **4.18.3 Regulatory Setting**

Federal, State, and local laws, regulations, plans, or guidelines that are applicable to the proposed Program are summarized below.

##### **4.18.3.1 State**

#### **California Transportation Plan**

The California Transportation Plan is prepared by Caltrans every five years to provide a long-range policy framework to meet the State's future mobility needs and reduce GHG emissions to goals set by the California Global Warming Solutions Act of 2006 (AB 32; discussed in **Subchapter 4.8**, Greenhouse Gas Emissions/Climate Change) and implementing legislation SB 375 (discussed below). The most recent California Transportation Plan was adopted in 2021. The California Transportation Plan defines goals, performance-based policies, and strategies to

achieve the State's collective vision for a future statewide, integrated, multimodal transportation system by envisioning a sustainable system that improves mobility, and enhances quality of life.

### **Senate Bill 743**

SB 743 (2013) changed the way that public agencies evaluate the transportation impacts of projects under CEQA, recognizing that roadway congestion, while an inconvenience to drivers, is not itself an environmental impact. (See Public Resources Code § 21099(b)(2) ["automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to [CEQA]".].)

Under SB 743, the Governor's OPR established VMT as the preferred metric for measuring transportation impacts of most projects in place of level of service (LOS) or related measures of congestion as the primary metric. The use of VMT for determining the significance of transportation impacts has become commonplace since the certification of this provision and the release of OPR's Technical Advisory on Evaluating Transportation Impacts in CEQA in December 2018 and, as of July 1, 2020, is the required statewide metric.

Caltrans has provided two guidance documents to address VMT impacts on the State highway system consistent with the requirements of SB 743 and the OPR Technical Advisory:

- The Transportation Analysis under CEQA provides information to support CEQA practitioners in making CEQA significance determinations for transportation impacts of projects on the State highway system.
- The Transportation Analysis Framework guides the preferred approach for analyzing the VMT attributable to proposed projects (induced travel) in various project settings.

### **State CEQA Guidelines Section 15064.3**

State CEQA Guidelines Section 15064.3 implements SB 743 and establishes VMT as the most appropriate measure of transportation impacts. This marks a shift away from the traditional LOS analysis that evaluated the impacts of a project on traffic conditions at nearby roadways, and intersections. The primary components of Section 15064.3 include:

- Identifies VMT as the most appropriate measure of transportation impacts.
- Declares that a project's effect on automobile delay shall not constitute a significant environmental impact (except for projects increasing roadway capacity).
- Creates a rebuttable presumption of no significant transportation impacts for (a) land use projects within 0.5 mile of either an existing major transit stop or a stop along an existing high quality transit corridor, (b) land use projects that reduce VMT below existing conditions, and (c) transportation projects that reduce or have no impact on VMT.
- Allows a lead agency to qualitatively evaluate VMT if existing models are not available.
- Gives lead agencies discretion to select a methodology to evaluate a project's VMT, but requires lead agencies to document that methodology in the environmental document prepared for the project.

CEQA lead agencies were required to comply with State CEQA Guidelines Section 15064.3 no later than July 1, 2020.

### **California Vehicle Code Division 15, Chapters 1-5**

Caltrans is responsible for planning, designing, building, operating, and maintaining California's transportation system. Caltrans sets standards related to transportation safety, design, performance, and accessibility. Specifically, California Vehicle Code Sections 35000-35796

include regulations pertaining to licensing, size, weight, and load of vehicles operated on highways.

### **California Streets and Highway Code Sections 660-771**

Caltrans has the discretionary authority to issue special permits for the use of State highways for other-than-normal transportation purposes and reviews requests from utility companies, developers, and others desiring to conduct activities within State highway ROW. Caltrans encroachment regulations would apply to construction of the proposed project facilities within and immediately adjacent to roadways, as well as the transportation of construction crews and construction equipment throughout the Program Area. Specifically, California Streets and Highway Code Sections 660-771 include regulations pertaining to transportation of oversized loads, certain materials, and construction-related roadway transportation disturbance.

#### **4.18.3.2 Regional and Local Regulations**

### **2020-2045 SCAG Regional Transportation Plan/Sustainable Communities Strategy**

SCAG is the designated MPO for San Bernardino, Riverside, Los Angeles, Orange, Imperial, and Ventura counties. On September 3, 2020, SCAG adopted its 2020-2045 RTP/SCS. The RTP/SCS presents the transportation vision for the SCAG region through the year 2045 and provides a long-term investment framework for addressing the region's transportation and related challenges. The RTP/SCS focuses on maintaining and improving the transportation system through a balanced approach and considers economic, environmental, public health, improved coordination between land-use decisions and transportation investments, and strategic expansion of the system to accommodate future growth. Specifically, the RTP/SCS vision is to locate housing, jobs, and transit closer together; increase investment in transit and complete streets; and increase mobility options to achieve a more sustainable growth pattern.

### **San Bernardino County Long Range Transit Plan**

San Bernardino Associated Governments (SANBAG) is the council of governments and transportation planning agency for San Bernardino County. In January 2017, SANBAG split into the SBCTA and SBCOG. SBCOG and SBCTA are responsible for cooperative regional planning and furthering an efficient multi-modal transportation system countywide, respectively, and, thus, SBCTA supports freeway construction projects, regional and local road improvements, train and bus transportation, railroad crossings, call boxes, ridesharing, and long-term planning studies. The Long-Range Transit Plan (LRTP) addresses San Bernardino County's current and future travel challenges and provides a system of transit facilities and services that can increase transit's role in the future. The recommended LRTP began by developing and analyzing a wide range of alternatives designed to meet the needs of San Bernardino County. Alternatives were developed based on the identification of major travel markets and their ability to generate potential ridership. The recommended LRTP for San Bernardino County offers the best transit improvements to address growing travel demand anticipated through 2035.

### **County and City General Plans and Ordinances**

Local regulations and ordinances vary in the Big Bear Valley. Transportation-related policies included in General Plans typically concern transportation resulting from project operation rather than project construction. However, some local jurisdictions incorporate restrictions within their general plans that pertain to construction activities in or through their jurisdictional areas, such as assigning construction truck routes or requiring the development and implementation of construction transportation management plans.

#### **4.18.4 Thresholds of Significance**

According to Appendix G, Section XVII, of the State CEQA Guidelines, a project would have a significant effect on the environment if the project would cause a substantial adverse change in any element of the circulation system in Big Bear Valley, or would not meet local VMT thresholds.

- a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities;
- b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b);
- c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or
- d) Result in inadequate emergency access.

#### **4.18.5 Potential Impacts**

This section evaluates the potential impacts of the proposed Program to transportation.

##### **TRAN-1 Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?**

The primary plans that address the circulation system in the Program Area are the recently adopted San Bernardino Countywide Plan and the 1999 City of Big Bear Lake General Plan. These plans address various modes of transportation, including roadway vehicle, transit, bicycle, and pedestrian, and includes objectives and policies related to these modes of transportation. However, the proposed Program generally consists of short-term activities (i.e., construction) that will not conflict with any policies, except maintenance of access to the uses adjacent to the roadways, and limited maintenance activities in the future after the facilities—primarily pipelines—have been installed and are operational.

##### **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPf to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of 2 MW of solar panels at BBARWA’s WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA’s Administration Building.

**Construction:** During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for this Program Category is shown in **Table 4.4-6**, below.

**Table 4.4-6  
 CONSTRUCTION DURATION: COMPONENT 1**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 1: WWTP Upgrades	Jan 2025	Jan 2027	515

For the BBARWA AWP, construction would require 70 workers per day. A maximum of 55 truck trips would occur on a given day of construction.

The 55 truck round trips per day and employee vehicles would utilize SR-18 and SR-38 to access the Big Bear Valley, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the BBARWA WWTP Upgrades Project staging areas. In contrast, it is assumed that construction employees (up to 70 workers total, though this may be an overestimate, given that some workers may be assigned to multiple projects, depending on the overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.

The average total trips associated with construction of the BBARWA WWTP Upgrades should all of the construction activities occur on the same day will be about 55 large truck and an estimated 70 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the BBARWA WWTP Upgrades is estimated to be 235 passenger car equivalent trips or a total of 125 trips total. The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

- JCT. SR-38: 4,900
- Lakeview Drive: 10,800
- Stanfield Cutoff: 20,500
- JCT SR-38 East: 11,200
- JCT. SR-38 West: 5,000
- Baldwin Lake Road: 3,000



The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Construction of the BBARWA WWTP Upgrades, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County LRTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as BBARWA WWTP Upgrades construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Furthermore, the majority of the proposed facilities (pump stations, AWPf, and solar arrays) would be installed within facilities containing water and wastewater infrastructure, and thereby the temporary duration of construction and the activities associated with construction would not conflict with the underlying land use at these sites. BBARWA WWTP Upgrades construction could result in other short-term circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area.

Impacts would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted ROW, such as the proximity of intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sidewalks be completely blocked without an alternative or detour option for these modes of transport. Construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize potential conflicts with all modes of transportation as a result of BBARWA WWTP Upgrades implementation, and would reduce impacts to a less than significant level.

Operation: It is anticipated that operation of the BBARWA AWPf would utilize onsite employees to support the ongoing operation of the BBARWA AWPf, in addition to any necessary maintenance. However, an anticipated five new employees would be required to support Program facilities.

BBARWA WWTP Upgrades operations would not directly or indirectly induce population growth that could generate additional roadway, transit, bicycle, or pedestrian trips that could affect the circulation system, as the proposed Program would protect and help maintain existing regional water supply rather than expand future water supplies to support growth (refer to **Chapter 5, Topical Issues** for a full discussion of the Program's Growth Inducing Impacts). In addition, the proposed BBARWA AWPf would not result in a substantial addition of employees related to operation (an anticipated five new employees would be required in support of these agencies as a result of implementation of the BBARWA WWTP Upgrades, generally in support of the proposed AWPf at BBARWA's WWTP Site). As such, BBARWA WWTP Upgrades operation would not conflict with adopted SCAG RTP/SCS, San Bernardino County LRTP, and general plans policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities. The proposed BBARWA WWTP Upgrades would enhance Big Bear Valley water resources, and would install water and wastewater infrastructure, rather than a land use Program that could affect regional

land use and transportation patterns, transit use, or local transportation policy implementation. Generally, in order for noticeable circulation impact to occur, an increase of 100 operational trips or more would need to occur.<sup>106</sup> As the proposed BBARWA WWTP Upgrades Project would not generate fewer than 100 peak hour trips during any peak hour and would contribute fewer than 50 peak hour trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent), it would not result in other long-term circulation effects such as vehicle queues exceeding available storage, transit services, or facilities disruption, or a hazardous condition that currently does not exist for pedestrians and bicyclists. Therefore, operational transportation circulation system impacts would be less than significant without mitigation.

**Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12” in diameter.

Construction: During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for this Program Category is shown in **Table 4.4-13**, below.

**Table 4.4-13  
 CONSTRUCTION DURATION: COMPONENT 2**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 2: Lake Pipeline	May 2025	Oct 2026	370

For the Stanfield Marsh/Big Bear Lake Discharge Project, construction would require 20 workers per day. A maximum of 20 truck trips would occur on a given day of construction.

The 20 truck round trips per day and employee vehicles would utilize SR-18 and SR-38 to access the Big Bear Valley, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the Stanfield Marsh/Big Bear Lake Discharge Project staging areas. In contrast, it is assumed that construction employees (up to 20 workers total, though this may be an

<sup>106</sup> This is based on the San Bernardino County Traffic Guidelines, which states: The traffic impact study area is to be defined in conformance with the requirements of the County’s Guidelines, which state that the requirement to prepare a traffic study will be based upon, but not limited to, one or more of the following criteria:

- If a project generates 100 or more trips without consideration of pass-by trips during any peak hour.
- If a project is located within 300 feet of the intersection of two streets designated as Collector or higher in the County’s General Plan or the Department’s Master Plan or impacted intersection as determined by the Traffic Division.
- If a project creates safety or operational concerns.

Based on this criterion, a project is anticipated to generate fewer than 100 peak hour trips during any peak hour and would contribute fewer than 50 peak hour trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent).

overestimate, given that some workers may be assigned to multiple projects, depending on the overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.

The average total trips associated with construction of the Stanfield Marsh/Big Bear Lake Discharge Project should all of the construction activities occur on the same day will be about 20 large truck and an estimated 20 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the Stanfield Marsh/Big Bear Lake Discharge Project is estimated to be 80 passenger car equivalent trips or a total of 40 trips total. The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

- JCT. SR-38: 4,900
- Lakeview Drive: 10,800
- Stanfield Cutoff: 20,500
- JCT SR-38 East: 11,200
- JCT. SR-38 West: 5,000
- Baldwin Lake Road: 3,000

The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Stanfield Marsh/Big Bear Lake Discharge Project construction, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County LRTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as Program construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Stanfield Marsh/Big Bear Lake Discharge Project construction could result in other short-term circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area, as lane and/or road closures could be required temporarily where the Stanfield Marsh/Big Bear Lake Discharge Project would be installed in public roadway ROW and construction disturbance could traverse under existing transit, bicycle, and/or pedestrian thoroughfares.

Impacts would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted ROW, such as the proximity of intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sidewalks be completely blocked without an alternative or detour option for these modes of transport. Furthermore, construction activities associated with the Stanfield Marsh/Big Bear Lake Discharge Project could also result in accidental damage to the existing roadway network, including pavement, curbs, gutters, sidewalks, and drainage structures. As a result, construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize

potential conflicts with all modes of transportation as a result of Stanfield Marsh/Big Bear Lake Discharge Project implementation, and would reduce impacts to a less than significant level.

Operation: Maintenance vehicles would continue to be utilized as needed by the Program Team agencies to access and maintain the Stanfield Marsh/Big Bear Lake Discharge Project facilities. Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Stanfield Marsh/Big Bear Lake Discharge Project facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per month. An anticipated five new employees would be required to support Program facilities, but these are generally attributable to the BBARWA AWPf operations.

Public roadway ROW and portions of Big Bear Valley’s circulation system impacted during construction would be returned to pre-construction conditions upon completion of installation of each given facility. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment would be installed underground, and no other facilities would be installed within public ROW. As a result, Stanfield Marsh/Big Bear Lake Discharge Project would not physically interfere with the transportation circulation system during operation. Impacts would be less than significant.

**Replenish Big Bear Component 3: Shay Pond Discharge Project**

The Program would ultimately install about 710 LF of 4” pipeline to reach Shay Pond from either an existing pipeline or a new 6” pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

Construction: During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for this Program Category is shown in **Table 4.4-19**, below.

**Table 4.4-19  
 CONSTRUCTION DURATION: COMPONENT 3**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 3: Shay Pond	May 2025	Oct 2026	370

For the Shay Pond Discharge Project, construction would require 10 workers per day. A maximum of 10 truck trips would occur on a given day of construction.

The 10 truck round trips per day and employee vehicles would utilize SR-18 and SR-38 to access the Big Bear Valley, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the Stanfield Marsh/Big Bear Lake Discharge Project staging areas. In contrast, it is assumed that construction employees (up to 10 workers total, though this may be an overestimate, given that some workers may be assigned to multiple projects, depending on the

overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.

The average total trips associated with construction of the Shay Pond Discharge Project should all of the construction activities occur on the same day will be about 10 large truck and an estimated 10 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the Shay Pond Discharge Project is estimated to be 40 passenger car equivalent trips or a total of 20 trips total. The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

- JCT. SR-38: 4,900
- Lakeview Drive: 10,800
- Stanfield Cutoff: 20,500
- JCT SR-38 East: 11,200
- JCT. SR-38 West: 5,000
- Baldwin Lake Road: 3,000

The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Shay Pond Discharge Project construction, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County LRTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as Program construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Shay Pond Discharge Project construction could result in other short-term circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area, as lane and/or road closures could be required temporarily where the Shay Pond Discharge Project would be installed in public roadway ROW and construction disturbance could traverse under existing transit, bicycle, and/or pedestrian thoroughfares.

Impacts would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted ROW, such as the proximity of intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sidewalks be completely blocked without an alternative or detour option for these modes of transport. Furthermore, construction activities associated with the Shay Pond Discharge Project could also result in accidental damage to the existing roadway network, including pavement, curbs, gutters, sidewalks, and drainage structures. As a result, construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize potential conflicts with all modes of transportation as a result of Shay Pond Discharge Project implementation, and would reduce impacts to a less than significant level.

Operation: Maintenance vehicles would continue to be utilized as needed by the Program Team agencies to access and maintain the Shay Pond Discharge Project facilities. Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Shay Pond Discharge Project facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per month. An anticipated five new employees would be required to support Program facilities, but these are generally attributable to the BBARWA AWPf operations.

Public roadway ROW and portions of Big Bear Valley’s circulation system impacted during construction would be returned to pre-construction conditions upon completion of installation of each given facility. The Shay Pond Discharge Project would be installed underground, and no other facilities would be installed within public ROW. As a result, Shay Pond Discharge Project would not physically interfere with the transportation circulation system during operation. Impacts would be less than significant.

**Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

Construction: During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for this Program Category is shown in **Table 4.4-25**, below.

**Table 4.4-25  
 CONSTRUCTION DURATION: COMPONENT 4**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 4: Evaporation Pond	May 2025	Oct 2026	370

For the Solar Evaporation Ponds Project, construction would require 10 workers per day. A maximum of 100 truck trips would occur on a given day of construction.

The 100 truck round trips per day and employee vehicles would utilize SR-18 and SR-38 to access the Big Bear Valley, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the Solar Evaporation Ponds Project staging areas. In contrast, it is assumed that construction employees (up to 10 workers total, though this may be an overestimate, given that some workers may be assigned to multiple projects, depending on the overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.



The average total trips associated with construction of the Solar Evaporation Ponds Project should all of the construction activities occur on the same day will be about 100 large truck and an estimated 10 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the Solar Evaporation Ponds Project is estimated to be 310 passenger car equivalent trips or a total of 110 trips total. The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

- JCT. SR-38: 4,900
- Lakeview Drive: 10,800
- Stanfield Cutoff: 20,500
- JCT SR-38 East: 11,200
- JCT. SR-38 West: 5,000
- Baldwin Lake Road: 3,000

The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Construction of the Solar Evaporation Ponds Project, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County LRTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as Solar Evaporation Ponds Project construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Furthermore, the Solar Evaporation Ponds Project would be installed within facilities containing water and wastewater infrastructure, and thereby the temporary duration of construction and the activities associated with construction would not conflict with the underlying land use at these sites. Solar Evaporation Ponds Project construction could result in other short-term circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area.

Impacts would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted ROW, such as the proximity of intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sidewalks be completely blocked without an alternative or detour option for these modes of transport. Construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize potential conflicts with all modes of transportation as a result of Solar Evaporation Ponds Project implementation, and would reduce impacts to a less than significant level.

Operation: It is anticipated that operation of the Solar Evaporation Ponds Project would utilize onsite employees to support the ongoing operation of the BBARWA AWPF, inclusive of the Solar Evaporation Ponds, in addition to any necessary maintenance. However, an anticipated five new employees would be required to support Program facilities.

Solar Evaporation Ponds Project operations would not directly or indirectly induce population growth that could generate additional roadway, transit, bicycle, or pedestrian trips that could affect the circulation system, as the proposed Program would protect and help maintain existing regional water supply rather than expand future water supplies to support growth (refer to **Chapter 5, Topical Issues** for a full discussion of the Program's Growth Inducing Impacts). In addition, the proposed Solar Evaporation Ponds Project would not result in a substantial addition of employees related to operation (an anticipated five new employees would be required in support of these agencies as a result of implementation of the Solar Evaporation Ponds Project, generally in support of the proposed AWPf at BBARWA's WWTP Site). As such, Solar Evaporation Ponds Project operation would not conflict with adopted SCAG RTP/SCS, San Bernardino County LRTP, and general plans policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities. The proposed Solar Evaporation Ponds Project would enhance Big Bear Valley water resources, and would install water and wastewater infrastructure, rather than a land use Program that could affect regional land use and transportation patterns, transit use, or local transportation policy implementation. Generally, in order for noticeable circulation impact to occur, an increase of 100 operational trips or more would need to occur.<sup>107</sup> As the proposed Solar Evaporation Ponds Project would generate fewer than 100 peak hour trips during any peak hour and would contribute fewer than 50 peak hour trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent, it would not result in other long-term circulation effects such as vehicle queues exceeding available storage, transit services, or facilities disruption, or a hazardous condition that currently does not exist for pedestrians and bicyclists. Therefore, operational transportation circulation system impacts would be less than significant without mitigation.

#### **Replenish Big Bear Component 5: Sand Canyon Recharge Project**

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

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<sup>107</sup> This is based on the San Bernardino County Traffic Guidelines, which states: The traffic impact study area is to be defined in conformance with the requirements of the County's Guidelines, which state that the requirement to prepare a traffic study will be based upon, but not limited to, one or more of the following criteria:

- If a project generates 100 or more trips without consideration of pass-by trips during any peak hour.
- If a project is located within 300 feet of the intersection of two streets designated as Collector or higher in the County's General Plan or the Department's Master Plan or impacted intersection as determined by the Traffic Division.
- If a project creates safety or operational concerns.

Based on this criterion, a project is anticipated to generate fewer than 100 peak hour trips during any peak hour and would contribute fewer than 50 peak hour trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent).

**Construction:** During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for this Program Category is shown in **Table 4.4-31**, below.

**Table 4.4-31  
 CONSTRUCTION DURATION: COMPONENT 5**

Construction Activity	Start Date	End Date	Days
Replenish Big Bear Component 5: Sand Canyon	May 2025	Oct 2026	370

To implement the Sand Canyon Recharge Project, construction would require 30 workers per day. A maximum of 25 truck trips would occur on a given day of construction.

The 25 truck round trips per day and employee vehicles would utilize SR-18 and SR-38 to access the Big Bear Valley, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the Sand Canyon Recharge Project staging areas. In contrast, it is assumed that construction employees (up to 30 workers total, though this may be an overestimate, given that some workers may be assigned to multiple projects, depending on the overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.

The average total trips associated with construction of the Sand Canyon Recharge Project should all of the construction activities occur on the same day will be about 25 large truck and an estimated 30 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the Sand Canyon Recharge Project is estimated to be 105 passenger car equivalent trips or a total of 55 trips total. The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

- JCT. SR-38: 4,900
- Lakeview Drive: 10,800
- Stanfield Cutoff: 20,500
- JCT SR-38 East: 11,200
- JCT. SR-38 West: 5,000
- Baldwin Lake Road: 3,000

The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Sand Canyon Recharge Project construction, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County

L RTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as Program construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Furthermore, the majority of the proposed facilities (pump stations, etc.) would be installed within facilities containing water and wastewater infrastructure, and thereby the temporary duration of construction and the activities associated with construction would not conflict with the underlying land use at these sites. Land would likely need to be acquired for the Sand Canyon Monitoring Wells. Siting of the facilities would include determination of the most suitable locations to place facilities, taking into consideration surrounding land uses. However, because the precise locations for the Sand Canyon Monitoring Wells are presently unknown, wells may be developed across other designated land uses. Per Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, no land use conflicts would be anticipated to occur during either construction or operation for the Sand Canyon Monitoring Wells. However, Sand Canyon Recharge Project construction could result in other short-term circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area, as lane and/or road closures could be required temporarily where pipelines would be installed in public roadway ROW and construction disturbance could traverse under existing transit, bicycle, and/or pedestrian thoroughfares.

Impacts would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted ROW, such as the proximity of intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sidewalks be completely blocked without an alternative or detour option for these modes of transport. Furthermore, construction activities associated with the pipelines could also result in accidental damage to the existing roadway network, including pavement, curbs, gutters, sidewalks, and drainage structures. As a result, construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize potential conflicts with all modes of transportation as a result of Sand Canyon Recharge Project implementation, and would reduce impacts to a less than significant level.

Operation: Maintenance vehicles would continue to be utilized as needed by the Program Team agencies to access and maintain the various proposed facilities. Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Sand Canyon Recharge Project's facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per Sand Canyon Recharge Project facility per month. An anticipated five new employees would be required to support Program facilities, generally attributable to the BBARWA AWP operations.

Public roadway ROW and portions of Big Bear Valley's circulation system impacted during construction would be returned to pre-construction conditions upon completion of installation of each given facility. Sand Canyon Recharge Conveyance Pipelines would be installed underground, and no other facilities would be installed within public ROW. As a result, Sand

Canyon Recharge Conveyance Pipelines would not physically interfere with the transportation circulation system during operation.

Program operations would not directly or indirectly induce population growth that could generate additional roadway, transit, bicycle, or pedestrian trips that could affect the circulation system, as the proposed Program would protect and help maintain existing regional water supply rather than expand future water supplies to support growth (refer to **Chapter 5, Topical Issues** for a full discussion of the Program's Growth Inducing Impacts). In addition, the proposed Sand Canyon Recharge Project would not result in a substantial addition of employees related to operation (an anticipated five new employees would be required in support of these agencies as a result of implementation of the Program, generally in support of the proposed AWPf at BBARWA's WWTP Site). As such, Sand Canyon Recharge Project operation would not conflict with adopted SCAG RTP/SCS, San Bernardino County LRTP, and general plans policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities. The proposed Sand Canyon Recharge Project would enhance Big Bear Valley water resources, and would install water and wastewater infrastructure, rather than a land use Program that could affect regional land use and transportation patterns, transit use, or local transportation policy implementation. Generally, in order for noticeable circulation impact to occur, an increase of 100 operational trips or more would need to occur.<sup>108</sup> As the proposed Sand Canyon Recharge Project would generate fewer than 100 trips per day and would contribute fewer than 50 peak hour trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent, it would not result in other long-term circulation effects such as vehicle queues exceeding available storage, transit services, or facilities disruption, or a hazardous condition that currently does not exist for pedestrians and bicyclists. Therefore, operational transportation circulation system impacts would be less than significant without mitigation.

### **Combined Program Categories**

**Construction:** During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for the specific projects proposed under the Program is shown in **Table 4.18-1**, below.

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<sup>108</sup> This is based on the City of Big Bear Lake Traffic Guidelines, which states: A Local Traffic Assessment (LTA) will not be required for projects having certain types of activities (for example, local-serving projects) or for those with a limited trip generation. For the latter, the thresholds for determining the type of LTA report are as follows:

- If a project is forecast to generate between 50 and 100 peak hour trips, then a focused LTA maybe required, where the analyst will only need to analyze the project driveways and intersections adjacent to the project site.
- If a project is forecast to generate more than 100 trips, then a full LTA will be required.

Based on this criterion, a project is anticipated to generate fewer than 50 peak hour trips during any peak hour and would contribute fewer than 100 trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent).

**Table 4.18-1  
 CONSTRUCTION SCHEDULE**

<b>Construction Activity</b>	<b>Start Date</b>	<b>End Date</b>	<b>Days</b>
BBARWA WWTP Upgrades Project	Jan 2025	Jan 2027	515
Stanfield Marsh/Big Bear Lake Discharge	May 2025	Oct 2026	370
Shay Pond Discharge Project	May 2025	Oct 2026	370
Solar Evaporation Ponds Project	May 2025	Oct 2026	370
Sand Canyon Recharge Project	May 2025	Oct 2026	370

The maximum number of truck trips on a given day of construction are anticipated to be 210 truck round trips per day and construction vehicles would utilize SR-18 and SR-38 to access the Program Area, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the BBARWA WWTP Upgrades, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment, Shay Pond Discharge Project, Solar Evaporation Ponds Project, and Sand Canyon Recharge Project staging areas. In contrast, it is assumed that construction employees (up to 140 workers total, though this may be an overestimate, given that some workers may be assigned to multiple projects, depending on the overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.

While the maximum number of trucks on the roadways in Big Bear Valley are expressed above, the average total trips associated with construction of the Program's facilities should all of the construction activities occur on the same day will be about 150 large truck and an estimated 140 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the proposed Program is estimated to be 770 passenger car equivalent trips or 350 trips. However, the average daily trips if all activities were to occur on the same day is projected to be about 500 passenger car equivalent round trips (125 truck round trips + 125 worker round trips). The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

- JCT. SR-38: 4,900
- Lakeview Drive: 10,800
- Stanfield Cutoff: 20,500
- JCT SR-38 East: 11,200
- JCT. SR-38 West: 5,000
- Baldwin Lake Road: 3,000

The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Program construction, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County LRTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as Program construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction



within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Furthermore, the majority of the proposed facilities (pump stations, evaporation ponds, AWPF, and solar arrays) would be installed within facilities containing water and wastewater infrastructure, and thereby the temporary duration of construction and the activities associated with construction would not conflict with the underlying land use at these sites. Land would likely need to be acquired for the Sand Canyon Monitoring Wells. Siting of the facilities would include determination of the most suitable locations to place facilities, taking into consideration surrounding land uses. However, because the precise locations for a few of the proposed Program facilities are presently unknown, wells may be developed across other designated land uses. Per Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, no land use conflicts would be anticipated to occur during either construction or operation for the Sand Canyon Monitoring Wells. However, Program construction could result in other short-term circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area, as lane and/or road closures could be required temporarily where Conveyance Pipelines would be installed in public roadway ROW and construction disturbance could traverse under existing transit, bicycle, and/or pedestrian thoroughfares.

Impacts would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted ROW, such as the proximity of intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sidewalks be completely blocked without an alternative or detour option for these modes of transport. Furthermore, construction activities associated with the water Conveyance Pipelines could also result in accidental damage to the existing roadway network, including pavement, curbs, gutters, sidewalks, and drainage structures. As a result, construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize potential conflicts with all modes of transportation as a result of Program implementation, and would reduce impacts to a less than significant level.

Operation: The Program would consist of the operation of the upgraded BBARWA WWTP, monitoring wells, pump stations, and pipeline distribution network. Maintenance vehicles would continue to be utilized as needed by the Program Team agencies to access and maintain the various proposed facilities. Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Program's facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per Program facility per month. An anticipated five new employees would be required to support Program facilities.

Public roadway ROW and portions of Big Bear Valley's circulation system impacted during construction would be returned to pre-construction conditions upon completion of installation of each given facility. Water Conveyance Pipelines would be installed underground, and no other facilities would be installed within public ROW. As a result, Program components would not physically interfere with the transportation circulation system during Program operation.

Program operations would not directly or indirectly induce population growth that could generate additional roadway, transit, bicycle, or pedestrian trips that could affect the circulation system, as the proposed Program would protect and help maintain existing regional water supply rather than expand future water supplies to support growth (refer to Chapter 5, Topical Issues for a full discussion of the Program's Growth Inducing Impacts). In addition, the proposed Program would not result in a substantial addition of employees related to the proposed facilities operation (an anticipated five new employees would be required in support of these agencies as a result of implementation of the Program). As such, Program operation would not conflict with adopted SCAG RTP/SCS, San Bernardino County LRTP, and general plans policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, because the proposed Program would enhance Big Bear Valley water resources, and would install water and wastewater infrastructure, rather than a land use Program that could affect regional land use and transportation patterns, transit use, or local transportation policy implementation. Generally, in order for noticeable circulation impact to occur, an increase of 100 operational trips or more would need to occur.<sup>109 110</sup> As the proposed Program would generate fewer than 100 trips per day and would contribute fewer than 50 peak hour trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent, it would not result in other long-term circulation effects such as vehicle queues exceeding available storage, transit services, or facilities disruption, or a hazardous condition that currently does not exist for pedestrians and bicyclists. Therefore, operational transportation circulation system impacts would be less than significant without mitigation.

*Level of Significance Before Mitigation: Potentially Significant for Construction*

*Mitigation Measures:*

**TRAN-1: Prepare and Implement Construction Transportation Management Plan**  
***A construction TMP shall be developed and implemented by the implementing agency, in coordination with the respective jurisdictions, SBCTA, and/or other relevant parties during construction of the proposed project. The TMP shall conform to Caltrans' Transportation Management Plan Guidelines and shall include but is not limited to:***

**Construction Traffic Routes and Staging Locations: The TMP shall identify construction staging site locations and potential road closures, alternate routes for detours, and**

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<sup>109</sup> This is based on the City of Big Bear Lake Traffic Guidelines, which states: A Local Traffic Assessment (LTA) will not be required for projects having certain types of activities (for example, local-serving projects) or for those with a limited trip generation. For the latter, the thresholds for determining the type of LTA report are as follows:

- If a project is forecast to generate between 50 and 100 peak hour trips, then a focused LTA maybe required, where the analyst will only need to analyze the project driveways and intersections adjacent to the project site.
- If a project is forecast to generate more than 100 trips, then a full LTA will be required.

Based on this criterion, a project is anticipated to generate fewer than 50 peak hour trips during any peak hour and would contribute fewer than 100 trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent).

<sup>110</sup> This is based on the San Bernardino County Traffic Guidelines, which states: The traffic impact study area is to be defined in conformance with the requirements of the County's Guidelines, which state that the requirement to prepare a traffic study will be based upon, but not limited to, one or more of the following criteria:

- If a project generates 100 or more trips without consideration of pass-by trips during any peak hour.
- If a project is located within 300 feet of the intersection of two streets designated as Collector or higher in the County's General Plan or the Department's Master Plan or impacted intersection as determined by the Traffic Division.
- If a project creates safety or operational concerns.

Based on this criterion, a project is anticipated to generate fewer than 100 peak hour trips during any peak hour and would contribute fewer than 50 peak hour trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent).

*planned truck routes for construction-related vehicle trips, including but not limited to haul trucks, material delivery trucks, and equipment delivery trucks. It shall also identify alternative safe routes and policies to maintain safety along bicycle and pedestrian routes during construction. Construction vehicle routes shall avoid local residential streets and avoid peak morning and evening commute hours to the maximum extent practicable. Staging locations, alternate detour routes, and construction vehicle routes shall avoid other active construction projects within 0.25 mile of the project construction sites to the maximum extent practicable.*

**Damage Repair:** *The TMP shall include the following requirements to minimize damage to the existing roadway network:*

- *A list of precautionary measures to protect the existing roadway network, including but not limited to pavements, curbs, gutters, sidewalks, and drainage structures, shall be outlined. The construction contractor(s) shall be required to implement these measures throughout the duration of construction of the water Conveyance Pipelines.*
- *The roadway network along the proposed Program Water distribution alignment(s) shall be surveyed prior to the start of project construction activities, and existing roadway conditions shall be summarized in a brief report.*
- *Any damage to the roadway network that occurs as a result of project construction activities shall be noted, and the implementing agency or its contractors shall repair all damage.*

**Coordination with Emergency Services:** *The TMP shall include requirements to notify local emergency response providers, including relevant police and sheriff departments, ambulance services, and paramedic services at least one week prior to the start of work within public ROW if lane and/or road closures are required. To the extent practicable, the duration of disruptions/closures to roadways and critical access points for emergency services shall be minimized.*

**Coordination with Active Transportation Facilities:** *The TMP shall require coordination with owners/operators of any affected active transportation facilities to minimize the duration of disruptions/closures to bike paths, pedestrian trails, and adjacent access points.*

**Coordination with SBCTA:** *If the proposed project affects access to existing transit stops, the TMP shall also include temporary, alternative transit stops and directional signage, as determined in coordination with Mountain Transit.*

**Coordination with Caltrans:** *If the proposed project requires lane and/or road closures of State highways or State highway ramps, the TMP shall require coordination with Caltrans to ensure the TMP conforms with Caltrans' Transportation Management Plan Guidelines.*

**Coordination with Nearby Construction Sites:** *The TMP shall identify all active construction projects within 0.25 mile of project construction sites and require coordination with the applicants and/or contractors of these projects during all phases of construction regarding the following:*

- *All temporary lane and/or roadway closures shall be coordinated to limit overlap of roadway closures;*
- *All major deliveries and haul truck trips shall be coordinated to limit the occurrence of simultaneous deliveries and haul truck trips; and*
- *The implementing agency, its contractor(s), or its representative(s) shall meet on a regular basis with the applicant(s), contractor(s) or their representative(s) of active construction projects within 0.25 mile of the project construction sites during construction to address any outstanding issues related to construction vehicles.*

**Transportation Control and Safety:** *The TMP shall provide for roadway vehicle control measures including flag persons, warning signs, lights, barricades, cones, and/or detour routes to provide safe passage of vehicular, bicycle, and pedestrian circulation and access by emergency responders.*

**Plan Approval:** *The TMP shall be submitted to SBCTA for review and approval.*

*Level of Significance After Mitigation: Less Than Significant*

**MM TRAN-1** would require implementation of designated construction roadway vehicle routes, damage repair procedures, and transportation control measures to minimize potential impacts to the movement and circulation of vehicles, public transit, bicycles, and/or pedestrians within the Program Area due to construction roadway vehicle volumes and lane and/or road closures during Program construction. In addition, **MM TRAN-1** would require coordination with Mountain Transit and designation of alternative bicycle and pedestrian routes during Program construction to compensate for impacts to transit stops and bicycle and pedestrian facilities. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

### **Cumulative Impact Analysis**

The Big Bear Valley circulation system is managed by four agencies (City of Big Bear Lake, San Bernardino County, Caltrans, and USFS) with primarily residential, and some commercial and industrial development. As Big Bear Valley continues to develop, the addition of more residential and commercial development is expected to slowly increase traffic volumes on roadways within the Program Area. This increase from cumulative development is not expected to result in significant cumulative impacts on the existing transportation systems based on the rate of growth identified in **Chapter 4.15, Population and Housing Section**. Because the construction activities associated with the Program would increase construction traffic on the area roadways and potentially cause significant impacts, the Projects' contribution to cumulative impacts on roadways would be less than significant with mitigation. However, the implementation of **MM TRAN-1** would reduce the Program's contribution to potential construction traffic impacts to less than significant. The above measure would require all construction activities to be conducted in accordance with an approved construction TMP, which would serve to reduce the construction-related traffic impacts to the maximum extent feasible. Thus, the Program would not contribute cumulatively considerable contributions to cumulative transportation circulation system impacts.

*Mitigation Measures: **MM TRAN-1** would reduce impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less than Significant*

**TRAN-2** **Would the project conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b)?**

State CEQA Guidelines Section 15064.3(b) identifies criteria for evaluating transportation impacts states that VMT exceeding an applicable threshold of significance may indicate a significant transportation impact. According to State CEQA Guidelines Section 15064.3(b)(3), a lead agency may include a qualitative analysis of operational and construction transportation. However, as discussed below, the Program is not expected to permanently affect VMT in the study area based on guidance provided by the Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018).

### **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

**Construction:** A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed under Response (a) above, construction vehicles on local roadways would be temporarily increased during BBARWA WWTP Upgrades Project construction due to the presence of construction activities and employee trips. Increases in VMT from construction would be short-term, minimal, and temporary. The duration of the potential significant impacts would be limited to the period of time needed to construct the BBARWA WWTP Upgrades Project (515 construction days). As such, VMT standards, which are intended to monitor and address long-term transportation impacts resulting from future development, do not apply to the temporary impacts associated with construction activities. Therefore, no construction impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

**Operation:** The BBARWA WWTP Upgrades Project would not cause substantial long-term/ongoing transportation effects, because proposed BBARWA WWTP Upgrades Project facilities, once constructed, would only increase the number of employees by an estimated five new permanent employees. During BBARWA WWTP Upgrades Project operation, Program-related roadway vehicle trips would include daily employee trips to and from the AWPF. The Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018) states, "Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant VMT impact." As such, the BBARWA WWTP Upgrades Project would generate substantially less than 110 trips per day during operations, which is the recommended screening threshold. Therefore, the BBARWA WWTP Upgrades Project would not result in a substantial addition of VMT per service population or induce additional roadway vehicle travel by increasing physical roadway capacity or adding new roadways to the network. Therefore, no operational impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

### **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

**Construction:** A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed under Response (a) above, construction vehicles on local roadways would be temporarily increased during Stanfield Marsh/Big Bear Lake Discharge Project construction due to the presence of construction activities and employee trips. Increases in VMT from construction would be short-term, minimal, and temporary. The duration of the potential significant impacts would be limited to the period of time needed to construct the Stanfield Marsh/Big Bear Lake Discharge Project (370 construction days). As such, VMT standards, which are intended to monitor and address long-term transportation impacts resulting from future development, do not apply to the temporary impacts associated with construction activities. Therefore, no construction impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

**Operation:** The Stanfield Marsh/Big Bear Lake Discharge Project would not cause substantial long-term/ongoing transportation effects, because proposed Stanfield Marsh/Big Bear Lake Discharge Project facilities, once constructed, would only require maintenance activities similar to those that occur under existing conditions for the respective Program Team and the increase in employees due to the implementation of the Program is forecast to result in less than an estimated five new permanent employees. The Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018) states, "Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant VMT impact." As discussed under Response (a), scheduled maintenance visits would also occur in the future with one trip per maintenance event, with occasional trips also occurring when unforeseen circumstances arise that would require maintenance or repair of certain facilities. As such, the

Stanfield Marsh/Big Bear Lake Discharge Project would generate substantially less than 110 trips per day during operations, which is the recommended screening threshold. Therefore, the Stanfield Marsh/Big Bear Lake Discharge Project would not result in a substantial addition of VMT per service population or induce additional roadway vehicle travel by increasing physical roadway capacity or adding new roadways to the network. Therefore, no operational impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

### **Replenish Big Bear Component 3: Shay Pond Discharge Project**

Construction: A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed under Response (a) above, construction vehicles on local roadways would be temporarily increased during Shay Pond Discharge Project construction due to the presence of construction activities and employee trips. Increases in VMT from construction would be short-term, minimal, and temporary. The duration of the potential significant impacts would be limited to the period of time needed to construct the Shay Pond Discharge Project (370 construction days). As such, VMT standards, which are intended to monitor and address long-term transportation impacts resulting from future development, do not apply to the temporary impacts associated with construction activities. Therefore, no construction impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

Operation: The Shay Pond Discharge Project would not cause substantial long-term/ongoing transportation effects, because proposed Shay Pond Discharge Project facilities, once constructed, would only require maintenance activities similar to those that occur under existing conditions for the respective Program Team and the increase in employees due to the implementation of the Program is forecast to result in less than an estimated five new permanent employees. The Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018) states, "Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant VMT impact." As discussed under Response (a), scheduled maintenance visits would also occur in the future with one trip per maintenance event, with occasional trips also occurring when unforeseen circumstances arise that would require maintenance or repair of certain facilities. As such, the Shay Pond Discharge Project would generate substantially less than 110 trips per day during operations, which is the recommended screening threshold. Therefore, the Shay Pond Discharge Project would not result in a substantial addition of VMT per service population or induce additional roadway vehicle travel by increasing physical roadway capacity or adding new roadways to the network. Therefore, no operational impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

### **Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

Construction: A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed under Response (a) above, construction vehicles on local roadways would be temporarily increased during Solar Evaporation Ponds Project construction due to the presence of construction activities and employee trips. Increases in VMT from construction would be short-term, minimal, and temporary. The duration of the potential significant impacts would be limited to the period of time needed to construct the Solar Evaporation Ponds Project (370 construction days). As such, VMT standards, which are intended to monitor and address long-term transportation impacts resulting from future development, do not apply to the temporary impacts associated with construction activities. Therefore, no construction impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

Operation: The Solar Evaporation Ponds Project would not cause substantial long-term/ongoing transportation effects, because proposed Solar Evaporation Ponds Project facilities, once constructed, would only increase the number of employees by an estimated five new permanent



employees. During Solar Evaporation Ponds Project operation, Program-related roadway vehicle trips would include daily employee trips to and from the AWPf, which includes operating the Solar Evaporation Ponds Project. The Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018) states, "Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant VMT impact." As such, the Solar Evaporation Ponds Project would generate substantially less than 110 trips per day during operations, which is the recommended screening threshold. Therefore, the Solar Evaporation Ponds Project would not result in a substantial addition of VMT per service population or induce additional roadway vehicle travel by increasing physical roadway capacity or adding new roadways to the network. Therefore, no operational impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

### **Replenish Big Bear Component 5: Sand Canyon Recharge Project**

**Construction:** A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed under Response (a) above, construction vehicles on local roadways would be temporarily increased during Sand Canyon Recharge Project construction due to the presence of construction activities and employee trips. Increases in VMT from construction would be short-term, minimal, and temporary. The duration of the potential significant impacts would be limited to the period of time needed to construct the Sand Canyon Recharge Project (370 construction days). As such, VMT standards, which are intended to monitor and address long-term transportation impacts resulting from future development, do not apply to the temporary impacts associated with construction activities. Therefore, no construction impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

**Operation:** The Sand Canyon Recharge Project would not cause substantial long-term/ongoing transportation effects, because proposed Sand Canyon Recharge Project facilities, once constructed, would only require maintenance activities similar to those that occur under existing conditions for the respective Program Team and the increase in employees due to the implementation of the Program is forecast to result in less than an estimated five new permanent employees. The Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018) states, "Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant VMT impact." As discussed under Response (a), scheduled maintenance visits would also occur in the future with one trip per maintenance event, with occasional trips also occurring when unforeseen circumstances arise that would require maintenance or repair of certain facilities. As such, the Sand Canyon Recharge Project would generate substantially less than 110 trips per day during operations, which is the recommended screening threshold. Therefore, the Sand Canyon Recharge Project would not result in a substantial addition of VMT per service population or induce additional roadway vehicle travel by increasing physical roadway capacity or adding new roadways to the network. Therefore, no operational impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None required.*

### **Cumulative Impact Analysis**

As Big Bear Valley continues to develop the population is expected to grow slowly with a commensurate slow growth in traffic volumes on roadways within the Program Area. As described

above, the Program's contribution to cumulative VMTs would be less than cumulatively considerable considering the operation of the of the Program screens out of the designated VMT threshold, and therefore a less than significant cumulative impact would occur under this issue.

*Mitigation Measures: None required.*

*Level of Significance After Mitigation: Less than Significant*

**TRAN-3 Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

**Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

Construction: During construction, the BBARWA WWTP Upgrades Project could temporarily change the built configuration of intersections and roadways within the Program Area as described above. It is anticipated that the proposed BBARWA WWTP Upgrades Project would be installed entirely within the confines of the BBARWA WWTP. However, construction of the proposed facilities could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, the change to the mix of vehicles would stop when construction is completed. The potential conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The implementation of **MM TRAN-1** would reduce the BBARWA WWTP Upgrades Project's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

Operation: The BBARWA WWTP Upgrades Project would not include alterations to existing roadway alignments or intersections in the Program Area, and therefore, would not include sharp curves or unsafe designs that would increase transportation-related hazards. The BBARWA WWTP Upgrades Project facilities may include new or improved driveway access points; however, design of such driveways would be required to comply with local codes and standards for ingress and egress for both the San Bernardino County unincorporated areas. As such, the BBARWA WWTP Upgrades Project would not create a hazardous condition that currently does not exist for motorists, transit riders, pedestrians, or bicyclists nor would it include incompatible uses for the Program Area. Therefore, no operational impacts related to transportation hazards would occur. No impacts are anticipated.

**Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

Construction: During construction, the Stanfield Marsh/Big Bear Lake Discharge Project could temporarily change the built configuration of intersections and roadways within the Program Area as described above. Lane and/or road detours or closures may be required where the Stanfield Marsh/Big Bear Lake Discharge Project would be installed within public ROW. Construction equipment and materials may also be staged temporarily within the public ROW. Lane detours or closures have the potential to increase conflicts between vehicles, bicyclists, and pedestrians; however, implementation of existing regulations and policies for road closures and lane detours within active construction areas would reduce the potential for Program construction to increase hazards in the Program Area. However, although construction of the proposed Stanfield Marsh/Big Bear Lake Discharge Project could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, the change to the mix of vehicles would stop when Stanfield Marsh/Big Bear Lake Discharge Project

construction is completed. The potential conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The implementation of **MM TRAN-1** would reduce the Stanfield Marsh/Big Bear Lake Discharge Project's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

Operation: The Stanfield Marsh/Big Bear Lake Discharge Project would not include alterations to existing roadway alignments or intersections in the Program Area, and therefore, would not include sharp curves or unsafe designs that would increase transportation-related hazards. Once the pipelines are installed belowground, it is not anticipated that any aboveground hazards would remain once the pipelines are operational. Therefore, no operational impacts related to transportation hazards would occur. No impacts are anticipated.

### **Replenish Big Bear Component 3: Shay Pond Discharge Project**

Construction: During construction, the Shay Pond Discharge Project could temporarily change the built configuration of intersections and roadways within the Program Area as described above. Lane and/or road detours or closures may be required where the Shay Pond Discharge Project would be installed within public ROW. Construction equipment and materials may also be staged temporarily within the public ROW. Lane detours or closures have the potential to increase conflicts between vehicles, bicyclists, and pedestrians; however, implementation of existing regulations and policies for road closures and lane detours within active construction areas would reduce the potential for Program construction to increase hazards in the Program Area. However, although construction of the proposed Shay Pond Discharge Project could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, the change to the mix of vehicles would stop when Shay Pond Discharge Project construction is completed. The potential conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The implementation of **MM TRAN-1** would reduce the Shay Pond Discharge Project's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

Operation: The Shay Pond Discharge Project would not include alterations to existing roadway alignments or intersections in the Program Area, and therefore, would not include sharp curves or unsafe designs that would increase transportation-related hazards. Once the pipelines are installed belowground, it is not anticipated that any aboveground hazards would remain once the pipelines are operational. Therefore, no operational impacts related to transportation hazards would occur. No impacts are anticipated.

### **Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

Construction: During construction, the Solar Evaporation Ponds Project could temporarily change the built configuration of intersections and roadways within the Program Area as described above. It is anticipated that the proposed Solar Evaporation Ponds Project would be installed entirely within the confines of the BBARWA WWTP. However, construction of the proposed facilities could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, the change to the mix of vehicles would stop when construction is completed. The potential conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The potential

conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The implementation of **MM TRAN-1** would reduce the Solar Evaporation Ponds Project's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

Operation: The Solar Evaporation Ponds Project would not include alterations to existing roadway alignments or intersections in the Program Area, and therefore, would not include sharp curves or unsafe designs that would increase transportation-related hazards. The Solar Evaporation Ponds Project facilities may include new or improved driveway access points; however, design of such driveways would be required to comply with local codes and standards for ingress and egress for both the San Bernardino County unincorporated areas. As such, the Solar Evaporation Ponds Project would not create a hazardous condition that currently does not exist for motorists, transit riders, pedestrians, or bicyclists nor would it include incompatible uses for the Program Area. Therefore, no operational impacts related to transportation hazards would occur. No impacts are anticipated.

#### **Replenish Big Bear Component 5: Sand Canyon Recharge Project**

Construction: During construction, the Sand Canyon Recharge Project could temporarily change the built configuration of intersections and roadways within the Program Area as described above. Lane and/or road detours or closures may be required where water Conveyance Pipelines would be installed within public ROW. Construction equipment and materials may also be staged temporarily within the public ROW. Lane detours or closures have the potential to increase conflicts between vehicles, bicyclists, and pedestrians; however, implementation of existing regulations and policies for road closures and lane detours within active construction areas would reduce the potential for Sand Canyon Recharge Project construction to increase hazards in the Program Area. However, although construction of the proposed Sand Canyon Recharge Project facilities could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, the change to the mix of vehicles would stop when Sand Canyon Recharge Project construction is completed. The potential conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The implementation of **MM TRAN-1** would reduce the Sand Canyon Recharge Project's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

Operation: The Sand Canyon Recharge Project would not include alterations to existing roadway alignments or intersections in the Program Area, and therefore, would not include sharp curves or unsafe designs that would increase transportation-related hazards. The proposed Sand Canyon Recharge Project facilities may include new driveway access points; however, design of such driveways would be required to comply with local codes and standards for ingress and egress for both the San Bernardino County unincorporated and City of Big Bear Lake areas. As such, the Program would not create a hazardous condition that currently does not exist for motorists, transit riders, pedestrians, or bicyclists nor would it include incompatible uses for the Program Area. Therefore, no operational impacts related to transportation hazards would occur. No impacts are anticipated.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: Implementation of **MM TRAN-1** is required to achieve a less than significant impact.*

*Level of Significance After Mitigation: Less Than Significant*

The implementation of **MM TRAN-1** would reduce the Program's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

### **Cumulative Impact Analysis**

As the service area continues to develop, the addition of more residential, commercial, and industrial development is expected to occur slowly in Big Bear Valley (refer to **Chapter 4.15**). This slow increase in cumulative traffic volumes is not forecast to result in significant hazard impacts. Because the proposed construction activities associated with the Program could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, potential conflicts between construction trucks and automobiles could result in significant traffic hazard impacts. The implementation of **MM TRAN-1** would reduce the Program's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction Traffic Control Plan. Thus, the Program would not contribute cumulatively considerable contributions to cumulative traffic related hazards and incompatible use impacts.

*Mitigation Measures: **MM TRAN-1** would reduce impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less than Significant*

**TRAN-4** Would the project result in inadequate emergency access?

### **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**

Construction: BBARWA WWTP Upgrades Project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, construction impacts related to emergency access would be potentially significant. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during BBARWA WWTP Upgrades Project construction. Implementation of **MMs TRAN-1** and **WF-1**, would be required to reduce impacts to a less than significant level.

Operation: Operation of the BBARWA WWTP Upgrades Project would not block roadways or driveways, and emergency access to the proposed facilities, such as the advanced treatment facility, would be provided in accordance with applicable regulations, such as the California Fire

Code, and submitted for review to the applicable local agencies. As such, the BBARWA WWTP Upgrades Project would provide at least two separate apparatus access roads for proposed facilities requiring regular employee presence with the fire apparatus access roads having a minimum width of 20 ft and a minimum turning radii of 25 ft inside and 45 ft outside. Therefore, operational impacts related to emergency access would be less than significant.

### **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**

**Construction:** Stanfield Marsh/Big Bear Lake Discharge Project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, construction impacts related to emergency access would be potentially significant. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during Stanfield Marsh/Big Bear Lake Discharge Project construction. Implementation of **MMs TRAN-1** and **WF-1**, would be required to reduce impacts to a less than significant level.

**Operation:** Operation of the Stanfield Marsh/Big Bear Lake Discharge Project would not block roadways or driveways as the proposed pipelines would be installed belowground. Therefore, no operational impacts related to emergency access would occur.

### **Replenish Big Bear Component 3: Shay Pond Discharge Project**

**Construction:** Shay Pond Discharge Project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, construction impacts related to emergency access would be potentially significant. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during Shay Pond Discharge Project construction. Implementation of **MMs TRAN-1** and **WF-1**, would be required to reduce impacts to a less than significant level.

**Operation:** Operation of the Shay Pond Discharge Project would not block roadways or driveways as the proposed pipelines would be installed belowground. Therefore, no operational impacts related to emergency access would occur.

### **Replenish Big Bear Component 4: Solar Evaporation Ponds Project**

**Construction:** Solar Evaporation Ponds Project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, construction impacts related to emergency access would be potentially significant. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during



Solar Evaporation Ponds Project construction. Implementation of **MMs TRAN-1** and **WF-1**, would be required to reduce impacts to a less than significant level.

Operation: Operation of the Solar Evaporation Ponds Project would not block roadways or driveways, and emergency access to the proposed facilities, such as the advanced treatment facility, would be provided in accordance with applicable regulations, such as the California Fire Code, and submitted for review to the applicable local agencies. As such, the Solar Evaporation Ponds Project would provide at least two separate apparatus access roads for proposed facilities requiring regular employee presence with the fire apparatus access roads having a minimum width of 20 ft and a minimum turning radii of 25 ft inside and 45 ft outside. Therefore, operational impacts related to emergency access would be less than significant.

### **Replenish Big Bear Component 5: Sand Canyon Recharge Project**

Construction: Sand Canyon Recharge Project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, construction impacts related to emergency access would be potentially significant. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during Sand Canyon Recharge Project construction. Implementation of **MMs TRAN-1** and **WF-1**, would be required to reduce impacts to a less than significant level.

Operation: Operation of the Sand Canyon Recharge Project would not block roadways or driveways, and emergency access to the proposed facilities, such as the advanced treatment facility, would be provided in accordance with applicable regulations, such as the California Fire Code, and submitted for review to the applicable local agencies. As such, the Sand Canyon Recharge Project would provide at least two separate apparatus access roads for proposed facilities requiring regular employee presence with the fire apparatus access roads having a minimum width of 20 ft and a minimum turning radii of 25 ft inside and 45 ft outside. Therefore, operational impacts related to emergency access would be less than significant.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: Implementation of **MM TRAN-1** and **WF-1** is required to achieve a less than significant impact. **MM WF-1** is repeated below for reference.*

**WF-1:** *Prior to initiating construction of proposed Conveyance Pipelines or other Program facilities within public ROW, BBARWA or the implementing agency shall prepare and implement a traffic control plan that contains comprehensive strategies for maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The implementing agency shall ensure that the traffic control plan and other construction activities are consistent with*

*the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.*

*Level of Significance After Mitigation: Less Than Significant*

**MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during Program construction. As a result, implementation of **MMs TRAN-1** and **WF-1** would reduce construction impacts related to emergency access to a less than significant level.

### **Cumulative Impact Analysis**

As Big Bear Valley continues to develop, the addition of more residential, commercial, and industrial development is expected to slowly increase traffic volumes on roadways within the Program Area. Cumulative construction activities are expected to increase construction vehicles travelling on the roadways. While individual emergency vehicles could be slowed if travelling behind a slow-moving truck, per vehicle code requirements, vehicles must yield to emergency vehicles using a siren and red lights. Cumulative construction vehicles travelling along the roadways are expected to result in a less than significant impact on emergency access.

Lane closures due to cumulative construction activities could result in potential access impacts to emergency vehicles. As such, implementation of **MMs TRAN-1** and **WF-1** would reduce the Program's cumulative contribution to potential construction impacts on emergency access to a less than significant impact. The above measure would reduce impacts on emergency access by requiring all construction activities to be conducted in accordance with an approved construction Traffic Control Plan and require coordination of timing, location, and duration of construction activities with emergency services such as police and fire.

*Mitigation Measures: **MMs TRAN-1** and **WF-1** would reduce impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less than Significant*

## **4.18.6 Cumulative Impacts**

### **4.18.6.1 Construction Impacts**

Overlapping cumulative construction activities, simultaneous lane/road closures, and simultaneous staging of construction equipment and materials in public ROW could result in cumulative construction impacts related to transportation circulation patterns in the Program Area, transit stops, bicycle and pedestrian facilities, and/or emergency access. Cumulative construction activities are expected to increase construction vehicles traveling on the roadways. While individual emergency vehicles could be slowed if traveling behind a slow-moving truck, vehicle codes require vehicles to yield to emergency vehicles using a siren and red lights. As such, cumulative impacts related to construction transportation circulation and emergency access within Big Bear Valley would be potentially significant. However, the Program would be required to implement **MM TRAN-1**, which requires coordination with other active construction projects within 0.25 mile of Program construction sites to minimize simultaneous lane and/or road closures, major deliveries, and haul truck trips. **MM TRAN-1** also requires designating alternate detour routes and construction transportation routes that avoid these projects to the maximum extent practicable.

Similarly, **MM WF-1** would require the preparation of a traffic control plan with comprehensive strategies to reduce disruption to traffic in general, but particularly to maintain emergency access or evacuation capabilities. Therefore, with mitigation incorporated, the Program would not have a cumulatively considerable contribution to the significant cumulative impact related to construction transportation circulation and emergency access.

#### **4.18.6.2 Operational Impacts**

Operations related to buildout of cumulative development within the Program Area, including the projects assumed under buildout of the two land use jurisdictions within Big Bear Valley, would gradually increase cumulative operational roadway vehicle volumes on local roadways. The cumulative increase in roadway vehicle volumes would have the potential to increase cumulative operational VMT in the Program Area. As such, cumulative impacts related to operational transportation circulation and VMT within Big Bear Valley could be potentially significant. However, Program-related VMT would be negligible in comparison to the high volumes of VMT generated by the types of residential, commercial, and industrial projects assumed under buildout of the two general plans controlling land use in Big Bear Valley. Therefore, the Program would not have a cumulatively considerable contribution to the significant cumulative impact related to operational transportation circulation and VMT.

#### **4.18.7 Significant and Unavoidable Impacts**

As determined in the preceding environmental evaluation, with the implementation of **MMs TRAN-1** and **WF-1**, no significant and unavoidable impacts relating to Transportation issues would occur as a result of implementing the proposed Program, and the Program's potential impacts on Transportation issues will be less than significant.

## 4.19 TRIBAL CULTURAL RESOURCES

### 4.19.1 Introduction

This subchapter evaluates the potential environmental impacts on TCR from the implementation of the Replenish Big Bear Program (Program). In response to the AB 52 consultation initiated on December 28, 2022, one Tribe was notified—YSMN—and requested consultation. BBARWA staff-initiated consultation with YSMN and through the consultation process reached an agreement with YSMN to implement MMs to ensure protection of TCRs important to the Tribe that may be impacted by implementation of the Program. These MMs address the minimization of impacts to TCRs from implementation of specific projects under the Program as they are proposed for site-specific implementation. The Tribe requested updated archaeological evaluations when individual Program Components move forward with construction and requested the opportunity to participate in updated evaluations as well as an opportunity to monitor ground-disturbing activities on native soil in site-specific circumstances.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Tribal Cultural Resources
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comment letters regarding tribal cultural resources issues were received as part of the NOP. No comments were received at the Scoping Meeting held for the proposed Program. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

### 4.19.2 Environmental Setting: Tribal Cultural Resources

The YSMN is the single tribe with substantial cultural history in the Big Bear Valley, the region served by BBARWA and the Program Team.

#### 4.19.2.1 Prehistory/Ethnohistory

The Big Bear Valley lies in the heart of the homeland of the Serrano people, which is centered in the San Bernardino Mountains. Together with that of the Vanyume people, linguistically a subgroup, the traditional territory of the Serrano also includes part of the San Gabriel Mountains, much of the San Bernardino Valley, and the Mojave River Valley in the southern portion of the Mojave Desert, reaching as far east as the Cady, Bullion, Sheep Hole, and Coxcomb Mountains. The name “Serrano” was derived from a Spanish term meaning “mountaineer” or “highlander.” The basic written sources on Serrano culture are Kroeber (1925), Strong (1929), and Bean and Smith (1978). The following ethnographic discussion of the Serrano people is based mainly on these sources.

Prior to European contact, Serrano subsistence was defined by the surrounding landscape and primarily based on the gathering of wild and cultivated foods and hunting, exploiting nearly all of the resources available. They settled mostly on elevated terraces, hills, and finger ridges near where flowing water emerged from the mountains. Loosely organized into exogamous clans led by hereditary heads, the clans were in turn affiliated with one of two exogamous moieties, the Wildcat (*Tukutam*) or the Coyote (*Wahiam*). The core of the unit was the patrilineage, although women retained their own lineage names after marriage.

In Serrano oral tradition, the Big Bear Valley area is known as Yuhaaviat, or “Pine Place,” and is remembered as the point of origin for the nearby YSMN (Ramos 2009). It is well-documented in ethnographic literature that the Big Bear Valley figures prominently in the Serrano creation story. As Kroeber (1925:619) notes:

*Kukitat [younger brother of Pakrokitat, creator of Man], feeling death approach, gave instructions for his cremation; but the suspected coyote, although sent away on a pretended errand, returned in time to squeeze through badger's legs in the circle of the mourners and make away with Kukitat's heart. This happened at Hatauva (compare Luiseño Tova, where Wiyot died) in Bear Valley.*

In a newspaper article, James Ramos, former Chairman of the YSMN, generally corroborates Kroeber's account and provides the accurate spelling of the deities' names in the Serrano language, Kruktat and Pakruktat (Ramos 2009). In addition, he identifies the location of Hatauva as being in the general vicinity of a white quartz dome known to tribal members as Aapahunane't, or Eye of God, to the east of Baldwin Lake (*ibid.*).

At least two Serrano clans lived in or near the Big Bear Valley during prehistoric and protohistoric times, according to Strong (1929:11). The Yuhavetum (or Yuhaaviatam) clan's territory stretched from the Big Bear Valley to the present-day Highland area in the San Bernardino Valley. The Pervetum clan's territory extended from the vicinity of the Big Bear Valley to the headwaters of the Santa Ana River, across Sugarloaf Mountain. The two clans often intermarried.

The Serrano had a variety of technological skills that they used to acquire food, shelter, and clothing as well as to create ornaments and decorations. Common tools included manos and metates, mortars and pestles, hammerstones, fire drills, awls, arrow straighteners, and stone knives and scrapers. These lithic tools were made from locally sourced material as well as materials procured through trade or travel. They also used wood, horn, and bone spoons and stirrers; baskets for winnowing, leaching, grinding, transporting, parching, storing, and cooking; and pottery vessels for carrying water, storage, cooking, and serving food and drink. Much of this material cultural, elaborately decorated, does not survive in the archaeological record. As usual, the main items found archaeologically relate to subsistence activities.

Although contact with Europeans may have occurred as early as 1771 or 1772, Spanish influence on Serrano lifeways was minimal until the 1810s, when a mission *asistencia* was established on the southern edge of Serrano territory. Between then and the end of the mission era in 1834, most of the Serrano in the western portion of their traditional territory were removed to the nearby missions. In the eastern portion, a series of punitive expeditions in 1866-1870 resulted in the death or displacement of almost all remaining Serrano population in the San Bernardino Mountains. Today, most Serrano descendants are affiliated with the YSMN, the Morongo Band of Mission Indians, or the Serrano Nation of Indians.

### **4.19.3 Regulatory Setting**

Federal, State, and local laws, regulations, plans, or guidelines that are applicable to the Program are summarized below.

#### **4.19.3.1 Federal Regulations**

##### **Native American Graves Protection and Repatriation Act**

The Native American Graves Protection and Repatriation Act (NAGPRA) is a Federal law passed in 1990 that provides a process for museums and Federal agencies to return certain Native American cultural items, such as human remains, funerary objects, sacred objects, or objects of cultural patrimony, to lineal descendants, and culturally affiliated Indian Tribes.

#### **4.19.3.2 State**

##### **Public Resources Code**

Archaeological resources are protected pursuant to a wide variety of State policies and regulations enumerated under the California Public Resources Code. In addition, cultural resources are recognized as a non-renewable resource and therefore receive protection under the California Public Resources Code and CEQA.

- California Public Resources Code Sections 5097.9–5097.991 provides protection to Native American historical and cultural resources, and sacred sites and identifies the powers and duties of the NAHC. It also requires notification to descendants of discoveries of Native American human remains and provides for treatment and disposition of human remains and associated grave goods.
- California Public Resources Code Section 5097.9 states that no public agency or private party on public property shall “interfere with the free expression or exercise of Native American Religion.” The code further states that:

No such agency or party [shall] cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine...except on a clear and convincing showing that the public interest and necessity so require. County and city lands are exempt from this provision, except for parklands larger than 100 acres.

##### **Health and Safety Code**

The discovery of human remains is regulated per California Health and Safety Code Section 7050.5, which states:

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation...until the coroner...has determined...that the remains are not subject to...provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible.... The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains. If the coroner determines that the remains are not subject to his or her authority and...has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission.



### **Assembly Bill 52**

AB 52 took effect July 1, 2015, and incorporates tribal consultation and analysis of impacts to TCR into the CEQA process. It requires TCRs to be analyzed like any other CEQA topic and establishes a consultation process for lead agencies and California Tribes. Projects that require a NOP of an EIR or Notice of Intent to adopt a Negative Declaration or Mitigated Negative Declaration (MND) on or after July 1, 2015, are subject to AB 52. A significant impact on a TCR is considered a significant environmental impact under CEQA, requiring feasible **MMs**.

TCRs must have certain characteristics:

- 1) Sites, features, places, cultural landscapes (must be geographically defined), sacred places, and objects with cultural value to a California Native American Tribe that are either included or determined to be eligible for inclusion in the California Register or included in a local register of historical resources. (California Public Resources Code § 21074(a)(1).)
- 2) The lead agency, supported by substantial evidence, chooses to treat the resource as a TCR. (California Public Resources Code § 21074(a)(2).)

The first category requires that the TCR qualify as a historical resource according to California Public Resources Code Section 5024.1. The second category gives the lead agency discretion to qualify that resource—under the conditions that it support its determination with substantial evidence and consider the resource’s significance to a California Tribe. The following is a brief outline of the process (California Public Resources Code §§ 21080.3.1–21080.3.3):

- 1) A California Native American Tribe asks agencies in the geographic area with which it is traditionally and culturally affiliated to be notified about projects. Tribes must ask in writing.
- 2) Within 14 days of deciding to undertake a project or determining that a project application is complete, the lead agency must provide formal written notification to all Tribes who have requested it.
- 3) A Tribe must respond within 30 days of receiving the notification if it wishes to engage in consultation.
- 4) The lead agency must initiate consultation within 30 days of receiving the request from the Tribe.
- 5) Consultation concludes when both parties have agreed on measures to mitigate or avoid a significant effect to a TCR, OR a party, after a reasonable effort in good faith, decides that mutual agreement cannot be reached.
- 6) Regardless of the outcome of consultation, the CEQA document must disclose significant impacts on TCRs and discuss feasible alternatives or MMs that avoid or lessen the impact.

### **Senate Bill 18**

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). SB 18's provisions include:

- 1) Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe. (Gov. Code §65352.3(a)(2))
- 2) No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.

Confidentiality: Consistent with the guidelines developed and adopted by the OPR pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in California Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).

- 3) Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
  - a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
  - b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

#### **4.19.4 Thresholds of Significance**

According to Appendix G, Section XVIII, of the State CEQA Guidelines, a project would have a significant effect on the environment if the project would cause a substantial adverse change in the significance of a TCR, defined in California Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:

- a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
- b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.

#### **4.19.5 Potential Impacts**

This subchapter evaluates the level of adverse impact to the TCRs that are forecast to occur if the Program is implemented as proposed.

- a) **Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is listed or eligible for listing in the California Register, or in a local register of historical resources as defined in California Public Resources Code section 5020.1(k), or**

In response to the AB 52 consultation initiated in December of 2022, the singular tribe that was notified under AB 52 (YSMN) requested consultation. YSMN requested continued participation with this project's CEQA process and future projects implemented under the Program. Concerns expressed include the following: accidental exposure of subsurface cultural resources and proper management of such resources; concerns over exposure of human remains and proper management; concerns over impacting the viewshed of important locations within the YSMN's place of creation; and, presence of Native American monitors during future ground disturbing activities.

As discussed under **Subsection 4.19.2.1**, above, the Big Bear Valley lies in the heart of the homeland of the Serrano people, which is centered in the San Bernardino Mountains. The Yuhavetum (or Yuhaaviatam) clan's territory stretched from the Big Bear Valley to the present-day Highland area in the San Bernardino Valley. However, the YSMN's creation story and oral history are intrinsically tied to Baldwin Lake and the surrounding area. The Serrano people who make up several tribes, focused herein on the YSMN as a result of the YSMN's request for consultation with BBARWA and other agencies that make up the Program Team, had a variety of technological skills that they used to acquire food, shelter, and clothing as well as to create ornaments and decorations. Common tools included manos and metates, mortars and pestles, hammerstones, fire drills, awls, arrow straighteners, and stone knives and scrapers. These lithic tools were made from locally sourced material as well as materials procured through trade or travel. They also used wood, horn, and bone spoons and stirrers; baskets for winnowing, leaching, grinding, transporting, parching, storing, and cooking; and pottery vessels for carrying water, storage, cooking, and serving food and drink. Much of this material cultural, elaborately decorated, does not survive in the archaeological record. However, construction activities associated with the proposed Program may result in a substantial adverse change in the significance of a TCR including impacts to a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe.

#### **Program Category 1: Conveyance Pipelines**

**Construction:** Based on the sensitivity assessment presented in **Subchapter 4.6, Cultural Resources**, most of the Program APE, nearly 94 of 110 acres, lies within the lakebed of Baldwin Lake, while much of the rest is along natural drainages. This doesn't negate the fact that, in spite of the unlikelihood for tribal cultural resources to remain beneath the ground in much of the Program APE, including the APE for the Conveyance Pipelines, due to water movement and the presence of water historically—as neither the lakebed of Baldwin Lake nor natural drainages would have been considered suitable for permanent villages in ancient times—tribal cultural resources may still exist within the APE that could be impacted. For instance, the use of Baldwin Lake is part of the Serrano people's history, and thereby is considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a tribal cultural resource. Thus, implementation of specific the Baldwin Lake Pipeline Alignment Option, and indeed other Conveyance Pipeline alignments under the Program could encounter historical resources of value to California Native American Tribes and cause a significant impact on them.

Due to the proposed soil-disturbing activities that could extend below the topsoil surface level when implementing the proposed Conveyance Pipelines, it is possible that the development of the Program could disturb native soils that may inadvertently uncover historic archaeological resources, including those of tribal heritage or otherwise may disturb the cultural landscape important to the YSMN. Thus, the Program could result in a significant impact on TCRs where the input of the YSMN intended to protect such resources is not implemented.

In consultation with the YSMN, it was requested that the following **MMs TCR-1 through TCR-4** be implemented to protect tribal cultural resources. **MM TCR-1**, which would require tribal monitoring for the Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program

thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. Through the implementation of the above mitigation measures, Conveyance Pipeline impacts would be less than significant.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact a tribal cultural resource exists.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Based on the sensitivity assessment presented in **Subchapter 4.6, Cultural Resources**, most of the APE, nearly 94 of 110 acres, lies within the lakebed of Baldwin Lake, while much of the rest is along natural drainages. This doesn't negate the fact that, in spite of the unlikelihood for tribal cultural resources to remain beneath the ground in much of the Program APE due to water movement and the presence of water historically—as neither the lakebed of Baldwin Lake nor natural drainages would have been considered suitable for permanent villages in ancient times—tribal cultural resources may still exist within the Program APE that could be impacted. For instance, the use of Baldwin Lake is part of the Serrano people's history, and thereby is considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a tribal cultural resource. Thus, implementation of Ancillary Facilities under the Program could encounter historical resources of value to California Native American Tribes and cause a significant impact on them.

Due to the Ancillary Facility's proposed soil-disturbing activities that could extend below the topsoil surface level, it is possible that the development of the Ancillary Facilities could disturb native soils that may inadvertently uncover historic archaeological resources, including those of tribal heritage or otherwise may disturb the cultural landscape important to the YSMN. Thus, the development of the Ancillary Facilities could result in a significant impact on TCRs where the input of the YSMN intended to protect such resources is not implemented.

In consultation with the YSMN, it was requested that the following **MMs TCR-1 through TCR-4** be implemented to protect tribal cultural resources. **MM TCR-1** would require tribal monitoring for the Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. Through the implementation of the above mitigation measures, Ancillary Facility impacts would be less than significant.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact a tribal cultural resource exists.

### **Program Category 3: Solar Evaporation Ponds**

**Construction:** Based on the sensitivity assessment presented in **Subchapter 4.6, Cultural Resources**, most of the APE, nearly 94 of 110 acres, lies within the lakebed of Baldwin Lake, while much of the rest is along natural drainages. This doesn't negate the fact that, in spite of the unlikelihood for tribal cultural resources to remain beneath the ground in much of the Program APE due to water movement and the presence of water historically—as neither the lakebed of Baldwin Lake nor natural drainages would have been considered suitable for permanent villages in ancient times—tribal cultural resources may still exist within the APE that could be impacted, particularly as a result of the soil export required to install the Solar Evaporation Ponds. For instance, the use of Baldwin Lake is part of the Serrano people's history, and thereby is considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a tribal cultural resource. Thus, implementation of the Solar Evaporation Ponds could encounter historical resources of value to California Native American Tribes and cause a significant impact on them.

Due to the Solar Evaporation Ponds' proposed soil-disturbing activities that could extend below the topsoil surface level, it is possible that the development of the Program could disturb native soils that may inadvertently uncover historic archaeological resources, including those of tribal heritage or otherwise may disturb the cultural landscape important to the YSMN. Thus, development of the Solar Evaporation Ponds could result in a significant impact on TCRs where the input of the YSMN intended to protect such resources is not implemented.

In consultation with the YSMN, it was requested that the following **MMs TCR-1 through TCR-5** be implemented to protect tribal cultural resources. **MM TCR-1** would require tribal monitoring for the Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. **MM TCR-5** would enable YSMN input on the color choice for design elements at Baldwin Lake to ensure that the viewshed, which is an important tribal cultural resource to the YSMN, is protected. Through the implementation of the above mitigation measures, Solar Evaporation Ponds impacts would be less than significant.

**Operation:** The potential impacts from construction are discussed in detail above. The only operational impacts that may occur are those related to the changes to Baldwin Lake that would occur from construction and operation of the Solar Evaporation Ponds. This is because the Solar Evaporation Ponds lining could potentially impact the viewshed of Baldwin Lake. However, in the consultation with YSMN, YSMN and BBARWA agreed to enable YSMN input on the color choice for design elements at Baldwin Lake to ensure that the viewshed, which is an important tribal cultural resource to the YSMN, is protected. This would be enforced through **MM TCR-5**, which the implementation of which would ensure that impacts would be less than significant.

### **Program Category 4: BBARWA WWTP Upgrades**

**Construction:** Based on the sensitivity assessment presented in **Subchapter 4.6, Cultural Resources**, most of the APE, nearly 94 of 110 acres, lies within the lakebed of Baldwin Lake,

while much of the rest is along natural drainages. This doesn't negate the fact that, in spite of the unlikelihood for tribal cultural resources to remain beneath the ground in much of the Program APE due to water movement and the presence of water historically—as neither the lakebed of Baldwin Lake nor natural drainages would have been considered suitable for permanent villages in ancient times—tribal cultural resources may still exist within the BBARWA WWTP Upgrades APE that could be impacted. For instance, the use of Baldwin Lake is part of the Serrano people's history, and thereby is considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a tribal cultural resource. Thus, implementation of specific projects under the Program could encounter historical resources of value to California Native American Tribes and cause a significant impact on them.

Due to the BBARWA WWTP Upgrades' proposed soil-disturbing activities that could extend below the topsoil surface level, it is possible that the development of the BBARWA WWTP Upgrades could disturb native soils that may inadvertently uncover historic archaeological resources, including those of tribal heritage or otherwise may disturb the cultural landscape important to the YSMN. Thus, the BBARWA WWTP Upgrades could result in a significant impact on TCRs where the input of the YSMN intended to protect such resources is not implemented.

In consultation with the YSMN, it was requested that the following **MMs TCR-1 through TCR-4** be implemented to protect tribal cultural resources. **MM TCR-1** would require tribal monitoring for the Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. Through the implementation of the above mitigation measures, BBARWA WWTP Upgrades impacts would be less than significant.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, the BBARWA WWTP Site would continue to operate in a manner similar to that which occurs at present, which would minimize the potential for impacts to Baldwin Lake and other tribal cultural resources to occur. Impacts would be less than significant.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**TCR-1 Tribal Monitoring**

***Due to the heightened cultural sensitivity of the proposed Program Area, at the discretion of the YSMN, a tribal monitor shall be present for all ground-disturbing activities that occur within the proposed Program Area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work). At the discretion of the YSMN, a sufficient number of tribal monitors shall be present each work day to ensure that***



*simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation (“Cultural Resources” and “Tribal Cultural Resources”) shall be completed by the consultant, as detailed within CUL-1, and submitted to the Lead Agency for dissemination to the YSMN Cultural Resources Management Department. Once all parties review and agree to the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.*

**TCR-2 Treatment of Cultural Resources**

*If a pre-contact cultural resource is discovered during archaeological presence/absence testing, the discovery shall be properly recorded and then reburied in situ. A research design shall be developed by the archaeologist that shall include a plan to evaluate the resource for significance under CEQA criteria. Representatives from the YSMN Cultural Resources Management Department, the archaeologist, and the Lead Agency shall confer regarding the research design, as well as any testing efforts needed to delineate the resource boundary. Following the completion of evaluation efforts, all parties shall confer regarding the archaeological significance of the resource, its potential as a TCR, avoidance (or other appropriate treatment) of the discovered resource, and the potential need for construction monitoring during project implementation. Should any significant resource and/or TCR not be a candidate for avoidance or preservation in place, and the removal of the resource(s) is necessary to mitigate impacts, the research design shall include a comprehensive discussion of sampling strategies, resource processing, analysis, and reporting protocols/obligations. Removal of any cultural resource(s) shall be conducted with the presence of a tribal monitor representing the YSMN, unless otherwise decided by YSMN. All plans for analysis shall be reviewed and approved by the implementing agency and YSMN prior to implementation, and all removed material shall be temporarily curated on-site. It is the preference of YSMN that removed cultural material be reburied as close to the original find location as possible. However, should reburial within/near the original find location during project implementation not be feasible, then a reburial location for future reburial shall be decided upon by YSMN, the landowner, and the Lead Agency, and all finds shall be reburied within this location. Additionally, in this case, reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, all cataloguing and basic recordation of cultural resources have been completed, and a final monitoring report has been issued to Lead Agency, CHRIS, and YSMN. All reburials are subject to a reburial agreement that shall be developed between the landowner and YSMN outlining the determined reburial process/location, and shall include measures and provisions to protect the reburial area from any future impacts (vis a vis project plans, conservation/preservation easements, etc.).*

*Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner shall relinquish all ownership and rights to this material and confer with YSMN to identify an AAM-accredited facility within San Bernardino County that can accession the materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 CA Curation Guidelines. A curation agreement with an appropriate qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and the obligation of the Project implementing agency to pay for those fees.*

*All draft records/reports containing the significance and treatment findings and data recovery results shall be prepared by the archaeologist and submitted to the Lead Agency and YSMN for their review and comment. After approval from all parties, the*

*final reports and site/isolate records are to be submitted to the local CHRIS, the Lead Agency, and YSMN.*

**TCR-3** *Inadvertent Discoveries of Human Remains/Funerary Objects*

*In the event that any human remains are discovered within the Program Area, ground disturbing activities shall be suspended 100 feet around the resource(s) and an ESA physical demarcation/barrier constructed. The on-site lead/foreman shall then immediately who shall notify YSMN and the Lead Agency. The Lead Agency shall then immediately contact the San Bernardino County Coroner regarding the discovery. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c). The NAHC-identified MLD, shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and funerary objects shall be treated and disposed of with appropriate dignity. The MLD, Lead Agency, and landowner agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes. The MLD shall complete its inspection and make recommendations within forty-eight (48) hours of the site visit, as required by California Public Resources Code § 5097.98.*

*Reburial of human remains and/or funerary objects (those artifacts associated with any human remains or funerary rites) shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The MLD in consultation with the landowner, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains and funerary objects. All parties are aware that the MLD may wish to rebury the human remains and associated funerary objects on or near the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The Lead Agency/landowner should accommodate on-site reburial in a location mutually agreed upon by the Parties.*

*It is understood by all Parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r).*

**TCR-4** *Pre-construction Cultural Sensitivity Training*

*Due to the heightened cultural sensitivity of the proposed project area Program Area, a tribal monitor representing YSMN or a tribal representative of YSMN shall conduct a cultural sensitivity training at the start of construction for all on-site project personnel. The training may speak to, but is not limited to, the general cultural sensitivity of the area, the types of cultural resources that may be identified during construction, and the protocols for inadvertent discoveries.*

**TCR-5** *Tribal Consultation for Aesthetics of Treatment Plant Modification*

*The Lead Agency and consultant shall consult with YSMN regarding the aesthetics of the WWTP modifications, specifically regarding the color palette. The consultation will address how the design elements can incorporate a natural-looking aesthetic in order to blend into the culturally significant Baldwin Lake landscape.*

*Level of Significance After Mitigation: Less Than Significant*

To minimize future impacts on historical resources of value to California Native American Tribes, specifically the YSMN, the following **MMs** will be implemented. These measures have been developed by the YSMN to ensure protection of important TCRs, beginning with **MM TCR-1**, which would require tribal monitoring for the Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. **MM TCR-5** would enable YSMN input on the color choice for design elements at Baldwin Lake to ensure that the viewshed, which is an important tribal cultural resource to the YSMN, is protected. Implementation of **MMs TCR-1** through **TCR-5**, would ensure that implementation of the Program would not result in a significant impact on historical resources of value to California Native American Tribes.

- b) **Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in California Public Resources Code section 21074 as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is a resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of California Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of California Public Resources Code Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American Tribe.**

Please refer to the discussion under issue (a), above, which details the tribal consultation undertaken to comply with AB 52 for the Program.

The YSMN were contacted by BBARWA under AB 52. The YSMN requested continued participation with the Program CEQA process and future projects implemented under the Program. Concerns expressed include the following: accidental exposure of subsurface cultural resources and proper management of such resources; concerns over exposure of human remains and proper management; and presence of tribal monitors during future ground disturbing activities. Through the incorporation of **MMs** provided below, BBARWA concludes that the requests of the YSMN will be met under the Program umbrella.

According to the findings in the cultural resources study (**Appendix 13**) and the analysis found in **Subchapter 4.6, Cultural Resources**, the Program has a relatively low potential to impact (alter or destroy) a TCR. Physical modifications to the environment in the vicinity of Baldwin Lake (east of the Big Bear Airport) are particularly sensitive, but new facilities throughout the Big Bear Valley may encounter TCRs.

**Program Category 1: Conveyance Pipelines**

**Construction:** Based on the research results summarized above under **Subsection 4.19.2.1**, and direct experience with the YSMN, many of the Program infrastructure projects have the potential to expose subsurface resources. Furthermore, as discussed under issue (a), above, the use of

Baldwin Lake is part of the Serrano people's history, and thereby may be considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a TCR. Thus, implementation of the Baldwin Lake Pipeline Alignment Option, and indeed each of the Conveyance Pipeline alignments could encounter TCRs of value to California Native American Tribes and cause a significant impact on them. Mitigation is identified below that will be implemented by the Conveyance Pipeline projects. These measures are intended to address concerns expressed by the YSMN, which responded to BBARWA's AB 52 consultation process. Therefore, potentially significant impacts from Conveyance Pipeline implementation may affect TCRs, but with implementation of the mitigation identified below, such potential impacts can be mitigated to a less than significant impact level.

According to the findings in the **Subchapter 4.6, Cultural Resources**, which contains the detailed findings of and serves as the cultural resources study for the Program, the proposed Program has a modest potential to impact (alter or destroy) a TCR. Based on the research results summarized above and direct experience with the YSMN, many of the Program infrastructure projects have a potential to expose subsurface TCR. In light of the evidence presented by the YSMN in support of this and other projects in the Big Bear Valley, there is a potential for significant TCRs to be unearthed or otherwise impacted by construction. Mitigation is identified below that will be implemented by future Conveyance Pipeline projects. As stated above under issue (a), to minimize future impacts on TCRs determined to be significant by the BBARWA in light of the data and tribal history presented in confidence to BBARWA by the YSMN, **MMs TCR-1 through TCR-4** are necessary to ensure that no significant impacts to such resources will be impacted as a result of implementation of the Program. These measures have been developed by the YSMN to ensure protection of important TCR, beginning with **MM TCR-1**, which would require tribal monitoring for Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. These measures are intended to address concerns expressed by YSMN, which responded to BBARWA's AB 52 consultation request in December of 2022. Through implementation **MMs TCR-1 through TCR-4**, TCR impacts from implementation of the facilities proposed by this Program Category would be less than significant.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

**Construction:** Based on the research results summarized above under **Subsection 4.19.2.1**, and direct experience with the YSMN, many of the Program infrastructure projects have the potential to expose subsurface resources. Furthermore, as discussed under issue (a), above, the use of Baldwin Lake is part of the Serrano people's history, and thereby may be considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a TCR. Thus, implementation of Ancillary Facilities under the Program could encounter TCRs of value to California Native American Tribes and cause a significant impact on them. Mitigation is identified below that will be implemented by future Ancillary Facility projects. These measures are intended to address concerns expressed by the YSMN, which responded to BBARWA's AB 52 consultation process. Therefore, potentially significant impacts from Ancillary Facility implementation may

affect TCRs, but with implementation of the mitigation identified below, such potential impacts can be mitigated to a less than significant impact level.

According to the findings in the **Subchapter 4.6, Cultural Resources**, which contains the detailed findings of and serves as the cultural resources study for the Program, the proposed Program has a modest potential to impact (alter or destroy) a TCR. Based on the research results summarized above and direct experience with the YSMN, many of the Program infrastructure projects have a potential to expose subsurface TCR. In light of the evidence presented by the YSMN in support of this and other projects in the Big Bear Valley, there is a potential for significant TCRs to be unearthed or otherwise impacted by construction. Mitigation is identified below that will be implemented by future Ancillary Facility projects. As stated above under issue (a), to minimize future impacts on TCRs determined to be significant by the BBARWA in light of the data and tribal history presented in confidence to BBARWA by the YSMN, **MMs TCR-1 through TCR-4** are necessary to ensure that no significant impacts to such resources will be impacted as a result of implementation of the Program. These measures have been developed by the YSMN to ensure protection of important TCR, beginning with **MM TCR-1**, which would require tribal monitoring for Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. These measures are intended to address concerns expressed by YSMN, which responded to BBARWA's AB 52 consultation request in December of 2022. Through implementation **MMs TCR-1 through TCR-4**, TCR impacts from implementation of the facilities proposed by this Program Category would be less than significant.

### **Program Category 3: Solar Evaporation Ponds**

**Construction:** Based on the research results summarized above under **Subsection 4.19.2.1**, and direct experience with the YSMN, many of the Program infrastructure projects have the potential to expose subsurface resources. Furthermore, as discussed under issue (a), above, the use of Baldwin Lake is part of the Serrano people's history, and thereby may be considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a TCR. Thus, implementation of Solar Evaporation Ponds under the Program could encounter TCRs of value to California Native American Tribes and cause a significant impact on them. Mitigation is identified below that will be implemented by future Solar Evaporation Ponds projects. These measures are intended to address concerns expressed by the YSMN, which responded to BBARWA's AB 52 consultation process. Therefore, potentially significant impacts from Solar Evaporation Ponds implementation may affect TCRs, but with implementation of the mitigation identified below, such potential impacts can be mitigated to a less than significant impact level.

According to the findings in the **Subchapter 4.6, Cultural Resources**, which contains the detailed findings of and serves as the cultural resources study for the Program, the proposed Program has a modest potential to impact (alter or destroy) a TCR. Based on the research results summarized above and direct experience with the YSMN, many of the Program infrastructure projects have a potential to expose subsurface TCR. In light of the evidence presented by the YSMN in support of this and other projects in the Big Bear Valley, there is a potential for significant TCRs to be

unearthed or otherwise impacted by construction. Mitigation is identified below that will be implemented by the Solar Evaporation Ponds. As stated above under issue (a), to minimize future impacts on TCRs determined to be significant by the BBARWA in light of the data and tribal history presented in confidence to BBARWA by the YSMN, **MMs TCR-1 through TCR-5** are necessary to ensure that no significant impacts to such resources will be impacted as a result of implementation of the Program. These measures have been developed by the YSMN to ensure protection of important TCR, beginning with **MM TCR-1**, which would require tribal monitoring for Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. **MM TCR-5** would enable YSMN input on the color choice for design elements at Baldwin Lake to ensure that the viewshed, which is an important TCR to the YSMN, is protected. These measures are intended to address concerns expressed by YSMN, which responded to BBARWA's AB 52 consultation request in December of 2022. Through implementation **MMs TCR-1 through TCR-5**, TCR impacts from implementation of the facilities proposed by this Program Category would be less than significant.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Based on the research results summarized above under **Subsection 4.19.2.1**, and direct experience with the YSMN, many of the Program infrastructure projects have the potential to expose subsurface resources. Furthermore, as discussed under issue (a), above, the use of Baldwin Lake is part of the Serrano people's history, and thereby may be considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a TCR. Thus, implementation of BBARWA WWTP Upgrades under the Program could encounter TCRs of value to California Native American Tribes and cause a significant impact on them. Mitigation is identified below that will be implemented by future BBARWA WWTP Upgrades projects. These measures are intended to address concerns expressed by the YSMN, which responded to BBARWA's AB 52 consultation process. Therefore, potentially significant impacts from BBARWA WWTP Upgrades implementation may affect TCRs, but with implementation of the mitigation identified below, such potential impacts can be mitigated to a less than significant impact level.

According to the findings in the **Subchapter 4.6, Cultural Resources**, which contains the detailed findings of and serves as the cultural resources study for the Program, the proposed Program has a modest potential to impact (alter or destroy) a TCR. Based on the research results summarized above and direct experience with the YSMN, many of the Program infrastructure projects have a potential to expose subsurface TCR. In light of the evidence presented by the YSMN in support of this and other projects in the Big Bear Valley, there is a potential for significant TCRs to be unearthed or otherwise impacted by construction. Mitigation is identified below that will be implemented by the BBARWA WWTP Upgrades. As stated above under issue (a), to minimize future impacts on TCRs determined to be significant by the BBARWA in light of the data and tribal history presented in confidence to BBARWA by the YSMN, **MMs TCR-1 through TCR-4** are necessary to ensure that no significant impacts to such resources will be impacted as a result of implementation of the Program. These measures have been developed by the YSMN to ensure protection of important TCR, beginning with **MM TCR-1**, which would require tribal monitoring for



Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. These measures are intended to address concerns expressed by YSMN, which responded to BBARWA's AB 52 consultation request in December of 2022. Through implementation **MMs TCR-1 through TCR-4**, TCR impacts from implementation of the facilities proposed by this Program Category would be less than significant.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: **MMs TCR-1 through TCR-5** are required to minimize impacts to TCR values that have been determined by the Lead Agency to be significant.*

**TCR-1 Tribal Monitoring**

*Due to the heightened cultural sensitivity of the proposed Program Area, at the discretion of the YSMN, a tribal monitor shall be present for all ground-disturbing activities that occur within the proposed Program Area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work). At the discretion of the YSMN, a sufficient number of tribal monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the consultant, as detailed within CUL-1, and submitted to the Lead Agency for dissemination to the YSMN Cultural Resources Management Department. Once all parties review and agree to the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.*

**TCR-2 Treatment of Cultural Resources**

*If a pre-contact cultural resource is discovered during archaeological presence/absence testing, the discovery shall be properly recorded and then reburied in situ. A research design shall be developed by the archaeologist that shall include a plan to evaluate the resource for significance under CEQA criteria. Representatives from the YSMN Cultural Resources Management Department, the archaeologist, and the Lead Agency shall confer regarding the research design, as well as any testing efforts needed to delineate the resource boundary. Following the completion of evaluation efforts, all parties shall confer regarding the archaeological significance of the resource, its potential as a TCR, avoidance (or other appropriate treatment) of the discovered resource, and the potential need for construction monitoring during project implementation. Should any significant resource and/or TCR not be a candidate for avoidance or preservation in place, and the removal of the resource(s) is necessary to mitigate impacts, the research design shall include a comprehensive discussion of sampling strategies, resource processing, analysis, and reporting protocols/obligations. Removal of any cultural resource(s) shall be conducted with the presence of a tribal monitor representing the YSMN, unless*

*otherwise decided by YSMN. All plans for analysis shall be reviewed and approved by the implementing agency and YSMN prior to implementation, and all removed material shall be temporarily curated on-site. It is the preference of YSMN that removed cultural material be reburied as close to the original find location as possible. However, should reburial within/near the original find location during project implementation not be feasible, then a reburial location for future reburial shall be decided upon by YSMN, the landowner, and the Lead Agency, and all finds shall be reburied within this location. Additionally, in this case, reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, all cataloguing and basic recordation of cultural resources have been completed, and a final monitoring report has been issued to Lead Agency, CHRIS, and YSMN. All reburials are subject to a reburial agreement that shall be developed between the landowner and YSMN outlining the determined reburial process/location, and shall include measures and provisions to protect the reburial area from any future impacts (vis a vis project plans, conservation/preservation easements, etc.).*

*Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner shall relinquish all ownership and rights to this material and confer with YSMN to identify an AAM-accredited facility within San Bernardino County that can accession the materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 CA Curation Guidelines. A curation agreement with an appropriate qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and the obligation of the Project implementing agency to pay for those fees.*

*All draft records/reports containing the significance and treatment findings and data recovery results shall be prepared by the archaeologist and submitted to the Lead Agency and YSMN for their review and comment. After approval from all parties, the final reports and site/isolate records are to be submitted to the local CHRIS, the Lead Agency, and YSMN.*

**TCR-3 Inadvertent Discoveries of Human Remains/Funerary Objects**

*In the event that any human remains are discovered within the Program Area, ground disturbing activities shall be suspended 100 feet around the resource(s) and an ESA physical demarcation/barrier constructed. The on-site lead/foreman shall then immediately who shall notify YSMN and the Lead Agency. The Lead Agency shall then immediately contact the San Bernardino County Coroner regarding the discovery. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c). The NAHC-identified MLD, shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and funerary objects shall be treated and disposed of with appropriate dignity. The MLD, Lead Agency, and landowner agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes. The MLD shall complete its inspection and make recommendations within forty-eight (48) hours of the site visit, as required by California Public Resources Code § 5097.98.*

*Reburial of human remains and/or funerary objects (those artifacts associated with any human remains or funerary rites) shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The MLD in consultation with the landowner, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains and funerary objects. All parties are aware that the MLD may*

*wish to rebury the human remains and associated funerary objects on or near the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The Lead Agency/landowner should accommodate on-site reburial in a location mutually agreed upon by the Parties.*

*It is understood by all Parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r).*

**TCR-4 Pre-construction Cultural Sensitivity Training**

*Due to the heightened cultural sensitivity of the proposed project area Program Area, a tribal monitor representing YSMN or a tribal representative of YSMN shall conduct a cultural sensitivity training at the start of construction for all on-site project personnel. The training may speak to, but is not limited to, the general cultural sensitivity of the area, the types of cultural resources that may be identified during construction, and the protocols for inadvertent discoveries.*

**TCR-5 Tribal Consultation for Aesthetics of Treatment Plant Modification**

*The Lead Agency and consultant shall consult with YSMN regarding the aesthetics of the WWTP modifications, specifically regarding the color palette. The consultation will address how the design elements can incorporate a natural-looking aesthetic in order to blend into the culturally significant Baldwin Lake landscape.*

*Level of Significance After Mitigation: Less Than Significant*

As stated above under issue (a), to minimize future impacts on TCRs determined to be significant by the BBARWA in light of the data and tribal history presented in confidence to BBARWA by the YSMN, **MMs TCR-1** through **TCR-5** are necessary to ensure that no significant impacts to such resources will be impacted as a result of implementation of the Program. These measures have been developed by the YSMN to ensure protection of important TCR, beginning with **MM TCR-1**, which would require tribal monitoring for Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. **MM TCR-5** would enable YSMN input on the color choice for design elements at Baldwin Lake to ensure that the viewshed, which is an important TCR to the YSMN, is protected. Implementation of **MMs TCR-1** through **TCR-5**, would ensure that implementation of the Program would not result in a significant impact on TCRs.

**4.19.6 Cumulative Impacts**

As determined above, Program implementation can proceed without causing any unavoidable significant adverse impacts to TCRs. Implementation of the Program is not forecast to cause any direct, significant adverse impact to any site specific TCRs following implementation of identified

**MMs**, and as a result the Program has no potential to make a cumulatively considerable contribution to TCR impacts in the Program Area, i.e., the Big Bear Valley. This is because impacts to individual TCRs at specific sites would be mitigated and site specific as such, the Program's contribution to cumulative impacts, whether significant or mitigated below significance thresholds, would not be cumulatively considerable. Any TCRs discovered on a project site that would be adversely impacted by proposed future projects would be mitigated by implementing one or more of the three **MMs** listed above. With implementation of the appropriate measures, future Program site-specific projects are not forecast to cause or contribute to cumulatively considerable tribal cultural resource impacts.

#### **4.19.7 Significant and Unavoidable Impacts**

As determined above, no significant and unavoidable impacts to TCRs will occur as a result of implementing the Program, and the Program's potential impacts on tribal cultural resources will be less than significant.

## 4.20 UTILITIES AND SERVICE SYSTEMS

### 4.20.1 Introduction

This Subchapter evaluates the environmental impacts to the issue area of utilities and service systems from the implementation of the Replenish Big Bear Program (Program). Utilities within the Big Bear Valley are provided by a mix of public agencies, such as the Program Team agencies—BBARWA, BCCSD, BBLDWP, and BBMWD—and other private companies, such as BVES.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Utilities and Service Systems
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

Two comments specific to this topic were received in response to the NOP. No comments were received at the Scoping Meeting held for the proposed project. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

### 4.20.2 Environmental Setting: Utilities & Service Systems

#### 4.20.2.1 Water

Please refer to the discussion under **Subchapter 4.11, Hydrology and Water Quality**.

#### **City of Big Bear Lake, Department of Water and Power**

BBLDWP's water service area is located in Big Bear Valley in the San Bernardino Mountains of San Bernardino County, California as depicted in **Figure 4.20-1**, extracted from the BBLDWP 2020 UWMP.<sup>111</sup> Within the Big Bear Valley, BBLDWP's service area is located primarily along the south shore of Big Bear Lake. In addition, there are three other areas located outside the City of Big Bear Lake boundary. Fawnskin lies to the north of Big Bear Lake, while the Sugarloaf, Erwin Lake, and Lake William areas are located east of the City of Big Bear Lake. In total, BBLDWP's water service area encompasses approximately 13.25 square miles. The sole supply source within BBLDWP's service area is the Bear Valley Basin. BBLDWP's portion of the maximum perennial yield for the Bear Valley Basin has been estimated at 3,100 AFY.

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<sup>111</sup> BBLDWP, 2021. BBLDWP 2020 Urban Water Management Plan  
<https://www.bldwp.com/DocumentCenter/View/2149/2020-Urban-Water-Management-Plan> (accessed 08/07/23)

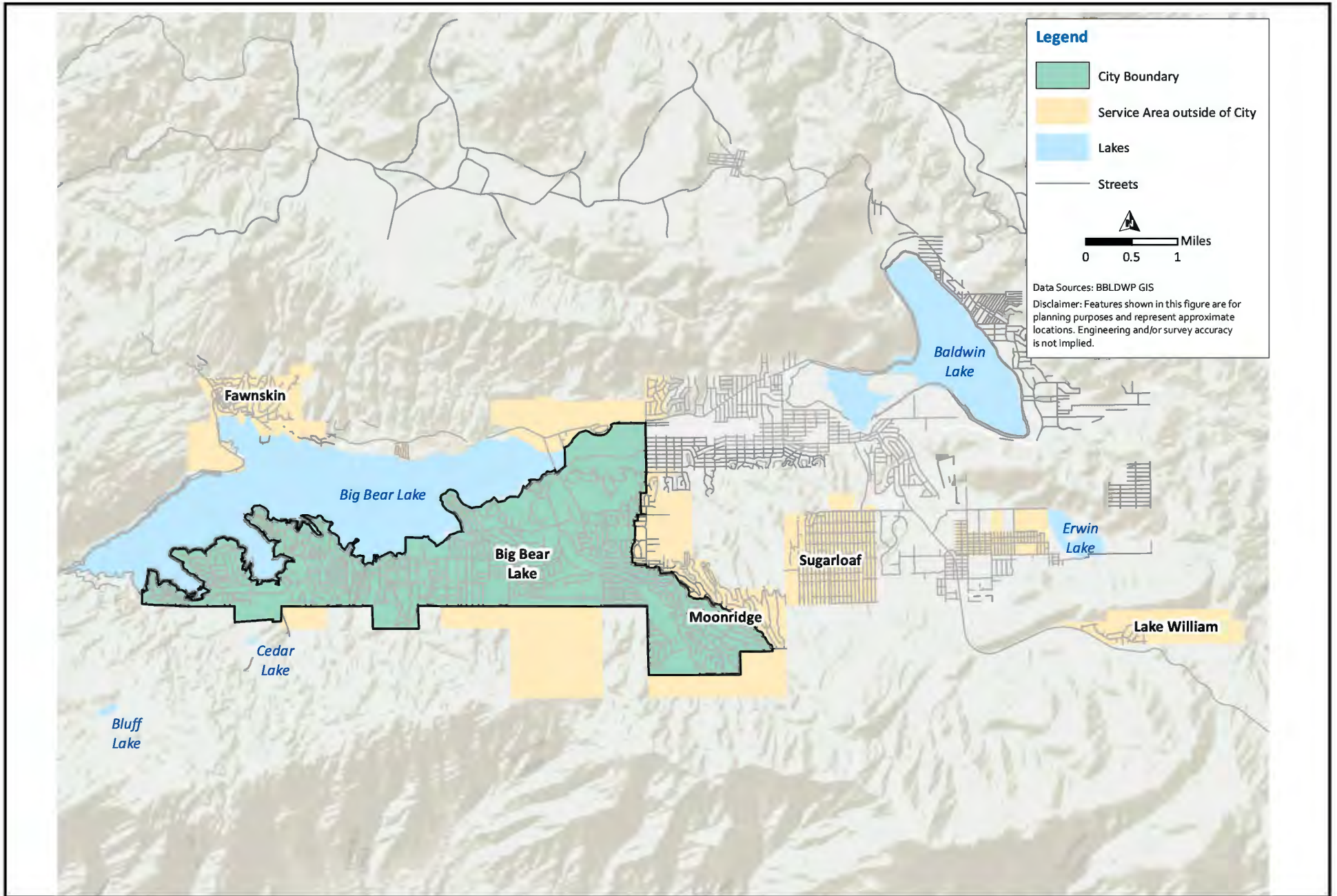


FIGURE 4.20-1



BBLDWP's service area is characterized by primarily residential land use. Recreation tourism has been the most important economic factor in the Big Bear Valley for nearly a century. Residential use composes 79 percent of the total service area demand. Commercial accounts make up approximately 21 percent of the total service area demand. There is no significant industrial or agricultural water use within BBLDWP's service area.

BBLDWP's service area is comprised of four systems, which include the Big Bear, Fawnskin, Big Bear Shores RV Park, and Lake William systems. The water system is comprised of 27 active groundwater wells, 22 slant wells, two spring boxes, 15 above ground reservoirs, 13 booster stations, approximately 52 pressure reducing valves, and about 184 miles of distribution pipeline.

BBLDWP's population is composed of full-time and temporary residents. The temporary population includes recreational visitors and second home-owners and is assumed to primarily occur during the weekend and holidays.

**Table 4.20-1** outlines the current estimated and future population within the BBLDWP's service area.

**Table 4.20-1  
 BBLDWP CURRENT AND PROJECTED POPULATION**

Population Served	2020	2025	2030	2035	2040	2045
Full Time Residents <sup>1,2,4</sup>	13,155	13,662	14,145	14,464	15,164	15,701
Average Temporary Population <sup>3,4</sup>	16,434	17,068	17,672	18,297	18,945	19,616
Average Annual Population <sup>4</sup>	29,589	30,730	31,817	32,943	34,109	35,317

Source: BBCCSD 2020 UWMP

Notes: (1) Based on 2019 ACS, approximately 32.9% of the BBLDWP's households are occupied and assumed to be permanent.

(2) Assumed average household is 2.45 persons (2019 ACS) year-round.

(3) Temporary population assumed to equate to 4 times the full-time population during the holidays and weekends (114 days out of the year).

(4) Assumes a 0.7% annual growth rate beginning in 2020. In addition, 50 units at 2.45 persons per unit has been added to the population.

Water demands served by BBLDWP are primarily residential, including single- and multi-family water users. Retail demands for potable and non-potable water for 2020 (actual) and projected for 2025-2045 are shown in **Table 4.20-2**, below.

**Table 4.20-2  
 BBLDWP RETAIL DEMANDS FOR POTABLE AND NON-POTABLE WATER  
 2020 ACTUAL AND 2025 THROUGH 2045 PROJECTED**

Land Use	Additional Description	2020 (Actual)	2025	2030	2035	2040	2045
Single Family <sup>1</sup>		1,464	1,409	1,459	1,511	1,564	1,619
Multi-Family		177	169	175	182	188	195
Commercial		455	426	441	456	473	489
Losses		246	235	224	252	261	271
Other <sup>2</sup>	Passive Savings	-	-93	-155	-211	-255	-291
<b>TOTAL:</b>		<b>2,332</b>	<b>2,147</b>	<b>2,164</b>	<b>2,190</b>	<b>2,231</b>	<b>2,283</b>

NOTES:

(1) Single Family includes 50 units for affordable housing in compliance with the RHNA mandate.

(2) Passive savings based on estimates from the 2019 Water Conservation Management Plan (Maddaus, 2019).

The actual source and volume of water for the year 2020 is presented in **Table 4.20-3**. As shown in **Table 4.20-3**, BBLDWP's actual supply was approximately 2,332 AFY, which is below BBLDWP's portion of the Bear Valley Basin's safe yield of 3,100 AFY. For BBLDWP, the available water supply is projected based on estimated future demands, which are below the safe yield of the Bear Valley Basin. These estimates rely on a low rate of growth and retaining a low gallon per capita per day consumption through continued conservation efforts.

**Table 4.20-3  
 BBLDWP RETAIL WATER SUPPLIES  
 2020 ACTUAL AND 2025 THROUGH 2045 PROJECTED**

	Water Supply	2020 (Actual)	2025	2030	2035	2040	2045
<b>TOTAL:</b>	<b>Bear Valley Groundwater Basin</b>	<b>2,332</b>	<b>3,100</b>	<b>3,100</b>	<b>3,100</b>	<b>3,100</b>	<b>3,100</b>

The per capita water demand was 70 gallons per capita per day (gpcd) in 2020, which is within the Water Conservation Bill of 2009 (SB X7-7) target of 142 gpcd by 2020 for BBLDWP using Method 3 (Hydrologic Region Target). Although BBLDWP was able to meet the 2020 target, the year 2020 did not represent a typical year due to the impacts of the COVID-19 pandemic. The reduction in international and air travel, and the shift to local travel and outdoor recreation, resulted in an increase in demands within the BBLDWP service area. In comparison to the 2020 per capita demand, the average per capita demand between 2016 and 2019 was 65 gpcd.

Based on the growth rate of 0.7 percent and the inclusion of low-income housing, demands under normal conditions are anticipated to be 2,283 AFY by the year 2045 with passive conservation. In addition, supply availability was reviewed under a single-dry year and five-consecutive-year drought. The highest projected demand that occurred in the single-dry year and multi-dry year scenario was 2,508 AFY in year 2045. However, if population trends follow the predicted 0.7 percent growth, per capita demand remains steady or decreases, and there are no further changes, under all three conditions (normal, single-dry year, and five-consecutive-year drought), demands were projected to be within the operating safe yield of 3,100 AFY.

**Big Bear City Community Services District**

BBCCSD's service area includes the unincorporated community of Big Bear City and nearby portions of San Bernardino County along the east end of Big Bear Valley surrounded by the SBNF. It is located 27 miles northeast of the City of San Bernardino and is immediately east of the incorporated City of Big Bear Lake. Ground elevations range between 6,710 and 7,100 feet amsl. BBCCSD was created by a formation and consolidation election on August 23, 1966.

BBCCSD was formed as a result of the consolidation of three separate agencies including the Big Bear City Sanitation District (waste collection), the Big Bear Fire Protection District, and the Big Bear City Street Lighting District. In 1967, the shareholders of the former Big Bear City Mutual Service Company voted to relinquish ownership and operation of their water system to BBCCSD. Currently, BBCCSD provides water, sewer, and solid waste (trash collection) services.

**Figure 4.20-2** shows the BBCCSD service area boundary map and surrounding area, extracted from the BBCCSD 2020 UWMP.<sup>112</sup>

Water is supplied to BBCCSD customers via groundwater derived from the Bear Valley Basin. BBCCSD’s water distribution system is comprised of eleven active vertical groundwater wells, two gravity slant wells, two natural springs, six booster stations, four storage reservoirs that provide up to 6.25 million gallons (MG) of total storage, and a fluoride and iron and manganese blending system. The system is divided into seven pressure zones and is composed of roughly 82 miles of distribution mains.

BBCCSD’s wastewater collection area includes Big Bear City and portions of unincorporated communities such as Sugarloaf, Erwin Lake, Whispering Forest, and Moonridge. The wastewater collected within the service area is discharged to the BBARWA WWTP.

The BBCCSD service area is primarily residential and experiences an influx of part-time population and vacationers enjoying the summer and winter recreational facilities within and adjacent to the service area. Due to the recreational nature of the Big Bear City economy, occupancy within the service area fluctuates seasonally, typically peaking in July and declining during the winter. Big Bear City has the potential to experience large demand changes. However, population and recreation fluctuations are anticipated to remain constant relative to previous years.

In 2020, the Big Bear Valley experienced an influx of visitors due to the COVID-19 pandemic, resulting in a total water demand increase of about 110 AFY from the previous year. The estimated BBCCSD 2020 population is 11,679. **Table 4.20-4** shows the current and projected populations for the BBCCSD service area.

**Table 4.20-4  
 BBCCSD CURRENT AND PROJECTED POPULATION**

Population Served	2020	2025	2030	2035	2040	2045
BBCCSD Service Area	11,679	11,886	12,097	12,311	12,529	12,751

Source: BBCCSD 2020 UWMP

Notes:

1. Population estimates for 2020 were obtained using the DWR Population Tool.
2. Projections for 2025-2045 were calculated using 2015-2020 total connection growth rate of 0.35% per year.

BBCCSD provided potable water to approximately 6,147 service connections in 2020 and supplied 1,067 AFY to its customers, which is the most water provided in the past five years. The total demand was estimated by multiplying the gpcd by the projected populations for 2025, 2030, 2035, 2040, and 2045. Since 1995, per capita water usage varied from a high of 119 GPCD to a low of 73 gpcd. Overall, per capita consumption has decreased, which is most likely due to the recent drought, State mandated water use reduction targets, more efficient appliances and plumbing, and conservation efforts made by BBCCSD and its customers.

<sup>112</sup> BBCCSD, 2021. BBCCSD 2020 Urban Water Management Plan  
[https://www.bbccsd.org/index.php/component/easyfolderlistingpro/?view=download&format=raw&data=eNpNj91ugzAMhV8lygtcMO3UduYKSu86ivojLIFaDl0UfpSkW6Vp7z6HFG1XiY\\_9HR8LiFwi-DawAt4MgkbNYwPLNXDZIRZnKb3KfH9IsINQJufdscp2xTm4HNMkL\\_ZJ7oaJ5w-D2uNmkoCHc6t9oLF\\_1uRcXFWT5qgNR3vRoStD4O5ZeVXWPJYQekijGoW9\\_5tclraRCmf2bQk8TbfbU8Yu- ip6VgqLmn2lnu7osLesUKQ2g2aLcDHF1wKf9vUb6-aVD5-j1Gjm5RHtE9aK29258Pg6qe9EaPyU-OXvosztMLSKsvz8Al-2aRw](https://www.bbccsd.org/index.php/component/easyfolderlistingpro/?view=download&format=raw&data=eNpNj91ugzAMhV8lygtcMO3UduYKSu86ivojLIFaDl0UfpSkW6Vp7z6HFG1XiY_9HR8LiFwi-DawAt4MgkbNYwPLNXDZIRZnKb3KfH9IsINQJufdscp2xTm4HNMkL_ZJ7oaJ5w-D2uNmkoCHc6t9oLF_1uRcXFWT5qgNR3vRoStD4O5ZeVXWPJYQekijGoW9_5tclraRCmf2bQk8TbfbU8Yu- ip6VgqLmn2lnu7osLesUKQ2g2aLcDHF1wKf9vUb6-aVD5-j1Gjm5RHtE9aK29258Pg6qe9EaPyU-OXvosztMLSKsvz8Al-2aRw) (accessed 08/07/23)

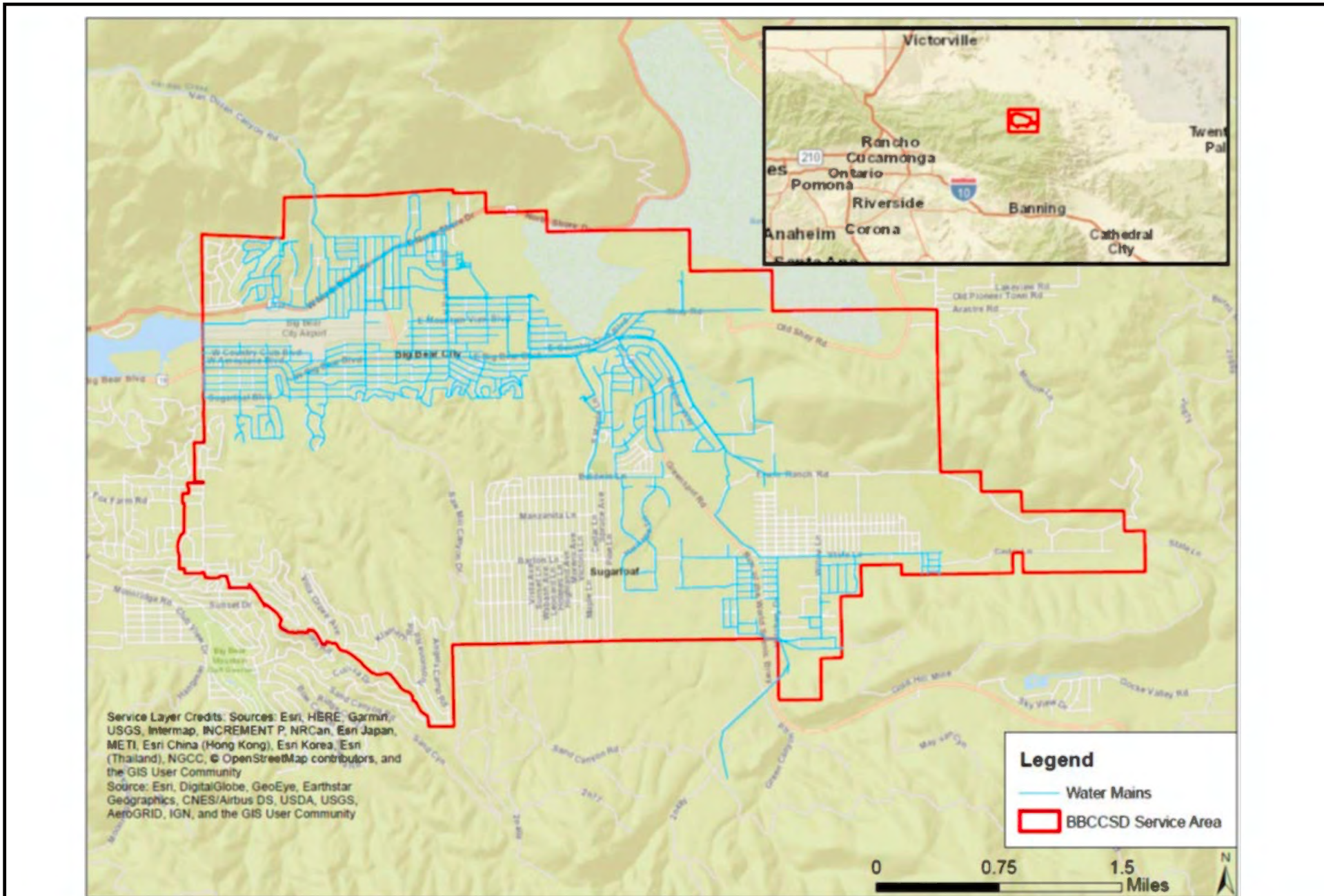


FIGURE 4.20-2

**Table 4.20-5  
 BBCCSD DEMANDS FOR WATER  
 2020 ACTUAL AND 2025 THROUGH 2045 PROJECTED**

Land Use	2020 (Actual)	2025	2030	2035	2040	2045
Single Family	831	956	984	1,001	1,019	1,037
Commercial	117	136	140	142	145	148
Losses	119	93	82	84	85	87
<b>TOTAL:</b>	<b>1,067</b>	<b>1,185</b>	<b>1,206</b>	<b>1,227</b>	<b>1,249</b>	<b>1,271</b>

**Table 4.20-6** shows 2020 actual water supplies. BBCCSD anticipates being able to supply 100% of projected demands due to the total demand being below the perennial yield of the Bear Valley Basin. The Bear Valley Basin is divided into 11 subunits. BBCCSD has water available from Erwin, Van Dusen, West Baldwin, and East Baldwin subunits. Flow from these four sub-units is directed toward Baldwin Lake and contribute to almost 60 percent of the Bear Valley Basin recharge. Perennial yield for these four sub-units have been estimated by Geoscience at 2,290 to 2,900 AFY, at 9,166 AFY by USGS Basin Characterization Model (BCM), and at 5,600 AFY by USGS INFILv3. BBLDWP also produces water from the Erwin subunit and private wells produce a minor amount across the Basin. **Table 4.20-6** also shows the projected groundwater water pumping through 2045.

**Table 4.20-6  
 BBCCSD WATER SUPPLY  
 2020 ACTUAL AND 2025 THROUGH 2045 PROJECTED**

Land Use	2020 (Actual)	2025	2030	2035	2040	2045
<b>TOTAL:</b>	<b>1,067</b>	<b>1,185</b>	<b>1,206</b>	<b>1,227</b>	<b>1,249</b>	<b>1,271</b>

#### 4.20.2.2 Wastewater

##### **Big Bear Area Regional Wastewater Agency**

BBARWA is a joint powers authority formed in 1974 to provide centralized wastewater conveyance, treatment, and disposal for its member agencies: the City of Big Bear Lake (representing approximately 47% of the total connections), BBCCSD (representing approximately 48% of the total connections), and San Bernardino County Service Area 53B (CSA53; representing approximately 5% of the total connections). Each of these member agencies maintains and operates its own wastewater collection system that conveys wastewater to BBARWA's interceptor system for transport to the BBARWA WWTP. The BBARWA service area includes the entire Big Bear Valley and covers about 79,000 acres. BBARWA owns and operates a regional WWTP to treat Big Bear Valley's wastewater and currently discharges undisinfectated secondary effluent to Lucerne Valley, which is located outside the Santa Ana Watershed.

San Bernardino County Service Area 53B: CSA 53B was established in June 1971 under the provision of County Service Area law, which provides fire protection and sanitation services within the Fawnskin communities and North Shore Tract areas of Big Bear Valley. CSA 53B encompasses approximately nine square miles and all flows discharge into the BBARWA North Shore Interceptor.



Big Bear City Community Services District: The Big Bear Community Sanitary District was formed in 1935 and was incorporated into BBCCSD when formed in 1966 to provide water supply, fire protection, street lighting, wastewater collection, and refuse disposal services. BBCCSD encompasses about 11.41 square miles and all wastewater flows discharge into the BBARWA Trunk Line.

City of Big Bear Lake: The Big Bear Lake Sanitation District was formed in November 1939 to provide sanitation services for the area that is now within the City of Big Bear Lake. The City of Big Bear Lake was incorporated in 1980 and became a Charter City in 1983. The total area encompasses approximately seven square miles and all wastewater flows discharge into the BBARWA Lake Pump Station wet well.

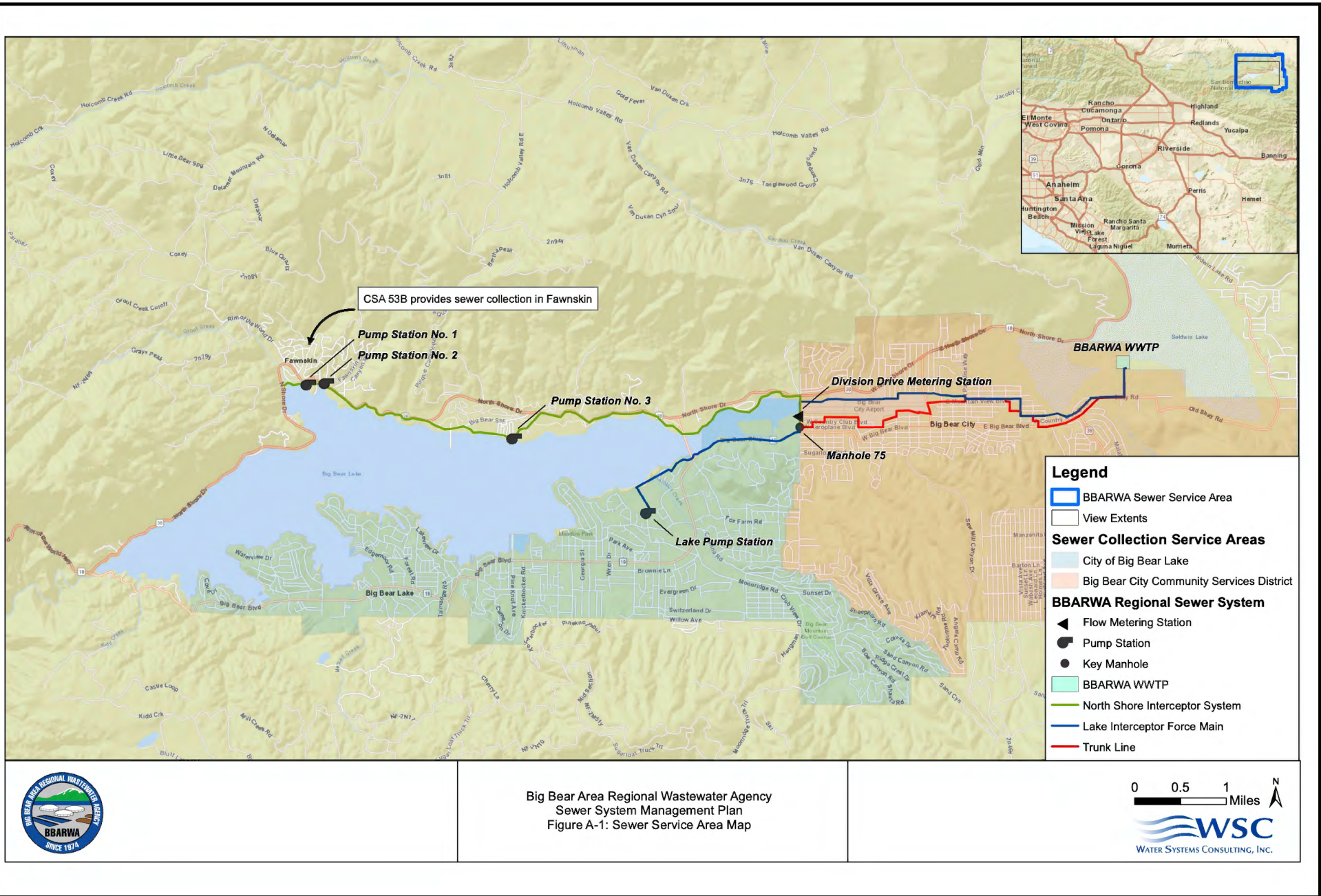
Big Bear Area Regional Wastewater Agency: BBARWA's existing collection system includes 10.29 miles of force main and 4.78 miles of gravity sewer along three major alignments which each receive raw wastewater from one of BBARWA's member agencies: the BBARWA Trunk Line, North Shore Interceptor, and Lake Interceptor Force Main (**Figure 4.20-3**). BBARWA's collection system does not include storm drains.

The existing BBARWA WWTP secondary treatment facility has a capacity of 4.89 MGD and a hydraulic capacity of 9.1 MGD. The WWTP treats commercial and domestic wastewater from the City of Big Bear Lake, BBCCSD, and CSA53 collection systems. The existing treatment process includes the following:

- Preliminary treatment consisting of a mechanical coarse screen and an aerated grit chamber;
- Secondary treatment consisting of extended aeration oxidation ditches and secondary clarifiers; and
- Solids handling through a dewatering belt filter press.

Treated effluent is temporarily stored on-site prior to discharge to Lucerne Valley and dewatered solids are hauled off-site. The undisinfected secondary effluent discharged to Lucerne Valley is currently used to irrigate fodder crops used for livestock feed not producing milk for human consumption. This discharge is regulated under Order R7-2021-0023 WDR permit, issued by the Colorado Regional Board (**Appendix 22**).





Big Bear Area Regional Wastewater Agency  
Sewer System Management Plan  
Figure A-1: Sewer Service Area Map

FIGURE 4.20-3

Exhibit 3-3 shows a process flow diagram of the existing BBARWA WWTP treatment process.

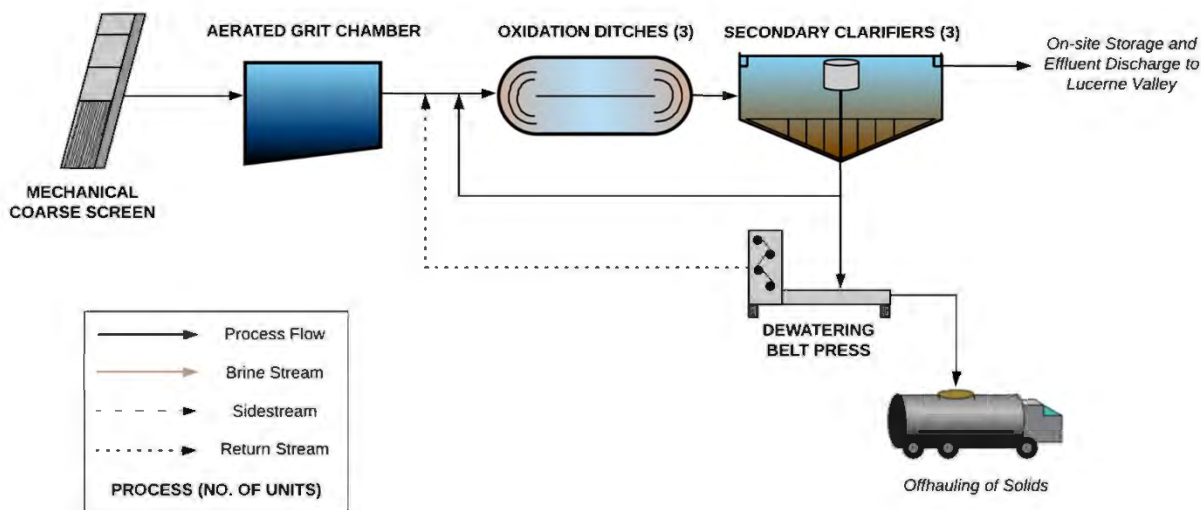


Exhibit 3-3: EXISTING TREATMENT PROCESS SCHEMATIC

BBARWA treats an average inflow of 2.2 MGD. The amount of wastewater handled by the treatment plant varies with the time of day and with the season of the year.<sup>113</sup>

#### 4.20.2.3 Stormwater

The City of Big Bear Lake maintains storm water drainage infrastructure within its city limits. San Bernardino County manages the storm drain system within its unincorporated area of the Big Bear Valley and the regional stormwater runoff conveyance infrastructure. Runoff flows drain to Big Bear Lake or Baldwin Dry Lake as the lowest points in the Big Bear Valley.

#### San Bernardino County Flood Control District (SBCFCD)

The flood control functions of the County are handled through the SBCFCD. The SBCFCD was established in 1939 in response to the severe floods of 1938, which caused millions of dollars of property damage in San Bernardino County and took several lives. The SBCFCD has developed an extensive system of facilities including dams, conservation basins, channels, and storm drains. The primary purpose of these facilities is to intercept and convey flood flows through and away from the major developed areas of San Bernardino County to protect property and ensure public safety. Primary functions of the district are flood protection, water conservation, and storm drain construction. For future development proposals, San Bernardino County does not require the payment of impact fees for the construction and maintenance of regional infrastructure, although each project is required to include drainage improvements.

The SBCFCD is divided into six zones with interests, responsibilities, and geographical divisions distinctive to the particular zone. The Big Bear Valley is located in Zone 6. This zone consists of the remaining portions of the San Gabriel and San Bernardino Mountains and the semidesert portion of San Bernardino County. This zone includes the Big Bear Valley, Joshua Tree, and

<sup>113</sup> BBARWA, 2023. Operations. [bbarwa.org/operations](http://bbarwa.org/operations) (accessed 08/07/23)

Lucerne Valley. According to the information readily available for Zone 6, facilities primarily consist of storm drains, channels, natural streams, and watercourses.

#### 4.20.2.4 Solid Waste

The California Department of Resources Recycling and Recovery (CalRecycle) maintains a Solid Waste Information System (SWIS) that lists disposal sites in San Bernardino County by disposal facility activity, regulatory status, and operational status. According to SWIS, there are two active Class III landfills<sup>114</sup> within a 50-mile radius of the Big Bear Valley that conduct solid waste disposal activities and accept construction and demolition material. These landfills are the San Timoteo and Mid-Valley Sanitary Landfills. **Table 4.20-7** lists the closure dates, daily permitted capacities, and remaining permitted capacities of the local Class III solid waste landfills. The Big Bear Transfer Station also accepts solid waste in the Big Bear Valley, where waste is then transferred to a nearby landfill. Biosolids generated by the BBARWA WWTP are currently disposed of in Helendale, CA or in Vicksburg, Arizona.

The San Bernardino County operates the Mid-Valley Sanitary Landfill in Rialto, and the San Timoteo Sanitary Landfill.

**Table 4.20-7  
 LANDFILLS AND TRANSFER STATIONS IN PROXIMITY TO THE BIG BEAR VALLEY**

Facility Name	Address	Closure Date	Daily Permitted Capacity (tons/day)	Remaining Permitted Capacity (cubic yards)
Mid-Valley Sanitary Landfill <sup>1</sup>	2390 Alder Ave, Rialto, CA 92377	4/1/2045	7,500	61,219,377 as of 06/2019
San Timoteo Sanitary Landfill <sup>2</sup>	San Timoteo Canyon Road Redlands, CA 92373	12/1/2039	2,000	12,360,396 as of 4/2019
Big Bear Transfer Station <sup>3</sup>	Holcomb Valley Rd 1.5 Miles N of Hwy 18 Big Bear City, CA 92314	--	400	--

SOURCE: California Department of Resources Recycling and Recovery, 2023. *Solid Waste Information System (SWIS)*  
<sup>1</sup> <https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1880?siteID=2662> (accessed 08/07/23)  
<sup>2</sup> <https://www2.calrecycle.ca.gov/SolidWaste/Site/Details/2688> (accessed 08/07/23)  
<sup>3</sup> <https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4554?siteID=2777> (accessed 08/07/23)

There are two municipal solid waste handling entities that serve the Big Bear Valley. Big Bear Disposal, Inc., a private solid waste disposal service, handles municipal solid waste from the City of Big Bear Lake. It offers residential and commercial solid waste and recycling handling services, in addition to dumpster rentals for the whole of the City of Big Bear Lake. The BBCCSD has been providing trash collection services to the public within its service area for over 45 years. This year, BBCCSD will collect approximately 6,800 tons of trash from 11,000 residences within a service area of 11.4 square miles. A fleet of seven refuse-hauling trucks and three support vehicles sustain department operations. It offers monthly dumpster rentals with timely and flexible pickups. BBCCSD will also collect over 80 tons of household recyclables.

<sup>114</sup> Class III landfills are only permitted to accept nonhazardous solid waste.



#### 4.20.2.5 Electricity and Natural Gas

The most recent data for California's estimated total energy consumption is from 2017 and natural gas consumption is from 2020, released by the U.S. EIA California State Profile and Energy Estimates in 2021 and included:<sup>115</sup>

- As of 2020, approximately 6,923 trillion BTUs of energy was consumed.
- As of 2020, approximately 524 million barrels of petroleum.
- As of 2021, approximately 2,101 billion cubic feet of natural gas.
- As of 2021, approximately 1 million short tons of coal.

According to the EIA, in 2021 the U.S. petroleum consumption comprised about 77% of all transportation energy use, excluding fuel consumed for aviation and most marine vessels. In 2021, about 249,790 million gallons (or about 5.95 million barrels) of finished petroleum products were consumed in the U.S., an average of about 684 MGD (or about 16 million barrels per day). In 2021, California consumed approximately 12,157 million gallons in motor gasoline (33.31 MGD) and approximately 3,541 million gallons of diesel fuel (9.7 MGD). The most recent data provided by the EIA for energy use in California by demand sector is from 2020 and is reported as follows:

- Approximately 34.0% transportation
- Approximately 24.6% industrial
- Approximately 21.8% residential
- Approximately 19.6% commercial

According to the EIA, California used approximately 247,250 GWhs of electricity in 2021. By sector in 2021, residential uses utilized 36.5% of the State's electricity, followed by 43.9% for commercial uses, 19.2% for industrial uses, and 0.3% for transportation. Electricity usage in California for differing land uses varies substantially by the type of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building.

According to the EIA, California used approximately 200,871 million therms of natural gas in 2021. In 2021 (the most recent year for which data is available), by sector, industrial uses utilized 33% of the State's natural gas, followed by 30% used as fuel in the electric power sector, 21% from residential, 11% from commercial, 1% from transportation uses and the remaining 3% was utilized for the operations, processing and production of natural gas itself. While the supply of natural gas in the U.S. and production in the lower 48 states has increased greatly since 2008, California produces little, and imports 90% of its supply of natural gas.

In 2021, total system electric generation for California was 277,764 GWhs. California's massive electricity in-state generation system generated approximately 194,127 GWhs which accounted for approximately 70% of the electricity it uses; the rest was imported from the Pacific Northwest (12%) and the U.S. Southwest (18%). Natural gas is the main source for electricity generation at 50.2% of the total in-state electric generation system power as shown in **Table 4.7-1**.

An updated summary of, and context for energy consumption and energy demands within the State is presented in "U.S. Energy Information Administration, California State Profile and Energy Estimates, Quick Facts" excerpted below:

- In 2022, California was the seventh-largest producer of crude oil among the 50 states, and, as of January 2022, the State ranked third in crude oil refining capacity.

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<sup>115</sup> US Energy Information Administration, 2023. California State Energy Profile  
<https://www.eia.gov/state/print.php?sid=CA> (Accessed 07/19/23)

- California is the largest consumer of jet fuel and second-largest consumer of motor gasoline among the 50 states.
- In 2020, California was the second-largest total energy consumer among the states, but its per capita energy consumption was less than in all but three other states.
- In 2022, renewable resources, including hydroelectric power and small-scale, customer-sited solar power, accounted for 49% of California’s in-state electricity generation. Natural gas fueled another 42%. Nuclear power supplied almost all the rest.
- In 2022, California was the fourth-largest electricity producer in the nation. The State was also the nation’s third-largest electricity consumer, and additional needed electricity supplies came from out-of-state generators.

As indicated below, California is one of the nation’s leading energy producing states, and California’s per capita energy use is among the nation’s most efficient. Given the nature of the Program, the remainder of this discussion will focus on the three sources of energy that are most relevant to the Program—namely, electricity, natural gas, and transportation fuel for vehicle trips associated with the uses planned for the Program as shown in **Table 4.20-8**.

**Table 4.20-8  
 TOTAL ELECTRICITY SYSTEM POWER (CALIFORNIA 2022)**

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	Total Imports (GWh)	Percent of Imports	Total California Energy Mix (GWh)	Total California Power Mix
Coal	273	0.13%	181	5,716	5,897	6,170	2.15%	273
Natural Gas	96,457	47.46%	44	7,994	8,038	104,495	36.38%	96,457
Oil	65	0.03%	-	-	-	65	0.2%	65
Other (Waste Heat/Petroleum Coke)	315	0.15%	-	-	-	315	0.11%	315
Unspecified	-	0.0%	12,485	7,943	20,428	20,428	7.11%	-
<b>Total Thermal and Unspecified</b>	<b>97,110</b>	<b>47.78%</b>	<b>12,710</b>	<b>21,653</b>	<b>34,363</b>	<b>121,473</b>	<b>45.77%</b>	<b>97,110</b>
Nuclear	17,627	8.67%	397	8,342	8,739	26,366	9.18%	17,627
Large Hydro	14,607	7.19%	10,803	1,118	11,921	26,528	9.24%	14,607
Biomass	5,366	2.64%	771	25	797	6,162	2.15%	5,366
Geothermal	11,110	5.47%	253	2,048	2,301	13,412	4.67%	11,110
Small Hydro	3,005	1.48%	211	13	225	3,230	1.12%	3,005
Solar	40,494	19.92%	231	8,225	8,456	48,950	17.04%	40,494
Wind	13,938	6.86%	8,804	8,357	17,161	31,099	10.83%	13,938
<b>Total Non-GHG and Renewables</b>	<b>106,147</b>	<b>52.22%</b>	<b>21,471</b>	<b>28,129</b>	<b>49,599</b>	<b>155,747</b>	<b>54.23%</b>	<b>106,147</b>
<b>SYSTEM TOTALS</b>	<b>203,257</b>	<b>100.0%</b>	<b>34,180</b>	<b>49,782</b>	<b>83,962</b>	<b>287,220</b>	<b>100.0%</b>	<b>203,257</b>

#### **4.20.2.6 Telecommunication**

The Big Bear Valley area is served by several telecommunication providers including Verizon, AT&T, Frontier, Spectrum, and others.

#### **4.20.3 Regulatory Setting: Utilities & Service Systems**

##### **4.20.3.1 Water, Wastewater and Stormwater**

###### **Federal**

###### ***Clean Water Act***

Pursuant to Section 404 of the CWA, the USACE regulates discharges of dredged and/or fill material into waters of the U.S. "Waters of the United States" are defined in USACE regulations at 33 C.F.R. Part 328.3(a). Navigable Waters of the U.S. are those Waters of the U.S. that are navigable in the traditional sense. Waters of the U.S. is a broader term than navigable Waters of the U.S. and includes adjacent wetlands and tributaries to navigable Waters of the U.S. and other waters where the degradation or destruction of which could affect interstate or foreign commerce.

The CWA requires all states to conduct water quality assessments of their water resources to identify water bodies that do not meet water quality standards. The water bodies that do not meet water quality standards are placed on a list of impaired waters pursuant to the requirements of Section 303(d) of the CWA.

The CWA and the State Porter-Cologne Act, require basin-wide planning. Additionally, the NPDES empowers the RWQCBs to set discharge standards, and encourages the development of new approaches to water quality management. As part of the NPDES program, a SWPPP must be prepared for construction activities affecting greater than one acre because the discharge of stormwater during construction is considered a non-point source of water pollution.

The Stanfield Marsh/Big Bear Lake and the Bear Valley Basin are located in the Santa Ana Regional Board jurisdiction. The LV Site Discharge Reduction falls within the Colorado Regional Board jurisdiction.

In 1972, the CWA was amended to prohibit the discharge of pollutants to Waters of the United States unless the discharge complies with a NPDES permit. The CWA focused on tracking point sources, primarily from wastewater treatment facilities and industrial waste dischargers, and required implementation of control measures to minimize pollutant discharges. The CWA was amended again in 1987, adding Section 402(p), to provide a framework for regulating municipal and industrial storm water discharges. In November 1990, the EPA published final regulations that establish requirements for specific categories of industries, including construction projects that encompass certain acreage, currently projects of one acre or larger. (see **Subchapter 4.11, Hydrology and Water Quality**, of this EIR).

###### ***Safe Drinking Water Act***

The Safe Drinking Water Act (SDWA) is the Federal law that protects drinking water supplies and applies to every public water system in the U.S. The SDWA requires many actions to protect drinking water including source water protection, treatment, distribution system integrity, and public information. Source water may include rivers, lakes, reservoirs, springs, and groundwater wells. The SDWA authorizes the EPA to set national health-based standards for drinking water to protect against both naturally-occurring and human-made contaminants that may be found in



drinking water. The National Primary Drinking Water Regulations set enforceable MCLs for particular contaminants in drinking water or required ways to treat water to remove contaminants. Each standard also includes requirements for water systems to test for contaminants in the water to make sure standards are achieved.

### ***National Pollutant Discharge Elimination System Program***

As stated above, the NPDES permit program is administered in the State of California by the SWRCB and RWQCBs under the delegated authority of the EPA pursuant to the CWA to control water pollution by regulating point sources that discharge pollutants into Waters of the U.S. A general NPDES permit covers multiple facilities within a specific activity category such as construction activities. A general permit applies with same or similar conditions to all dischargers covered under the general permit. The proposed program would be covered under the general permits discussed below.

#### General Dewatering Permit

The SWRCB has issued General WDRs under Order No. R8-2003-0061, NPDES No. CAG 998001 (Dewatering General Permit) governing non-stormwater construction-related discharges from activities such as dewatering, water line testing, and sprinkler system testing. The discharge requirements include provisions mandating notification, testing, and reporting of dewatering and testing-related discharges. The General WDRs authorize such construction-related discharges so long as all conditions of the permit are fulfilled. This permit would apply to the proposed program for the testing of the effluent pipelines and in the event that shallow perched groundwater is encountered during construction that requires dewatering.

#### Construction General Permit

The CGP NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, NPDES No. CAS000002) regulates discharges of pollutants in stormwater associated with construction activity to Waters of the U.S. from construction sites that disturb one or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface. Note that the CGP was updated and a new version takes effect on September 1, 2023 (Order WQ 2022-0057-DWQ; NPDES NO. CAS000002).<sup>116</sup> The permit regulates stormwater discharges associated with construction or demolition activities, such as clearing and excavation; construction of buildings; and LUP, including installation of water pipelines and other utility lines.

The CGP requires the development and implementation of a SWPPP that includes specific BMPs designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving offsite into receiving waters. The SWPPP BMPs are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. Routine inspection of all BMPs is required under the provisions of the CGP. In addition, the SWPPP is required to contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

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<sup>116</sup> SWRCB, 2023. National Pollutant Discharge Elimination System (NPDES) General Permit For Stormwater Discharges Associated with Construction and Land Disturbance (General Permit) Order WQ 2022-0057-DWQ NPDES No. CAS000002

[https://www.waterboards.ca.gov/water\\_issues/programs/stormwater/construction/docs/2022-0057-dwq-with-attachments/cgp2022\\_order.pdf](https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction/docs/2022-0057-dwq-with-attachments/cgp2022_order.pdf) (accessed 08/03/23)

### Industrial General Permit (IGP)

The IGP became effective July 1, 2020 as amended in 2015 and 2018 (Order No. 2014-0057-DWQ). The IGP covers ten broad categories of industrial activities, including sewage or wastewater treatment works that store, treat, recycle, and reclaim municipal or domestic sewage with a design flow of one MGD or more, or are required to have an approved pretreatment program under 40 CFR Part 403. For a sewage treatment facility, the IGP covers both the municipal or domestic sewage being sent to the facility for treatment, and rainwater falling on the facility that must be managed as stormwater. This is because rainwater falling on the facility is routed to the onsite treatment system to prevent contaminants from migrating offsite from the treatment facility.

### Municipal Stormwater Permitting

The State's Municipal Stormwater Permitting Program regulates stormwater discharges from MS4s. MS4 Permits were issued in two phases. Phase I was initiated in 1990, under which the RWQCBs adopted NPDES stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving more than 250,000 people) municipalities. As part of the Phase II, the SWRCB adopted a General Permit for small MS4s (serving less than 100,000 people) and non-traditional small MS4s including governmental facilities such as military bases, public campuses, and hospital complexes. The permit also requires permittees to develop CBRP. An MS4 Permit was issued to San Bernardino County (Order No. R8-2010-0036, NPDES Permit No. CAS618036).<sup>117</sup>

## State

### ***State Water Resources Control Board Division of Drinking Water***

The EPA has granted the State of California the authority to implement SDWA within its jurisdiction. The SWRCB *Division of Drinking Water* regulates public drinking water systems and is responsible for making sure water systems test for contaminants, reviewing plans for water system improvements, conducting on-site inspections and sanitary surveys, providing training and technical assistance, and taking action against water systems not meeting standards.

The SWRCB's *Safe Drinking Water Plan* provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The plan, which is updated every five years, represents the SWRCB's assessment of the overall quality of the State's drinking water, the identification of specific water quality problems, an analysis of the known and potential health risks that may be associated with drinking water contamination in California, and recommendations to improve drinking water quality. The plan also identifies and evaluates existing and proposed statewide water demand management and water supply augmentation programs and projects to address the State's water needs. The plan provides resource management strategies and recommendations to strengthen integrated regional water management. These strategies can reduce water demand, improve operational efficiency, increase water supply, improve water quality, practice resource stewardship, and improve flood management.

### ***California Code of Regulations***

Pursuant to California Code of Regulations Title 23, Division 3, Article 2 (Waste Classification and Management) and Article 3 (Waste Unit Classification and Siting), Class III (municipal solid waste) landfills are sited in accordance with criteria that are similar to those found in Subtitle D of RCRA.

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<sup>117</sup> Santa Ana Regional Board, 2023. Stormwater Program.  
[https://www.waterboards.ca.gov/santaana/water\\_issues/programs/stormwater/](https://www.waterboards.ca.gov/santaana/water_issues/programs/stormwater/) (08/04/23)

California Code of Regulations Title 27 includes various regulations pertaining to siting, design, construction, and operation of solid waste landfills.

California Code of Regulations Title 22, Division 4, Sections 60301 through 60355 (Articles 1 through 9), includes descriptions of overall allowable sources of and uses for recycled water, as well as specific use descriptions depending on treatments. Title 22 also includes specific treatment pathways including disinfection procedures, oxidation, soils and bed filter media, and requirements for impoundments. It covers use area requirements, water testing and analysis, and plant design and operational requirements.

#### ***Protection of Underground Infrastructure***

The California Government Code Sections 4216-4216.9 “Protection of Underground Infrastructure” requires an excavator to contact a regional notification center (e.g., Underground Services Alert or DigAlert) at least two days prior to excavation of any subsurface installations. Any utility provider seeking to begin a project that could damage underground infrastructure can call DigAlert, the regional notification center for Southern California.

DigAlert will notify the utilities that may have buried lines within 1,000 feet of the project. Representatives of the utilities are then notified and are required to mark the specific location of their facilities within the work area prior to the start of project activities in the area.

#### ***California Health and Safety Code***

California Health and Safety Code Section 116815 requires all pipes carrying recycled water to be colored purple or wrapped in purple tape. This requirement stems from a concern in cross-contamination and potential public health risks similar to those discussed for Title 17, Sections 7583-7586 and 7601-7605 of the California Code of Regulations. It is also discussed in the California Health Laws Related to Recycled Water.

#### ***Regional Water Quality Control Board (RWQCB)***

The primary responsibility for the protection of water quality in California rests with the SWRCB and nine RWQCBs. The SWRCB sets statewide policy for the implementation of State and Federal laws and regulations. The RWQCBs adopt and implement WQCP (i.e., Basin Plans) which recognize regional differences in natural water quality, actual and potential beneficial uses, and water quality problems associated with human activities. The Program Area is within the jurisdiction of the Santa Ana Regional Board. However, the Program would maintain its discharge permit to the LV Site, which is within the jurisdiction of the Colorado Regional Board.

#### ***California Department of Water Resources (DWR)***

The DWR is a department within the California Resources Agency. The DWR is responsible for the State’s management and regulation of water usage.

#### ***Senate Bills 610 (Chapter 643, Statutes of 2001) and 221 (Chapter 642, Statutes of 2001)***

SB 610 and SB 221 are companion measures that seek to promote more collaborative planning among local water suppliers and cities and counties. They require that water supply assessments occur early in the land use planning process for all large-scale development projects. If groundwater is the proposed supply source, the required assessments must include detailed analyses of historic, current, and projected groundwater pumping and an evaluation of the sufficiency of the groundwater basin to sustain a new project’s demands. They also require an identification of existing water entitlements, rights, and contracts and a quantification of the prior year’s water deliveries. In addition, the supply and demand analysis must address water supplies during single and multiple dry years presented in five-year increments for a 20-year projection.

### **Local**

The Big Bear Valley encompasses multiple jurisdictions including unincorporated areas of San Bernardino County and the City of Big Bear Lake.

### ***San Bernardino Countywide Plan***

The following San Bernardino Countywide Plan policies pertain to water, wastewater, and stormwater:

<b>Policy</b>	
H-1.2:	Concurrent infrastructure. We support the integrated planning and provision of appropriate infrastructure (including water, sewer, and roadways) concurrent with and as a condition of residential development to create more livable communities.
D/H-1.3:	Waterwise landscaping. Where multiple-family apartment projects are required to have landscaping, we encourage water-conserving, drought-tolerant, or native landscaping that is capable of surviving a desert climate.
H-5.2:	Local and regional infrastructure. We support the integrated planning and provision of appropriate infrastructure (including water, sewer, stormwater, and roadways) to create more livable residential environments. This effort will contain: <ul style="list-style-type: none"><li>• Cooperation with the San Bernardino Local Agency Formation Commission (LAFCO) and service providers in service planning;</li><li>• Coordination of capital improvement planning efforts with cities and through the San Bernardino County Transportation Authority (SBCTA);</li><li>• Review minimum improvement standards for rural areas in the update of the County development code; and</li><li>• Coordination with the Southern California Association of Governments to include transportation improvements into the regional transportation plan.</li></ul>
IU-1.1:	Water supply. We require that new development be connected to a public water system or a County-approved well to ensure a clean and resilient supply of potable water, even during cases of prolonged drought.
IU-1.2:	Water for military installations. We collaborate with military installations to avoid impacts on military training and operations from groundwater contamination and inadequate groundwater supply.
IU-1.3:	Recycled water. We promote the use of recycled water for landscaping, groundwater recharge, direct potable reuse, and other applicable uses in order to supplement groundwater supplies.
IU-1.4:	Greywater. We support the use of greywater systems for non-potable purposes.
IU-1.5:	Agricultural water use. We encourage water-efficient irrigation and the use of non-potable and recycled water for agricultural uses.
IU-1.6:	User fees. For water systems operated by County Special Districts, we establish user fees that cover operation and maintenance costs and set aside adequate reserves for capital upgrades and improvements.
IU-1.9:	Water conservation. We encourage water conserving site design and the use of water conserving fixtures, and advocate for the adoption and implementation of water conservation strategies by water service agencies. For existing County-owned facilities, we incorporate design elements, building materials, fixtures, and landscaping that reduce water consumption, as funding is available.
IU-1.10:	Connected systems. We encourage local water distribution systems to interconnect with regional and other local systems, where feasible, to assist in the transfer of water resources during droughts and emergencies.

- IU-1.11: Water storage and conveyance. We assist in development of additional water storage and Conveyance Facilities to create a resilient regional water supply system, when it is cost effective for County-owned water and stormwater systems.
- IU-2.2: User fees. For wastewater systems operated by County Special Districts, we establish user fees that cover operation and maintenance costs and set aside adequate reserves for capital upgrades and improvements.
- IU-2.3: Shared wastewater facilities for recycled water. We encourage an expansion of recycled water agreements between wastewater entities to share and/or create connections between wastewater systems to expand the use of recycled water.
- IU-2.4: Wastewater discharge. We apply federal and state water quality standards for wastewater discharge requirements in the review of development proposals that relate to type, location, and size of the proposed project in order to safeguard public health and shared water resources.

***City of Big Bear Lake General Plan***

The following Big Bear Lake General Plan policies pertain to water, wastewater, and stormwater:

<b>GOAL</b>	<b>ER 3</b>	A dependable long-term supply of clean and healthful domestic water to meet the needs of all segments of the community.
<b>Policy</b>	ER 3.1:	The City of Big Bear Lake shall provide direction and guidelines for the development of onsite storm water retention facilities consistent with local and regional drainage plans, community design standards and the requirements of the Flooding and Hydrology Element.
<b>Program</b>	ER 3.1.1:	Enforce regulations and guidelines and update them as needed to meet the specific needs in the planning area to manage storm water flows, which may include requirements for on-site detention or retention, and which implement the NPDES program, enhance groundwater recharge, complement regional flood control facilities, and address applicable community design policies.
<b>Policy</b>	ER 3.2:	Evaluate all proposed land use and development plans for their potential to create groundwater contamination hazards from point and non-point sources, and cooperate with other appropriate agencies to assure appropriate mitigation.
<b>Program</b>	ER 3.2.1:	Monitor changes in state and federal guidelines and aggressively pursue enforcement to ensure mitigation of groundwater contamination hazards from point and non-point pollutants.
<b>Policy</b>	ER 3.3:	Ensure the long-term balance of water supplies and growth through coordination of land use planning with infrastructure development.
<b>Program</b>	ER 3.3.1:	Ensure coordination of long- range goals and objectives within and between City plans and programs, including the General Plan, Capital Improvement Program, Water Master Plan and others as appropriate.
	3.3.2:	Ensure that the water distribution system is planned and constructed to adequately serve existing and planned development, through the development review process.
	3.3.3:	Participate with and encourage the appropriate local water agencies to investigate all potential alternatives for Big Bear Valley-wide conjunctive use of water.
<b>GOAL</b>	<b>ER 4</b>	An informed public that respects the City's finite water resource and maximizes protection and conservation efforts so that long-term growth in the community is sustainable.
<b>Policy</b>	ER 4.1:	Encourage the use of low water-consuming, drought-tolerant landscape plantings as a means of reducing water demand, and strengthen education/public relations programs to inform residents of the full range of water-saving techniques available.

<b>Program</b>	ER 4.1.2:	Continue to develop educational materials and programs that encourage and facilitate water conservation throughout the community.
	ER 5.1.3:	Site development practices which reduce erosion, promote rapid revegetation and reduce the amount of sediment leaving a construction site shall be adopted and enforced, to protect drainage ways and Lake resources.
	ER 5.1.5:	Develop and implement a public information program for residents and the building trades which details erosion control and construction management practices to protect the watershed.
<b>GOAL</b>	<b>PS 1</b>	<b>GENERAL INFRASTRUCTURE NEEDS</b> Public services and facilities that adequately meet the immediate and long-term needs of the City, providing a high level of service for the lowest reasonable cost, while minimizing impacts on the local and regional environment.
<b>Policy</b>	PS 1.1:	Assure the provision of adequate public services and facilities for all residents, businesses and visitors within the community, now and in the future.
<b>Program</b>	PS 1.1.1:	Cooperate with all utility, infrastructure and service providers to promote coordinated master planning for these services, coordination of infrastructure planning with land use planning, and to assure minimal impacts to the environment and the community from expansion and maintenance of infrastructure systems.
	PS 1.1.2:	Adopt and annually update the City's Capital Improvement Program to prioritize funding for public works projects in accordance with this General Plan and other identified needs within the City.
	PS 1.1.3:	Evaluate the City's infrastructure capacity and needed improvements as part of the City's growth management program, and revise and update the program as needed to ensure that a nexus exists between fees collected and identified public infrastructure improvements, and that new development pays only that portion of the cost needed to mitigate impacts of that development.
	PS 1.1.4:	Seek public input regarding proposed property acquisitions for public facilities and uses when feasible without jeopardizing the negotiation process, through public notice for open City Council discussions of these matters as they arise.
<b>Policy</b>	PS 1.2:	Ensure that adequate infrastructure exists or can reasonably be extended to serve new development, that such extensions are planned in an efficient and cost-effective manner, and that new development pays its fair share of the cost of infrastructure.
<b>Program</b>	PS 1.2.1:	Continue to require that adequate water supply, distribution, fire suppression systems, sewer facilities, and storm drainage facilities are assured prior to issuance of building permits for new construction which increases the use or intensity of a site. This is not to be construed as a requirement to connect to a public utility.
<b>GOAL</b>	<b>PS 2</b>	<b>WATER FACILITIES</b> A water storage and distribution system adequate to meet the community's needs, including domestic and commercial use and fire flow, and which can ultimately accommodate use of reclaimed water when such use becomes feasible within the City.
<b>Policy</b>	PS 1.4:	Assure an adequate water system and source of supply for existing and future development and maintain an adequate reserve of water in storage facilities.
<b>Program</b>	PS 2.1.1:	Update and implement the Department of Water and Power Master Plan for future development of facilities and Fifty-Year Depreciation Plan.
	PS 2.1.2:	Develop and maintain a contingency plan for potential water shortages including ground water management, locations for additional storage facilities, and water conservation programs.



	PS 2.1.3:	Encourage conservation of ground water resources through the following measures: <ol style="list-style-type: none"><li>1. Development standards shall be compatible with and promote the City's water conservation goals and policies;</li><li>2. Encourage the use of drought-tolerant and native plants in landscaping plans;</li><li>3. Require that new development consider and plan for water reclamation when feasible;</li><li>4. Require the utilization of reclaimed water for landscape irrigation, grading, and other non--human contact uses where appropriate and when feasible.</li></ol>
<b>GOAL</b>	<b>PS 3</b>	<b>SEWER FACILITIES</b> A sewer system adequate to serve the long-term needs of the community, including an upgraded sewage collection system and adequate treatment plant capacity.
<b>Policy</b>	PS 3.1	Cooperate with the Big Bear Area Regional Wastewater Agency (BBARWA) in determining future needs and developing plans for wastewater facilities.
<b>Program</b>	PS 3.1.1:	Include in the new Five-Year Capital Improvement Program the upgrading and replacement, as necessary, of the City's main lines and manholes, as well as any other necessary measures to reduce inflow and infiltration into the sewer system.
	PS 3.1.2:	Cooperate with BBARWA in assuring that new development pays its fair share of future development, expansion, and operating costs for wastewater treatment.
	PS 3.1.3:	Provide assistance to BBARWA as needed to complete and implement that agency's Long-Range Facilities Plan.
	PS 3.1.4:	Cooperate with BBARWA as needed in that agency's plans to upgrade the secondary treatment system and to seek customers and facility upgrades needed to accommodate local use of reclaimed water.
	PS 3.1.5:	Actively encourage and support BBARWA in any future requests to change its point of discharge, as determined by the California Regional Water Quality Control Board, from Lucerne Valley to the Big Bear Valley, for local use of reclaimed water at the appropriate time.
	PS 3.1.6:	Provide ongoing communication and coordination with BBARWA regarding the City's sewer system upgrades, including long-range planning, capital improvement projects, inspections and maintenance of the system, through the Utility Coordinating Committee or other means as appropriate.

### ***San Bernardino County Flood Control District***

Any encroachments on the SBCFCD's ROW or facilities, including but not limited to access, fencing and grading, utility crossings, landscaping, new and/or alteration to drainage connections will require a permit from the SBCFCD prior to start of construction.

### **4.20.3.2 Solid Waste**

#### **Federal**

#### ***Resource Conservation and Recovery Act***

RCRA (40 CFR, Part 258 Subtitle D) establishes minimum location standards for siting municipal solid waste landfills. In addition, because California laws and regulations governing the approval of solid waste landfills meet the requirements of Subtitle D, the EPA has delegated the enforcement responsibility to the State of California.

#### ***Title 40 of the Code of Federal Regulations Part 503***

The Federal biosolids regulations are contained in Title 40 CFR Part 503 as Standards for the Use or Disposal of Sewage Sludge. Known as the Part 503 Rule, or Part 503, these regulations

govern the use and disposal of biosolids. Part 503 established requirements for the final use or disposal of biosolids when biosolids are:

- Applied to land to condition the soil or fertilize crops or other vegetation;
- Placed on a surface disposal site for final disposal; or
- Fired in a biosolids incinerator.

Part 503 permits are issued by the EPA and are required for all biosolids generators. Part 503 requirements can be incorporated into the NPDES permits that also are issued to publicly-owned treatment works.

## **State**

### ***California Code of Regulations***

Pursuant to California Code of Regulations Title 23, Division 3, Article 2 (Waste Classification and Management), and Article 3 (Waste Unit Classification and Siting), Class III (municipal solid waste) landfills are sited in accordance with criteria that are similar to those found in Subtitle D of RCRA. California Code of Regulations Title 27 includes various regulations pertaining to siting, design, construction, and operation of solid waste landfills.

California Code of Regulations Title 22, Division 4, Sections 60301 through 60355 (Articles 1 through 9), include descriptions of overall allowable sources of and uses for recycled water, as well as specific use descriptions depending on treatments. Title 22 also includes specific treatment pathways including disinfection procedures, oxidation, soils, and bed filter media, and requirements for impoundments. It covers use area requirements, water testing and analysis, and plant design and operational requirements.

### ***California Department of Resources Recycling and Recovery (CalRecycle)***

CalRecycle, formally known as CIWMB, is the State agency designated to oversee, manage, and track California's 76 million tons of waste generated each year. It is one of the six agencies under the umbrella of the CalEPA. CalRecycle develops laws and regulations to control and manage waste, for which enforcement authority is typically delegated to the local government. CalRecycle works jointly with local governments to implement regulations and fund programs.

The Integrated Waste Management Act of 1989 (California Public Resources Code Section 40050 et seq. or AB 939, codified in California Public Resources Code Section 40000), administered by CalRecycle, requires all local and county governments to adopt a Source Reduction and Recycling Element to identify means of reducing the amount of solid waste sent to landfills. This law set reduction targets at 25 percent by the year 1995 and 50 percent by the year 2000. To assist local jurisdictions in achieving these targets, the California Solid Waste Reuse and Recycling Access Act of 1991 requires all new developments to include adequate, accessible, and convenient areas for collecting and loading recyclable and green waste materials.

### ***California Integrated Waste Management Act of 1989***

The California Integrated Waste Management Act of 1989 (AB 939) redefined solid waste management in terms of both objectives and planning responsibilities for local jurisdictions and the State. AB 939 was adopted in an effort to reduce the volume and toxicity of solid waste that is landfilled and incinerated by requiring local governments to prepare and implement plans to improve the management of waste resources. AB 939 required each of the cities and unincorporated portions of the counties to divert a minimum of 25 percent of the solid waste landfilled by 1995 and 50 percent by the year 2000. To attain goals for reductions in disposal, AB 939 established a planning hierarchy utilizing new integrated solid waste management practices.

These practices include source reduction, recycling and composting, and environmentally safe landfill disposal and transformation.

### **Assembly Bill 341**

AB 341 (Chesbro, Chapter 476, Statutes of 2011) sets forth the requirements of the statewide mandatory commercial recycling program. California requires all businesses that generate four or more cubic yards of garbage per week and multi-family dwellings with five or more units to recycle.

### **California Solid Waste Reuse and Recycling Act of 1991**

Other State statutes pertaining to solid waste include compliance with the California Solid Waste Reuse and Recycling Act of 1991 (AB 1327), which requires the local jurisdiction to require adequate areas for collecting and loading recyclable materials within a development project for commercial, institutional, marina, and residential buildings with five units or more.

### **California's Short-Lived Climate Pollutant Reduction Regulations**

SB 1383, California's Short-Lived Climate Pollutant Reduction Regulations, which establishes methane reduction targets for California. SB 1383 sets goals to reduce disposal of organic waste in landfills, including edible food.<sup>118</sup> The bill's purpose is to reduce greenhouse gas emissions, such as methane, and address food insecurity in California. This requires jurisdictions to implement mandatory organic waste collection and recycling in a statewide effort to divert organic waste from landfills with goals to:

- Reduce organic waste disposal 50% by 2020 and 75% by 2025, and
- Recover at least 20% of currently disposed surplus edible food by 2025.

### **California Green Building Standards Code**

Section 5.408 (Construction Waste Reduction, Disposal, and Recycling) of the 2022 CALGreen Code (Title 24, California Code of Regulations, Part 11) requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

### **Local**

The Big Bear Valley encompasses multiple jurisdictions including unincorporated areas of San Bernardino County and the City of Big Bear Lake.

### **San Bernardino Countywide Plan**

The following San Bernardino Countywide Plan policies pertain to solid waste:

<b>Goal</b>	<b>IU-4</b>	Adequate regional landfill capacity that provides for the safe disposal of solid waste, and efficient waste diversion and collection for unincorporated areas.
<b>Policy</b>	IU-4.1	Landfill capacity We maintain a minimum ongoing landfill capacity of 15 years to serve unincorporated waste disposal needs.
	IU-4.2	Transfer stations We locate and operate transfer stations based on overall system efficiency.
	IU-4.3	Waste diversion We shall meet or exceed state waste diversion requirements, augment future landfill capacity, and reduce greenhouse gas emissions and use of natural resources through the reduction, reuse, or recycling of solid waste.

<sup>118</sup> County of Santa Clara, 2023. Understand Senate Bill (SB) 1383. <https://reducewaste.sccgov.org/food-recovery/understand-senate-bill-sb-1383#3925188384-318395615> (accessed 04/20/23)

- IU-4.4 Landfill funding  
We require sufficient fees for use of County landfills to cover capital costs; ongoing operation, maintenance, and closure costs of existing landfills; and the costs and liabilities associated with closed landfills.

***City of Big Bear Lake General Plan***

The following Big Bear Lake General Plan policies pertain to solid waste:

<b>GOAL</b>	<b>PS 4</b>	<b>UTILITIES</b> Adequate utility systems to meet the long-term needs of the community and enhance communication systems, while minimizing visual and environmental impacts of utility poles, overhead lines, and telecommunication facilities.
<b>Policy</b>	PS 4.1:	Cooperate with all utility purveyors in the planning, designing, and siting of distribution, collection, and support facilities to ensure the timely expansion of services in a manner which minimizes environmental impacts and disturbances to existing improvements.
<b>GOAL</b>	<b>PS6</b>	Ensure provision of adequate facilities and programs to accommodate the collection, transport and disposal of solid waste and hazardous waste, in conformance with applicable laws.
<b>Policy</b>	PS 6.1:	Implement the regulations of the California Integrated Waste Management Act of 1989 (also known as "AB 939"), in consideration of the specific conditions and needs within the planning area.
<b>Program</b>	PS 6.1.1:	Continue to cooperate with the Desert and Mountain Coalition of San Bernardino County and to implement the Source Reduction and Recycling Element and the Household Hazardous Waste Element.
	PS 6.1.2:	In cooperation with San Bernardino County and other affected agencies, assist in planning for a suitable site within Big Bear Valley for legal disposal, stockpiling and/or recycling of paving materials and construction debris.
	PS 6.1.3:	Participate in exploring cost-effective alternatives to the disposal of solid waste in landfills. Responsible Agency: City Manager's Office, Engineering Division, Public Works Division, in cooperation with other affected agencies
	PS 6.1.4:	Maintain and improve the appearance of community trash collection sites throughout the City for visitors, while encouraging the long-term expansion of curbside collection service for residents. Responsible Agency: Public Works Division, in cooperation with Big Bear Disposal
<b>Policy</b>	PS 6.2:	Provide for the safe collection and disposal of hazardous waste generated from City residents and businesses.
<b>Program</b>	PS 6.2.1:	Maintain the City's Household Hazardous Waste collection site at the Garstin Yard, or other location as appropriate, and inform residents of the location and hours of this service.
	PS 6.2.2:	Ensure that larger generators of hazardous waste take proper measures for its lawful disposal.
	PS 6.2.3:	In review of new development projects, evaluate the potential for soil contamination and require mitigation measures as appropriate.
	PS 6.2.4:	Assist in informing the public of procedures and methods of disposal for hazardous wastes.

***San Bernardino County Construction and Demolition Solid Waste Management Plan***

San Bernardino County requires the preparation of construction and demolition solid waste management plans (waste management plans) for all new construction projects. The waste management plan's goal is to ensure a minimum of 50 percent diversion of construction building

materials and demolition debris from landfills and compliance with State law which states that 50 percent of non-hazardous construction and demolition debris be recycled and/or salvaged for reuse in order to extend the life of landfills. Information provided in the waste management plan includes how the waste will be managed, hauler identification, and anticipated material wastes.

#### **4.20.3.3 Electricity, Natural Gas, and Telecommunications**

##### **State**

##### ***California Energy Action Plan II***

The California Energy Action Plan II is the State's principal energy planning and policy document (California Energy Commission, 2005, 2008). The plan identifies statewide energy goals, describes a coordinated implementation plan for State energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the first priority actions to address California's increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy and capacity needs, clean and efficient fossil-fired generation is supported. In 2002, California established its RPS program,<sup>119</sup> with the goal of increasing the percentage of renewable energy in the State's electricity mix to 20 percent by 2017. The CEC subsequently accelerated that goal to 2010, and further recommended increasing the target to 33 percent by 2020. Because much of electricity demand growth is expected to be met by increases in natural-gas-fired generation, reducing consumption of electricity and diversifying electricity generation resources are significant elements of plans to reduce natural gas demand.

##### ***California's Green Building Standards Code (CALGreen)***

Effective January 1, 2011, California's Green Building Standards Code (CALGreen Code) requires the diversion of at least 50 percent of the construction waste generated during most "new construction" projects (CALGreen Code Sections 4.408 and 5.408). Subsequent amendments have expanded upon what types of construction are covered. In all jurisdictions, including those without a Construction and Debris (C&D) ordinance requiring the diversion of 50 percent of construction waste, the owners/builder of construction projects within the occupancies subject to this requirement must divert 50 percent of the construction waste materials generated during the project. The 50 percent C&D diversion rate can be met through three methods: 1) develop and submit a waste management plan to the jurisdiction's enforcement agency which identifies materials and facilities to be used and document diversion; 2) use a waste management company, approved by the enforcing agency, that can document 50 percent diversion; or 3) use the disposal reduction alternative, as appropriate for the type of project. If the waste management plan option is used, the plan should be developed before construction begins, and project managers should use the project's planning phase to estimate materials that will be generated and identify diversion strategies for those materials. All covered projects should be able to divert 50 percent non-hazardous waste.

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<sup>119</sup> The Renewable Portfolio Standard is a flexible, market-driven policy to ensure that the public benefits of wind, solar, biomass, and geothermal energy continue to be realized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country. By increasing the required minimum amount over time, the Renewable Portfolio Standard puts the electricity industry on a path toward increasing sustainability.

### ***California Assembly Bill 341***

In 2012, AB 341 was signed into law in California to help reduce GHG emissions and set a statewide goal to recycle, compost, or source reduce 75 percent of all solid waste generated in California by 2020. This legislation requires businesses and multi-family residential dwellings of five units or more, that generate four or more cubic yards of commercial solid waste per week, to implement a recycling program.

### ***Resource Conservation and Recovery Act***

RCRA (40 CFR, Part 258 Subtitle D) establishes minimum location standards for siting municipal solid waste landfills. In addition, because California laws and regulations governing the approval of solid waste landfills meet the requirements of Subtitle D, the EPA has delegated the enforcement responsibility to the State of California.

### ***Integrated Energy Policy Report***

SB 1389 (Bowen, Chapter 568, Statutes of 2002) requires the CEC to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the State's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the State's economy; and protect public health and safety (California Public Resources Code § 25301[a]). The CEC prepares these assessments and associated policy recommendations every two years, with updates in alternate years, as part of the Integrated Energy Policy Report.

The 2018 InEPR was adopted February 20, 2019, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2018 IEPR focuses on a variety of topics such as including the environmental performance of the electricity generation system, landscape-scale planning, the response to the gas leak at the Aliso Canyon natural gas storage facility, transportation fuel supply reliability issues, updates on Southern California electricity reliability, methane leakage, climate adaptation activities for the energy sector, climate and sea level rise scenarios, and the California Energy Demand Forecast.

### ***California Code Title 24, Part 6, Energy Efficiency Standards***

CCR Title 24 Part 6, California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2019 version of Title 24 was adopted by the CEC and went into effect on January 1, 2020. The 2019 Title 24 standards went into effect on January 1, 2020 and are applicable to building permit applications submitted on or after that date. The 2019 Title 24 standards require solar photovoltaic systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, and update indoor and outdoor lighting for nonresidential buildings. The CEC anticipates that single-family homes built with the 2019 standards will use approximately 7% less energy compared to the residential homes built under the 2016 standards. Additionally, after implementation of solar photovoltaic systems, homes built under the 2019 standards will about 53% less energy than homes built under the 2016 standards. Nonresidential buildings will use approximately 30% less energy due to lighting upgrades.



## **Local**

The Big Bear Valley encompasses multiple jurisdictions including unincorporated areas of San Bernardino County and the City of Big Bear Lake.

### ***San Bernardino Countywide Plan***

The following San Bernardino Countywide Plan policies pertain to electricity and natural gas:

<b>Policy</b>	
H-1.5:	Life-cycle costs. We encourage energy-conservation techniques and upgrades in both the construction and rehabilitation of residential units that will reduce the life- cycle costs of housing.
D/H-1.4:	Funding priorities. As funding becomes available, we prioritize the use and application of grants and loans for housing rehabilitation, energy conservation retrofits, and water conservation retrofits for housing in the Desert Region.
IU-5.1:	Electricity and natural gas service. We partner with other public agencies and providers to improve the availability and stability of electricity and natural gas service in unincorporated communities.
RE1.9:	Building design and upgrades. We use the CALGreen Code to meet energy efficiency standards for new buildings and encourage the upgrading of existing buildings to incorporate design elements, building materials, and fixtures that improve environmental sustainability and reduce emissions.
RE-1.1:	GHG Reduction Plan. We implement the energy conservation and efficiency measures identified in the County of San Bernardino Greenhouse Gas Emissions Reduction Plan.
RE-1.2:	Optimized efficiency. We optimize energy efficiency in the built environment.
RE-1.3:	Local benefits. We promote the local economic benefits of energy efficiency retrofits.
RE-1.4:	Energy conservation. We encourage residents and businesses to conserve energy.
RE-2.1:	Types of renewable energy systems. We support solar energy generation, solar water heating, wind energy and bioenergy systems that are consistent with the orientation, siting and environmental compatibility policies of the General Plan.
RE-2.2:	Energy storage. We promote use of energy storage technologies that are appropriate for the character of the proposed location.
RE-2.4:	Access to renewable energy. We identify and prioritize programs that support cost- effective and universal access to renewable energy.
RE-2.5:	Zero net energy. We support renewable energy systems that accelerate zero net energy through innovative design, construction, and operations of residences, businesses, and institutions that are grid-neutral and independent of centralized energy infrastructure.
RE-2.6:	Energy efficiency. We encourage energy efficiency through appropriate renewable energy systems.
RE-3.1:	Onsite accessory systems. We prioritize, facilitate, and encourage onsite accessory renewable energy generation to serve the unincorporated county, with a primary focus on rooftop and parking lot solar energy generation.
RE-3.2:	Locally-focused service. We encourage neighborhood- and community-serving renewable energy generation that primarily serves local uses in the county.
RE-3.3:	Adaptive and resilient energy infrastructure. We promote adaptive distributed energy infrastructure that sustains local communities and improves resiliency to grid failures and increasing energy prices.

- RE-3.4: Sphere standards. We require renewable energy facilities developed in spheres of influence of incorporated cities to be compatible and consistent with standards of the sphere cities.
- RE-3.6: Community goals. We encourage renewable energy facilities to meet community goals, including supporting community health, wellness, and recreational needs.

**City of Big Bear Lake General Plan**

The following Big Bear Lake General Plan policies pertain to electricity and natural gas:

<b>GOAL</b>	<b>ER 7</b>	Conservation and prudent management of energy sources and mineral deposits, assuring the long-term viability of limited and nonrenewable resources.
<b>Policy</b>	ER 7.1:	Promote energy conservation in all areas of community development, including transportation, development planning, public and private sector office construction and operation, as well as in the full range of residential, commercial and industrial projects.
<b>Program</b>	ER 7.1.1:	Encourage the use of passive solar energy for natural heating through design, construction and landscaping techniques.
	ER 7.1.3:	Support and facilitate the integration of proven alternative energy systems into new development projects, where appropriate.
	ER 7.1.4:	Encourage use of alternate fuel vehicles when technology makes their widespread use readily available, by seeking funding for support infrastructure as appropriate, and by modifying city regulations to accommodate their use, as needed.
<b>GOAL</b>	<b>PS 1</b>	<b>GENERAL INFRASTRUCTURE NEEDS</b> Public services and facilities that adequately meet the immediate and long-term needs of the City, providing a high level of service for the lowest reasonable cost, while minimizing impacts on the local and regional environment.
<b>Policy</b>	PS 1.1:	Assure the provision of adequate public services and facilities for all residents, businesses and visitors within the community, now and in the future.
<b>Program</b>	PS 1.1.1:	Cooperate with all utility, infrastructure and service providers to promote coordinated master planning for these services, coordination of infrastructure planning with land use planning, and to assure minimal impacts to the environment and the community from expansion and maintenance of infrastructure systems.
	PS 1.1.2:	Adopt and annually update the City's Capital Improvement Program to prioritize funding for public works projects in accordance with this General Plan and other identified needs within the City.
	PS 1.1.3:	Evaluate the City's infrastructure capacity and needed improvements as part of the City's growth management program, and revise and update the program as needed to ensure that a nexus exists between fees collected and identified public infrastructure improvements, and that new development pays only that portion of the cost needed to mitigate impacts of that development.
	PS 1.1.4:	Seek public input regarding proposed property acquisitions for public facilities and uses when feasible without jeopardizing the negotiation process, through public notice for open City Council discussions of these matters as they arise.
<b>Policy</b>	PS 1.2:	Ensure that adequate infrastructure exists or can reasonably be extended to serve new development, that such extensions are planned in an efficient and cost-effective manner, and that new development pays its fair share of the cost of infrastructure.
<b>GOAL</b>	<b>PS 4</b>	<b>UTILITIES</b> Adequate utility systems to meet the long-term needs of the community and enhance communication systems, while minimizing visual and environmental impacts of utility poles, overhead lines, and telecommunication facilities.

<b>Policy</b>	PS 4.1:	Cooperate with all utility purveyors in the planning, designing, and siting of distribution, collection, and support facilities to ensure the timely expansion of services in a manner which minimizes environmental impacts and disturbances to existing improvements.
<b>Program</b>	PS 4.1.1:	On new development approvals, the City will require that the project applicant coordinates with utility companies to ensure provisions of adequate access to utility lines and facilities.
<b>Policy</b>	PS 4.2:	Encourage use of alternative energy sources to conserve nonrenewable resources.
<b>Program</b>	PS 4.2.1:	As technological advances for alternative energy sources make these sources available and feasible, actively participate in the long-term planning and development of the infrastructure needed to support their use, including but not limited to recharge stations.
	PS 4.2.2:	Encourage the availability and installation of individual alternative energy systems in residential, commercial and industrial uses through various means, including but not limited to streamlining the development review process for these systems.
	PS 4.2.3:	Support local, State and Federal programs and economic incentives for conservation and alternative energy programs, and consider establishing City incentives.
<b>Policy</b>	PS 4.3:	Cooperate with other agencies to ensure the provision of expanded electric power to the planning area to meet future needs.
<b>Program</b>	PS 4.3.1:	Assist the Bear Valley Electric Service as needed in that agency's plans to upgrade capacity in the distribution system for electricity to and within the community.
<b>Policy</b>	PS 4.5:	Improve the visual appearance of the community through requirements to underground utility lines on new development where appropriate, and seek funding sources to underground existing lines for City beautification in selected areas, while minimizing street cutting through coordination with utility companies.
<b>Program</b>	PS 4.5.1:	Adopt regulations requiring the undergrounding of utility lines on new development except where this requirement may be waived by the City Engineer.
	PS 4.5.3:	Coordinate with utility companies through regular meetings of the Utility Coordination Committee and by other means as appropriate, to limit the impact of utility upgrades on the City's road system, limit disruption to traffic, encourage consolidation of transmission facilities and corridors to the extent practicable, and encourage that utility work be undertaken when the roadway will be otherwise disturbed.
<b>GOAL</b>	<b>PS 5</b>	Provision of a wide variety of communication services and providers to serve businesses and citizens, while avoiding adverse impacts to health, land use, environmental resources or aesthetics which may result from unregulated proliferation of these facilities.
<b>Policy</b>	5.4:	Ensure that the general public does not bear the cost of providing telecommunication services, that cost recovery for use of public land and infrastructure is commensurate with the benefit provided, and that providers of communication services are treated equitably within the City.

#### **4.20.4 Thresholds of Significance: Utilities & Service Systems**

According to Appendix G, Section XIX, of the State CEQA Guidelines, a project would normally have a significant effect on the environment if the project:

- a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?
- b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

- c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?
- d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?
- e) Comply with Federal, State, and local management and reduction statutes and regulations related to solid waste?

#### 4.20.5 **Potential Impacts: Utilities & Service Systems**

- a) **Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?**

##### 4.20.5.1 **Water and Wastewater**

The Program includes the construction of the following types of facilities:

- The existing BBARWA WWTP will be upgraded to produce Program Water to serve the objectives outlined in the Program Description. These upgrades would treat wastewater to full advanced treatment at a capacity of 2.2 MGD, or approximately 2,200 AFY. The AWPf upgrades that would occur within the BBARWA WWTP are as follows:
  - Oxidation Ditches
  - Denitrification Filter
  - UF and RO
  - UV/AOP
  - Pellet Reactor: 0.22 MGD
- Development between 23 and 57 acres of Solar Evaporation Ponds, depending on the total system recovery rate achieved, at BBARWA's WWTP site to accommodate 22,000 gpd to 55,000 gpd of brine concentrate.
- Installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.
- Installation of a 20 gpm brine pump station.
- Installation of one or more monitoring wells at the evaporation pond on the WWTP Site to monitor groundwater quality, as required by the future discharge permit.
- Installation of an anticipated 1,500 to 1,600 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.
- Installation of a new 471 gpm pump station at the Resort Storage Pond to convey water to Sand Canyon.
- Installation of a new pipeline that will discharge into Sand Canyon that will be 8" in diameter, and 7,210 feet in length.
- Installation of two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF (**Figure 3-34**).
- Installation of a pipeline utilizing one of three alignments shown on **Figure 3-2** from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12" in diameter.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon, similar to that which is shown on **Exhibit 3-1**.
- Installation of an additional 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's

Administration Building. The solar panels will be installed east of the old sludge building at the WWTP as a solar field, and atop the OAC and Administration Building roofs. Refer to **Figure 3-37**.

The development of the above facilities constitutes the construction of new and expansion or modifications to existing water and wastewater infrastructure facilities.

### **Program Category 1: Conveyance Pipelines**

The environmental effects associated with the proposed Program, specifically the installation of Conveyance Pipelines, are documented throughout this DPEIR. The installation of the proposed Conveyance Pipelines is not anticipated to result in significant and unavoidable construction impacts for nearly every issue evaluated in this DPEIR—no significant construction related aesthetic, agriculture,<sup>120</sup> forestry, air quality, cultural resource, energy, geology and soils, GHG, hazards, hydrology and water quality,<sup>121</sup> land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, TCRs, utilities and service systems,<sup>122</sup> and wildfire. However, as described in **Subchapter 4.5, Biological Resources**, construction of the Baldwin Lake Pipeline Alignment Option may adversely affect bird-foot checkerbloom, as it is present within the proposed Baldwin Lake Pipeline Alignment Option footprint. While **MMs BIO-1** through **BIO-4** would minimize impacts to bird-foot checkerbloom from construction of the Solar Evaporation Ponds to a level of less than significant, **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species from installation of the Baldwin Lake Pipeline Alignment Option, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. Therefore, the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact if the Baldwin Lake Pipeline Alignment Option is the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option. If BBARWA does not select the Baldwin Lake Pipeline Alignment Option, a significant impact under this issue would be avoided. Regardless, as the Baldwin Lake Pipeline Alignment Option may be the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option, impacts under this issue are considered significant and unavoidable.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

The environmental effects associated with the proposed Program are documented throughout this DPEIR. The proposed Program is not anticipated to result in any significant and unavoidable construction impact for nearly every issue—no significant construction related aesthetic, agriculture, forestry, air quality, cultural resource, energy, geology and soils, GHG, hazards, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, TCRs, utilities and service systems, and wildfire. However, as described in **Subchapter 4.5, Biological Resources**, construction of the Baldwin Lake Pipeline Alignment Option may adversely affect bird-foot checkerbloom, as it is present within the proposed Program Area footprint for this pipeline alignment. However, none of the Ancillary Facilities would be installed within areas that would adversely affect bird-foot checkerbloom. Therefore, the construction of the proposed Ancillary Facilities would not result in a significant biological resources impact. Therefore, Ancillary Facilities impacts under this issue are considered less than significant.

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<sup>120</sup> Significant Agricultural Resource impacts are related to operation of the proposed Program resulting in less available water to support the agricultural land at the LV Site.

<sup>121</sup> Significant Hydrology impacts are related to the decrease in discharge to the LV Site as a result of operation of the proposed Program.

<sup>122</sup> Significant Utilities and Service Systems impacts are related to the decrease in discharge to the LV Site as a result of operation of the proposed Program.

### **Program Category 3: Solar Evaporation Ponds**

The environmental effects associated with the proposed Program are documented throughout this DPEIR. The proposed Program is not anticipated to result in any significant and unavoidable construction impact for nearly every issue—no significant construction related aesthetic, agriculture, forestry, air quality, cultural resource, energy, geology and soils, GHG, hazards, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, TCRs, utilities and service systems, and wildfire. However, as described in **Subchapter 4.5, Biological Resources**, construction of the Baldwin Lake Pipeline Alignment Option may adversely affect bird-foot checkerbloom, as it is present within the proposed Program Area footprint for this pipeline alignment. **MM BIO-1** would minimize the potential for the Solar Evaporation Ponds to impact bird-foot checkerbloom as a result of Program implementation. In order to identify the extent of the bird-foot checkerbloom, and other special status species plants within a given Program component, **MM BIO-2**, which requires preconstruction clearance surveys, shall be implemented. **MM BIO-3 and BIO-4** require orange construction fencing to be installed where special status plant species are found adjacent to a given project footprint. These measures will ensure that the bird-foot checkerbloom will be protected from construction impacts at the evaporation pond site within BBARWA's WWTP site (shown on **Figure 4.5-10**). Thus, **MMs BIO-1 through BIO-4** would minimize impacts to bird-foot checkerbloom from construction of the Solar Evaporation Ponds to a level of less than significant. Therefore, the construction of the proposed water and wastewater facilities under this Program Category is not anticipated to cause a significant biological resources impact. Therefore, Solar Evaporation Ponds impacts under this issue are considered less than significant.

### **Program Category 4: BBARWA WWTP Upgrades**

The environmental effects associated with the proposed Program are documented throughout this DPEIR. The proposed Program is not anticipated to result in any significant and unavoidable construction impact for nearly every issue—no significant construction related aesthetic, agriculture, forestry, air quality, cultural resource, energy, geology and soils, GHG, hazards, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, TCRs, utilities and service systems, and wildfire. However, as described in **Subchapter 4.5, Biological Resources**, construction of the Baldwin Lake Pipeline Alignment Option may adversely affect bird-foot checkerbloom, as it is present within the proposed Program Area footprint for this pipeline alignment. However, the BBARWA WWTP Upgrades would not be installed within areas that would adversely affect bird-foot checkerbloom. Therefore, the construction of the proposed BBARWA WWTP Upgrades would not result in a significant biological resources impact. Therefore, BBARWA WWTP Upgrades impacts under this issue are considered less than significant.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: All MMs identified throughout this DPEIR would otherwise reduce impacts related to the construction of water and wastewater facilities under all remaining issues set forth in Appendix G of the State CEQA Guidelines.*

*Level of Significance After Mitigation: Significant and Unavoidable*

### **Cumulative Impact Analysis**

Cumulative water and wastewater infrastructure development in the region may be significant as the region continues to be developed with uses that require such facilities. The cumulative impact



of the water and wastewater infrastructure required to implement the Program would be cumulatively considerable, as, even though the implementation of mitigation to minimize impacts to bird-foot checkerbloom, a significant and unavoidable construction-related biological resources impact related to the construction of the Baldwin Lake Pipeline Alignment Option is anticipated to occur if this alignment is selected. As such, the Program's extension of such infrastructure would be cumulatively considerable level even with the implementation of mitigation. Thus, the contribution of the Program to future water and wastewater infrastructure would be cumulatively considerable, thus preventing a cumulatively considerable contribution to significant cumulative water and wastewater infrastructure.

*Mitigation Measures: All MMs identified throughout this DPEIR would otherwise reduce impacts related to the construction of water and wastewater facilities under all remaining issues set forth in Appendix G of the State CEQA Guidelines.*

*Level of Significance After Mitigation: Significant and Unavoidable*

#### **4.20.5.2 Stormwater Drainage**

##### **Program Category 1: Conveyance Pipelines**

The proposed pipelines would be underground and would not permanently alter existing site drainage patterns because once installed, the roadways or compacted dirt within which the pipeline would be installed, would be returned to original condition or better. The pipelines would not require the construction of new or expanded stormwater drainage facilities. Because there would be no requirement for the construction of new or expanded drainage facilities to serve the proposed project, there would be no construction impacts associated with the provision of these facilities to serve the proposed pipelines. Therefore, a less than significant impact will occur under this issue.

##### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

For the Sand Canyon pipe outlet and erosion control, no channel modifications to the channel bottom are anticipated since it is anticipated that the Program Water stored in Big Bear Lake will percolate within the defined recharge area (as discussed below). If the Program Water does not fully percolate within the defined recharge area, the surface application discharge rate will be reduced using a VFD on the Sand Canyon Booster Station until the water does percolate within the defined recharge area. Recharge to Sand Canyon would occur through a discharge via a new pipe outlet at the top of the Sand Canyon Recharge Area at the top of the channel bank that discharges down the side slope of the channel into the channel bottom. All of these concepts will need to be coordinated with SBCFCD to ensure that the capacity of the flood control channel remains sufficient to meet the primary purpose of providing flood protection. If these improvements resulted in a decrease in surface flow entering Big Bear Lake, the impact to surface water rights under the 1977 Judgment will be evaluated, which is a part of the overall Program design, and therefore, no mitigation is necessary to ensure a less than significant impact related to the relocation or construction of new or expanded stormwater drainage facilities, the construction or relocation of which could cause significant environmental effects.

The development of Ancillary Facilities would result in the addition of impervious surfaces that could increase stormwater runoff quantity. This increase could affect on-site drainage patterns as well as off-site drainage volume and require the construction and operation of new and/or expanded stormwater drainage facilities. Implementation of the proposed Ancillary Facilities would be housed aboveground. The proposed Ancillary Facilities would be developed within sites that are anticipated to be less than one-half acre in size. Ancillary facilities development would

result in the addition of impervious surfaces that would increase stormwater runoff quantity. This increase could affect on-site drainage patterns as well as off-site drainage volume and require the construction and operation of new and/or expanded stormwater drainage facilities. As such, mitigation (**MM UTIL-1**) that would require the implementation of a drainage plan is provided below is necessary to ensure that impacts related to stormwater drainage facilities are minimized below significance thresholds. Impacts would therefore be less than significant through the implementation of mitigation.

### **Program Category 3: Solar Evaporation Ponds**

Impacts are the same as those identified under Program Categories 1 and 2. The development of evaporation ponds would result in the addition of impervious surfaces that could increase stormwater runoff quantity; however, these facilities would be designed to capture stormwater flow, or otherwise discharge flows in a controlled manner. This increase could affect on-site drainage patterns as well as off-site drainage volume and require the construction and operation of new and/or expanded stormwater drainage facilities. As such, mitigation (**MM UTIL-1**) that would require the implementation of a drainage plan is provided below is necessary to ensure that impacts related to stormwater drainage facilities are minimized below significance thresholds. Impacts would therefore be less than significant through the implementation of mitigation.

### **Program Category 4: BBARWA WWTP Upgrades**

Impacts are the same as those identified under Program Categories 1, 2, and 3. The development at the BBARWA WWTP would result in some new impervious surfaces that could increase stormwater runoff quantity; however, these facilities would be designed to discharge flows in a controlled manner. This increase could affect on-site drainage patterns as well as off-site drainage volume and require the construction and operation of new and/or expanded stormwater drainage facilities. As such, mitigation (**MM UTIL-1**) that would require the implementation of a drainage plan is provided below is necessary to ensure that impacts related to stormwater drainage facilities are minimized below significance thresholds. Impacts would therefore be less than significant through the implementation of mitigation.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**UTIL-1:** *Prior to issuance of permits for construction of project facilities, the implementing agency shall prepare a drainage plan that shall be incorporated into the final site design for each Program facility, that includes design features to reduce stormwater peak concentration flows exiting the above ground facility sites (consistent with MS4 requirements) so that the capacities of the existing downstream drainage facilities are not exceeded. These design features could include bio-retention, sand infiltration, return of stormwater for treatment within the treatment plant, and/or detention facilities.*

*Level of Significance After Mitigation: Less Than Significant*

Implementation of **MM UTIL-1** would require implementation of a drainage plan(s) to reduce downstream flows, which is sufficient to reduce the potential for impacts related to construction of stormwater facilities.

### **Cumulative Impact Analysis**

Cumulative stormwater and drainage infrastructure development in the region may be significant as the region continues to be developed with uses that require such facilities. The cumulative impact of the stormwater infrastructure required to implement the proposed Program would not be cumulatively considerable given that mitigation would ensure that the Program facilities would implement proper onsite detention to reduce drainage and to reduce downstream flows. This would minimize the Program's demand for extension of such infrastructure to a less than cumulatively considerable level through implementation of mitigation. Thus, the contribution of the Program to future stormwater infrastructure would not be cumulatively considerable, thus preventing a cumulatively considerable contribution to significant cumulative stormwater infrastructure.

*Mitigation Measures: Implementation of MM UTIL-1 would reduce impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less Than Significant*

#### **4.20.5.4 Electricity**

The proposed Program includes the development of various types of water infrastructure facilities, outlined above under **Water**. Additionally, the proposed Program would include the development of a 2 MW solar system, which will be installed at several locations—BBARWA's WWTP site, Administration Building site, and/or BBCCSD owned site just south of the BBARWA WWTP (refer to **Figure 3-37**)—in addition to the existing 1.67 MW system that serves BBARWA's existing WWTP operations.

#### **Program Category 1: Conveyance Pipelines**

As stated under **Subchapter 4.7, Energy**, electricity would not be demanded by the Conveyance Facilities. As such, this Program Category would not result in the construction of new or expansion of existing alternative electricity infrastructure to serve the new Program facilities. No impacts are anticipated.

#### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

The Ancillary Facilities that would be located within the BBARWA WWTP Site have been accounted for under Program Category 4, as part of the overall BBARWA WWTP Upgrades Project, as described under **Subchapter 4.7**.

The Ancillary Facilities at Sand Canyon, as part of the Sand Canyon Recharge Project, would result in operational energy demands that are estimated at: 19,079 kWh/year of electricity. Electricity would be supplied by BVES. As such, this Program Category would result in the construction of new/expansion of existing alternative electricity infrastructure to serve the new Program facilities; however, as discussed above under **Subchapter 4.7, Energy**, the proposed Program would not cause or result in the need for additional electricity producing facilities or electricity delivery systems beyond the proposed solar system described above because the operation of the proposed Program would involve energy consumption, as described above.

The Program would be designed and constructed in accordance with the City of Big Bear Lake or the San Bernardino County's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, the Title 24 Lighting Power Density requirements define the

maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation. Given that connection to electricity is a minor component of the overall construction of Program facilities and that the energy analysis concluded that impacts thereof would be less than significant, the provision of these facilities as part of the overall Program would not cause a significant environmental effect. Impacts would be less than significant.

For the Sand Canyon Monitoring Wells, given that the locations are unknown, it is possible that a given facility that would not have access electricity due to its location and the electricity services available at this location, and would require either extension of infrastructure or creation of new infrastructure to meet electricity needs at a Program facility site, mitigation (**MM UTIL-2**) will be required to examine the environmental impacts thereof. Impacts would therefore be less than significant through the implementation of mitigation.

### **Program Category 3: Solar Evaporation Ponds**

As stated under **Subchapter 4.7, Energy**, electricity would not be demanded by the Solar Evaporation Ponds Project. As such, this Program Category would not result in the construction of new or expansion of existing alternative electricity infrastructure to serve the new Program facilities. No impacts are anticipated.

### **Program Category 4: BBARWA WWTP Upgrades**

The BBARWA WWTP Upgrades Project facility operational energy demands are estimated at: 147,883 kWh/year of electricity after netting out the 3,652,117 kWhs/year of electricity generated by the Program's photovoltaic solar design feature. Electricity would be supplied by BVES. As such, this Program Category would result in the construction of new/expansion of existing alternative electricity infrastructure to serve the new Program facilities; however, as discussed above under **Subchapter 4.7, Energy**, the proposed Program would not cause or result in the need for additional electricity producing facilities or electricity delivery systems beyond the proposed solar system described above because the operation of the proposed Program would involve energy consumption, as described above.

The Program would be designed and constructed in accordance with the City of Big Bear Lake or the San Bernardino County's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, the Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation. Given that connection to electricity is a minor component of the overall construction of Program facilities and that the energy analysis concluded that impacts thereof would be less than significant, the provision of these facilities as part of the overall Program would not cause a significant environmental effect. Impacts would be less than significant.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**UTIL-2:** *For future Replenish Big Bear Program projects that do not have access to electrical or natural gas connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either extension of infrastructure or creation of new infrastructure to meet electricity needs at a future Replenish Big Bear Program facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical infrastructure.*

*Level of Significance After Mitigation: Less Than Significant*

Because it is not known exactly where the Sand Canyon Monitoring Wells will be installed, there may be locations in which electricity services are not available within the immediate vicinity of a given Program site. As such, **MM UTIL-2** would ensure that a subsequent CEQA documentation is prepared for projects that require extension or development of such infrastructure, which will ensure that any impacts are appropriately assessed and mitigated.

**Cumulative Impact Analysis**

Cumulative electricity infrastructure development in the region may be significant as the region continues to be developed with uses that require such connections. The cumulative impact of the connection to electricity required to implement the proposed Program would not be cumulatively considerable given that mitigation would ensure that the program's demand for extension of such infrastructure would be minimized through implementation of mitigation identified for specific projects that undergo subsequent CEQA documentation. Furthermore, the proposed Program would generate a majority of the electricity needs for the operation of the proposed facilities onsite, which would further reduce the Program's contribution to cumulative electricity infrastructure construction.

*Mitigation Measures: Implementation of **MM UTIL-2** would reduce impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less Than Significant*

**4.20.5.5 Natural Gas**

The proposed Program includes the development of various types of water infrastructure facilities, outlined above under **Water**. The development of the above facilities would not result in the construction of new and expansion of existing natural gas infrastructure to serve the new Program facilities.

**Program Category 1: Conveyance Pipelines**

As stated under **Subchapter 4.7, Energy**, natural gas would not be demanded by the Conveyance Facilities. As such, this Program Category would not result in the construction of new or expansion of existing natural gas infrastructure to serve the new Program facilities. No impacts are anticipated.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

The Ancillary Facilities that would be located within the BBARWA WWTP Site have been accounted for under Program Category 4, as part of the overall BBARWA WWTP Upgrades Project, as described under **Subchapter 4.7**.

The Ancillary Facilities at Sand Canyon, as part of the Sand Canyon Recharge Project, would not result in operational natural gas demands. As such, this Program Category would not result in the construction of new or expansion of existing natural gas infrastructure to serve the new Program facilities. No impacts are anticipated.

### **Program Category 3: Solar Evaporation Ponds**

As stated under **Subchapter 4.7, Energy**, natural gas would not be demanded by the Solar Evaporation Ponds Project. As such, this Program Category would not result in the construction of new or expansion of existing natural gas infrastructure to serve the new Program facilities. No impacts are anticipated.

### **Program Category 4: BBARWA WWTP Upgrades**

The BBARWA WWTP Upgrades Project facility operational energy demands are estimated at: 760,427 kBtu/year of natural gas. Natural gas would be supplied to the BBARWA WWTP Upgrades Project by Southwest Gas. **Subchapter 4.7, Energy**, concluded that the Program's minor demand for natural gas (760,427 kBtu/year) would fall within the context of the existing available natural gas resources in the Big Bear Valley. Given that a connection to natural gas, where a connection to natural gas is required at future facilities, are minor components of the overall construction of Program facilities and that the energy analysis concluded that impacts thereof would be less than significant, the provision of these facilities as part of the overall Program would not cause a significant environmental effect. Impacts would be less than significant.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant*

### **Cumulative Impact Analysis**

Cumulative natural gas infrastructure development in the region may be significant as the region continues to be developed with uses that require such connections. The cumulative impact of the connection to natural gas required to implement the proposed Program would not be cumulatively considerable given that the program's demand for extension of such infrastructure would be less than significant, as existing natural gas connections can be utilized in support of the Program.

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant*

## **4.20.5.6 Telecommunications**

### **Program Category 1: Conveyance Pipelines**

Telecommunication facilities would not be demanded by the Conveyance Facilities. As such, this Program Category would not result in the construction of new or expansion of existing telecommunication facilities to serve the new Program facilities. No impacts are anticipated.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

The types of Ancillary Facilities proposed as part of the Program typically would not require extension of telecommunication services. However, given that the Sand Canyon Monitoring Wells that are proposed as part the Program have not been fully designed, and further the locations for



which have not yet been selected, there is a potential for Sand Canyon Monitoring Wells to require extension of telecommunication infrastructure as part of operation, which could result in a potentially significant impact. As such, **MM UTIL-3** would be required to ensure that impacts related to extension of infrastructure are minimized for the proposed Sand Canyon Monitoring Wells that may require telecommunication services by requiring project-specific subsequent CEQA documentation for the Sand Canyon Monitoring Wells that may be installed within sites without immediate access to telecommunication connections. Existing telecommunication facility infrastructure is available to support the remaining Ancillary Facility sites, if needed. Given that telecommunication facility connections, where a connection is required at future facilities, are minor components of the overall construction of the Ancillary Facility, the provision of these facilities as part of the Ancillary Facility would not cause a significant environmental effect. Impacts would be less than significant through the implementation of mitigation.

### **Program Category 3: Solar Evaporation Ponds**

Telecommunication facilities would not be demanded by the Solar Evaporation Ponds. As such, this Program Category would not result in the construction of new or expansion of existing telecommunication facilities to serve the new Program facilities. No impacts are anticipated.

### **Program Category 4: BBARWA WWTP Upgrades**

Existing telecommunication facility infrastructure is available to support the BBARWA WWTP Upgrades, if needed. Given that telecommunication facility connections, where a connection is required at future facilities, are minor components of the overall construction of the BBARWA WWTP Upgrades, the provision of these facilities as part of the BBARWA WWTP Upgrades would not cause a significant environmental effect. Impacts would be less than significant.

### **Combined Program Categories**

The types of facilities proposed as part of the Program typically would not require extension of telecommunication services. However, given that the facilities proposed as part the Program have not been fully designed, there is a potential for certain facilities to require extension of telecommunication infrastructure as part of operation. As such, **MM UTIL-3** would be required to ensure that impacts related to extension of infrastructure are minimized for the proposed Program projects that would require telecommunication services by requiring project-specific subsequent CEQA documentation for projects proposed at sites without immediate access to telecommunication connections.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**UTIL-3:** *For future Replenish Big Bear Program projects that do not have access to telecommunication connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either extension of infrastructure or creation of new infrastructure to meet telecommunication needs at a future Replenish Big Bear Program facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical or natural gas infrastructure.*

*Level of Significance After Mitigation: Less Than Significant*

Because it is not known where the Sand Canyon Monitoring Wells will be installed, there may be locations in which telecommunication services, which may be necessary to operate the monitoring

wells, are not available within the immediate vicinity the Sand Canyon monitoring well sites. As such, **MM UTIL-3** would ensure that subsequent CEQA documentation is prepared for projects that require extension or development of such infrastructure, which will ensure that any impacts are appropriately assessed and mitigated.

### **Cumulative Impact Analysis**

Cumulative telecommunication infrastructure development in the region may be significant as the region continues to be developed with uses that require such connections. The cumulative impact of the connection to telecommunication required to implement the proposed Program would be less than significant given that mitigation would ensure that the program's demand for extension of such infrastructure would be minimized to less than cumulatively considerable through implementation of mitigation identified for specific projects that undergo subsequent CEQA documentation. The contribution of the Program to future telecommunication infrastructure is considered a benefit to the overall Big Bear Valley as it may enable expanded supply for other uses surrounding future Program facilities.

*Mitigation Measures: Implementation of **MM UTIL-3** would reduce impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less Than Significant*

- b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?**

### **Big Bear Valley Overall Impacts**

The Program would contribute to long-term sustainability of local water supplies for the whole of the Big Bear Valley. Replenish Big Bear is a multi-benefit recycled water project that will utilize a water resource currently discharged outside of the Bear Valley Basin to secure a new drought proof local water supply that will support continued groundwater sustainability, among other benefits.

The 2020 UWMPs state the following regarding water supply reliability:

**BBCCSD:** *"The BBCCSD's 2020 UWMP water service reliability assessment and DRA<sup>123</sup> results indicate that no water shortages are anticipated within the next 25-years under normal, single dry water years, and multiple dry water years."*

**BBLDWP:** *"BBLDWP is projected to have sufficient supply available to meet water demands through the year 2045 for multiple-dry year conditions, which is within BBLDWP's operating safe yield of 3,100 AFY."*

As stated in **Chapter 3, Program Description**, drought conditions and a long-term decline in precipitation trends have led the local water management agencies to investigate opportunities for supplemental water supplies, which are extremely limited due to its isolated location at the top of the Santa Ana River watershed (**Figure 3-18**). As such, the Program has been designed to retain local water in Big Bear Valley to increase the sustainability of water supplies. The proposed Program is uniquely designed to deliver public benefits including a highly reliable, dedicated environmental water supply to benefit Big Bear Lake, as well as enhance water supply reliability and availability in the Big Bear Valley.

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<sup>123</sup> DRA = Drought Reliability Assessment

The Program would increase additional available groundwater supplies in the Bear Valley Basin through upgrades to BBARWA's WWTP to full advanced treatment, enabling for the Program Water to be discharged to Big Bear Lake by way of Stanfield Marsh. The Program would produce 2,200 AFY of Program Water, the majority of which would be discharged to Big Bear Lake via Stanfield Marsh. The Program Water would both enhance the amount of water in Big Bear Lake, but would also enable groundwater recharge at Sand Canyon by way of a new pipeline from the Bear Mountain Resort to a discharge point at Sand Canyon (refer to **Exhibit 3-2**), which will supply up to 380 AFY of Program Water stored in Big Bear Lake for groundwater recharge. Additionally, up to 80 AFY of Program Water may be discharged to Shay Pond to replace potable water currently being utilized to support the Stickleback species. The Sand Canyon Recharge Area proposed as part of this Program would increase groundwater recharge.

The BVBGSA, which includes the same Program Team as the Program, identified two projects in the GSP to support efforts to maintain long-term groundwater sustainability. The Program was one of the identified projects.

Sustainable groundwater management was evaluated in the context of the sustainability goal for the Bear Valley Basin and the absence of undesirable results. The GSP identified Sustainable Management Criteria, which are the conditions that constitute sustainable groundwater management for the Bear Valley Basin, which included:

1. Chronic Lowering of Groundwater Levels,
2. Reductions of Groundwater in Storage,
3. Degraded Groundwater Quality,
4. Land Subsidence, and
5. Depletion of Interconnected Surface Water.

Of the above Sustainable Management Criteria—which are intended to ensure water supply reliability for the water purveyors utilizing groundwater from the Bear Valley Basin—the Program would address the chronic lowering of groundwater levels and reductions of groundwater in storage criteria.

The Program proposes the implementation of a variety of projects, as outlined in the Program Description, and listed above under question (a), Water. The Program's proposed upgrades to the BBARWA WWTP, Conveyance Facilities, and pump stations, etc. would allow more optimal management of local water supplies. The Sand Canyon Recharge Area would increase adaptive management opportunities by providing additional water that can be pumped out by BBLDWP and transferred to BBCCSD using existing interconnections and would also help achieve the Measurable Objective of groundwater level for various Management Areas. It would, according to the GSP, effectively increase Sustainable Yield by approximately 380 AFY.

Furthermore, groundwater is the only potable water supply in the Bear Valley Basin. In the past decade, BBLDWP and BBCCSD have maintained a decreasing trend in per capita demands through conservation efforts. However, while past conservation efforts have been very effective, the agencies expect that additional demand reduction will become slower and more difficult or costly to achieve in the future. As more and more customers take advantage of water efficient fixture upgrades, low water use landscaping and adopt more efficient water use behaviors, additional opportunities for customers to further reduce water demand will become more limited. According to the GSP, if Sustainable Yield declines over time, growth in the Big Bear Valley continues and water users have limited ability for further conservation, additional supply will likely be needed in the future to maintain supply reliability. The drought proof supply provided by the

Program will become more critical to maintain water reliability in times of extended drought and provide insurance against climate change uncertainty.

The water agencies in the Bear Valley Basin rely solely on groundwater to supply municipal potable water demand. Absent this Program, surface water in Big Bear Lake is not available for municipal water supply in the Big Bear Valley as Big Bear Lake is adjudicated and the natural inflows are reserved for other uses. Imported water, such as from the SWP, is not financially feasible due to the lack of infrastructure to Big Bear Valley's high elevation and isolated location. Also, there is a concern that the reliability of SWP imported supplies will continue to decrease due to multiple factors including increased demands for environmental uses and municipal demand increases with growing populations.

As described above, and within **Subchapter 4.11, Hydrology and Water Quality**, implementation of the Program requires mitigation to ensure adequate management of the Bear Valley Basin as the Program becomes fully operational. The following are operation strategies for the Sand Canyon Recharge Project, which is the only Program component that involves groundwater recharge to the Bear Valley Basin; these components shall be adhered to as part of Program implementation:

- Recharge will occur within the defined Sand Canyon Recharge Area.
- Recharge will not occur during periods where natural surface flows occur in the channel.
- Recharge will occur over a 6-month dry weather period (April-October).
- Flows will be reduced or stopped if Program Water does not fully percolate within the defined recharged area. This shall be reinforced through the implementation of **MM HYD-2** provided below.
- BBLDWP will monitor the discharge and percolation performance as needed to comply with permit requirements for the Sand Canyon Recharge Project operation. This shall be reinforced through the implementation of **MM HYD-3** provided below.

Through the above operational scenario, the Sand Canyon Recharge Project can be implemented without significantly impacting the groundwater in the Bear Valley Basin. Based on the analysis presented in the "Sand Canyon Recharge Evaluation" (**Appendix 4**), the Sand Canyon Recharge Project would enhance groundwater recharge, and increase groundwater supplies. Furthermore, through the implementation of **MMs HYD-2 and HYD-3**, sustainable groundwater management of the Bear Valley Basin will be maintained. With the implementation of mitigation that would ensure sustainable management of the Bear Valley Basin, thereby protecting and sustaining the necessary water supply to accommodate area demands, impacts under this issue would be less than significant.

### **Lucerne Valley Overall Impacts**

The topic at hand asks whether the Program would have sufficient water supplies available to serve the Program and reasonably foreseeable future development during normal, dry and multiple dry years. As discussed above, the proposed Program is intended to enhance water supplies in the Bear Valley Basin to serve existing and reasonably foreseeable future development during normal, dry and multiple dry years within the Big Bear Valley. However, as discussed under **Subchapter 4.11, Hydrology and Water Quality, Section 4.11.9, issue (b)**, the proposed Program would indirectly have a potential interfere with groundwater recharge of the Lucerne Valley Basin due to the reduction in discharge to the LV Site.

Based on the Water Balance conducted by WSC utilizing data from actual BBARWA discharge operations to the LV Site, it is assumed that the actual amount of water recharged to the Lucerne

Valley Basin is less than the amount assumed by the MBA Watermaster, at 1,610 AFY. The proposed Program intends to retain the water supply generated in the Big Bear Valley rather than continuing to send secondary effluent generated at the BBARWA WWTP to the LV Site. With the implementation of the Program, the flows BBARWA will send to the LV Site will vary based on the hydrologic conditions. For example, in a dry year, no water would be sent to the LV Site, and in a wet year, like in 2011, up to 1,050 AFY could be sent to the LV Site. The 2012-2022 period that was used to characterize current conditions was very dry and did not include wet years like 2005, 2011, and 2023. Therefore, a longer period (2005-2023) was used to estimate the average future monthly and annual flows to the LV Site to account for wet years. Based on this period, an average of about 340 AFY of secondary effluent discharge could be sent to the LV Site. This volume was estimated by evaluating and averaging daily flows between 2005-2023 that exceeded the 2.2 MGD capacity.

The proposed Program intends to retain the water supply generated in the Big Bear Valley rather than continuing to send secondary effluent generated at the BBARWA WWTP to the LV Site. The Program would create a new and sustainable water supply that can be utilized in the Big Bear Valley through the full advanced treatment facility upgrades at the existing BBARWA WWTP that would result in a Program Water supply. The effect of retaining this water supply in the Big Bear Valley is that the water that the MBA Watermaster and Stakeholders of the Este Subbasin/Lucerne Valley Basin would no longer be able to rely on the recharge of the average of 1,610 AFY from BBARWA operations. Instead, the Program has a potential to result in a decrease in recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to 340 AFY under future BBARWA operations. This has a potential to impact the MBA Watermaster's calculation of PSY of the Lucerne Valley Basin based on the reduction in recharge from BBARWA reaching the Lucerne Valley Basin, for which the MBA Watermaster presently assumes that the BBARWA discharge of undisinfected secondary effluent to the LV Site contributes 2,000 AFY to the Este Subbasin (which encompasses the Lucerne Valley Basin) water supply. As stated above, WSC conducted the Water Balance utilizing data from actual BBARWA discharge operations to the LV Site, which estimates that only 1,610 AFY is recharged to the Lucerne Valley Basin. This may result in a further reduction in Free Production Allowance, which impacts Stakeholders of the Este Subbasin/Lucerne Valley Basin's pumpage allowance, thereby further reducing the available water supply to Stakeholders of the Lucerne Valley Basin.

It is outside of the purview of this DPEIR to determine the actions of the MBA Watermaster in response to the anticipated reduction in supply of the Este Subbasin/Lucerne Valley Basin, as the Program Team has no authority to make such a determination. Only the MBA Watermaster has such authority. Regardless, the decrease in recharge to the Este Subbasin/Lucerne Valley Basin would result in a potential for the implementation of the project to substantially impair the availability of water supplies in the Lucerne Valley Basin as a result in the reduction in recharge to the Lucerne Valley Basin. Therefore, the proposed Program is concluded to have a significant and unavoidable impact under this issue. No mitigation is available to reduce the potential for this significant and unavoidable impact to occur; however, BBARWA and the Program Team are open to working with the MBA Watermaster and MWA to find an alternative use for any excess secondary effluent discharged to the LV Site, should there be a desire to do so.

#### **Program Category 1: Conveyance Pipelines**

**Construction:** Construction of the proposed pipelines would require minimal water usage for dust control and concrete washout activities. Pipeline construction would occur in phases and is expected to be relatively short, lasting from several months to a year, depending on the alignment proposed under this Program Category. Therefore, water demand during construction would not be substantial. Six water trucks handling about 5,000 gallons would operate during grading and

other ground moving activities to minimize fugitive dust; this is a standard construction practice, and as it is only necessary for the short duration of grading and other ground moving activities, the amount of water in support of construction would be standard and within the context of available water resources within the Big Bear Valley, and would not require new or expanded water supply resources. Therefore, impacts would be less than significant.

Operation: The proposed pipelines would distribute water generated by the upgraded BBARWA WWTP to Big Bear Lake and to Shay Pond, and would distribute Program Water from Big Bear Lake to the Bear Mountain Resort pump station (through an existing pipeline) to Sand Canyon for recharge (through a new pipeline). These facilities would not require additional water for operation. Conveyance and distribution of water and brine through the proposed pipelines and Ancillary Facilities would facilitate the creation of a reliable source of water supply within the Bear Valley Basin, specifically through discharging Program Water to Big Bear Lake, recharge through the Sand Canyon Recharge Project, and through direct reuse. Therefore, impacts related to new or expanded water supply resources or entitlements would be less than significant beyond those created by the implementation of Program facilities as discussed above.

#### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: The development of wells and Ancillary Facilities would require minimal water usage for dust control activities should grading be required to install the wells. The installation of wells may require up to 60 days of construction to complete. Therefore, given the short period of construction, water demand during construction would not be substantial and would not require new or expanded water supply resources. Therefore, impacts would be less than significant.

Operation: The development of the proposed wells would not require expanded supply to operate beyond those created by the implementation of Program facilities as discussed above. Therefore, impacts would be less than significant.

#### **Program Category 3: Solar Evaporation Ponds**

Construction: Impacts would be the same as those discussed under Program Categories 1 and 2 above. The development of the Solar Evaporation Ponds would require minimal water usage for dust control activities should grading be required to install the wells. The installation of the Solar Evaporation Ponds may require up to 370 days of construction to complete. Given the short period of construction, water demand during construction would not be substantial and would not require new or expanded water supply resources. Therefore, impacts would be less than significant.

Operation: The development of the proposed Solar Evaporation Ponds would not require expanded supply to operate beyond those created by the implementation of Program facilities as discussed above. Therefore, impacts would be less than significant.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Impacts would be the same as those discussed under Program Categories 1, 2, and 3 above. The development of the BBARWA WWTP Upgrades would require minimal water usage for dust control activities, primarily because the majority of construction would occur within developed spaces. The installation of the BBARWA WWTP Upgrades may require up to 515 days of construction to complete. Given the short period of construction, water demand during construction would not be substantial and would not require new or expanded water supply resources. Therefore, impacts would be less than significant.



**Operation:** The development of the proposed BBARWA WWTP Upgrades would not require expanded supply to operate beyond those created by the implementation of Program facilities as discussed above. Therefore, impacts would be less than significant.

### **Other Physical Changes to the Environment**

Other physical changes to the environment would not demand a water supply or impact water supply availability beyond that which is discussed under the **Lucerne Valley Overall Impacts** header, above.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: **MMs HYD-2 through HYD-3** would ensure that sustainable groundwater management of the Big Bear Valley Basin will be maintained.*

**HYD-2:** *The Sand Canyon Recharge Project shall occur within the defined Sand Canyon Recharge Area shown on Figure 3-32, and shall not occur during periods where natural surface flows occur in the channel (i.e. the channel is completely dry). If the water discharged into Sand Canyon as a result of Program implementation does not fully percolate within the defined Sand Canyon Recharge Area, discharge to Sand Canyon will be modified (reduced or stopped) to a point at which full percolation occurs within the limits of the defined Sand Canyon Recharge Area.*

**HYD-3:** *BBLDWP shall monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Project operation. The terms of the permit will be defined by the Santa Ana Regional Board and the California State Water Resources Control Board Division of Drinking Water (DDW).*

*Level of Significance After Mitigation: Significant and Unavoidable*

MMs are required to reduce impacts from the Sand Canyon Recharge Project operations on the underlying groundwater basin. **MM HYD-2** would ensure that the Sand Canyon Recharge Project operations occur within the defined area on **Figure 3-32**, and that operations would be modified if the recharge was not to fully percolate. **MM HYD-3** would require BBLDWP to monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Project operation. When combined with **MM HYD-2**, monitoring the discharge and percolation performance would ensure that operations of the Sand Canyon Recharge Project Program would continue to enable the Bear Valley Basin to operate sustainably. With the implementation of mitigation that would ensure sustainable management of the Bear Valley Basin, thereby protecting and sustaining the necessary water supply to accommodate area demands, impacts under this issue for the Bear Valley Basin would be less than significant.

As discussed above, no mitigation is available to reduce the potential for a significant and unavoidable impact to occur to water supplies in the Lucerne Valley Basin as a result of Program Implementation. This is because the Program would reduce the amount of water that would be discharged to the Lucerne Valley Basin, which has a potential to impact the amount of water that could be expected to be recharged to the Lucerne Valley Basin on an annual basis, thereby impacting water supplies. Therefore, the proposed Program would have a significant and unavoidable potential for the implementation of the project to substantially impair the availability of water supplies in the Lucerne Valley Basin as a result in the reduction in recharge to the Lucerne Valley Basin.

### **Cumulative Impact Analysis**

Cumulative development within the Big Bear Valley and Lucerne Valley areas could result in an increase in demand for water. For the Big Bear Valley, the Program would enhance Bear Valley Basin water supplies through the Sand Canyon Recharge Project, and for the Program Water to be utilized in support of the Stickleback. These activities are being considered as part of the Program in response to the potential for cumulative demand on area water supplies. The Sand Canyon Recharge Project would require **MMs HYD-2 and HYD-3** to ensure that the operation of the Sand Canyon Recharge Project is regulated. As such, with implementation of the above mitigation, the Program Team would be able to minimize impacts on the Bear Valley Basin, thereby reducing any potential for the Program to contribute cumulatively considerable impacts on water supply availability. However, for the Lucerne Valley Basin, the Program would have a potential to reduce groundwater recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to an average of 340 AFY under future BBARWA operations. Cumulative development in the Lucerne Valley could result in greater demand for water supplies, thereby further contributing to the need for water supplies that are currently being utilized at a higher rate than the Lucerne Valley Basin is being replenished. As the proposed Program would contribute to impairing groundwater recharge in the Lucerne Valley Basin, the proposed Program would result in a cumulatively considerable impact on water supply availability within the Lucerne Valley Basin.

*Mitigation Measures: Implementation of **MMs HYD-2 and HYD-3** would reduce impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less Than Significant*

- c) **Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

Please refer to the discussion under **(a) Wastewater**, above.

### **Program Category 1: Conveyance Pipelines**

**Construction:** The proposed Program includes construction of Conveyance Facilities. As stated under the response to issue 4.20(a) above, construction workers would temporarily require use of portable sanitary units during construction of the proposed Conveyance Facilities. Wastewater generated during construction of the proposed Program facilities would be minimal, consisting of portable toilet waste generated by construction workers and therefore would not substantially impact wastewater treatment capacity. All conveyance systems—excepting brine conveyance—wells, and Ancillary Facilities would not generate wastewater during their operation. Impacts would be less than significant.

**Operation:** The disposal of brine through the proposed brine Conveyance Facilities are addressed under Program Category 4, below, and would therefore be the same as those identified under Program Category 4, below. No other operational impacts related to Conveyance Facilities would be anticipated as Conveyance Facilities do not generate any wastewater. Impacts would be less than significant.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

**Construction:** Impacts related to implementation of all of the facilities under this Program Category are the same as those identified under Program Category 1, above. As stated under the response to issue 4.20(a) above, construction workers would temporarily require use of portable sanitary units during construction of the proposed Ancillary Facilities. Wastewater generated during

construction of the proposed facilities under this Program Category would be minimal, consisting of portable toilet waste generated by construction workers and therefore would not substantially impact wastewater treatment capacity. Impacts would be less than significant.

Operation: Operationally, Ancillary Facilities would not generate any wastewater, as no staff restroom facilities would be installed at these facilities, and these facilities themselves would not generate wastewater. Thus, impacts would be less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: As stated under the response to issue 4.20(a) above, construction workers would temporarily require use of portable sanitary units during construction of the proposed Solar Evaporation Ponds. Wastewater generated during construction of the proposed facilities under this Program Category would be minimal, consisting of portable toilet waste generated by construction workers and therefore would not substantially impact wastewater treatment capacity. Impacts would be less than significant.

Operation: Operationally, the Solar Evaporation Ponds themselves would not generate any wastewater, as no staff restroom facilities would be installed directly in relation to the Solar Evaporation Ponds, and these facilities themselves would not generate wastewater. The disposal of brine through the evaporation process facilitated by the proposed Solar Evaporation Ponds is addressed under Program Category 4, below, and would therefore be the same as those identified under Program Category 4, below. Thus, impacts would be less than significant.

### **Program Category 4: BBARWA WWTP Upgrades**

Construction: The proposed BBARWA WWTP Upgrades would constitute another form of treatment to the wastewater received by BBARWA from its service area. The BBARWA WWTP Upgrades would also create a new sources of brine waste generated by full advanced treatment that would require disposal via the Solar Evaporation Ponds. As the brine discharged to the Solar Evaporation Ponds evaporates, the minerals in the concentrate are precipitated in salt crystals, which are removed periodically and disposed off-site. The precipitated crystal will be hauled off to an appropriate disposal site.

As with the impacts outlined above under Program Category 1, the construction of these upgrades and improvements at the BBARWA WWTP is not anticipated to generate additional demand for capacity from BBARWA due to the limited wastewater the construction activities would generate. Impacts would be less than significant.

Operation: While the Program in and of itself is a project that would add a new full advanced treatment train to the existing BBARWA WWTP, this action would not result in an additional demand for wastewater disposal within the Big Bear Valley. Furthermore, this action would not expand the capacity of the BBARWA WWTP, it would instead treat the wastewater received at the BBARWA WWTP to full advanced treatment, which is beyond the secondary treatment that wastewater undergoes at the BBARWA WWTP at present. Thus, the only source of demand for additional wastewater capacity that would result from proposed Program would occur during construction, and as a result of the additional five permanent employees that would support the operation of the Program. Given that the proposed Program is not anticipated to generate substantial additional demand for these existing facilities, the projects proposed to be implemented as part of the Program are not anticipated to require substantial additional capacity from the area wastewater treatment provider (BBARWA) beyond the BBARWA's existing commitments. Impacts would be less than significant.

### **Other Physical Changes to the Environment**

The other physical changes to the environment would not generate wastewater, and therefore would have no potential to result in a demand for wastewater service beyond the area wastewater provider's existing commitments. No impacts are anticipated.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Less Than Significant*

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant*

### **Cumulative Impact Analysis**

Future cumulative development within the Big Bear Valley is expected to demand additional capacity from BBARWA. In general, BBARWA has available capacity to accommodate the anticipated population growth and subsequent demand for its services in the future, and has developed long-term plans that address growth through the expansion or upgrades to its facility. In fact, the Program is one of the projects that would accommodate growth within the region, though not through an expansion of capacity, it would increase the availability of alternative water resources for beneficial reuse within the Big Bear Valley, thereby accommodating the potential increased water demand that comes with regional growth. BBARWA is the only wastewater treatment provider in the Big Bear Valley, and therefore, as it has adequate capacity to accommodate both population and tourism growth, and based on the ability to meet future cumulative contribution to wastewater treatment from area growth, impacts would be less than cumulatively considerable.

As discussed in the previous analysis, the proposed Program would require brine disposal, but this would not require a discharge offsite, as occurs in some areas through a brine disposal line. Instead, due to the remote nature of the Big Bear Valley in the San Bernardino Mountains, evaporation ponds will be utilized to enable the brine to dry and be hauled off site. Therefore, no discharge to a wastewater/brine treatment provider will be necessary to support to Program. Because the project would result in a less than significant impact related to wastewater capacities, the project's contribution to cumulative impacts is not considered cumulatively considerable, and therefore, would not contribute to a significant cumulative impact on the availability of wastewater treatment.

*Mitigation Measures: None required*

*Level of Significance After Mitigation: Less Than Significant*

- d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?**

### **Program Category 1: Conveyance Pipelines**

**Construction:** Construction of pipelines may result in generation of solid waste in excess of the capacities of local infrastructure. Pipelines would require demolition of sections of roadway and/or compacted dirt in order to install Conveyance Facilities below ground and within ROW, but would not require a large area of construction. Each of the Program facilities would include the preparation of a construction and demolition solid waste management plan as required by San Bernardino County for all new construction projects. Information provided in this waste

management plan would include how the waste would be managed, hauler identification, and anticipated material wastes. Each plan would demonstrate a minimum of at least 65 percent of the nonhazardous construction and demolition waste be recycled and/or salvaged for reuse per the 2022 CalGreen Code. Compliance with this requirement is mandatory. Regardless, approximately 6,585 tons of asphalt may be disposed of as a result of pipeline installation, which is proposed to be disposed of over the approximately 16-month (370 day) duration of construction. As such, given the large amount of material that could be required to be hauled off site in support of the installation of the Conveyance Pipelines, generation of solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or impairment of the attainment of solid waste reduction goals could occur. As such, mitigation to ensure that the asphalt and other construction and demolition materials disposed of as part of the conveyance pipeline installation is recycled beyond the minimum of at least 65 percent of the nonhazardous construction and demolition waste be recycled and/or salvaged for reuse per the 2022 CalGreen Code, is necessary to reduce potential impacts to a level of less than significant.

Operation: Operation of the proposed pipelines would not generate waste, and therefore would have no potential to generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. Thus, no impacts are anticipated.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Construction of each ancillary facility may require demolition of existing facilities, grading, soil import/export, etc. at a specific site. Given that the proposed Ancillary Facilities would be located within sites no more than one half acre in size, it is not anticipated that construction thereof would generate substantial solid waste. Therefore, it is not anticipated that the generation of solid waste from each ancillary facility, even if developed concurrently, would have a potential to exceed the daily capacity of the local landfills or transfer stations. As stated under Program Category 1, above, each of the Program facilities would include the preparation of a construction and demolition solid waste management plan as required by San Bernardino County, which would demonstrate a minimum of at least 65 percent of the nonhazardous construction and demolition waste be recycled and/or salvaged for reuse per the 2022 CalGreen Code. Compliance with this requirement is mandatory, and therefore, development of Ancillary Facilities is not anticipated to generate solid waste in excess of the capacity of local infrastructure. Construction impacts would be less than significant.

Operation: Operation of the proposed Ancillary Facilities is not anticipated to generate waste, as the facilities proposed would not be manned, with the exception of the facilities proposed to be developed within the BBARWA WWTP site, which is already manned by existing employees. It is not anticipated that any of these facilities would be manned 24/7, with visits to the facilities occurring on a planned maintenance, or emergency maintenance basis. Thus, implementation of the Ancillary Facilities would have a less than significant impact on the generation of solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Construction of the Solar Evaporation Ponds is anticipated to result in generation of substantial construction waste, that, without mitigation, could be in excess of the capacities of local infrastructure. Given the size of the proposed 6 to 10 ponds (400 feet to 800 feet wide x 400 feet to 800 feet long x 10 feet in depth), it is anticipated that a cut amount from 1 to 2-feet of the existing grade will provide enough fill dirt to create the earthen berms of the ponds. However, it is anticipated that no more than a total of 175,000 CY of materials would be hauled off site by 15 to

30 CY trucks, as an estimated one half of the cut material will be used as fill material to enhance flood control from installation of the Solar Evaporation Ponds. An average of 50 round trips per day at a 100-mile round-trip distance would be required to accomplish the effort to remove excess materials off-site over a period of approximately six months. Therefore, a maximum of about 1,500 CY of material is anticipated to be disposed of per day, which would result in the equivalent of about 1,750 tons per day of soil being removed and hauled off-site per day, assuming that one cubic yard of soil weighs approximately 1 ton. As such, given the large amount of material that could be required to be hauled off site in support of the installation of the Solar Evaporation Ponds, generation of solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or impairment of the attainment of solid waste reduction goals could occur. As such, mitigation (**MMs UTIL-5** and **UTIL-6**) to ensure that the soil disposed of as part of the evaporation pond installation is recycled beyond the minimum of at least 65 percent of the nonhazardous construction and demolition waste be recycled and/or salvaged for reuse per the 2022 CalGreen Code, is necessary to reduce potential impacts to a level of less than significant.

Operation: Operation of the proposed Solar Evaporation Ponds would generate dried brine. Solar Evaporation Pond maintenance is expected to occur approximately 2-3 times a year, consisting of removal of the brine, maintenance of liners and grading, removal of vegetation, and vector management. As the brine evaporates, the minerals in the concentrate are precipitated in salt crystals, which are removed periodically and disposed off-site at a disposal facility licensed to receive and dispose of such material. Since it is not known whether the brine will contain wastes (salts) that may require special disposal, the disposal location will be identified once this information becomes available. The precipitated crystal will be hauled off to an appropriate disposal facility. The amount of waste generated during the maintenance of the Solar Evaporation Ponds is not anticipated to be greater than five tons per maintenance event. The operational waste would comply with mandatory source reduction laws thereby reducing the amount of waste generated by operational activities, and therefore, implementation of the Solar Evaporation Ponds would have a less than significant potential to generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. Operational impacts would be less than significant.

#### **Program Category 4: BBARWA WWTP Upgrades**

Construction: While the installation of the proposed upgrades to the BBARWA WWTP would occur over a large area within the existing BBARWA WWTP site (refer to **Figures 3-23 through 3-25**), solid waste generation is anticipated to be minimized as a result of utilizing existing structures to install the proposed treatment upgrades. However, the proposed BBARWA WWTP Upgrades do require to demolition of the existing concrete basins, which is anticipated to generate concrete waste. As a result, while the compliance with the 2022 CalGreen Code required, in order to fully ensure that generation of solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or impairment of the attainment of solid waste reduction goals does not occur as a result of project implementation, mitigation to ensure that all construction waste that can feasibly be recycled, is recycled, thereby ensuring that construction and demolition waste is recycled above and beyond 2022 CalGreen Code, is necessary to reduce potential impacts to a level of less than significant.

Operation: Operation of the proposed WWTP would generate brine, which would evaporate and be hauled offsite once dried as discussed under Program Category 3, above. Additional waste sources include: the amount of waste generated by operation of the upgraded BBARWA WWTP is not anticipated to be greater than a few tons per year. The operational waste would comply with mandatory source reduction laws thereby reducing the amount of waste generated by operational activities, and therefore, implementation of the BBARWA WWTP Upgrades would have a less



than significant impact to the generation of solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

### **Other Physical Changes to the Environment**

No waste would be generated by the above-described other physical changes to the environment. While the reduced discharge to the LV Site does include a potential for continued and enhanced site maintenance, these activities would fall within the existing operations of the site by BBARWA, and therefore is not anticipated to result in additional waste generation. Therefore, there is no potential for other physical changes to the environment to generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. No impacts are anticipated.

### **Combined Program Categories**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**UTIL-4:** *The contract with demolition and construction contractors for a given Replenish Big Bear Program project shall include the requirement that all materials that can feasibly be recycled shall be salvaged and recycled. This includes but is not limited to wood, metals, concrete, road base, soil and asphalt. The contractors for a given Replenish Big Bear Program project shall submit a recycling plan to the implementing agency for review and approval prior to issuance of permits for the construction of demolition/construction activities.*

**UTIL-5:** *The contract with demolition and construction contractors for a given Replenish Big Bear Program project shall include the requirement that all soils that are planned to be exported from the site that can be recycled shall be recycled for re-use; alternatively, soils shall be reused on site to balance soil import/export.*

*Level of Significance After Mitigation: Less Than Significant*

Implementation of **MM UTIL-4** will ensure that construction and demolition materials that are salvageable are recycled, and thereby diverted from the local landfill, which will minimize the potential for Program projects to generate waste in excess of local landfill capacities. Similarly, **MM UTIL-5** will ensure that soils that would generally be exported from a given construction site are salvaged where possible for recycled and ultimately reuse, thereby diverting this waste stream from the local landfill. This too will minimize the potential for Program projects to generate waste in excess of local landfill capacities.

### **Cumulative Impacts**

*Level of Significance Before Mitigation: Potentially Significant*

Future cumulative development within the Big Bear Valley would cumulatively contribute to the generation of solid waste and disposal of solid waste at the Big Bear Transfer Station, San Timoteo Canyon Sanitary Landfill, and Mid-Valley Sanitary Landfill. Based on growth projections, these two landfills have approximately 16 to 22 more years of capacity. Future cumulative development could eventually exceed the capacities of these landfills. Therefore, cumulative development could result in significant impacts to landfills. Because the proposed Program would

not substantially increase the generation of solid waste, particularly with the implementation of **MMs UTIL-4** and **UTIL-5**, the project's contribution to cumulative effects on landfills would be less than cumulatively considerable, and therefore, would result in a less than significant contribution to cumulative impacts.

*Level of Significance After Mitigation: Less Than Significant*

e) **Would the project comply with Federal, state, and local management and reduction statutes and regulations related to solid waste?**

**Program Category 1: Conveyance Pipelines**

Construction: Construction of the proposed Conveyance Facilities would comply with all applicable city, county, and State construction and demolition requirements during construction of the proposed facilities as described above in the regulatory setting. All excavated soil would be hauled offsite by truck to an appropriately permitted solid waste facility. The daily amount of soil to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Furthermore, other solid waste would be disposed of at an appropriately permitted solid waste facility. The daily amount of solid waste to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Any hazardous materials collected during construction would be transported and disposed of by a permitted and licensed hazardous materials service provider. In order to ensure full compliance above and beyond Federal, State, and local management and reduction statutes and regulations related to solid waste, and avoid a potentially significant impact thereof, the Conveyance Facilities would be required, through the implementation of **MM UTIL-4** to recycle construction and demolition materials beyond the mandated 65 percent diversion required by the 2022 CalGreen Code. Furthermore, **MM UTIL-5** would require further diversion through the recycling of soils where possible. Thus, construction impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the proposed Conveyance Pipelines would not result in the generation of solid waste. Therefore, the proposed Conveyance Pipelines would result in no impacts under this issue.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Construction of the proposed Ancillary Facilities would comply with all applicable city, county, and State construction and demolition requirements during construction of the proposed facilities as described above in the regulatory setting. All excavated soil would be hauled offsite by truck to an appropriately permitted solid waste facility. The daily amount of soil to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Furthermore, other solid waste would be disposed of at an appropriately permitted solid waste facility. The daily amount of solid waste to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Any hazardous materials collected during construction would be transported and disposed of by a permitted and licensed hazardous materials service provider. In order to ensure full compliance above and beyond Federal, State, and local management and reduction statutes and regulations related to solid waste, and avoid a potentially significant impact thereof, the Ancillary Facilities would be required, through the implementation of **MM UTIL-4** to recycle construction and demolition materials beyond the mandated 65 percent diversion required by the 2022 CalGreen Code. Furthermore, **MM UTIL-5** would require further diversion through the recycling of soils where possible. Thus, construction impacts would be less than significant through the implementation of mitigation.

Operation: Impacts are the same as those identified under Program Category 1. Operation of the proposed Ancillary Facilities would comply all Federal, State, and local statues related to solid waste disposal. Big Bear Lake and San Bernardino County are required to comply with AB 939, which requires diversion of solid waste from landfills through reuse and recycling. Ancillary Facilities would be required to recycle as part of the projects' operational activities. Additionally, any hazardous materials collected on the project site during either operation of future development within the Program would be transported and disposed of by a permitted and licensed hazardous materials service provider. This is a mandatory requirement; compliance does not require mitigation. As such, operation of the proposed Program facilities would comply with Federal, State, and local management and reduction statutes and regulations related to solid waste. Operational impacts would be less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Construction of the proposed Solar Evaporation Ponds would comply with all applicable city, county, and State construction and demolition requirements during construction of the proposed facilities as described above in the regulatory setting. All excavated soil would be hauled offsite by truck to an appropriately permitted solid waste facility. The daily amount of soil to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Furthermore, other solid waste would be disposed of at an appropriately permitted solid waste facility. The daily amount of solid waste to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Any hazardous materials collected during construction would be transported and disposed of by a permitted and licensed hazardous materials service provider. In order to ensure full compliance above and beyond Federal, State, and local management and reduction statutes and regulations related to solid waste, and avoid a potentially significant impact thereof, the Solar Evaporation Ponds would be required, through the implementation of **MM UTIL-4** to recycle construction and demolition materials beyond the mandated 65 percent diversion required by the 2022 CalGreen Code. Furthermore, **MM UTIL-5** would require further diversion through the recycling of soils where possible. Thus, construction impacts would be less than significant through the implementation of mitigation.

Operation: Impacts are the same as those identified under Program Categories 1 and 2. Operation of the proposed Solar Evaporation Ponds would comply all Federal, State, and local statues related to solid waste disposal. San Bernardino County, where this facility is located is required to comply with AB 939, requires diversion of solid waste from landfills through reuse and recycling. The Solar Evaporation Ponds would be required to recycle as part of the projects' operational activities. Additionally, any hazardous materials collected on the project site during operation of future development within the Solar Evaporation Ponds would be transported and disposed of by a permitted and licensed hazardous materials service provider. This is a mandatory requirement; compliance does not require mitigation. As such, operation of the proposed Solar Evaporation Ponds would comply with Federal, State, and local management and reduction statutes and regulations related to solid waste. Operational impacts would be less than significant.

### **Program Category 4: BBARWA WWTP Upgrades**

Construction: Construction of the proposed BBARWA WWTP Upgrades would comply with all applicable city, county, and State construction and demolition requirements during construction of the proposed facilities as described above in the regulatory setting. All excavated soil would be hauled offsite by truck to an appropriately permitted solid waste facility. The daily amount of soil to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Furthermore, other solid waste would be disposed of at an

appropriately permitted solid waste facility. The daily amount of solid waste to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Any hazardous materials collected during construction would be transported and disposed of by a permitted and licensed hazardous materials service provider. In order to ensure full compliance above and beyond Federal, State, and local management and reduction statutes and regulations related to solid waste, and avoid a potentially significant impact thereof, the BBARWA WWTP Upgrades would be required, through the implementation of **MM UTIL-4** to recycle construction and demolition materials beyond the mandated 65 percent diversion required by the 2022 CalGreen Code. Furthermore, **MM UTIL-5** would require further diversion through the recycling of soils where possible. Thus, construction impacts would be less than significant through the implementation of mitigation.

Operation: Impacts are the same as those identified under Program Categories 1 through 3. Operation of the proposed BBARWA WWTP Upgrades would comply all Federal, State, and local statutes related to solid waste disposal. San Bernardino County, where this facility is located is required to comply with AB 939, requiring diversion of solid waste from landfills through reuse and recycling. The BBARWA WWTP Upgrades would be required to recycle as part of the project's operational activities. Additionally, any hazardous materials collected on the project site during operation of the BBARWA WWTP Upgrades would be transported and disposed of by a permitted and licensed hazardous materials service provider. This is a mandatory requirement; compliance does not require mitigation. As such, operation of the BBARWA WWTP Upgrades would comply with Federal, State, and local management and reduction statutes and regulations related to solid waste. Operational impacts would be less than significant.

#### **Other Physical Changes to the Environment**

The proposed Program would also result in other physical changes to the environment, including future release of advanced treated water into Big Bear Lake by way of Stanfield Marsh, and possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback at Shay Pond, and a decrease of up to 2,200 AFY less discharge to the LV Site, for a total estimated annual discharge to Lucerne Valley averaging about 340 AFY.

No waste would be generated by the above-described other physical changes to the environment. While the reduced discharge to the LV Site does include a potential for continued and enhanced site maintenance, these activities would fall within the existing operations of the site by BBARWA, and therefore is not anticipated to result in additional waste generation. Therefore, other physical changes to the environment would comply with Federal, State, and local management and reduction statutes and regulations related to solid waste.

#### **Combined Project Facilities**

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: **MMs UTIL-4 and UTIL-5** outlined under issue 4.20(a) above are required.*

*Level of Significance After Mitigation: Less Than Significant*

As stated above under issue 4.20(d), implementation of **MMs UTIL-4 and UTIL-5** will ensure that recyclable waste streams are diverted from the local landfill, thereby ensuring compliance above and beyond the required 65 percent waste diversion mandated by the 2022 CalGreen Code.

### **Cumulative Impacts**

Potential cumulative impacts related to solid waste facilities and solid waste disposal would occur if projects within the Big Bear Valley would be served by a facility without sufficient permitted capacity to accommodate solid waste disposal needs, or if cumulative projects do not comply with Federal, State, and local statutes and regulations related to solid waste. Specifically, projects producing solid waste during project implementation, including cleanup, residential and commercial projects, could produce a waste stream that could together not be accommodated by current solid waste facilities within regional solid waste disposal areas, resulting in a cumulatively considerable impact to solid waste facilities.

The proposed Program projects would comply with all Federal, State, and local statutes and regulations related to solid waste and would not result in potential significant impacts. When added to cumulative projects, the effects of the proposed Program projects would contribute incrementally to the cumulative impacts on solid waste facilities.

Cumulative projects would generally be served by the local municipal solid waste disposal facilities and hazardous waste disposal facilities, resulting in potential cumulative impacts to solid waste facilities. However, new cumulative development projects would participate in local programs designed to divert up to 50 percent of waste from landfills (AB 939), and divert up to 75% of organic waste from landfills by 2025 (SB 1383), and divert 65 percent of construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse (2022 CalGreen Code). In addition, all cumulative projects implemented in the area would also be required to comply with Federal, State, and local solid waste regulations and statutes. Therefore, when considered in addition to the anticipated impacts of other cumulative projects, and when considering that **MMs UTIL-4** and **UTIL-5** would minimize the Program's individual potential to contribute to cumulative violations of solid waste regulations, the proposed project's incremental contribution to solid waste facility capacity impacts would not be cumulatively considerable, and therefore, would result in a less than significant contribution to cumulative impacts.

*Mitigation Measures: **MMs UTIL-4** and **UTIL-5** are necessary to reduce impacts to a level of less than significant.*

*Level of Significance After Mitigation: Less Than Significant*

#### **4.20.6 Cumulative Impacts**

The cumulative analysis of each Utilities and Service System issue evaluated in this **Subchapter 4.20** determined that the proposed Program would result in a cumulatively considerable contribution to cumulative utilities and service system impacts within the Big Bear Valley. Additionally, the Program would contribute a cumulatively considerable contribution to utilities and service systems impacts as the potential for the proposed Program in the Lucerne Valley Basin. For the Lucerne Valley Basin, the Program would have a potential to reduce groundwater recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to an average of 340 AFY under future BBARWA operations. Cumulative development in the Lucerne Valley could result in greater demand for water supplies, thereby further contributing to the need for water supplies that are currently being utilized at a higher rate than the Lucerne Valley Basin is being replenished. As the proposed Program would contribute to impairing groundwater recharge in the Lucerne Valley Basin, the proposed Program would result in a cumulatively considerable impact on utilities and service systems, specifically water supply, within the Lucerne Valley Basin. Furthermore, as construction of the proposed water and wastewater facilities would

result in significant biological resources impacts to the bird-foot checkerbloom if the Baldwin Lake Pipeline Alignment Option, the Program would contribute a cumulatively considerable contribution to utilities and service systems impacts in the Big Bear Valley.

#### **4.20.7 Unavoidable Significant Adverse Impacts**

As determined in the preceding evaluation, the proposed Program would result in significant and unavoidable impacts under Utilities and Service Systems, which pertains both to the Big Bear Valley and to the reduction in discharge of undisinfected secondary effluent to the LV Site. As described in **Subchapter 4.5, Biological Resources**, construction of the Baldwin Lake Pipeline Alignment Option may affect bird-foot checkerbloom, as it is present within the proposed Program Area footprint for this pipeline alignment. While **MMs BIO-1** through **BIO-4** would minimize impacts to bird-foot checkerbloom from construction of the Solar Evaporation Ponds to a level of less than significant, **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. Therefore, the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact if the Baldwin Lake Pipeline Alignment Option is the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option. If BBARWA does not select the Baldwin Lake Pipeline Alignment Option, a significant impact under this issue would be avoided. Regardless, as the Baldwin Lake Pipeline Alignment Option may be the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option, impacts under this issue are considered significant and unavoidable.

No mitigation is available to reduce the potential for a significant and unavoidable impact to occur on water supplies in the Lucerne Valley Basin as a result of Program implementation. This is because the Program would reduce the amount of water that would be discharged to the Lucerne Valley Basin, which has the potential to impact the amount of water that could be expected to be recharged in the Lucerne Valley Basin on an annual basis, thereby impacting water supplies. Therefore, the proposed Program would have a significant and unavoidable potential for the implementation of the project to substantially impair the availability of water supplies in the Lucerne Valley Basin as a result of the reduction in recharge to the Lucerne Valley Basin. All other utilities and service system impacts are considered less than significant.



## 4.21 WILDFIRE

### 4.21.1 Introduction

This subchapter evaluates the environmental impacts to wildfire hazards from the implementation of the Replenish Big Bear Program (Program). The following topics address whether the proposed Program is located in or near State Responsibility Areas or lands classified as very high FHSZs, has a potential to impair an adopted emergency plan, has a potential to exacerbate the spread of a wildfire, may require fire prevention infrastructure (such as firebreak roads) that may exacerbate the spread of wildfire, or may expose people or structures to downstream flooding or landslides as a result of post-fire instability. The purpose of this subchapter is to identify and provide analysis and assessment of the potential for wildfire hazards within the Program Area or the sensitivity for such a threat to be encountered at a future specific project site, and ultimately determine if the implementation of the Program would result in a significant wildfire impact. The analysis provided in this section may be utilized and incorporated into the planning process for future infrastructure and entitlement compliance considerations.

The analysis herein, while prepared under a Programmatic DEIR, has been provided as the project level for all of the facilities proposed under this Program, with one exception: the monitoring wells at Sand Canyon. Sufficient detail for all other projects proposed under this Program is available for project level impact forecasts.

These issues will be discussed below as set in the following framework:

- Introduction
- Environmental Setting: Wildfire
- Regulatory Setting
- Thresholds of Significance
- Potential Impacts
- Cumulative Impacts
- Unavoidable Adverse Impacts

No comments pertaining to wildfire threats were received in response to the NOP, and no comments were received at the Scoping Meeting held on behalf of the Program. NOP Comment Letters and Responses to NOP Comments can be found in **Subchapter 8.2**.

## 4.21.2 Environmental Setting / Program Location

### 4.21.2.1 Big Bear Valley

In general, various communities in the mountain and foothill areas in San Bernardino County are at a high risk for wildfire. According to CAL FIRE Wildfire Activity Statistics Redbooks (Redbooks) from the years 2018 to 2021<sup>124</sup> and the 2022 Incident Archive<sup>125</sup>, within San Bernardino County, about 473 fires totaling 15,781 acres caused a number of injuries, and between the years of 2018 and 2021 resulted in an estimated \$3,806,566 in damages to property, crops, public facilities and infrastructure (averaging about \$951,641 per year, with the greatest costs generally corresponding to the years with the greatest burn acreage). This is primarily due to location, vegetation, weather, seasonal Santa Ana winds, and prolonged drought. The above includes the 2020 fire season, which was a particularly severe fire season throughout California due to drought conditions. In 2020, one of the largest fires in the area in recent history—the El Dorado Fire<sup>126</sup>—took place in the SBNF in San Bernardino and Riverside Counties. It was caused by a human error as a result of a malfunctioning pyrotechnic device and consumed 22,744 acres, destroyed 20 structures, and claimed the life of one firefighter. The El Dorado Fire continued burning for more than four weeks, surpassing the duration of any previous fire in the Inland Empire.

In urban areas, urban fires include fires within individual commercial, industrial, and residential structures, vehicles, and vacant lots. The effectiveness of responding to urban fires is generally based on the age of the structures, proximity of the nearest fire station, efficiency of circulation routes, and water availability to fight fires.

Wildland-urban interface fires occur in areas where urban/suburban development meets wildland areas. Wind-driven wildland-urban interface fires pose a significant threat to lives and have increased potential to cause significant damage to structures. In wildland and wildland-urban interface areas, cities and counties require the use of fire-resistant building materials, implementation of fuel modification zones, and maintenance of vegetation clearance around structures to protect development from wildland fires, thereby reducing the potential loss of life and property.

The proposed Program Area (which encompasses much of the Big Bear Valley) is an area susceptible to wildland fires, and is located within an area delineated as a very high Fire Hazard Severity Zone (FHSZ) in a State Responsibility Area; the majority of the area surrounding Big Bear Lake and Baldwin Lake is located within a very high FHSZ, as shown on **Figure 4.10-5** (Countywide Plan Policy Map of Fire Hazard Severity Zones).

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<sup>124</sup> CAL FIRE, 2023. 2018-2021 Redbooks: [https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2021\\_redbook\\_final.pdf?rev=525959073bbe4bbe816d67624911e4c3&hash=CFD17F879B2CE984AB5BA9FEA4F73A56,https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2020\\_redbook\\_final.pdf?rev=72030b4d2cb7466aa573754ecb4f656e&hash=337DB407876BE384081C7D722D82B1BF,https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2019\\_redbook\\_final.pdf?rev=0f4b0e8ec5ca4580b7072ab311519f9f&hash=7C7B0266E97136539C0E81D30B3F47F1,https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2018\\_redbook\\_final.pdf?rev=26c8ffc6fef04ea8a77e00f488cb83bd&hash=19B77F82A19D93A7684C7618B6337482](https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2021_redbook_final.pdf?rev=525959073bbe4bbe816d67624911e4c3&hash=CFD17F879B2CE984AB5BA9FEA4F73A56,https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2020_redbook_final.pdf?rev=72030b4d2cb7466aa573754ecb4f656e&hash=337DB407876BE384081C7D722D82B1BF,https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2019_redbook_final.pdf?rev=0f4b0e8ec5ca4580b7072ab311519f9f&hash=7C7B0266E97136539C0E81D30B3F47F1,https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2018_redbook_final.pdf?rev=26c8ffc6fef04ea8a77e00f488cb83bd&hash=19B77F82A19D93A7684C7618B6337482) (accessed 09/05/23)

<sup>125</sup> CAL FIRE, 2023. Incident Archive 2022. <https://www.fire.ca.gov/incidents/2022> (accessed 09/05/23)

<sup>126</sup> CAL FIRE, 2023. El Dorado Fire. <https://www.fire.ca.gov/incidents/2020/9/5/el-dorado-fire> (accessed 09/05/23)

As shown on **Figure 3-29** in Chapter 3, Program Description (Program Infrastructure), a substantial majority of the proposed infrastructure would occur on Baldwin Dry Lake Bed and within existing disturbed areas (road alignments). **Figure 4.21-1** shows the FHSZ in the State Responsibility Areas, which **Figure 4.10-5** shows the FHSZ in the State and Local Responsibility Areas. Further, many of the proposed facilities consist of subsurface pipelines. Ultimately, there may be small areas within the Program footprint of the proposed Program that support wildland vegetation, such as forested areas, riparian, and other native vegetation, these can only be determined once final facility sites are selected, which may be the case for the Sand Canyon Monitoring Wells, for which no specific sites have been selected.

Major evacuation routes within the Big Bear Valley are shown on **Figure 4.10-16**, which depicts the San Bernardino Countywide Plan Evacuation Route Map in the vicinity of the Program Area. Evacuation routes include the three primary access routes into Big Bear Valley, SR-18 on the west; SR-38 from the south; and SR-18 to the east (Lucerne Valley).

#### **4.21.2.2 Lucerne Valley**

The LV Site is designated as being within a moderate FHSZ on the San Bernardino Countywide Plan FHSZ Map (**Figure 4.10-11**) within an area with a State Responsibility Area as shown on the San Bernardino Countywide Plan Fire Responsibility Areas Map (**Figure 4.10-12**). Evacuation routes in Lucerne Valley include SR-247, which is located along the northern boundary of the LV Site.

#### **4.21.3 Regulatory Setting**

There are numerous State, Federal, and local regulations regarding wildfire planning, forest management, and wildfire responsibility.

##### **4.21.3.1 State**

#### **California Fire Code**

The California Fire Code is a series of building, property, and lifeline codes outlined in Title 24, Chapter 9 in the California Code of Regulations. The California Fire Code is based on the International Fire Code, which is a collection of best practices agreed upon by professional fire agencies and organizations. The California Fire Code uses a hazards classification system to outline the measures to take to protect life and property. It also regulates hazardous materials at fixed facilities. The California Fire Code, along with the CBC, is updated every three years to incorporate recommendations by the International Code Council.

#### **Senate Bill 1241 of 2012**

SB 1241, enacted in 2012, amended California Government Code Section 65302 to address wildfire safety in general plans. SB 1241 requires that updates to general plan safety elements address wildfire risk in State Responsibility Areas and Very High FHSZs in Local Responsibility Areas.

#### **Fire Responsibility Areas**

CAL FIRE has designated three zones or responsibility areas, depending on the agency with primary financial responsibility for addressing the prevention, suppression, and postfire recovery of fire. These include Local Responsibility Areas, State Responsibility Areas, and Federal Responsibility Areas (FRA), defined as follows:

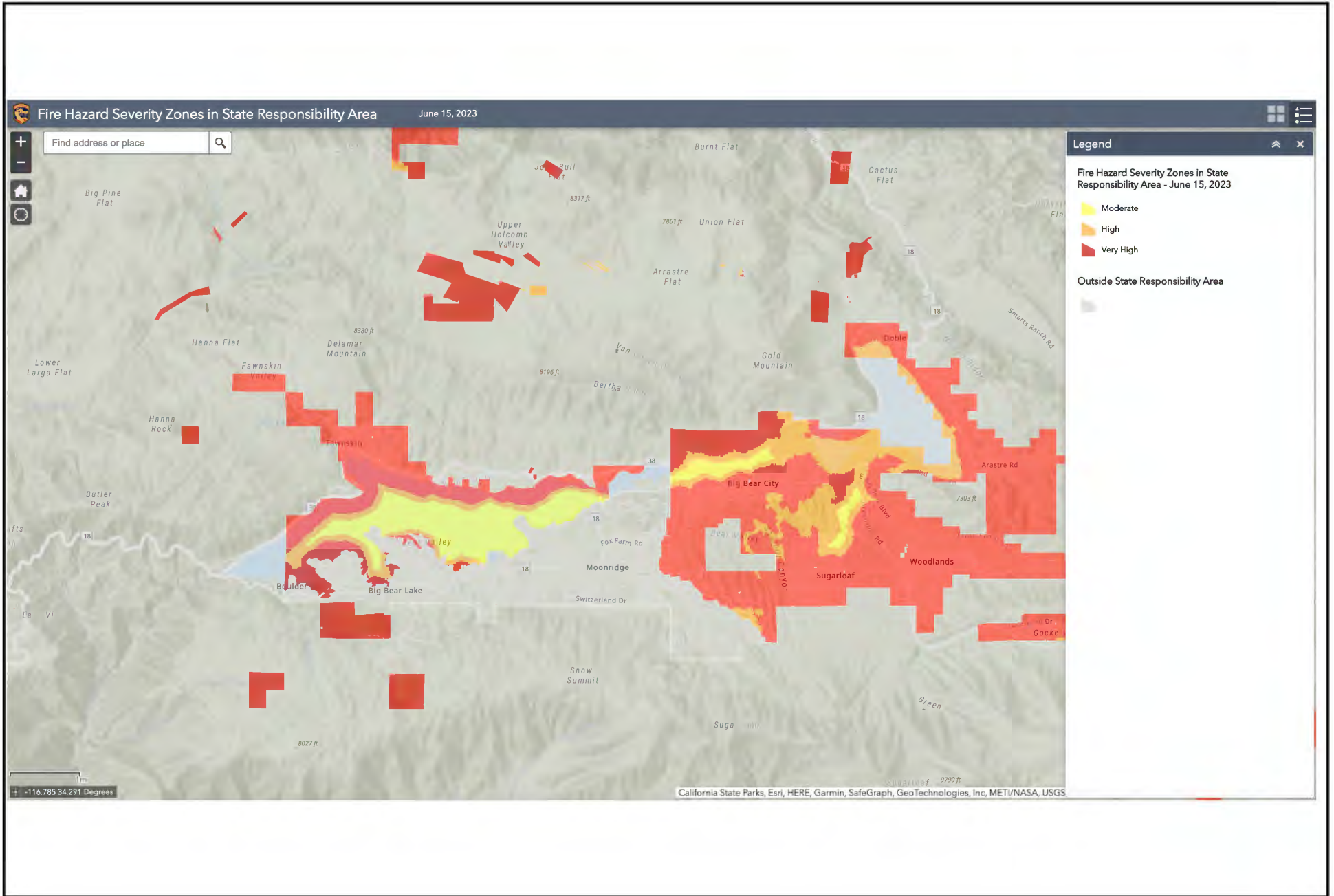


FIGURE 4.21-1

- Local Responsibility Areas are the areas of California where local jurisdictions (e.g., city fire departments, fire protection districts, counties, and CAL FIRE under contract to local government) are responsible for the prevention and suppression of wildfires.
- State Responsibility Areas are the areas of California where the State of California is financially responsible for the prevention and suppression of wildfires. State Responsibility Areas do not include lands within city boundaries or in Federal ownership.
- FRA are the areas of California where the Federal government has the primary financial responsibility for preventing and suppressing fires. FRA are generally protected by a variety of Federal agencies.

CAL FIRE maps the FHSZs of Big Bear Valley. The FHSZs are based on an evaluation of fuels, topography, dwelling density, weather, infrastructure, building materials, brush clearance, and fire history. The majority of the Big Bear Valley is located within a very high FHSZ, as shown on **Figure 4.10-5**, which depicts the San Bernardino Countywide Plan FHSZ Map of the Program Area. In relation to the physical components of the Program, the features that would be developed within the BBARWA WWTP are designated as being within a high FHSZ. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Alternatives traverse through areas designated as being within very high, high, and moderate FHSZs. The Sand Canyon Booster Station and pipeline traverses through an area designated as being within a very high FHSZ. The Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipelines traverse through an area designated as being within a very high FHSZ. These FHSZs are almost entirely located within State Responsibility Areas, with the exception of those areas that fall within the City of Big Bear Lake, which are in Local Responsibility Areas (**Figure 4.10-6**). A description of the precise FHSZs for the specific facilities proposed under the Program and the corresponding responsibility areas is provided below:

- BBARWA WWTP AWP, Monitoring Wells, Pump Stations, and Solar Array: High FHSZ in a State Responsibility Area
- Evaporation Ponds: High FHSZ in a State Responsibility Area
- Lake Discharge Pipeline: Moderate FHSZ (Baldwin Lake and part of the residential portion of the alignment), High FHSZ (BBARWA WWTP and residential portion of the alignment), Very High FHSZ (remaining portions of the alignment). The Lake Discharge Pipeline traverses through a State Responsibility Area until it reaches the City of Big Bear Lake boundaries, at which it would be located within a Local Responsibility Area
- Shay Pond Replacement Pipeline: Very High FHSZ in a State Responsibility Area
- Shay Pond New Pipeline: Very High FHSZ in a State Responsibility Area
- Sand Canyon Pipeline: Very High FHSZ in a Local Responsibility Area
- Sand Canyon Pipe Outlet: Very High FHSZ in a Local Responsibility Area
- Sand Canyon Booster Station: Very High FHSZ in a Local Responsibility Area
- Sand Canyon Monitoring Wells: Very High FHSZ in a Local Responsibility Area

A majority of the Program Area is within the San Bernardino County Fire Safety Overlay, with the exception of those areas that fall within the City of Big Bear Lake (**Figure 4.10-5**).

#### 4.21.3.2 Local

##### San Bernardino Countywide Plan

The following San Bernardino Countywide Plan policies addressing wildfire are applicable to the Program:

<b>Goal</b>	<b>HZ-1</b>	<b>Natural Environmental Hazards</b> Minimized risk of injury, loss of life, property damage, and economic and social disruption caused by natural environmental hazards and adaptation to potential changes in climate.
<b>Policy</b>	<b>HZ-1.2</b>	New development in environmental hazard areas. We require all new development to be located outside of the environmental hazard areas listed below. For any lot or parcel that does not have sufficient buildable area outside of such hazard areas, we require adequate mitigation, including designs that allow occupants to shelter in place and to have sufficient time to evacuate during times of extreme weather and natural disasters. <ul style="list-style-type: none"><li>• Flood: 100-year flood zone, dam/basin inundation area.</li><li>• Geologic: Alquist Priolo earthquake fault zone; County-identified fault zone; rockfall/debris-flow hazard area, medium or high liquefaction area (low to high and localized), existing and County-identified landslide area, moderate to high landslide susceptibility area).</li><li>• Fire: high or very high fire hazard severity zone.</li></ul>
	<b>HZ-1.6</b>	Critical and essential facility location. We require new critical and essential facilities to be located outside of hazard areas, whenever feasible.
	<b>HZ-1.7</b>	Underground utilities. We require that underground utilities be designed to withstand seismic forces, accommodate ground settlement, and hardened to fire risk.
	<b>HZ-1.9</b>	Hazard areas maintained as open space. We minimize risk associated with flood, geologic, and fire hazard zones or areas by encouraging such areas to be preserved and maintained as open space.
	<b>HZ-1.13</b>	Fire protection planning. We require that all new development in County-designated Fire Safety Overlay and/or CAL FIRE-designated Very High Fire Hazard Severity Zones meet the requirements of the California Fire Code and the California Building Code as amended by the County Fire Protection District, including Title 14 of the California Code of Regulations fire safety requirements for any new development within State Responsibility Areas, as well as provide and maintain a Fire Protection Plan or Defensible Space/Fuel Modification Plan and other pre-planning measures in accordance with the County Code of Ordinances.
	<b>HZ-1.14</b>	Long-term fire hazard reduction and abatement. We require proactive vegetation management/hazard abatement to reduce fire hazards on existing private properties, along roadsides of evacuation routes out of wildfire prone areas, and other private/public land where applicable, and we require new development to enter into a long-term maintenance agreement for vegetation management in defensible space, fuel modification, and roadside fuel reduction in the Fire Safety Overlay and/or Very High Fire Hazard Severity Zones.
	<b>HZ-1.15</b>	Evacuation route adequacy. We coordinate with CAL FIRE, California's Office of Emergency Services, and other local fire districts to identify strategies that ensure the maintenance and reliability of evacuation routes potentially compromised by wildfire, including emergency evacuation and supply transportation routes.

### **City of Big Bear Lake General Plan**

The City of Big Bear Lake General Plan Public Services Element includes the following goal and policies regarding wildfire that may be applicable to Program activities within the unincorporated areas of Big Bear Valley.

The Public Services Element sets forth the following goal and policies pertaining to geology and soils:

<b>Goal</b>	<b>PS 1</b>	Public services and facilities that adequately meet the immediate and long-term needs of the City, providing a high level of service for the lowest reasonable cost, while minimizing impacts on the local and regional environment.
<b>Program</b>	<b>PS 1.2.1</b>	Continue to require that adequate water supply, distribution, fire suppression systems, sewer facilities, and storm drainage facilities are assured prior to issuance of building



permits for new construction which increases the use or intensity of a site. This is not to be construed as a requirement to connect to a public utility.

<b>Goal</b>	<b>PS 2</b>	A water storage and distribution system adequate to meet the community's needs, including domestic and commercial use and fire flow, and which can ultimately accommodate use of reclaimed water when such use becomes feasible within the City.
<b>Goal</b>	<b>PS 7</b>	A safe and secure environment for the City through the provision of adequate law enforcement and fire protection services.
<b>Policy</b>	<b>PS 7.1</b>	The City, through the Big Bear Lake Fire Protection District, shall provide fire prevention, suppression and emergency life support services for all persons and property within the boundaries of the District, and shall investigate all means of providing these services in an efficient and cost-effective manner.
<b>Program</b>	<b>PS 7.2.4</b>	Require approved emergency access for all new development or phases thereof when deemed necessary for public health and safety, pursuant to Policy C1.2.1.
	<b>PS 7.4.2</b>	Continue to administer the City's weed abatement program under contract with San Bernardino County.

#### **4.21.3.3 Evacuation Routes and Evacuation Planning**

The San Bernardino Countywide Plan EIR identifies SR-18 and SR-38 in the vicinity of the proposed Program as designated evacuation routes (**Figure 4.10-16**).

##### **Evacuation Road Network**

As evidenced by historical mass evacuations in San Bernardino County and throughout Southern California, even with roadways that are designed to the code requirements, it may not be possible, or even the best response, to move large numbers of persons at the same time as part of a mass-evacuation. Instead, informed, phased evacuations enable more streamlined evacuations where those at highest risk are moved first. Road infrastructure throughout the United States, including San Bernardino County, is not designed to accommodate a short-notice, mass evacuation without some level of congestion. The need for evacuation plans, pre-planning, and tiered or targeted and staggered evacuations becomes very important for improving evacuation effectiveness. Among the most important factors for successful evacuations in urban settings is control of intersections downstream of the evacuation area. If intersections are controlled by law enforcement, barricades, signal control, and other means, potential backups and slowed evacuations can be minimized. Multiple evacuation points enable more evacuees the ability to evacuate with less impact on roadways.

Wildfires that occur on non-extreme weather days behave in a much less aggressive manner and pose fewer dangers to life and property than on extreme weather days because they include less aggressive fire behavior and are easier to control. However, there can be on-shore wind conditions that can lead to aggressive fire behavior. Terrain and fuel are typically the wildfire drivers. During these non-extreme weather days, vegetation is much more difficult to ignite and does not spread fire as rapidly. In these situations, firefighters have a very high success rate of controlling fires and keeping them under 10 acres. The historical fire record shows that most vegetation fires occur during average weather conditions and that such fires account for only a proportionally small amount of the land area burned. Conversely, a small number of wildfires that occur during extreme fire weather account for most of the land area burned. These data highlight that the most dangerous fire conditions are those related to a fire that moves rapidly due to high winds and low humidity, whereas under normal conditions fires are likely to be controlled with no evacuation or possibly limited extent, focused evacuations.

While it is possible that a fire driven by average wind conditions could require evacuation within the Big Bear Valley, such an event would be highly unusual. Moreover, due to the reduced fire behavior during normal weather periods, the evacuation would not be expected to be a large-scale evacuation. Instead, most of the Program Area population would be anticipated to remain at their locations and within their communities, with a more targeted evacuation being ordered, if needed.

If a wildfire ignited closer to the Big Bear Valley and surrounding area during weather that facilitates rapid fire spread, a different evacuation approach would need to be considered. Because it is preferred to evacuate long before a wildfire is near, and in fact, history indicates that most human fatalities from wildfires are due to late evacuations when evacuees are overtaken on roads, it is prudent to consider a contingency option. For example, if a wildfire is anticipated to encroach upon the Program Area in a timeframe that is shorter than would be required to evacuate all occupants, then options available to responding fire and law enforcement personnel should include 1) partial relocation where occupants are temporarily relocated to nearby shelter sites or areas, or 2) temporary shelter in place where occupants are instructed to remain in protected on-site structures or at a designated site, while firefighters perform their structure protection function.

Among the most important factors for successful evacuations in populated settings is control of intersections downstream of the evacuation area. If intersections are controlled by law enforcement, barricades, signal control, firefighters or other means, potential backups and slowed evacuations can be minimized. Another important aspect of successful evacuation is a managed and phased evacuation declaration. Evacuating in phases, based on vulnerability, location, or other factors, enables the subsequent traffic surges on major roadway to be smoothed over a longer time frame and can be planned to result in traffic levels that flow better than when mass evacuations include large evacuation areas at the same time.

#### **4.21.4 Thresholds of Significance**

Appendix G, Section XX of the State CEQA Guidelines indicates that a project would normally have a significant effect on the environment if the project is located in or near a State Responsibility Area or lands classified as very high FHSZs, and would:

- a) Substantially impair an adopted emergency response plan or emergency evacuation plan.
- b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of wildfire.
- c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
- d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

It should be noted for this assessment that the proposed Program infrastructure would mostly be located outside most State Responsibility Areas or lands classified as very high FHSZ, or would be installed underground and would not pose a continuing fire hazard.

#### **4.21.5 Potential Impacts**

The location of future specific projects proposed under the Program are well-defined, with the exception of the Sand Canyon Monitoring Wells, which do not have a defined location, beyond being located downstream of the Sand Canyon Recharge Area. However, even this general location provides enough detail to determine whether the facility would be located within a FHSZ.

As stated under the Regulatory Setting above, the features that would be developed within the BBARWA WWTP (two pump stations, two monitoring wells, the AWP, solar, and evaporation ponds) are designated as being within a high FHSZ. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Alternatives traverse through areas designated as being within very high, high, and moderate FHSZs. The Sand Canyon Booster Station and pipeline traverses through an area designated as being within a very high FHSZ, and indeed it is likely that the monitoring wells downstream of the Sand Canyon Recharge Area would be located within a very high FHSZ. The Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipelines traverse through an area designated as being within a very high FHSZ. These FHSZs are almost entirely located within State Responsibility Areas, with the exception of those areas that fall within the City of Big Bear Lake, which are in Local Responsibility Areas (**Figure 4.10-6**). The impact assessment presented below focuses on physical changes to the landscape at various Program facility sites and any potential adverse impacts these changes may have on any wildfire threats that exist at the site or as a result of the Program. For purposes of the impact forecast, it is assumed that over the next three years, all proposed Program infrastructure would be implemented as described in Chapter 3, Program Description.

**a) Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?**

**Program Category 1: Conveyance Pipelines**

**Construction:** Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Conveyance Facilities will be constructed within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

Indirectly, construction traffic during the Conveyance Facility construction window, could potentially impact traffic, primarily during large truck deliveries of material to construction sites. To minimize potential conflicts between construction deliveries and potential emergency evacuation periods, and thereby avoid a potentially significant impact, BBARWA shall establish access protocols with its construction contractors that will require deliveries to be postponed during a declared fire emergency. Thus, through the implementation of **MM WF-1** potential conflicts between Conveyance Facility construction traffic and a potential fire emergency can be avoided. Once in operation, the pipelines will be placed belowground, and therefore operation of the pipelines would not substantially impair an adopted emergency response plan or emergency evacuation plan as they would be located underground, and the roadways and ROW within which the pipelines would be installed would be returned to their original condition or better once constructed.

The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan and/or emergency evacuation plan. **MM WF-1**, which requires consistency with the San Bernardino County Operational Area Emergency Response Plan (SBCOAE), as well as review and approval by the local agency with authority over construction within the public ROW, would be required to reduce these potential temporary significant impacts to a less than significant level. The SBCOAE provides wildfire

mitigation efforts that include the goal of continuing to reduce fire hazards in San Bernardino County, and generally coordinates evacuation in the event of an area emergency, which includes area wildfires. Impacts would therefore be less than significant with the implementation of **MM WF-1**.

Operation: As shown on **Figure 3-29**, none of the proposed Conveyance Facilities will operate within any of the three identified evacuation routes. Following construction, the operation of the pipelines would not substantially impair an adopted emergency response plan or emergency evacuation plan as they would be located underground. Therefore, the potential for significant impairment of any emergency response or evacuation plans is minimal, or less than significant.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Ancillary Facilities will be constructed within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

Indirectly, construction traffic during the Program's construction window, could potentially impact traffic, primarily during large truck deliveries of material to construction sites. To minimize potential conflicts between construction deliveries and potential emergency evacuation periods, BBARWA shall establish access protocols with its construction contractors that will require deliveries to be postponed during a declared fire emergency. The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan and/or emergency evacuation plan. **MM WF-1**, which requires consistency with the SBCOAE, as well as review and approval by the local agency with authority over construction within the public ROW, would be required to reduce these potential temporary significant impacts to a less than significant level. The SBCOAE provides wildfire mitigation efforts that include the goal of continuing to reduce fire hazards in San Bernardino County, and generally coordinates evacuation in the event of an area emergency, which includes area wildfires. Thus, through the implementation of **MM WF-1** potential conflicts between Ancillary Facility-related construction traffic and a potential fire emergency can be avoided. Impacts would therefore be less than significant with the implementation of **MM WF-1**.

Operation: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Ancillary Facilities will operate within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

The Ancillary Facilities would be contained within the boundaries of their specific sites which would not include any roadways. Ancillary Facility-related vehicles would not block existing street access or use. Therefore, impacts related to emergency evacuation plans would not occur from the operation of proposed Ancillary Facilities. Operation of the proposed Ancillary Facilities would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts related to an adopted emergency plan would be considered less than significant during Ancillary Facilities operation.

The proposed Ancillary Facilities include facilities to be developed at the BBARWA WWTP at Baldwin Lake, which includes the only facilities that will be occupied by humans (the AWPf), and would not be located within a very high FHSZ due to lack of fuel load; and the surface facilities (monitoring wells, blow off valves, and pump stations) located within very high FHSZs will have minor susceptibility to wildland fires as a result of the fact that the facilities will be cleared of all native vegetation once installed (some large trees may be kept in place, but only those that fall outside of the mandatory setbacks for structures per the California Fire Code), and will comply with the mandatory setbacks from any landscaping or existing trees per the California Fire Code, and that the facilities are generally not flammable, and can be replaced at modest cost if damaged. Thus, once these Ancillary Facilities are in place that have a less than significant potential to conflict with an emergency or evacuation plan for the Big Bear Valley. Impacts would be less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Solar Evaporation Ponds will be constructed within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

Indirectly, construction traffic during the Solar Evaporation Ponds' construction window, could potentially impact traffic, primarily during large truck deliveries of material to construction sites. The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan and/or emergency evacuation plan. **MM WF-1**, which requires consistency with the SBCOAE, as well as review and approval by the local agency with authority over construction within the public ROW, would be required to reduce these potential temporary significant impacts to a less than significant level. The SBCOAE provides wildfire mitigation efforts that include the goal of continuing to reduce fire hazards in San Bernardino County, and generally coordinates evacuation in the event of an area emergency, which includes area wildfires. Thus, through the implementation of **MM WF-1** potential conflicts between Solar Evaporation Ponds-related construction traffic and a potential fire emergency can be avoided. Impacts would therefore be less than significant with the implementation of **MM WF-1**.

Operation: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary

evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Solar Evaporation Ponds will operate within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

The Solar Evaporation Ponds would be contained the boundaries of the BBARWA WWTP Site which would not include any roadways. Solar Evaporation Ponds-related vehicles would not block existing street access or use. Therefore, impacts related to emergency evacuation plans would occur from the installation and operation of proposed Solar Evaporation Ponds. Operation of the proposed Solar Evaporation Ponds would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts related to an adopted emergency plan would be considered less than significant during Solar Evaporation Ponds operation.

The proposed Solar Evaporation Ponds include facilities to be developed at the BBARWA WWTP at Baldwin Lake, which includes the only facilities that will be occupied by humans (the AWPf), and would not be located within a very high FHSZ due to lack of fuel load. The Solar Evaporation Ponds will have minor susceptibility to wildland fires as a result of the fact that the facilities will be cleared of all native vegetation once installed (some large trees may be kept in place, but only those that fall outside of the mandatory setbacks for structures per the California Fire Code), and will comply with the mandatory setbacks from any landscaping or existing trees per the California Fire Code, and that the facilities are generally not flammable, and can be replaced at modest cost if damaged. Thus, once the Solar Evaporation Ponds are in place that have a less than significant potential to conflict with an emergency or evacuation plan for the Big Bear Valley. Impacts would be less than significant.

#### **Program Category 4: BBARWA WWTP Upgrades**

**Construction:** Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed BBARWA WWTP Upgrades will be constructed within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

Indirectly, construction traffic during the BBARWA WWTP Upgrades construction window, could potentially impact traffic, primarily during large truck deliveries of material to construction sites. The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan and/or emergency evacuation plan. **MM WF1**, which requires consistency with the SBCOAE, as well as review and approval by the local agency with authority over construction within the public ROW, would be required to reduce these potential temporary significant impacts to a less than significant level. The SBCOAE provides wildfire mitigation efforts that include the goal of continuing to reduce fire hazards in San Bernardino County, and generally coordinates evacuation in the event of an area emergency, which includes area wildfires. Thus, through the implementation of **MM WF-1** potential conflicts between BBARWA WWTP Upgrades-related construction traffic and a potential fire emergency



can be avoided. Impacts would therefore be less than significant with the implementation of **MM WF-1**.

Operation: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed BBARWA WWTP Upgrades will operate within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

The BBARWA WWTP Upgrades would be contained the boundaries of the BBARWA WWTP Site which would not include any roadways. BBARWA WWTP Upgrades-related vehicles would not block existing street access or use. Therefore, impacts related to emergency evacuation plans would occur from the operation of proposed BBARWA WWTP Upgrades. Operation of the proposed BBARWA WWTP Upgrades would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts related to an adopted emergency plan would be considered less than significant during BBARWA WWTP Upgrades operation.

The proposed BBARWA WWTP Upgrades include facilities to be developed at the BBARWA WWTP at Baldwin Lake, which includes the only facilities that will be occupied by humans (the AWPf), and would not be located within a very high FHSZ due to lack of fuel load. The BBARWA WWTP Upgrades will have minor susceptibility to wildland fires as a result of the fact that the facilities will be installed within a developed site, and will comply with the mandatory setbacks from any landscaping or existing trees per the California Fire Code, and that the facilities are generally not flammable, and can be replaced at modest cost if damaged. Thus, once the BBARWA WWTP Upgrades are in place that have a less than significant potential to conflict with an emergency or evacuation plan for the Big Bear Valley.

### **Combined Program Categories**

Construction: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Program facilities will be constructed within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

Indirectly, construction traffic during the Program's construction window, could potentially impact traffic, primarily during large truck deliveries of material to construction sites. The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan and/or emergency evacuation plan. **MM WF-1**, which requires consistency with the SBCOAE, as well as review and approval by the local agency with authority over construction within the public ROW, would be required to reduce these

potential temporary significant impacts to a less than significant level. The SBCOAE provides wildfire mitigation efforts that include the goal of continuing to reduce fire hazards in San Bernardino County, and generally coordinates evacuation in the event of an area emergency, which includes area wildfires. Thus, to minimize potential conflicts between construction deliveries and potential emergency evacuation periods, BBARWA shall establish access protocols with its construction contractors that will require deliveries to be postponed during a declared fire emergency. Thus, through the implementation of **MM WF-1** potential conflicts between Program-related construction traffic and a potential fire emergency can be avoided. Impacts would therefore be less than significant with the implementation of **MM WF-1**.

Operation: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Program facilities will operate within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant. Once in operation, the pipelines will be placed belowground, and therefore operation of the pipelines would not substantially impair an adopted emergency response plan or emergency evacuation plan as they would be located underground, and the roadways and ROW within which the pipelines would be installed would be returned to their original condition or better once constructed.

With the exception of Conveyance Facilities (pipelines), all proposed Program facilities (AWPF, monitoring wells, pump stations, solar, and evaporation ponds) would be contained within the boundaries of their specific sites which would not include any roadways. Program-related vehicles would not block existing street access or use. Therefore, with the exception of Conveyance Facilities (pipelines), no impacts related to emergency evacuation plans would occur from the operation of proposed Program infrastructure facilities. Operation of the proposed facilities would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts related to an adopted emergency plan would be considered less than significant during Program operation.

The proposed Program facilities include facilities on Baldwin Lake, pipelines to convey the Program Water to points of use (Stanfield Marsh, Big Bear Lake, and possibly Shay Pond) and to convey blended Lake and Program Water to the Sand Canyon Recharge Area. The facilities to be developed at the BBARWA WWTP at Baldwin Lake includes the only facilities that will be occupied by humans (the AWPF) are not within a very high FHSZ due to lack of fuel load; the pipelines will be placed underground and will not be exposed damage during a major wildland fire; and the surface facilities (monitoring wells, blow off valves, and pump stations) located within very high FHSZs will have minor susceptibility to wildland fires as a result of the fact that the facilities will be cleared of all native vegetation once installed (some large trees may be kept in place, but only those that fall outside of the mandatory setbacks for structures per the California Fire Code), and will comply with the mandatory setbacks from any landscaping or existing trees per the California Fire Code, and that the facilities are generally not flammable, and can be replaced at modest cost if damaged. Thus, once these facilities are in place that have a less than significant potential to conflict with an emergency or evacuation plan for the Big Bear Valley. Impacts would be less than significant.

### **Other Physical Changes to the Environment**

The additional water discharged to Big Bear Lake, change in recycled water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. Thus, no impacts related to the impairment of an adopted emergency response plan or emergency evacuation plan would be anticipated to occur.

As the LV Site does not propose any new operations beyond those that already occur at the Site in support of the existing farming operation, continuation and enhancement of maintaining the site, and discharge of effluent to the onsite recharge basins, no greater potential to impair an adopted emergency response plan or emergency evacuation plan than that which presently exists would occur as a result of implementation of the proposed Program.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**WF-1:** *Prior to initiating construction of proposed Conveyance Pipelines or other Program facilities within public ROW, BBARWA or the implementing agency shall prepare and implement a traffic control plan that contains comprehensive strategies for maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The implementing agency shall ensure that the traffic control plan and other construction activities are consistent with the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.*

*Level of Significance After Mitigation: Less Than Significant*

The implementation of **MM WF-1** would require the preparation of a traffic control plan with comprehensive strategies to reduce disruption to traffic in general, but particularly to maintain emergency access or evacuation capabilities. Therefore, potential significant impacts to emergency access would be reduced to a less than significant level.

### **Cumulative Impact Analysis**

The Big Bear Valley is moderately urbanized with residential and commercial development. As the area continues to develop, the addition of more development could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan by constructing facilities within public ROW. Since the proposed Program pipelines would be constructed within public ROW, the proposed Program's contribution to the cumulative impact would be considerable requiring implementation of **MM WF-1** to reduce the Program's contribution to this significant cumulative impact. The implementation of **MM WF-1** would ensure that the proposed Program's contribution to cumulative emergency access and evacuation impacts would not be cumulatively considerable by requiring the preparation and implementation of a project specific traffic control plan with comprehensive strategies to reduce/control disruption to emergency access and evacuation plans.

*Mitigation Measures: Implementation of MM WF-1 is required.*

*Level of Significance After Mitigation: Less Than Significant*

- b) **Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of wildfire?**

**Program Category 1: Conveyance Pipelines**

Operation: The Conveyance Pipelines would be installed in areas that are either flat or have shallow slopes. Implementation of the proposed Conveyance Pipelines would not substantially exacerbate wildfire risks, as once construction is completed, the pipelines would be located belowground.

Smoke from wildfires that may occur in the severe wildland fire hazard areas surrounding Big Bear Lake may generally impact air quality throughout the Big Bear Valley region during a fire. Thus, workers in the Program Area could be exposed to the plume of smoke from a wildfire in the San Bernardino Mountains in or surrounding the Big Bear Valley, but the proposed Conveyance Pipelines will not contribute to any substantial increase in this exposure. Due to the character of the facilities (belowground), the proposed Conveyance Pipelines would not contribute substantially to the uncontrolled spread of a wildfire. Thus, impacts would be less than significant.

Construction: During construction, because some Conveyance Pipelines may be installed in locations designated as high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed Conveyance Pipelines require the implementation of **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that the exposure of future Program infrastructure that may be located within high or very high FHSZs would not be exposed to severe damage or loss. Impacts would be less than significant with mitigation incorporated.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Operation: The Program Area and the sites where proposed Ancillary Facilities would be installed are either flat or have shallow slopes. The only facilities that would be located within very high FHSZs are the Sand Canyon Booster Station, Sand Canyon Recharge Conveyance Pipeline, Sand Canyon Conveyance Pipeline Discharge Outlet, and Sand Canyon Booster Station. Implementation of the proposed Ancillary Facilities would not substantially exacerbate wildfire risks, as once construction is completed, none of the Ancillary Facilities that may be occupied will be exposed to greater high fire hazard risk than that which exists at present. The pump station at Sand Canyon would be housed within a structure that would enable maintenance workers to access the pump station, as would the monitoring wells, but no long-term occupancy by workers would occur at any facility within a very high FHSZ. This would ensure that fire risks at these facilities are not substantially exacerbated. Furthermore, for the improvements at BBARWA's WWTP, these improvements would occur within an existing developed hardscaped site, in an area containing very little fuel load when compared to the surrounding forested areas within the Big Bear Valley. The new structure that would be installed to house the pump station would conform to the ignition-resistant building codes codified in Chapter 7A of the CBC, and would be ignition-resistant, defensible and designed to require minimal firefighting resources for protection. Note that this would also be the case for the Sand Canyon Booster Station and Monitoring Wells.

Smoke from wildfires that may occur in the severe wildland fire hazard areas surrounding Big Bear Lake may generally impact air quality throughout the Big Bear Valley region during a fire. Thus, employees in the Program Area could be exposed to the plume of smoke from a wildfire in the San Bernardino Mountains in or surrounding the Big Bear Valley, but the proposed Ancillary Facilities will not contribute to any substantial increase in this exposure. Due to the short-term exposure of the Program Area to a wildfire plume, no significant adverse exposure is forecast to occur for future employees that would support the proposed Ancillary Facilities infrastructure.

Finally, due to the character of the facilities (low potential to cause ignition of a wildland fire and their location, generally outside of the very high FHSZ), the proposed Ancillary Facilities would not contribute substantially to the uncontrolled spread of a wildfire. Thus, impacts would be less than significant.

Construction: During construction, because some Ancillary Facilities may be installed in locations designated as high or very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed Ancillary Facilities require the implementation of **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that the exposure of future Program infrastructure that may be located within high or very high FHSZs would not be exposed to severe damage or loss. Impacts would be less than significant with mitigation incorporated.

### **Program Category 3: Solar Evaporation Ponds**

Operation: The Program Area and Solar Evaporation Ponds site would be installed within a flat area. Implementation of the Solar Evaporation Ponds would not substantially exacerbate wildfire risks, as once construction is completed. The Solar Evaporation Ponds improvements would occur within an area containing very little fuel load when compared to the surrounding forested areas within the Big Bear Valley.

Smoke from wildfires that may occur in the severe wildland fire hazard areas surrounding Big Bear Lake may generally impact air quality throughout the Big Bear Valley region during a fire. Thus, employees in the Program Area could be exposed to the plume of smoke from a wildfire in the San Bernardino Mountains in or surrounding the Big Bear Valley, but the proposed Solar Evaporation Ponds will not contribute to any substantial increase in this exposure. Due to the short-term exposure of the Program Area to a wildfire plume, no significant adverse exposure is forecast to occur for future employees that would support the proposed Solar Evaporation Ponds. Finally, due to the character of the facilities (low potential to cause ignition of a wildland fire and their location, outside of the very high FHSZ), the proposed Solar Evaporation Ponds would not contribute substantially to the uncontrolled spread of a wildfire. Thus, impacts would be less than significant.

Construction: During construction, because the Solar Evaporation Ponds may be installed in locations designated as high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed Solar Evaporation Ponds requires the implementation of **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that the exposure of future

Program infrastructure that may be located within high or very high FHSZs would not be exposed to severe damage or loss. Impacts would be less than significant with mitigation incorporated.

#### **Program Category 4: BBARWA WWTP Upgrades**

Operation: The Program Area and the area where proposed BBARWA WWTP Upgrades would be installed is flat. Implementation of the proposed BBARWA WWTP Upgrades would not substantially exacerbate wildfire risks, as once construction is completed, none of the Program above ground facilities that may be occupied will be exposed to greater high fire hazard risk than that which exists at present. For the improvements at BBARWA's WWTP, these improvements would occur within an existing developed hardscaped site, in an area containing very little fuel load when compared to the surrounding forested areas within the Big Bear Valley. The new structure that would be installed to house the AWPf and associated appurtenances would conform to the ignition-resistant building codes codified in Chapter 7A of the CBC, and would be ignition-resistant, defensible and designed to require minimal firefighting resources for protection.

Smoke from wildfires that may occur in the severe wildland fire hazard areas surrounding Big Bear Lake may generally impact air quality throughout the Big Bear Valley region during a fire. Thus, employees in the Program Area could be exposed to the plume of smoke from a wildfire in the San Bernardino Mountains in or surrounding the Big Bear Valley, but the proposed BBARWA WWTP Upgrades will not contribute to any substantial increase in this exposure. Due to the short-term exposure of the Program Area to a wildfire plume, no significant adverse exposure is forecast to occur for future employees that would support the proposed Program infrastructure.

Finally, due to the character of the facilities (low potential to cause ignition of a wildland fire and their location, generally outside of the very high FHSZ), the proposed BBARWA WWTP Upgrades would not contribute substantially to the uncontrolled spread of a wildfire. Thus, impacts would be less than significant.

Construction: During construction, because the BBARWA WWTP Upgrades may be installed in a high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed BBARWA WWTP Upgrades requires the **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that the exposure of future Program infrastructure that may be located within high or very high FHSZs would not be exposed to severe damage or loss. Impacts would be less than significant with mitigation incorporated.

#### **Combined Program Categories**

Operation: The Program Area and the sites where proposed facilities would be installed are either flat or have shallow slopes. The only facilities that would be located within very high FHSZs are the Sand Canyon Booster Station, pipeline, discharge and erosion control, and monitoring wells, in addition to portions of Big Bear Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment. Implementation of the proposed Program would not substantially exacerbate wildfire risks, as once construction is completed, none of the Program above ground facilities that may be occupied will be exposed to greater high fire hazard risk than that which exists at present. The pump station at Sand Canyon would be housed within a structure that would enable maintenance workers to access the pump station, as would the monitoring wells, but no long-term occupancy by workers would occur at any facility within a very high FHSZ. This would ensure that fire risks at these facilities are not substantially exacerbated. Furthermore, for the improvements at BBARWA's



WWTP, these improvements would occur within an existing developed hardscaped site, in an area containing very little fuel load when compared to the surrounding forested areas within the Big Bear Valley. The new structure that would be installed to house the AWP and associated appurtenances would conform to the ignition-resistant building codes codified in Chapter 7A of the CBC, and would be ignition-resistant, defensible and designed to require minimal firefighting resources for protection. Note that this would also be the case for the Sand Canyon Booster Station and monitoring wells.

Smoke from wildfires that may occur in the severe wildland fire hazard areas surrounding Big Bear Lake may generally impact air quality throughout the Big Bear Valley region during a fire. Thus, employees in the Program Area could be exposed to the plume of smoke from a wildfire in the San Bernardino Mountains in or surrounding the Big Bear Valley, but the proposed Program will not contribute to any substantial increase in this exposure. Due to the short-term exposure of the Program Area to a wildfire plume, no significant adverse exposure is forecast to occur for future employees that would support the proposed Program infrastructure.

Finally, due to the character of the facilities (low potential to cause ignition of a wildland fire and their location, generally outside of the very high FHSZ), the proposed Program would not contribute substantially to the uncontrolled spread of a wildfire. Thus, impacts would be less than significant.

Construction: During construction, because some Program components may be installed in locations designated as high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed Program requires the **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that the exposure of future Program infrastructure that may be located within high or very high FHSZs would not be exposed to severe damage or loss. Impacts would be less than significant with mitigation incorporated.

### **Other Physical Changes to the Environment**

The additional water discharged to Big Bear Lake, change in recycled water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. However, the provision of additional water resources available for use in the Big Bear Valley, which is almost entirely located within high and very high FHSZs would be beneficial to wildfire protections, as the provision of additional water would provide redundancies in the water resources available for fire flow and fire protection in the event of a wildfire.

As the LV Site does not propose any new operations beyond those that already occur at the Site in support of the existing farming operation, continuation and enhancement of maintaining the site, and discharge of effluent to the onsite recharge basins, it is not anticipated that, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of wildfire. The continuation and enhancement of site maintenance at the LV Site would ensure that vegetation that could create greater wildfire hazard is removed and stabilized within the LV Site. This is anticipated to ensure that, even though less effluent will be discharged to the LV Site, the proposed Program would not contribute to greater wildfire risk at the LV Site than that which exists

at present. Furthermore, given the high desert location of the LV Site, the area is only considered to be moderately susceptible to wildfire risk as shown on **Figure 4.10-11**.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures:*

**WF-2:** *Prior to construction of facilities located in areas designated as High or Very High FHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.*

*Level of Significance After Mitigation: Less Than Significant*

The implementation of **MM WF-2** would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce the potential to exacerbate wildfire risks or cause a wildfire to occur, and thereby expose project occupants (there would be minimal occupants of the proposed AWPF) to pollutant concentrations from a wildfire or contribute to the uncontrolled spread of wildfire. Therefore, potential significant impacts to the spread of wildfires would be reduced to a less than significant level.

### **Cumulative Impact Analysis**

The floor of the Big Bear Valley is largely urbanized with residential and commercial development. As the area continues to develop, the addition of more development could expose future residents to pollutant concentrations from a wildfire or contribute to the uncontrolled spread of wildfire resulting in a significant cumulative fire hazard impact. The Program infrastructure would primarily be constructed within the Big Bear Valley's urban areas or outside of very high FHSZs (Baldwin Lake) or, if a facility must be located within a very high FHSZ, **MM WF-2** would be implemented, reducing the project specific impacts to a level of less than significant. The implementation of **MM WF-2** would ensure that the proposed Program facilities' contribution to cumulative wildfire hazard impacts would be reduced to less than cumulatively considerable impact by requiring the preparation and implementation of a project specific fire management plans with comprehensive strategies to reduce/control contribution to the spread of wildfire in high FHSZs. BBARWA would review and approve such fire management plans with an opportunity for review and comment by CAL FIRE and local fire departments to ensure their implementation during construction and operation on the proposed Program.

*Mitigation Measures: Implementation of **MM WF-2** is required.*

*Level of Significance After Mitigation: Less Than Significant*

- c) **Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

**Program Category 1: Conveyance Pipelines**

Construction: At this time, some Conveyance Pipelines are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The pipeline alignments will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options traverse through some delineated very high FHSZ areas. The potential that such facilities can exacerbate fire risk or cause short- or long-term impacts to the environment related to this hazard is minimal because existing paved roadways will be used for the pipelines and Sand Canyon Recharge Area is periodically maintained under existing conditions. Installation of those facilities in these locations could exacerbate fire risk in these areas as a result of spark-producing equipment use during operations and construction, and could therefore result in both temporary and ongoing impacts on the environment. However, the implementation of **MM WF-2** under such circumstances would be available to reduce any Conveyance Pipeline contribution to greater fire risk to a less than significant impact level. Additionally, over the long-term, the pipelines will be essentially passive and will not contribute to increased access or other activities that could contribute to greater fire risk in the future. Thus, the proposed Conveyance Pipeline would not result in any significant adverse short- or long-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

Operation: The pipelines would be installed belowground. The potential for operational wildfire impacts would be negligible given that these facilities would convey water belowground, and as such, would operate in a passive manner. Therefore, no operational impacts are anticipated.

**Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: At this time, some Ancillary Facilities are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The Sand Canyon Booster Station, Sand Canyon Recharge Conveyance Pipeline, Sand Canyon Conveyance Pipeline Discharge Outlet, and Sand Canyon Booster Station will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. The potential that such facilities can exacerbate fire risk or cause short-term impacts to the environment related to this hazard is minimal because existing paved roadways will be used for the Sand Canyon Recharge Project is periodically maintained under existing conditions. Construction of those facilities in these locations could exacerbate fire risk in these areas as a result of spark-producing equipment use during operations and construction, and could therefore result in both temporary and ongoing impacts on the environment. However, the implementation of **MM WF-2** under such circumstances would be available to reduce any contribution to greater fire risk to a less than significant impact level. Thus, the Ancillary Facilities would not result in any significant adverse short-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

Operation: At this time, some Ancillary Facilities are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The Sand Canyon Booster Station, Sand Canyon Recharge Conveyance Pipeline, Sand Canyon Conveyance Pipeline Discharge Outlet, and Sand Canyon Booster Station will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. The potential that such

facilities can exacerbate fire risk or cause short- or long-term impacts to the environment related to this hazard is minimal because existing paved roadways will be used for the Sand Canyon Recharge Project is periodically maintained under existing conditions. Thus, the Ancillary Facilities would not result in any significant adverse long-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

### **Program Category 3: Solar Evaporation Ponds**

Construction: At this time, Solar Evaporation Ponds are proposed to be installed within an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The potential that the Solar Evaporation Ponds can exacerbate fire risk or cause short-term impacts to the environment related to this hazard is minimal because site is currently, and would continue to be maintained under existing and future conditions. Construction of the Solar Evaporation Ponds in these locations could exacerbate fire risk in these areas as a result of spark-producing equipment use during operations and construction, and could therefore result in both temporary and ongoing impacts on the environment. However, the implementation of **MM WF-2** under such circumstances would be available to reduce any contribution to greater fire risk to a less than significant impact level. Thus, the proposed Solar Evaporation Ponds would not result in any significant adverse short-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

Operation: At this time, Solar Evaporation Ponds are proposed to be installed within an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The potential that the Solar Evaporation Ponds can exacerbate fire risk or cause short- or long-term impacts to the environment related to this hazard is minimal because site is currently, and would continue to be maintained under existing and future conditions. Thus, the proposed Solar Evaporation Ponds would not result in any significant adverse long-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

### **Program Category 4: BBARWA WWTP Upgrades**

Construction: At this time, BBARWA WWTP Upgrades are proposed to be installed within an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The potential that the BBARWA WWTP Upgrades can exacerbate fire risk or cause short-term impacts to the environment related to this hazard is minimal because site is currently, and would continue to be maintained under existing and future conditions. Construction of the BBARWA WWTP Upgrades in these locations could exacerbate fire risk in these areas as a result of spark-producing equipment use during operations and construction, and could therefore result in both temporary and ongoing impacts on the environment. However, the implementation of **MM WF-2** under such circumstances would be available to reduce any contribution to greater fire risk to a less than significant impact level. Thus, the proposed BBARWA WWTP Upgrades would not result in any significant adverse short-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

Operation: At this time, BBARWA WWTP Upgrades are proposed to be installed within an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The potential that the BBARWA WWTP Upgrades can exacerbate fire risk or cause long-term impacts to the environment related to this hazard is minimal because site is currently, and would continue to be maintained under existing and future conditions. Thus, the proposed BBARWA WWTP Upgrades would not result in any significant adverse long-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

### **Combined Program Categories**

**Construction:** At this time, some Program infrastructure components are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The pipeline alignments and installation of the Sand Canyon Monitoring Wells, pump station, and discharge and erosion control facilities will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Big Bear Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment traverses through some delineated very high FHSZ areas. The potential that such facilities can exacerbate fire risk or cause short-term impacts to the environment related to this hazard is minimal because existing paved roadways will be used for the pipelines and Sand Canyon Recharge Area is periodically maintained under existing conditions. Construction of those facilities in these locations could exacerbate fire risk in these areas as a result of spark-producing equipment use during operations and construction, and could therefore result in both temporary and ongoing impacts on the environment. However, the implementation of **MM WF-2** under such circumstances would be available to reduce any contribution to greater fire risk to a less than significant impact level. Therefore, potential significant impacts due to the construction of Program infrastructure would be reduced to less than significant level.

**Operation:** At this time, some Program infrastructure components are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The pipeline alignments and installation of the Sand Canyon Monitoring Wells, pump station, and discharge and erosion control facilities will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Big Bear Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment traverses through some delineated very high FHSZ areas. The potential that such facilities can exacerbate fire risk or cause long-term impacts to the environment related to this hazard is minimal because existing paved roadways will be used for the pipelines and Sand Canyon Recharge Area is periodically maintained under existing conditions. Additionally, over the long-term, the pipelines and other recharge facilities will be essentially passive and will not contribute to increased access or other activities that could contribute to greater fire risk in the future. Thus, the operation of the proposed Program would not result in any significant adverse long-term wildfire impacts with the implementation of mitigation.

### **Other Physical Changes to the Environment**

The additional water discharged to Big Bear Lake, change in recycled water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. Therefore, no further potential to exacerbate fire risk from the installation of infrastructure exists than that which has been identified under Combined Program Categories, above.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: Implementation of **MM WF-2** is required*

**WF-2:** *Prior to construction of facilities located in areas designated as High or Very High FFHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark*

*arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.*

*Level of Significance After Mitigation: Less Than Significant*

The implementation of **MM WF-2** would require the preparation of a fire management plan/fuel modification plan for Program infrastructure proposed within very high FHSZs, and it would identify comprehensive strategies to reduce fire potential during construction and over long-term operation. Therefore, potential significant impacts due to the installation of Program infrastructure would be reduced to less than significant level.

### **Cumulative Impact Analysis**

The floor of the Big Bear Valley is largely urbanized with residential and commercial development. As the area continues to develop, the addition of more development could exacerbate fire risk or may result in temporary or ongoing impacts to the environment as a result of development located within adjacent very high FHSZs. Since the Program infrastructure would primarily be constructed within urban areas or non-very high FHSZs or, if a facility must be located within a FHSZ, **MM WF-2** would be implemented, proposed Program impacts would not be cumulatively considerable. The implementation of **MM WF-2** would ensure that the proposed facilities' contribution to cumulative wildfire hazard impacts would not be cumulatively considerable by requiring the preparation and implementation of a project specific fire management plan with comprehensive strategies to reduce/control contribution to the spread of wildfire. BBARWA would review and approve such fire management plans with an opportunity for review and comment by CAL FIRE, Big Bear Fire Department, and SBCFD to ensure their implementation during construction and operation on the proposed Program. As such, while installation or maintenance of the proposed Program may exacerbate fire risk in the region as a result of cumulative development within very high FHSZs, with the implementation of **MM WF-2**, the proposed Program would not result in a cumulatively considerable contribution to cumulative impacts from such occurrences.

*Mitigation Measures: Implementation of **MM WF-2** is required*

*Level of Significance After Mitigation: Less Than Significant*

- d) **Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?**

### **Program Category 1: Conveyance Pipelines**

**Construction:** At this time, some Conveyance Pipeline alignments are proposed for areas designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The pipeline alignments will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options traverses through some delineated very high FHSZ areas.



While the proposed pipelines have a small surface footprint that can be constructed within existing paved roadways to minimize potential fire hazards, the installation could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the Conveyance Pipelines can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Conveyance Pipelines to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Operation: The pipelines would be installed belowground. The potential for operational wildfire impacts would be negligible given that these facilities would convey water belowground, and as such, would operate in a passive manner. Therefore, no operational impacts are anticipated.

### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

Construction: At this time, some of the Ancillary Facilities are proposed for areas designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The installation of the Sand Canyon Booster Station, Sand Canyon Recharge Conveyance Pipeline, Sand Canyon Conveyance Pipeline Discharge Outlet, and Sand Canyon Booster Station will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. No construction, other than that which would occur as part of the Sand Canyon Recharge Project, may occur at any of the existing stream channels that flow northward from Big Bear Valley's southern ridge. The pipe outlet and erosion control at Sand Canyon would be installed pursuant to the regulatory requirements, such that risk from runoff, post-fire slope instability, or drainage changes would not be significantly altered from that which could occur at present. Thus, no significant construction related drainage changes would occur within the Program Area that may be exposed to indirect impacts from wildfire. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the Ancillary Facilities can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Ancillary Facilities to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Operation: At this time, some of the Ancillary Facilities are proposed for areas designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The installation of the Sand Canyon Booster Station, Sand Canyon Recharge Conveyance Pipeline, Sand Canyon Conveyance Pipeline Discharge Outlet, and Sand Canyon Booster Station will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. The Ancillary Facilities could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Ancillary Facilities locations outside of very high FHSZs, i.e., urban areas. Additionally, no facilities, other than that which would occur as part of the Sand Canyon Recharge Project, would operate at any of the existing stream channels that flow northward from Big Bear Valley's southern ridge. The pipe outlet and erosion control at Sand Canyon would be installed pursuant to the regulatory requirements, such that risk from runoff, post-fire slope instability, or

drainage changes would not be significantly altered from that which could occur at present. Thus, no significant operational drainage changes would occur within the Program Area that may be exposed to indirect impacts from wildfire. However, as the Ancillary Facilities would be constructed within a very high FHSZ, it is possible that a potentially significant wildfire related drainage alteration could occur during construction. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the Ancillary Facilities can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Ancillary Facilities to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

### **Program Category 3: Solar Evaporation Ponds**

Construction: At this time, the Solar Evaporation Ponds are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The Solar Evaporation Ponds would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Program infrastructure locations outside of very high FHSZs, i.e., urban areas. However, as the Solar Evaporation Ponds would be constructed within a high FHSZ, it is possible that a potentially significant wildfire related drainage alteration could occur during construction. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the Solar Evaporation Ponds can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Solar Evaporation Ponds to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Operation: At this time, the Solar Evaporation Ponds are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The Solar Evaporation Ponds could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Program infrastructure locations outside of very high FHSZs, i.e., urban areas. However, as the Solar Evaporation Ponds would be constructed within a high FHSZ, it is possible that a potentially significant wildfire related drainage alteration could occur. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during operation. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Solar Evaporation Ponds to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

### **Program Category 4: BBARWA WWTP Upgrades**

Construction: At this time, the BBARWA WWTP Upgrades are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The BBARWA WWTP Upgrades would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Program infrastructure locations outside of very high FHSZs, i.e., urban areas.

However, as the BBARWA WWTP Upgrades would be constructed within a high FHSZ, it is possible that a potentially significant wildfire related drainage alteration could occur during construction. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the BBARWA WWTP Upgrades can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the BBARWA WWTP Upgrades to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Operation: At this time, the BBARWA WWTP Upgrades are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The BBARWA WWTP Upgrades could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Program infrastructure locations outside of very high FHSZs, i.e., urban areas. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during operation. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the BBARWA WWTP Upgrades to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

#### **Combined Program Categories**

Construction: At this time, some of the Program Facilities are proposed for areas designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The pipeline alignments will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options traverses through some delineated very high FHSZ areas. The BBARWA WWTP Upgrades are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. Some of the Ancillary Facilities are proposed for areas designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The Solar Evaporation Ponds are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**.

No construction, other than that which would occur as part of the Sand Canyon Recharge Project, may occur at any of the existing stream channels that flow northward from Big Bear Valley's southern ridge. The pipe outlet and erosion control at Sand Canyon would be installed pursuant to the regulatory requirements, such that risk from runoff, post-fire slope instability, or drainage changes would not be significantly altered from that which could occur at present. Thus, no significant construction related drainage changes would occur within the Program Area that may be exposed to indirect impacts from wildfire.

The installation of Program facilities could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the Program infrastructure can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Program to expose people or

structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Operation: At this time, some Program infrastructure components are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The pipeline alignments and installation of the Sand Canyon Monitoring Wells, pump station, and discharge and erosion control facilities will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Big Bear Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment traverses through some delineated very high FHSZ areas, which could result in potentially significant potential to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during operation. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Program to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Additionally, no facilities, other than that which would occur as part of the Sand Canyon Recharge Project, would operate at any of the existing stream channels that flow northward from Big Bear Valley's southern ridge. The pipe outlet and erosion control at Sand Canyon would be installed pursuant to the regulatory requirements, such that risk from runoff, post-fire slope instability, or drainage changes would not be significantly altered from that which could occur at present. Thus, no significant operational drainage changes would occur within the Program Area that may be exposed to indirect impacts from wildfire.

The Program could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Program infrastructure locations outside of very high FHSZs, i.e., urban areas. However, as many Program facilities would be constructed within a high and very high FHSZ, it is possible that a potentially significant wildfire related drainage alteration could occur. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during operation. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Program to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

#### **Other Physical Changes to the Environment**

The additional water discharged to Big Bear Lake and change in recycled water source at Shay Pond, as a result of the Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. Therefore, no further potential to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes exists than that which has been identified under Combined Program Categories, above.

As the LV Site does not propose any new operations beyond those that already occur at the Site in support of the existing farming operation, continuation and enhancement of maintaining the site, and discharge of effluent to the onsite recharge basins, it is not anticipated that this change in operation at the LV Site would expose people or structures to significant risks, including

downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. The continuation and enhancement of site maintenance at the LV Site would ensure that vegetation that could create greater wildfire hazard is removed and stabilized within the LV Site. This is anticipated to ensure that, even though less effluent will be discharged to the LV Site, the proposed Program would not contribute to greater wildfire risk at the LV Site than that which exists at present. Furthermore, given the high desert location of the LV Site, the area is only considered to be moderately susceptible to wildfire risk as shown on **Figure 4.10-11**.

*Level of Significance Before Mitigation: Potentially Significant*

*Mitigation Measures: Implementation of **MM WF-2** is required.*

**WF-2:** *Prior to construction of facilities located in areas designated as High or Very High FFHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.*

The implementation of **MM WF-2** would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction and over long-term operation. Therefore, potential impacts due to exposing people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes would be less than significant.

*Level of Significance After Mitigation: Less Than Significant*

### **Cumulative Impact Analysis**

The floor of the Big Bear Valley is largely urbanized with residential and commercial development. As the area continues to develop, the addition of more urban development could exacerbate fire risk or may result in temporary or ongoing impacts to the environment, resulting in a significant cumulative impact. Since the Program infrastructure would primarily be constructed within urban areas or outside of very high FHSZs, if the Program infrastructure project must be located within a severe wildfire hazard area, **MM WF-2** would be implemented. As such, while exposure of people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes may be exacerbated by cumulative development in within very high FHSZs, with the implementation of **MM WF-2**, the Program would not result in a cumulatively considerable contribution to cumulative impacts from such occurrences. The implementation of **MM WF-2** would ensure that the proposed facilities' contribution to cumulative wildfire hazard impacts would not be cumulatively

considerable by requiring the preparation and implementation of a project-specific fire hazard mitigation plan with comprehensive strategies to reduce/control exposing people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. BBARWA would review and approve such fire management plans with an opportunity for review and comment by CAL FIRE and local fire departments to ensure their implementation during the construction and operation of the proposed Program.

*Mitigation Measures: Implementation of **MM WF-2** may be required*

*Level of Significance After Mitigation: Less Than Significant*

#### **4.21.6 Cumulative Impacts**

The cumulative analysis of each wildfire issue evaluated in this **Subchapter (4.21)** of the DPEIR determined that the proposed Program would not make a cumulatively considerable contribution to cumulative wildfire hazards for two primary reasons: 1) most, if not all, of the Program infrastructure are proposed to be located within urban areas or outside of very high FHSZs or, 2) if a facility must be located within a severe wildfire hazard area, **MMs WF-1** and **WF-2** would be implemented. As such, while overall wildfire risk may be exacerbated by other cumulative development within very high FHSZs, with the implementation of **MMs WF-1** and **WF-2**, the Program would not result in a cumulatively considerable contribution to wildfire impacts from such occurrences.

#### **4.21.7 Unavoidable Adverse Impacts**

As determined in the preceding evaluation, with the implementation of mitigation, the proposed Program would have no potential to result in any significant and unavoidable impacts as a result of wildfire threats or hazards in the Big Bear Valley.



## CHAPTER 5 – ALTERNATIVES

### 5.1 INTRODUCTION

CEQA and State CEQA Guidelines require an evaluation of alternatives to the proposed action when a project may cause a significant adverse impact on the environment. The Program has been evaluated for potential significant adverse impacts in **Chapter 4, Environmental Impact Evaluation** of this document. This chapter of the DPEIR describes and evaluates alternatives to the Program and is intended to implement the requirements set forth in the State CEQA Guidelines. This chapter also identifies the Environmentally Superior Program Alternative as required by State CEQA Guidelines Section 15126.6(e)(2).

#### 5.1.1 Rationale for Alternatives Selection

The purpose of the alternatives' evaluation under CEQA is to determine whether one or more feasible alternatives are capable of reducing these potentially significant impacts of a preferred project to a less than significant level. The applicable text in the State CEQA Guidelines is as follows:

*Section 15126.6(a): Alternatives to the Proposed Program. An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation.*

*Section 15126.6(b): Purpose. Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly.*

The range of feasible alternatives to the Program is selected and discussed in a manner to foster meaningful public participation and informed decision making. Among the factors that may be taken into account when addressing the feasibility of alternatives are environmental impacts, site suitability, economic viability, availability of infrastructure, regulatory limitations, jurisdictional boundaries and whether the applicant could reasonably acquire, control, or otherwise have access to the alternative option. (State CEQA Guidelines § 15126.6(f)(1))

Additionally, a NPA is required to be included in the range of alternatives. An EIR need not consider an alternative whose effects cannot be reasonably identified, whose implementation is remote or speculative, or one that would not achieve most of the basic Proposed Program objectives. Finally, the Environmentally Superior Alternative shall be identified and if it is the NPA, an Environmentally Superior Alternative shall also be identified.

Based on the analysis in **Chapter 4** of the DPEIR, implementation of the Program is forecast to contribute to significant adverse impacts on agricultural resources in Lucerne Valley as a result of the probable loss of 190 acres or more of existing agricultural production due to the Program,

thereby resulting in a significant adverse impact to Prime Farmland and Farmland of Statewide Importance. A potential to adversely impact bird-foot checkerbloom from Program implementation also may occur. The Baldwin Lake Pipeline Alignment Option is being considered by BBARWA, as it would avoid a large portion of construction within residential roadways that would otherwise occur under other Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options. If the Baldwin Lake Pipeline Alignment Option is selected, mitigation would be necessary to minimize impacts to the bird-foot checkerbloom species, but it would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. Therefore, the Program's contribution is considered cumulatively considerable, and would result in a significant and cumulatively considerable adverse impact under Biological Resources.

The continued, but reduced, discharge of BBARWA's secondary effluent to the LV Site under the Program will have the potential to contribute to the degradation of water quality in the Lucerne Valley Basin by removing a dilution source, but is not the direct cause of degradation because BBARWA effluent is only a minor contributor and not the primary source of degradation. The groundwater at the monitoring wells downgradient of the LV Site currently exceeds the MCLs for TDS (recommended) and nitrate, so the reduced flows would not cause the Basin to violate a water quality standard, WDRs or otherwise substantially degrade surface or groundwater quality, but may result in a further exceedance of TDS and Nitrate, which is a potentially significant and unavoidable impact. The Program has a potential to interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin as a result of the reduction in discharge to the LV Site. Finally, the Program has a potential to conflict with or obstruct the Colorado Basin Plan for the same reasons, as the Program has a potential to substantially degrade groundwater quality of the Lucerne Valley Basin discussed above. Thus, the Program would result in cumulatively significant and significant and unavoidable impacts under Hydrology and Water Quality.

As described in **Subchapter 4.5, Biological Resources**, construction of the Baldwin Lake Pipeline Alignment Option may affect bird-foot checkerbloom, as it is present within the proposed Program Area footprint for this pipeline alignment. While **MMs BIO-1** through **BIO-4** would minimize impacts to bird-foot checkerbloom from construction of the Solar Evaporation Ponds to a level of less than significant, **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. Therefore, the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact if the Baldwin Lake Pipeline Alignment Option is the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option. If BBARWA does not select the Baldwin Lake Pipeline Alignment Option, a significant impact under this issue would be avoided. Regardless, as the Baldwin Lake Pipeline Alignment Option may be the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option, impacts under this issue are considered significant and unavoidable. Furthermore, no mitigation is available to reduce the potential for a significant and unavoidable impact to occur to water supplies in the Lucerne Valley Basin as a result of Program implementation. This is because the Program would reduce the amount of water that would be discharged to the Lucerne Valley Basin, which has a potential to impact the amount of water that could be expected to be recharged in the Lucerne Valley Basin on an annual basis, thereby impacting water supplies. Therefore, the proposed Program would have a significant and unavoidable potential for the implementation of the project to substantially impair the availability of water supplies in the Lucerne Valley Basin as a result of the reduction in

recharge to the Lucerne Valley Basin. As such, impacts under Utilities and Service Systems are considered significant and unavoidable.

Based on the above discussion, implementation of the Program would result in significant and unavoidable impacts under the following issues: Agriculture and Forestry Resources, Biological Resources, Hydrology and Water Quality, and Utilities and Service Systems.

Implementation of feasible **MMs** or Program design features would reduce potentially significant impacts to the following issues to less than significant: Aesthetics, Air Quality, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Land Use and Planning, Noise, Public Services, Transportation, Tribal Cultural Resources, and Wildfire. The issues of Energy, Greenhouse Gas, Mineral Resources, Population and Housing, and Recreation were found to be less than significant without the need for mitigation. No other potential significant adverse environmental impacts are forecast to result from the Program's implementation after implementation of the recommended MMs.

As described in **Chapter 1, Executive Summary**, the goal of the Program Team is to partner to recover a water resource that is currently being transported out of Big Bear Valley to Lucerne Valley, close the water loop, and keep the water in the Big Bear Valley for beneficial reuse. This goal will be achieved through the development of a multi-benefit water reuse project that:

- Augments natural recharge for water supply sustainability;
- Protects the rare and diverse habitat and species in Big Bear Valley;
- Promotes a thriving community through enhanced recreation;
- Creates a new and sustainable water supply;
- Educates the community about the water cycle, recycled water treatment process, and water quality to gain public support;
- Creates a Program that benefits the Program Team, and thereby benefits the community served by the members of the Program Team;
- Develops a cost-effective project to offset potable water demands; and
- Takes advantage of current outside funding opportunities.

The Program Team intends to implement the Program, which was first discussed in detail in **Appendix 2** "Bear Valley Water Sustainability Project Final Draft Lake Alternative Evaluation" prepared by WSC dated December 19, 2018. Since 2018, some aspects of the Program have been modified. However, the objectives of the Program remain the same and include the following uses and benefits:

- Sustain Stanfield Marsh Habitat and Increase Educational Opportunities: By providing a consistent water source to Stanfield Marsh through the discharge of Program Water to Stanfield Marsh, the habitat therein would be sustained and educational opportunities for the community and visitors would be created;
- Enhance Big Bear Lake Benefits: The Program would discharge Program Water to Stanfield Marsh, allowing the Program Water to flow through Stanfield Marsh and provide new inflow to Big Bear Lake. The Program will increase inflows and Lake level, thereby enhancing recreational opportunities and aquatic habitat in both Big Bear Lake and Stanfield Marsh, and would support water quality improvements;
- Expand Local Water Supplies: When there is space in the groundwater basin to increase water levels and there is available Program Water stored in Big Bear Lake, Program Water could be pumped to Sand Canyon to recharge the groundwater basin to strengthen the sustainability of the groundwater basin. The Program Team, in coordination with the Big Bear Watermaster, will negotiate an accounting framework to track the volume of Program

Water stored in Big Bear Lake over time, which will account for inputs, extractions, evaporation and releases of Program Water, and will be negotiated with the existing accounting and reporting framework used by the Big Bear Watermaster. This framework is envisioned to include a provision for some Program Water to be stored in Big Bear Lake and subsequently used for recharge in Sand Canyon when conditions are favorable for recharge;

- Sustain Unarmored Threespine Stickleback Fish with Program Water: To sustain the habitat for the Federally listed Unarmored Threespine Stickleback (Stickleback) fish with a new sustainable water source, Program Water will be discharged to Shay Pond in place of potable groundwater. While this part of the Program is included in this DPEIR for analysis purposes, this Program component is not anticipated to be completed in the near term. Therefore, a full analysis was not completed;<sup>127</sup>

The Program will require significant upgrades to the treatment process at the WWTP to meet stringent discharge requirements for the Big Bear Lake Discharge and the Sand Canyon Recharge Project.

The implementation of the facilities proposed as part of the Program consists of construction and operation of the various facilities summarized below.

Each Program Category has been formed utilizing the greatest number, intensity, lengths, and capacities for each type of facility proposed under the Program. For example, the pipeline lengths and sizes considered under Program Category 1 represent the option(s) that would require the greatest pipeline length to achieve that "Component" of the Program.

#### **Program Category 1: Conveyance Pipelines**

The Program would ultimately install a total of about 6.59 miles or 34,810 LF of various types of pipelines. Potential alignments include the following:

- Pipeline to Lake: 12" 19,940 LF
- Pipeline to Stickleback: 4" 710 LF, and possible additional 6" 5,600 LF where the existing pipeline cannot be utilized
- Pipeline from Resort Storage Pond to Sand Canyon: 8" 7,210 LF
- Brine Pipeline (within BBARWA WWTP property): 8" 1,350 LF

#### **Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

The Program would ultimately install monitoring wells in order to facilitate project operation as follows:

- Up to four monitoring wells
  - Two downstream of the Sand Canyon Recharge Area.
  - Two near the Solar Evaporation Ponds at the BBARWA WWTP site.

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<sup>127</sup> The utilization of the Program Water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*), which is a Federally and state endangered species.

The Program would ultimately install three pump stations in order to facilitate project operation as follows:

- Effluent Pump Station @ WWTP 1,520 gpm
- Pump Station @ Resort Storage Pond 471 gpm
- Brine Pump Station @ WWTP: 20 gpm

The Program would ultimately install a pipe outlet at the top of the channel bank at Sand Canyon that discharges down the side slope of the channel into the channel bottom. The channel slope will be protected from erosion using rip rap or other erosion control methods, similar to that which is shown on **Exhibit 3-1**.

### **Program Category 3: Solar Evaporation Ponds**

The Program would between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the bring to evaporate, and then removing remaining brine.

### **Program Category 4: BBARWA WWTP Upgrades**

This Program Category includes upgrades to the BBARWA WWTP, to include 2.2 MGD of full advanced treatment, producing up to 2,200 AFY of Program Water. The AWPf includes the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

This Program Category also accounts for the installation of 2 MW of solar panels at BBARWA's WWTP and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

### **Other Physical Changes to the Environment**

While the proposed Program would result in the installation of several facilities, it would also result in other physical changes to the environment, including releasing of Program Water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would have the potential to enhance the visual setting of the Big Bear Valley by way of increased water in Big Bear Lake and Stanfield Marsh. This would result from Big Bear Lake levels being higher, thereby minimizing the dry habitat that occurs around Big Bear Lake's rim when Big Bear Lake levels are low. Additionally, in Stanfield Marsh, greater provision of water in this area has the potential to support wetland/marsh habitat in a larger area than is supported on average.

The Program would also result in a change at Shay Pond in that Program Water would be used in place of the existing water source—groundwater—in support of the Stickleback. This change is not anticipated to result in a physical change to the environment at or surrounding Shay Pond beyond that, the source of water utilized at Shay Pond will be altered.

The Program will result in a flow reduction to the LV Site from about 2,190 AFY to about 340 AFY on average. The flows BBARWA will send to the LV Site will vary based on the hydrologic conditions. For example, in a dry year, it is possible that no water would be sent to the LV Site,

and in a wet year, like in 2011, up to 1,050 AFY could be sent to the LV Site. The reduction in discharge would limit the ability to continue the agricultural use of the site from an existing use of 190 acres of the 480-acre LV site, to a utilization of 40 acres of the LV Site for farming purposes. The LV Site would continue to be owned by BBARWA, and BBARWA would ensure that the site is maintained. Enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and eco-conscious weed killing applications;
- Planting cover crops, such as sorghum to prevent dust migration; and/or
- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

As shown in the preceding discussion, the Program consists of a complex, complicated and integrated program that incorporates a mix of projects and operations that are designed to meet the primary objectives of the Program.

**Section 5.2** describes alternatives that were considered but rejected. **Section 5.3** describes the No Program Alternative, and **Section 5.4** describes the Greenspot Alternative. **Section 5.5** describes the Greenspot & Sand Canyon Alternative. **Section 5.6** compares the alternatives to the Program.

## **5.2 ALTERNATIVES CONSIDERED BUT REJECTED**

### **5.2.1 Alternate Location**

Management of water resources in the Big Bear Valley is an activity that cannot be conducted at another location, as the water purveyors in the Big Bear Valley—BBLDWP and BBCCSD—utilize groundwater from the Bear Valley Basin that underlies the Big Bear Valley. Thus, conducting the Program at a location outside of the Big Bear Valley is not a feasible alternative to conducting the Program in Big Bear Valley. Furthermore, each of the Program Objectives pertains to enhancing resources in the Big Bear Valley. As such this evaluation will not give further consideration to an alternative location for the Program because implementation outside the Big Bear Valley would fail to meet any of the basic Program objectives. Thus, an alternative location evaluation (i.e. conducting the Program outside of the Big Bear Valley) in this DPEIR is rejected as infeasible and unable to meet basic Program objectives, i.e., the objective of recovering a water resource that is currently being transported out of the Big Bear Valley to Lucerne Valley, close the water loop, and keep the water in the Big Bear Valley for beneficial reuse. A project outside of the Big Bear Valley cannot achieve this fundamental and essential objective.

### **5.2.2 Imported Water**

An imported water alternative would require the water agencies in the Big Bear Valley to obtain imported water, which is not presently available in the eastern San Bernardino Mountains. This is because in order to deliver imported water from one of the wholesale agencies outside of Big Bear Valley, such as San Bernardino Valley Municipal Water District or MWA, the Program Team would need to invest in substantial infrastructure to reach the Big Bear Valley (i.e., 30-40 miles of pipeline, booster stations, water storage reservoirs, and water treatment facilities). Not only would the construction of such facilities be cost prohibitive, but the energy to deliver the water once the facilities would be operational would also be cost prohibitive due to the elevation change between the closest locations at which imported water is available and the energy required to transmit



water from a lower elevation to a higher elevation. While importing water could create a new water supply in the Big Bear Valley, it would not create a new sustainable water supply, as the volume of available imported water is highly dependent on precipitation, snow pack, and other climate factors in the northern portion of the State. This alternative would not meet most of the basic Program objectives.

### **5.2.3 Landscape Irrigation**

The Program Team compiled a list of 25 potential recycled water users in the Big Bear Valley that could convert to recycled water for landscape irrigation purposes. The BBARWA WWTP is distant from a majority of the potential recycled water users, requiring 13 miles of pipelines and booster station energy to distribute the recycled water throughout Big Bear Valley. Based on the evaluation presented in the Bear Valley Water Sustainability Recycled Water Facilities Planning Study (December 2016; **Appendix 20, Volume 2**), this alternative was evaluated and the maximum potential benefit is keeping 231 AFY of water in Big Bear Valley, or roughly 13% of what was exported in 2015. With the added uncertainty of customer conversion to recycled water that would increase unit cost as a result of end users converting to drought tolerant landscaping and reduce beneficial use yield, this Alternative does not adequately address the Program Team objective of developing a cost effective, drought proof and sustainable water source. This alternative would not meet most of the basic Program objectives.

## **5.3 NO PROGRAM ALTERNATIVE**

One of the alternatives that must be evaluated in an EIR is the (NPA, regardless of whether it is a feasible alternative to the proposed Program (i.e., would meet the project objectives or requirements). Under this alternative, the environmental impacts that would occur if the proposed Program is not approved and implemented are identified. The NPA is required under CEQA to evaluate the environmental effects associated with no action on the part of the Lead Agency. The NPA would not require any upgrades to the BBARWA WWTP and the secondary effluent would continue to be discharged outside of Big Bear Valley for crop irrigation at the LV Site. The NPA would not provide any benefits to the Big Bear Valley. This alternative evaluates the environmental impacts resulting from a hypothetical continuation of the existing land use and circumstances. The NPA would not result in the Program Team securing a reliable, renewable source of water that could be retained in Big Bear Valley, which would essentially provide security for the future during potential droughts and dry years.

The following evaluation will also include identification of an environmentally superior alternative as required by Section 15126.6I(2) of the State CEQA Guidelines. A summary comparative discussion of the NPA in terms of the specific issues evaluated in this DPEIR is provided below.

Aesthetics: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels in the Rathbone Management Area of the Bear Valley Basin (where the proposed Sand Canyon Recharge would be located under the Program) could drop below the minimum threshold established in the GSP for that Management Area by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future hydrologic variations and growth. With no specific facilities required under the NPA, the NPA would have no potential to impact a scenic vista; substantially damage scenic resources; conflict with applicable zoning and other regulations

governing scenic quality; or create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. Contrastingly, under the Program, aesthetic impacts to scenic vistas and resources from disturbance would be potentially significant, but can be reduced to less than significant by shielding facilities and landscaping or revegetating disturbed areas either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area, as specified in MMs **AES-1**, **AES-5**, and **AES-6**. Program facilities shall be located outside of scenic viewsheds or otherwise undergo subsequent CEQA documentation mm **AES-2**. Additionally, under the Program implementation of mm **AES-3** is required to ensure that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a less than significant level, and mm **AES-4** is required to ensure that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof. mm **AES-7** and **AES-8** would minimize light and glare conflicts from future facility construction and operation. As such, while the Program would require mitigation to reduce impacts to a level of less than significant, the NPA would not result in any significant aesthetic impacts. Under this evaluation and set of assumptions, the NPA would result in less overall aesthetic impacts; however, neither would result in any significant and unavoidable impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Agricultural and Forestry Resources: The NPA would not result in any new facilities. The Program would have no potential to impact agricultural resources in Lucerne Valley and forestry resources located within Big Bear Valley, mitigation is available to minimize impacts to forestry resources to a level of less than significant. However, no feasible **MMs** exist to avoid a significant impact from the conversion of agricultural lands at the LV Site in Lucerne Valley as a result of Program implementation. It should be noted that the farmer who leases the LV Site from BBARWA could, at any time, with or without the proposed Program, terminate their lease with BBARWA. As the farmer is presently under a lease agreement with BBARWA, it is assumed that the farming operations will continue for the foreseeable future. Thus, based on the current conditions, the NPA would have no known potential to result in the loss of Prime Farmland or Farmland of Statewide Importance, and as the NPA would have no known potential to involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use. The NPA would have no potential to impact forestry resources, and furthermore, where the Program would have a potential to result in any impacts to forestry as a result of the Sand Canyon pipeline, mitigation to ensure compliance with CAL FIRE regulations would minimize impacts to a level of less than significant. Thus, the NPA would have no potential to impact forestry resources, and the Program would require mitigation to minimize impacts to such resources. Under this evaluation and set of assumptions, the NPA would avoid a significant agricultural resources impact, though impacts to forestry resources under both the Program and the NPA would be less than significant.

Air Quality: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have minimal potential to result in significant air quality impacts. As with the Program, this alternative would not lead to unplanned population, housing or employment growth that exceeds the forecasts used in the development of the SCAQMD's AQMP. Because no upgrades to existing recycled water systems or groundwater recharge by the Program Team under the

NPA, it is unlikely that maximum daily emissions during construction and operation of the NPA would exceed SCAQMD regional or localized significance thresholds, however, mitigation is required to minimize operational NO<sub>x</sub> emissions, and as such **MM AQ-1** would be required to minimize potentially significant impacts below significance thresholds (see **Subchapter 4.3, Air Quality**). The NPA also does not include any reduction in discharge to the LV Site, and therefore would avoid the need for a fugitive dust response program to address the potential for fugitive dust to occur as a result of the LV Site agricultural fields becoming fallow. However, **MM AQ-2** would minimize this potential impact under the proposed Program. The NPA also would not include new facilities with the potential to generate substantial odorous emissions, though nor would the Program through the implementation of **MM AQ-3**. As such, under this evaluation and set of assumptions, the NPA would have substantially less potential to result in significant air quality impacts; however, the level of significance of air quality impacts of the Program would not be significant, and therefore impacts to air quality under both the Program and the NPA would be less than significant.

Biological Resources: The NPA will have no general biological resource impacts as it would not require any construction through Baldwin Lake. The NPA would eliminate the impacts of the construction of the Baldwin Lake Pipeline Alignment Option through Baldwin Lake, which, under the Program, would potentially adversely impact bird-foot checkerbloom, a State and Federal endangered species. When mitigation is implemented—primarily avoidance of biologically sensitive areas or compensation to offset losses to sensitive biological resources—the proposed Program approaches the level of significance regarding biological resource to those that would result from the NPA’s impacts, but a potential still exists for significant impacts under the Program as a result of the construction of the Baldwin Lake Pipeline Alignment Option thus impacting the bird-foot checkerbloom as **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species. While the NPA would avoid the significant Biological Resources impact, it would not provide the anticipated habitat and recreational benefits, which are objectives of the Program, and that would result from the Program’s discharge to Stanfield Marsh and Big Bear Lake. Regardless, under this evaluation and set of assumptions, the Program’s effects on biological resources are considered to be greater than the NPA, and the NPA would avoid a potentially significant impact on biological resources that would otherwise result from implementation of the Program.

Cultural Resources: Simply because the Program will disturb a greater amount of area, its potential for encountering cultural resources is greater than for the NPA. The NPA does not require the development of any kind, other than the business-as-usual approach by which BBARWA manages its operations. As such, the NPA would have no cultural resources impacts. When mitigation is implemented—primarily avoidance of culturally sensitive areas, further site-specific study of the Sand Canyon Monitoring Wells, archaeological monitoring in sensitive areas, and specific treatment requirements for buried cultural materials that may be uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to cultural resources. Under this evaluation and set of assumptions the NPA would have less impacts on cultural resources when compared to the proposed Program, but neither the NPA nor the Program would result in significant cultural resource impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Energy: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042.

There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have minimal potential to result in significant energy impacts. Because no upgrades to existing recycled water systems or groundwater recharge by the Program Team, including the addition of an AWPf in conjunction with Conveyance Pipelines, pump stations, monitoring wells, and evaporation ponds as proposed by the Program, energy consumption under the NPA would be less than that which would occur under the proposed Program. However, as with the proposed Program, the potential for wasteful, inefficient, or unnecessary energy consumption during construction activities would be minimized by compliance with existing applicable regulations. Furthermore, operational energy usage under the NPA would not be wasteful, inefficient, or unnecessary because it would continue to contribute to the provision of wastewater collection, recycled water generation, and water delivery within Big Bear Valley and would be conducted in accordance with existing applicable regulations related to energy efficiency and vehicle fuel economy. However, operational energy usage for the proposed Program would not be wasteful, inefficient, or unnecessary because it would include the installation of a 2 MW solar array. As such, under this evaluation and set of assumptions, the NPA would result in less overall energy consumption; however, the level of significance of the energy impacts of this alternative would be similar to that which would occur under the proposed Program and would be less than significant.

Geology and Soils: The Big Bear Valley contains substantial geological and soils constraints. Due to these substantial constraints and the installation of future Program related facilities in locations where such constraints may occur, a potential for significant geology and soils resources impacts from implementation of the Program were identified in **Subchapter 4.8**. The NPA does not require development of any kind, other than the business-as-usual approach by which the Program Team manage each agency's individual operations. As such, the NPA would not result in exposure of persons or structures to new sources of geology and soils related constraints including seismic constructions such as, liquefaction, ground shaking, landslide, and ground rupture as well as soil constraints such as erosion, subsidence, and soil stability. Several **MMs** were identified to minimize geology and soils impacts under the Program, while the NPA would not require mitigation to ensure that geology and soils impacts are less than significant. As such, under this evaluation and set of assumptions, the NPA would have less potential to result in significant geology and soils impacts compared to the Program; however, the level of significance of geology and soils impacts of this alternative would be similar, if less than, that which would occur under the proposed Program since both would be less than significant with the implementation of mitigation.

Greenhouse Gas: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have minimal potential to result in significant greenhouse impacts. Because no upgrades to existing recycled water systems or groundwater recharge by the Program Team, including the addition of an AWPf in conjunction Conveyance Pipelines, pump stations, monitoring wells, and evaporation ponds as proposed by the Program, GHG emissions under the NPA would likely be less than those of the proposed Program. Given that the NPA represents an alternative with no new construction or operational activities outside of the scope of a business-as-usual scenario (i.e., continuation of practices that have already been evaluated and approved under CEQA or that fall outside of the scope of CEQA), the NPA would have no potential to

generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. The proposed Program would not exceed SCAQMD thresholds for GHG, nor would it conflict with a plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG. As such, under this evaluation and set of assumptions, the NPA would result in fewer overall construction and operational GHG emissions compared to the proposed Program. Under this evaluation and set of assumptions the NPA would result in less overall GHG emissions; however, the level of significance of the GHG impacts of this alternative would be similar to that which would occur under the proposed Program and would be less than significant.

Hazards and Hazardous Materials: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have minimal potential to result in significant hazards and hazardous materials impacts. The NPA would operate in accordance with existing Program Team agency policies related to the handling of hazardous materials and, as with the Program, would be subject to mandatory regulations pertaining to the handling and transport of hazardous materials. Given that no new facilities would be developed under the NPA, no mitigation would be required to minimize potential hazards and hazardous materials impacts. Several MMs were identified to minimize hazards and hazardous materials impacts under the Program. Therefore, though there will be some adverse impacts as a result of implementing the Program, specific MMs would reduce its potential project specific and cumulative (direct and indirect) effects to a less than significant impact level for hazards and hazardous material issues. As such, under this evaluation and set of assumptions, the NPA would likely have less potential to result in significant hazard and hazardous materials impacts; however, the level of significance of the hazard and hazardous materials impacts that would result from this alternative would be similar, if less than, that which would occur under the proposed Program since both would be less than significant with the implementation of mitigation.

Hydrology and Water Quality: The Program will provide a local, drought-resistant water supply with up to 380 AFY used to sustain groundwater levels and storage in the Bear Valley Basin, with even greater potential for water savings through use of Program Water stored in Big Bear Lake to serve the Bear Mountain Golf Course, Resort bike park, and other uses. Under the NPA, however, there are other challenges with managing the Bear Valley Basin, including that, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. The consequences of taking no action towards addressing groundwater supply challenges, given Big Bear Valley's remote location, that would be addressed by the Program or by the other alternatives—the Greenspot Recharge Alternative and Greenspot and Sand Canyon Alternative—would be impairment of the Bear Valley Basin, and noncompliance with the Bear Valley Basin GSP. Consequently, going forward with management of the Basin in a business-as-usual approach, without addressing the need for new facilities needed to tackle the above challenges, would have a potential to result in a major significant impact to the Bear Valley Basin's hydrology resources and water quality characteristics.

However, by continuing the discharge of secondary effluent to the LV Site, the NPA would avoid a significant water quality impact and groundwater impact on the Lucerne Valley Basin.

Regarding flood hazards and contribution thereof, the NPA, with no proposed facilities, would have no potential flood hazard impacts beyond those that have been identified to occur at existing facilities by previously adopted or certified CEQA documentation. Regardless, both of these alternatives are forecast to have less than significant adverse impact under this environmental topic.

The NPA, which assumes no facilities would be installed and business-as-usual would continue, would result in significant groundwater supply challenges, impairment of the Bear Valley Basin, and noncompliance with the Bear Valley Basin GSP, with no mitigation available to minimize this significant impact. Due to Big Bear Valley's unique position at the top of the Santa Ana Watershed, the only water available to Big Bear Valley is groundwater, which is replenished by precipitation, and while the Program would result in a significant impact on the Lucerne Valley Basin as a result of reducing the discharge to the LV Site, and thereby reducing the amount of recharge to the Lucerne Valley Basin, the Program is necessary to meet supply needs and protect the groundwater basin from impairment. Ultimately, under this evaluation and set of assumptions the Program's effects on hydrology and water quality are considered to be equal to the NPA, with both the NPA and Program resulting in significant hydrology and water quality impacts, only for different reasons and within different watersheds. The NPA would ultimately lead to new significant impacts under hydrology and water quality that would not otherwise result from implementation of the Program. Impacts under both the Program and the NPA would be significant.

**Land Use and Planning:** The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. While no specific facilities would be installed under the NPA, the GSP itself could be considered a planning document, and by taking no action to address groundwater management, the NPA could result in a conflict thereof, thereby resulting in a significant impact under land use and planning. With no specific facilities required under the NPA, the NPA would have no potential to conflict with the majority of goals and policies of the applicable General Plans or physically divide an established community. However, there are a number of goals and policies pertaining to water resources in the San Bernardino Countywide Plan and Big Bear Lake General Plan that the NPA may conflict with through lack of action to manage water supplies in Big Bear Valley. Namely, the NPA would directly conflict with the following goals, policies, and programs put forth in the Big Bear Lake General Plan.

**Goal ER 3:** A dependable long-term supply of clean and healthful domestic water to meet the needs to all segments of the community.

**Goal PS 3: Sewer Facilities.** A sewer system adequate to serve the long-term needs of the community, including an upgraded sewage collection system and adequate treatment plant capacity.

**Policy PS 3.1:** Cooperate with the Big Bear Area Regional Wastewater Agency (BBARWA) in determining future needs and developing plans for wastewater facilities.

**Program PS 3.1.5:** Actively encourage and support BBARWA in any future requests to change its point of discharge, as determined by the California Regional Water Quality



Control Board, from Lucerne Valley to the Big Bear Valley, for local use of reclaimed water at the appropriate time.

As such, given that the NPA would conflict with the Bear Valley Basin GSP, San Bernardino Countywide Plan and Big Bear Lake General Plan, a significant land use and planning impact would result from the NPA. Mitigation is required to reduce impacts to a level of less than significant under the Program, and these measures would ensure that the Sand Canyon Monitoring Wells facilities associated with the Program are developed in appropriate areas and conform with the surrounding land uses or are developed to minimize conflicts with adjacent land uses. As such, while the Program would require mitigation to reduce potential impacts to a level of less than significant, the NPA would result in significant and unavoidable land use and planning impacts. Under this evaluation and set of assumptions, the NPA would result in greater overall land use impacts than the Program, and would result in a new significant and unavoidable impact when compared to the less than significant land use and planning determination made in this DPEIR for the Program.

Mineral Resources: The NPA would not result in any new facilities that have been proposed to operate under the Program. With no specific facilities required under the NPA, the NPA would have no potential to result in a direct adverse impact on mineral resources, or result in the loss of availability of a known valuable mineral resource or result in the loss of availability of a locally important mineral resource recovery site. Similarly, no mineral resource impacts were projected to occur as a result of the implementation of the proposed Program. Under this evaluation and set of assumptions, the NPA would result in comparable impacts to mineral resources to that which would occur under the proposed Program and neither the NPA nor the Program would result in significant mineral resource impacts. Impacts under both the Program and the NPA would be less than significant.

Noise: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have minimal potential to result in significant noise impacts. Because no upgrades to existing recycled water systems or groundwater recharge by the Program Team would occur, including the addition of an AWP in conjunction Conveyance Pipelines, pump stations, monitoring wells, and evaporation ponds as proposed by the Program, continuation of the business-as-usual approach would have no potential generate temporary or permanent increases in ambient noise levels and excessive groundborne vibration levels in excess of the applicable thresholds. Therefore, while the proposed Program would result in noise and vibration impacts, only the drilling of the monitoring wells would rise to the level of significant, but even then, mitigation would reduce this impact to a level of less than significant. In contrast, the NPA would not require mitigation to reduce noise impacts below significance thresholds, as the continued operations at Program Team facilities systems would continue to apply with existing noise standards and regulations as they do at present. Under this evaluation and set of assumptions, the NPA would result in less overall noise impacts; however, the level of significance would be similar, if less than, that which would occur under the proposed Program and neither the NPA nor the Program would result in significant noise impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Population and Housing: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would not include construction of new homes or businesses and would therefore not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley. Furthermore, the NPA would not result in displacement of housing or persons because no specific facilities are proposed under this alternative. The same would be the case for the Program, which is not anticipated to result in any significant impacts to population and housing. As such, while the Program would require mitigation to reduce impacts to a level of less than significant, the NPA would not result in any population and housing impacts. Under this evaluation and set of assumptions, the NPA would result in comparable overall impacts related to population and housing than that which would occur under the proposed Program since neither the NPA nor the Program would result in significant population and housing impacts. Impacts under both the Program and the NPA would be less than significant.

Public Services: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have no potential to result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, schools, fire protection facilities, parks, or other public services, or the need for new or physically altered police protection facilities, schools, fire protection facilities, parks, or other public services, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives. Mitigation is required to reduce impacts to a level of less than significant under the Program to minimize the potential for trespass during both construction and operation that could exacerbate demand for police protection services. As such, while the Program would require mitigation to reduce impacts to a level of less than significant, the NPA would not result in any public services impacts. Under this evaluation and set of assumptions, the NPA would result in less overall public service impacts; however, the level of significance would be similar, if less than, that which would occur under the proposed Program since neither the NPA nor the Program would result in significant public services impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Recreation: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have no potential to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or include recreational facilities or require the construction or expansion of

recreational facilities which might have an adverse physical effect on the environment. The proposed Program impacts would also be less than significant without the need for added mitigation. As such, the neither the NPA nor the Program would not result in any significant recreation impacts. Under this evaluation and set of assumptions, the NPA would result in comparable overall recreation impacts than that which would occur under the proposed Program since neither the NPA nor the Program would result in significant recreation impacts. Impacts under both the Program and the NPA would be less than significant.

Transportation: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have no potential to conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities; conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b); substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or result in inadequate emergency access. Mitigation is required to minimize impacts to transportation that would reduce the Program's potential construction traffic impacts by requiring all construction activities to be conducted in accordance with an approved construction TMP. As such, while the Program would require mitigation to reduce impacts to a level of less than significant, the NPA would not result in any transportation impacts. Under this evaluation and set of assumptions, the NPA would result in less overall transportation impacts; however, the level of significance would be similar, if less than, that which would occur under the proposed Program since neither the NPA nor the Program would result in significant transportation impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Tribal Cultural Resources: Simply because the Program will disturb a greater amount of area, the potential for encountering TCRs is greater under the Program. The NPA does not require development of any kind, other than the business-as-usual approach by which the Program Team agencies manage individual agency operations. As such, the NPA would have no TCR impacts. When mitigation is implemented—primarily avoidance of tribally sensitive areas, tribal and archaeological monitoring, and specific treatment requirements for buried TCRs that may be uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to TCRs. As such, while the Program would require mitigation to reduce impacts to a level of less than significant, the NPA would not result in any TCR impacts. Under this evaluation and set of assumptions, the NPA would be less likely to cause impacts on TCRs than would the proposed Program, but neither the NPA nor the Program would result in significant tribal cultural resource impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Utilities and Service Systems: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. Under the Program, significant impacts to stormwater drainage, energy, natural gas telecommunications, and solid

waste were determined to be less than significant with the implementation of mitigation, and under the NPA, specifically as it relates to utilities infrastructure, it is anticipated that no impact to these utility systems would occur. Under the Program mitigation is required to minimize impacts related to stormwater through implementation of a drainage plan to reduce downstream flows for future Program projects; this would be not required to implement the NPA, as BBARWA would continue operating its existing facilities in the same manner as it would at present. The Program would generate solid waste during operation and construction and mitigation is required to address potential impacts related to solid waste to a level of less than significant. In contrast, under the NPA, the Program Team would not cause any new impacts to solid waste as it would be required to continue to comply with mandatory regulations pertaining to solid waste, and would not generate any new sources of solid waste requiring additional analysis.

The construction of infrastructure related to energy and natural gas under the Program was analyzed and determined to be less than significant with the implementation of mitigation that would ensure that Program projects are not located in an area containing adjacent access to electricity and natural gas infrastructure, and if that is not possible, then subsequent CEQA documentation would be required. This mitigation would not be required to reduce impacts under the NPA, as existing facilities are currently served by adequate electricity and natural gas service systems. Under the Program, the construction of infrastructure related to telecommunications was determined to be less than significant with the implementation of mitigation; this mitigation would not be required to reduce impacts under the NPA, as existing facilities are currently service by adequate telecommunication systems. As such, for the issues of solid waste and stormwater drainage, electricity, natural gas, and telecommunications, the Program would require mitigation to minimize impacts to a level of less than significant, while the NPA would not require mitigation to achieve this level of impact, but neither would result in significant impacts in these areas.

The extension of water and wastewater related infrastructure was determined to be significant under the Program, because the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact. As no facilities would be installed under the NPA, no significant water or wastewater construction impacts occur.

Under both the NPA and the Program, sufficient capacities are anticipated to be available at BBARWA. However, as described under Hydrology and Water Quality, the consequences of taking no action towards addressing groundwater supply challenges, given Big Bear Valley's remote location and that groundwater is the only local source of water available in the Big Bear Valley, that would be addressed by the Program or by the other alternatives—the Greenspot Recharge Alternative and Greenspot and Sand Canyon Alternative—would result in insufficient supply in the Big Bear Valley. This is because without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. Consequently, going forward with management of the Bear Valley Basin in a business-as-usual approach, without addressing the need for new facilities needed to tackle potential future water supply challenges, would have a potential to result in a significant impact to the water supply in the Big Bear Valley. Whereas, for the Program, the reduction in discharge of secondary effluent to the Lucerne Valley Basin would result in a significant impact on Lucerne Valley Basin water supply. As a result, while the area in which significant impacts would result are different, both the NPA and the Program would result in significant and unavoidable water supply impacts. As such, under this evaluation and set of assumptions the proposed Program effects on utilities and service systems would be significant, and as would the NPA, therefore the NPA would not eliminate the

significant impact that is anticipated to occur under the Program. Impacts from both the Program and the NPA would be significant and unavoidable under this issue.

Wildfire: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have no potential to result in new impacts at existing facilities located in a very high FHSZ that have not been identified previously. However, the Program would contribute a new water supply that could be used in aid of firefighting. The Program would require mitigation to minimize impacts to wildfire that would: reduce the project's potential traffic conflicts that could be exacerbating in high FHSZs by requiring all construction activities to be conducted in accordance with an approved construction Traffic Control Plan; and ensure fire hazard reduction measures are incorporated into a fire management plan/fuel modification plan for the proposed facility. As such, while the Program would require mitigation to reduce wildfire impacts to a level of less than significant, the NPA would not result in any wildfire impacts. Under this evaluation and set of assumptions, the NPA would result in less overall wildfire impacts; however, the level of significance would be similar, if less than, that which would occur under the proposed Program since neither the NPA nor the Program would result in significant transportation impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

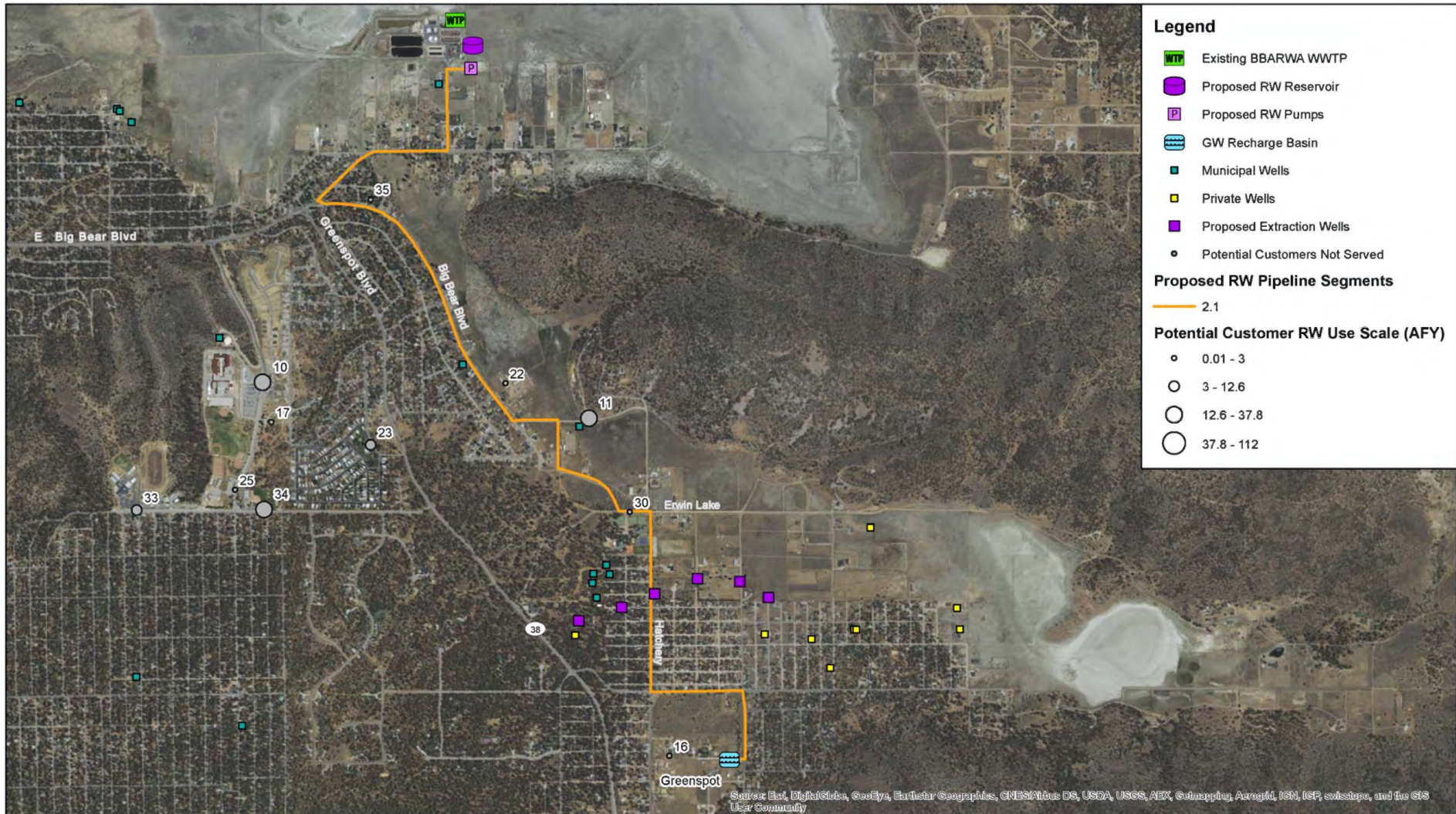
## **Conclusion**

While the NPA would reduce impacts related to Agriculture and Forestry Resources and Biological Resources, it would not avoid significant Hydrology and Water Quality or Utilities and Service Systems impacts, and furthermore, it would create a new significant impact under Land Use and Planning. As the NPA would hinder sustainable management of the Bear Valley Basin per the GSP, the NPA is not considered to be the environmentally superior alternative.









## **5.4 GROUNDWATER RECHARGE AT GREENSPOT ALTERNATIVE**

The Groundwater Recharge at Greenspot Alternative (Greenspot Alternative) was developed as part of the Bear Valley Water Sustainability Project Recycled Water Facilities Planning Study (**Appendix 20**) prepared by WSC in December of 2016. The Greenspot Alternative analyzes the impacts from a scenario in which the Alternative utilizes the similar AWPf upgrades at the BBARWA WWTP as identified under the Program to send blended tertiary and advanced treated water to the Greenspot Recharge Site (**Figure 5-1**). Because this Alternative would not discharge to Big Bear Lake, both tertiary and advanced treatment systems would be utilized. It is assumed that 22% of the recharge water would receive tertiary treatment, and 78% would receive advanced treatment.









**Legend**

-  Existing BBARWA WWTP
-  Proposed RW Reservoir
-  Proposed RW Pumps
-  GW Recharge Basin
-  Municipal Wells
-  Private Wells
-  Proposed Extraction Wells
-  Potential Customers Not Served

**Proposed RW Pipeline Segments**

2.1

**Potential Customer RW Use Scale (AFY)**

-  0.01 - 3
-  3 - 12.6
-  12.6 - 37.8
-  37.8 - 112

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Geuzmapping, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

0 2,150 4,300 Feet



Bear Valley Water Sustainability Project  
 Alternative 2 - Groundwater Recharge at Greenspot  
 6/3/2016



FIGURE 5-1



Analysis of the drilling and pilot recharge testing at the Greenspot site resulted in the following conclusions:

- The Greenspot site is located on recent alluvial deposits of permeable sand and gravel and no soil layers were observed beneath the site that would inhibit the downward percolation of recharge water to the ground water table.
- Groundwater levels start at approximately 100 ft bgs, which allows adequate space for mounding and storage of recharge water.
- A one-month pilot recharge test resulted in recharge rates of 3.1 to 3.7 ft/day. For planning purposes, the recharge rate is assumed to be one half of the observed rate to be conservative.
- At the seepage velocities estimated from the artificial recharge test data, ground water recharged at the Greenspot Recharge Site would reach the nearest production wells (BBLDWP's Lakewood well field) in 8.5 to 17.5 months.
- No fatal flaws were identified during the pilot recharge test.
- The property necessary to support a full-scale program at this site should include more than five acres of area for surface water spreading, plus the necessary additional land for berms and maintenance access.

In a subsequent study, a calibrated groundwater flow model was used to simulate and evaluate a full-scale artificial recharge spreading basin facility at this site. The study evaluated potential changes in groundwater levels that would result from the artificial recharge of 500, 1,000, 1,500 or 2,000 AFY of water, with and without additional groundwater pumping. The study concluded that:

- An additional extraction well field downgradient of the recharge site would be needed to effectively intercept the water that is artificially recharged at the Greenspot Recharge Site. The study assumed six extraction wells at a rate of 100 gpm each.
- Groundwater levels can be maintained below approximately 30 ft bgs with as much as 1,000 AFY of artificial recharge during periods of below normal precipitation, provided that an equivalent amount of water is extracted at the down gradient well field.
- During wet periods, further pumping from the extraction well field and Lakewood Wells is required to artificially lower the ground water levels to maintain storage space within the aquifer in order to continue artificial recharge.
- DWR records suggest that some existing private wells are located in the vicinity of the proposed recharge basins and would be within 6-months travel time from the proposed basins. However, the exact locations of these wells will have to be verified.

Thus, the Bear Valley Water Sustainability Project Recycled Water Facilities Planning Study anticipated that the recharge capacity at the Greenspot site would be 1,000 AFY.

It is assumed that, at a general level, the Greenspot Alternative would require the following infrastructure components to achieve recharge of 1,000 AFY of blended tertiary and advanced treated water:

- 6 extraction wells with a 100 gpm capacity at each well
- 2 monitoring wells
- Upgrades to the BBARWA WWTP, to include 1.0 MGD of full advanced treatment, producing up to 1,000 AFY of blended tertiary and advanced treated water. The secondary effluent from the existing WWTP would be fed to the advanced treatment process train consisting of:
  - Microfiltration/ultrafiltration (MF/UF)
  - Reverse Osmosis (RO)

- Ultraviolet Advanced Oxidation (UV/AOP)
- Brine Disposal
- Approximately 16,200 LF of 12-in pipeline
- 2 MW Solar Array
- The Greenspot Recharge Site is assumed to be a 7-acre site to allow more than five acres of area for surface water spreading, plus the necessary additional land for berms and maintenance access.
- Solar evaporation ponds (Vibratory Shear-Enhanced Processing (VSEP) would be used to reduce the volume of concentrate. The reduced concentrate would then be conveyed to new, lined evaporation ponds on the LV Site).

The location of the facilities required for the Greenspot Alternative are shown in **Figure 5-1**.

A summary comparative discussion of the Greenspot Alternative in terms of the specific issues evaluated in this DPEIR is provided below.

Aesthetics: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, as described in the description of the Greenspot Alternative, above, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Like the Program, the presence of construction equipment and related construction materials could be visible from public vantage points such as open space areas and public ROW such as roadways and sidewalks. However, construction impacts related to aesthetics would be temporary and short-term in nature and would not substantially affect scenic vistas or resources in the area. Construction would primarily occur in the daytime and would not result additional sources of light and glare. Overall, aesthetic impacts during construction would be slightly less intensive than the Program due to the smaller scale of potential construction; however, the level of significance of construction-related aesthetic impacts is similar to that which would occur under the proposed Program and both would be less than significant with the implementation of mitigation.

Landscape disturbance from the development of new facilities and structures has the highest potential to result in potentially significant permanent effects to scenic vistas and resources from conflict with local agency design guidelines. Most of the facilities would likely be underground, small, and/or similar to nearby existing facilities. Once constructed certain facilities could conflict with the existing views of any nearby scenic resources. Aesthetic impacts to scenic vistas and resources from disturbance would be potentially significant, but can be reduced to less than significant by shielding facilities and landscaping or revegetating disturbed areas either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area, as specified in **MM AES-1, AES-5, and AES-6**. Program facilities shall be located outside of scenic viewsheds or otherwise undergo subsequent CEQA documentation **MM AES-2**. Additionally, implementation of **MM AES-3** is required to ensure that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a less than significant level, and **MM AES-4** is required to ensure that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof. **MMs AES-7 and AES-8** would minimize light and glare conflicts from future facility construction and operation. As such, under this evaluation and set of assumptions, the Greenspot Alternative would result in comparable, if slightly less overall aesthetic impacts; however, the level of significance of aesthetic impacts to scenic vistas and

scenic resources from this alternative would be similar to that which would occur under the proposed Program and both would be less than significant with implementation of mitigation.

Like the Program, facilities construction under the Greenspot Alternative may include nighttime security lighting which could result in spill over lighting onto adjacent land uses. Also similar to the Program some new facilities could be a source of glare depending on reflectivity of the materials used. Given that roughly the same type and number of above ground facilities would be developed under the Greenspot Alternative, measures to reduce impacts related to light and glare, as specified in **MMs AES-5** and **AES-6**, would be required to reduce light and glare impacts to less than significant. As such, under this evaluation and set of assumptions, the level of significance of aesthetics impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Agricultural and Forestry Resources: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Within the Big Bear Valley, there are no agricultural resources, but as BBARWA discharges its secondary effluent to the LV Site, which contains substantial agricultural resources, any reduction in secondary effluent would result in a commensurate reduction in land that can be farmed at the LV Site. The Program would have a potential to impact agricultural and forestry resources located within Big Bear Valley, mitigation is available to minimize impacts to Forestry Resources to a level of less than significant, and this same mitigation may be necessary should any forest trees require removal as part of construction of the Greenspot Alternative facilities. However, no feasible MMs exist to avoid a significant impact from the conversion of agricultural lands as a result of Program implementation. As the Greenspot Alternative would also result in a reduction in discharge to the LV Site, in order to retain the blended tertiary and advanced treated water in Big Bear Valley and Watershed, it also would result in a significant loss of important farmland. As such, under this evaluation and set of assumptions, the level of significance of agricultural and forestry resource impacts of this alternative would be similar to that which would occur under the Program and both would be significant and unavoidable.

Air Quality: As with the proposed Program, operation of the Greenspot Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. Therefore, as with the Program, this alternative would not lead to unplanned population, housing or employment growth that exceeds the forecasts used in the development of the SCAQMD's AQMP. The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Similar to the proposed Program, construction and operation of these components would generate criteria air pollutant emissions. Modestly fewer facilities would be constructed under the Greenspot Alternative as compared to the proposed Program. Therefore, construction and operational criteria air pollutant emissions would likely be modestly lower than, but comparable to, those of the proposed Program. The intensity of daily construction activities under the Greenspot Alternative would potentially be similar to that which would occur under the proposed Program. As such, similar to the Program, maximum daily emissions during construction of the Greenspot Alternative may exceed SCAQMD regional significance thresholds. Therefore, implementation of **MM AQ-1** would be required for

the Greenspot Alternative to address the exceedance(s) and would likely reduce impacts to a less than significant level, as with the proposed Program. Furthermore, similar to that which would occur under the Program, the relatively small scale of construction projects and operation and maintenance activities under the Greenspot Alternative would minimize the potential for the exposure of sensitive receptors to substantial concentrations of carbon monoxide and toxic air contaminants. This alternative also would not likely include new facilities with the potential to generate substantial odorous emissions. Therefore, the level of impact of this alternative and the proposed Program is equivalent with implementation of **MM AQ-1**. As such, under this evaluation and set of assumptions, the Greenspot Alternative would likely have similar or fewer overall construction and operational emissions as the proposed Program, and the level of significance of the air quality impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Biological Resources: Development of the Greenspot Alternative would not result in a pipeline that would traverse Baldwin Lake, and as a result would avoid the significant and unavoidable impact to bird-foot checkerbloom, a State and Federal endangered species. When mitigation is implemented—primarily avoidance of biologically sensitive areas or compensation to offset losses to sensitive biological resources—the proposed Program approaches the level of significance regarding biological resource to those that would result from the Greenspot Alternative’s impacts, but a potential still exists for significant impacts under the Program as a result of the construction of the Baldwin Lake Pipeline Alignment Option thus impacting the bird-foot checkerbloom as **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species. While this alternative would avoid the significant Biological Resources impact, it would not provide the anticipated habitat and recreational benefits, which are objectives of the Program, and that would result from the Program’s discharge to Stanfield Marsh and Big Bear Lake. Regardless, under this evaluation and set of assumptions, the Program’s effects on biological resources are considered to be greater than the Greenspot Alternative, and the Greenspot Alternative would avoid a significant impact on biological resources that would otherwise result from implementation of the Program.

Cultural Resources: As with the proposed Program, operations of the Greenspot Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. The Big Bear Valley is a large expanse of area that contains known historical, archaeological, or paleontological resources. As such, future Program projects may be developed within sites that contain such resources which, due to the similar scope of the Greenspot Alternative, may also occur under the Greenspot Alternative. Mitigation imposed to minimize impacts to cultural resources at future Program facilities that would also apply to the Greenspot Alternative. As such, when mitigation is implemented—primarily avoidance of culturally sensitive areas, further site-specific study the Sand Canyon Monitoring Wells, archaeological monitoring in sensitive areas, and specific treatment requirements for buried cultural materials that may be uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to cultural resources. As such, under this evaluation and set of assumptions, the Greenspot Alternative would likely have a potential to impact cultural resources comparable to the Program, and the level of significance of the cultural impacts that would result from the Greenspot Alternative would be similar to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Energy: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the

constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Similar to the proposed Program, construction and operation of these components would consume energy. Modestly fewer facilities would be constructed under the Greenspot Alternative as compared to the proposed Program. Therefore, construction and operational energy consumption would likely be somewhat lower than that which would occur under the Program. However, as with the Program, the potential for wasteful, inefficient, or unnecessary energy consumption during construction activities would be minimized by compliance with existing applicable regulations. Furthermore, operational energy usage under the Greenspot Alternative would not be wasteful, inefficient, or unnecessary because it would be in furtherance of increasing local water supply reliability, providing a new local water supply for the Big Bear Valley, and additionally would install solar to accommodate energy use by the upgrades to the WWTP at BBARWA. In addition, construction and operation of the Greenspot Alternative would be conducted in accordance with existing applicable regulations related to energy efficiency and vehicle fuel economy. As such, under this evaluation and set of assumptions, the Greenspot Alternative would result in similar or less overall construction and operational energy consumption, and the level of significance of its energy impacts would be comparable to that which would occur under the Program and both would be less than significant.

Geology and Soils: As with the proposed Program, operations of the Greenspot Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. Similar to the proposed Program, construction and operation of these components would be subject to geologic and soils-related constraints. Because comparable facilities would be constructed under the Greenspot Alternative as compared to the proposed Program, there would be comparable overall potential for the Greenspot Alternative to expose persons or structures to geologic hazards. Due to the substantial geologic and soils-related constraints, installation of future Program and the Greenspot Alternative related facilities in locations where such constraints may occur could result in a potential for significant geology and soils impacts. However, several **MMs** were identified to minimize geology and soils impacts would be applicable to both the Program and the Greenspot Alternative, including those **MMs** that would: reduce potential impacts from geological hazards through a design level geotechnical investigation with implementation of specific design recommendations, relocation of the site, or subsequent CEQA documentation; minimize impacts to paleontological resources through requiring site-specific studies, where necessary. Under this evaluation and set of assumptions, the Greenspot Alternative would result in comparable overall geology and soils impacts to the Program. Given that site-specific geotechnical investigations have not yet been performed for most of the components of either the Program or the Greenspot Alternative, the same mitigation that will apply to future Program facilities would also apply to facilities proposed under the Greenspot Alternative. As such, the level of significance of the geology and soils impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Greenhouse Gas: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Similar to the proposed Program, construction and operation of these components would generate GHG emissions. Modestly fewer facilities would be constructed under the Greenspot Alternative as compared to the proposed Program. Therefore, construction and operational GHG emissions would likely be somewhat lower than those of the proposed Program. Construction-related GHG emissions associated with

the Program would fall below the SCAQMD thresholds. Given the comparable levels of construction required to develop the facilities proposed under the Greenspot Alternative, construction related GHG impacts would be the same as those projected for the Program, and thereby would be considered less than significant. As such, under this evaluation and set of assumptions, the Greenspot Alternative would likely result in similar or potentially less overall construction and operational GHG emissions, and the level of significance of the GHG emissions impacts of the Greenspot Alternative would be similar to that which would occur under the Program and both would be less than significant.

Hazards and Hazardous Materials: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Similar to the Program, construction and operation of these components would be subject to hazards. Because comparable facilities would be constructed under the Greenspot Alternative as compared to the Program, there would be comparable overall potential for the Greenspot Alternative to expose a site or persons to hazards and hazardous materials. Due to substantial hazard-related constraints, the installation of future Program and the Greenspot Alternative facilities may occur at locations where such constraints may exist. As such, a potential for significant hazards and hazardous materials issue impacts from implementation of both the Program and the Greenspot Alternative exists. However, several **MMs** were identified to minimize hazards and hazardous materials impacts, which would apply to both the Program and the Greenspot Alternative. Those **MMs** include those that would: ensure that applicable facilities Business Plans incorporate BMPs designed to minimize the potential for accidental release of such chemicals; ensure that applicable facilities Business Plans identify the equipment and response capabilities required to provide immediate containment, control and collection of any released material; ensure sensitive receptors will not be exposed to significant health threat by modeling the pathways of release and implementing specific measures that would minimize potential exposure to acutely hazardous materials; ensure hazardous materials are disposed of and delivered to licensed facilities; ensure establishment of and adherence to specific thresholds of acceptable clean-up of hazardous materials; ensure the preparation of and adherence to vector management plans; ensure remediation of an accidental spill or discharge of hazardous material in compliance with State and local regulations; ensure that sites for future facilities obtain a Phase I Environmental Site Assessment and either avoid or remediate a site that is contaminated; ensure that any unknown contamination is remediated and handled according to the local CUPA; ensure that construction traffic is managed safely; and ensure that fire hazard reduction measures are enforced. Therefore, though there will be some adverse impacts as a result of implementing either the Program or the Greenspot Alternative, specific **MMs** would reduce potential project specific and cumulative (direct and indirect) effects to a less than significant impact level for hazards and hazardous material issues. As such, under this evaluation and set of assumptions, the Greenspot Alternative would likely have comparable potential to result in significant hazard and hazardous materials impacts; the level of significance of the hazard and hazardous materials impacts that would result from this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Hydrology and Water Quality: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to Figure 5-1), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no



pipeline installed through Baldwin Lake to Stanfield Marsh. As the intent of the Greenspot Alternative is to address long-term groundwater supply vulnerabilities, it is anticipated that the Greenspot Alternative would not result in any new water quality or water supply-related issues beyond those addressed and mitigated as part of the Program. The Program will provide a local, drought-resistant water supply with up to 380 AFY used to sustain groundwater levels and storage in the Bear Valley Basin, with even greater potential for water savings through use of Lake water to serve the Bear Mountain Golf Course, Resort, Snow Summit Bike Park, and other uses. Comparatively, the Greenspot Alternative would address the challenges with managing the Bear Valley Basin, including that, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. The Greenspot Alternative would provide up to 1,000 AFY to sustain groundwater levels and storage in the Bear Valley Basin, which has been determined to be greater than what is needed to address long term supply deficiencies. Therefore, the Greenspot Alternative is anticipated to result in the same or similar hydrology and water quality impacts in the Big Bear Valley as that which were identified under the Program.

The Program would result in a significant water quality impact and groundwater impact on the Lucerne Valley Basin. This is as a result of the reduced discharge to the LV Site that would result from the proposed Program. The Greenspot Alternative would also result in a reduction in discharge to the LV Site, but as the Greenspot Alternative does not require as large of a capacity AWP upgrade, it is anticipated that it would continue to discharge a greater volume of water to the LV Site than the Program. Due to the volume of water that the BBARWA discharge to the LV Site represents in terms of recharge to the Lucerne Valley Basin, it is anticipated that a significant water quality, groundwater volume, and Colorado Basin Plan impact would occur in the Lucerne Valley Basin from both the Program and the Greenspot Alternative.

Both the Program and the Greenspot Alternative would require implementation of mitigation that would: ensure that drainage is managed through either runoff collection or development of a drainage plan for a given Program project; require all disturbed areas that are not covered in hardscape or vegetation to be revegetated or landscaped at future Program facility sites; and monitor percolation performance at the recharge site. However, the Greenspot Alternative would not require mitigation specific to the Sand Canyon Recharge Project, or specific to the AMMP required for the proposed discharge to Stanfield Marsh. As such, under this evaluation and set of assumptions, the Greenspot Alternative and the Program would have equal hydrology and water quality impacts; the level of significance of the hydrology and water quality impacts that would result from this alternative would be comparable to that which would occur under the Program and both would be significant and unavoidable as a result of the reduced discharge to the LV Site.

Land Use and Planning: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Like the Program, the facilities that could be constructed for the Greenspot Alternative would not be anticipated to have features that would create a barrier or physically divide an established community. Land would need to be purchased for some of the proposed facilities, where not co-located at existing agency facilities, such as the BBARWA WWTP. It can be reasonably assumed that siting of the facilities would include determination of the most suitable locations to place facilities, taking into consideration surrounding land uses. However, because the precise location for some of the future facilities is presently unknown, the facilities may be developed across other designated land uses. Per

Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, any facilities constructed under the Greenspot Alternative that could potentially conflict with local General Plan land use designations would not be subject to a conditional use permit or general plan amendment. In addition, the City of Big Bear Lake and San Bernardino County within the Big Bear Valley area have adopted General Plans that support the provision of adequate water supply, and also support retaining water in Big Bear Valley and discontinuing the discharge from the LV Site; therefore, facilities constructed under the Greenspot Alternative would not conflict with the goals and policies of the applicable General Plans. As with the Program, new facilities may conflict with adjacent land uses and as such **MM LU-1** would be required to minimize land use incompatibilities (such as lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As such, under this evaluation and set of assumptions, the Greenspot Alternative would result in comparable overall land use impacts; the level of significance would be similar to that which would occur under the Program and both would be less than significant with mitigation.

Mineral Resources: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Like the Program, construction of the facilities for the Greenspot Alternative are unlikely to interfere with mining of mineral resources. Much of the Big Bear Valley is forested and therefore does not lend itself to mining activities, as no mineral extraction land uses exist in Big Bear Valley. Installation and operation of the Greenspot Alternative facilities would have little potential to result in a direct adverse impact on mineral resources, and as the Program is not anticipated to impact mineral resources, nor would the Greenspot Alternative. There would be comparable potential for impacts to mineral resources under both the Program and the Greenspot Alternative; as such, both would result in less than significant impacts.

Noise: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Construction activities, particularly production wells, under the Greenspot Alternative may generate temporary increases in ambient noise levels and excessive groundborne vibration levels in excess of FTA and CalTrans daytime and nighttime construction thresholds at the nearest sensitive receivers. In addition, facilities constructed under the Greenspot Alternative may include noise-generating components that could result in a substantial permanent increase in ambient noise levels at nearby sensitive receptors, if present, depending on the equipment type, whether equipment is enclosed in a structure, the distance between equipment and nearby sensitive receivers, and the local jurisdiction's noise standards. Therefore, as with the Program, construction and vibration impacts for the Greenspot Alternative would be potentially significant, and implementation of mitigation would be required. As with the Program, implementation of **MMs** to minimize noise impacts from well drilling would likely reduce the Greenspot Alternative's impacts to less than significant levels. Accordingly, under this evaluation and set of assumptions, the level of noise and vibration impacts of the Greenspot Alternative and the Program is equivalent and both would be less than significant with the implementation of mitigation.

Population and Housing: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. As with the Program, BBARWA operations of the Greenspot Alternative would be intended to serve existing customers as well as future customers associated with planned growth in the Big Bear Valley. The Greenspot Alternative would not include construction of new homes or businesses and would therefore not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley. Like the Program, any facilities constructed under the Greenspot Alternative would be growth accommodating but would not induce population growth. Also similar to the Program, the majority of construction and operations and maintenance staff for any new facilities can be expected to be drawn from the existing population within the Big Bear Valley. Furthermore, comparable construction and operation and maintenance staff would be required. As such, under this evaluation and set of assumptions, the level of significance of the population and housing impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant.

Public Services: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Facilities constructed under the Greenspot Alternative would not include construction of new homes or businesses that would result in a direct increase in population or new jobs that would increase demand for public services. Operation of the new facilities could require fire and police services in the unlikely event of an emergency; however, any increase in demand would be nominal. Similar to the Program, a HMBP would be required for use of chemicals at any of the new facilities, which would minimize the potential need for emergency services. Any new facilities would be fenced or access controlled to prevent illegal trespass, as required by **MM PS-1**. In addition, the majority of any new employees for operation and maintenance of new facilities would likely come from the existing population with the Big Bear Valley, and any increase in demand for schools, parks, or other public services would be nominal. As such, under this evaluation and set of assumptions, the level of significance of the public service impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Recreation: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. The Greenspot Alternative would not require construction or expansion of recreational facilities. The Greenspot Alternative would also not include construction of new homes or businesses. Therefore, there would not be a direct increase in population or a substantial number of new jobs that would result in increased demand for parks and recreational facilities within the Big Bear Valley. Also similar to the Program, the majority of construction and operations and maintenance staff for any new facilities can be expected to be drawn from the existing population within the Big Bear Valley. The proposed Program may result in enhanced settings at Stanfield Marsh and Big Bear Lake, which is an objective of the Program and thereby may increase recreational opportunities therein. However,

recreational infrastructure and fee mechanisms are in place to accommodate any increase in recreation at these locations. The Greenspot Alternative would not result in any enhancements of the Marsh or Big Bear Lake. Under this evaluation and set of assumptions, the level of significance of the recreational impacts of this alternative would be similar to that which would occur under the proposed Program and both would be less than significant.

Transportation: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Construction activities associated with these new facilities may generate temporary increases in heavy truck and construction worker trips that could affect roadway, transit, bicycle, and pedestrian circulation as well as emergency access. This could be due to construction equipment staged within a public ROW affecting transit stops, bicycle, and/or pedestrian facilities, construction disturbance under existing transit, bicycle, and/or pedestrian thoroughfares, potential lane or road closures, construction vehicles affecting roadway movement and circulation, and/or blockage of emergency vehicle roadway and driveway access during construction. Therefore, the construction-related circulation and emergency access impacts of the Greenspot Alternative would be potentially significant. However, with implementation of mitigation, specifically **MM TRA-1**, which requires preparation and implementation of a construction TMP, construction-related circulation and emergency access impacts under the Greenspot Alternative would be reduced to a less-than-significant level with the implementation of mitigation.

There would be slightly fewer facilities constructed under the Greenspot Alternative as compared to the Program, because the Greenspot Alternative would not include the pipeline to Big Bear Lake, nor the pipeline to Sand Canyon. As such, operational VMTs and potential operational impacts related to transportation circulation, design safety, and emergency access under the Greenspot Alternative would be slightly less than under the Program. Therefore, compared to the proposed Program, the Greenspot Alternative would result in slightly lesser impacts related to transportation. However, the level of significance would be comparable to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Tribal Cultural Resources: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Simply because the Program and the Greenspot Alternative would disturb a similar amount of area, the potential for encountering TCRs is comparable under both alternatives. However, this alternative would avoid the impact from the pipeline through Baldwin Lake. When mitigation is implemented—primarily avoidance of tribally sensitive areas, tribal and archaeological monitoring, and specific treatment requirements for buried TCRs that may be uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to TCRs. Under this evaluation and set of assumptions the Greenspot Alternative would have comparable impacts on TCRs to the Program; however, the level of significance would be similar to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Utilities and Service Systems: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative,

above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Under the Program, significant impacts to stormwater drainage, energy, natural gas telecommunications, or solid waste were determined to be less than significant with the implementation of mitigation, and as with the Program, specifically as it relates to utilities infrastructure, it is anticipated that the Greenspot Alternative would have comparable potential to impact these utility systems than the Program. Under the Program mitigation is required to minimize impacts related to stormwater through implementation of a drainage plan to reduce downstream flows for future Program projects; this would be required to minimize impacts from the facilities that would be developed under the Greenspot Alternative. As the Greenspot Alternative and Program would both generate solid waste during operation and construction, mitigation is required to address potential impacts related to solid waste including those that would: ensure that construction and demolition materials that are salvageable are recycled, and thereby diverted from the local landfill, which will minimize the potential for Program projects to generate waste in excess of local landfill capacities; and, ensure that soils that would generally be exported from a given construction site are salvaged where possible for recycled and ultimately reuse, thereby diverting this waste stream from the local landfill. The construction of infrastructure related to energy and natural gas under the Program was analyzed and determined to be less than significant with the implementation of mitigation that would ensure that Program projects not located in an area containing adjacent access to electricity and natural gas infrastructure would require subsequent CEQA documentation. This mitigation would also be required to reduce those same impacts under the Greenspot Alternative as this alternative would be installed within locations that have not yet been selected. Under the Program, the construction of infrastructure related to telecommunications was determined to be less than significant with the implementation of mitigation that would ensure that Program projects not located in an area containing adjacent access to telecommunication infrastructure would require subsequent CEQA documentation. This mitigation would also be required to reduce those same impacts under the Greenspot Alternative as this alternative would be installed within locations that have not yet been selected. However, for the issues of solid waste, stormwater drainage, electricity, natural gas, and telecommunications, mitigation would be required to minimize impacts to a level of less than significant for both the Program and the Greenspot Alternative.

The extension of water and wastewater related infrastructure was determined to be significant under the Program, because the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact. As the Greenspot Alternative would avoid a significant biological resources impact, as discussed under Biological Resources, above, the Greenspot Alternative would also avoid a significant Utilities and Service Systems impact from construction of water and wastewater facilities.

As with the Program, the Greenspot Alternative would contribute to the provision of sufficient wastewater treatment capacity at BBARWA's WWTP, as the Program is not anticipated to require an increase in overall capacity at the WWTP. Furthermore, as described under hydrology and water quality, the action towards addressing groundwater supply challenges, given Big Bear Valley's remote location, that would be addressed by the Program and the Greenspot Recharge Alternative would ensure sufficient supply in the Big Bear Valley. However, the reduction in discharge of secondary effluent to the Lucerne Valley Basin would result in a significant impact on Lucerne Valley Basin water supply. As the Greenspot Alternative would also contribute to reducing discharge to the LV Site, it too would result in a significant impact to the Lucerne Valley Basin water supply. Given that the Greenspot Alternative does not eliminate the potential for

significant water supply impacts, it could likewise result in comparable impacts; thus, under both alternatives, utilities and service systems impacts are significant and unavoidable.

Wildfire: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to Figure 5-1), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. The locations of Program facilities were determined to be located in designated high and very high fire hazard severity zones. Comparatively, since the proposed the Greenspot Alternative would be developed within the Big Bear Valley, it is likely that these facilities would have a potential to be located within a very high FHSZ. The Program, and by extension, the Greenspot Alternative, would require mitigation to minimize impacts to wildfire that would: reduce the project's potential traffic conflicts that could be exacerbating in high FHSZs by requiring all construction activities to be conducted in accordance with an approved construction traffic control plan; and, ensure fire hazard reduction measures are incorporated into a fire management plan/fuel modification plan for the proposed facility. As such, the Program would achieve a level of less than significant with mitigation. Thus, with implementation of mitigation to minimize wildfire impacts, neither the Program nor the Greenspot Alternative would cause significant unavoidable adverse wildfire impacts. Under this evaluation and set of assumptions the Greenspot Alternative would have comparable impacts on Wildfire when compared to the Program both would be less than significant with the implementation of mitigation.

## **Conclusion**

The Greenspot Alternative is comparable to the Program in terms of environmental impacts. Because the Greenspot Alternative would result in the development of some of the same types of facilities proposed by the Program, if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh, most of the impacts related to this alternative are the same as those identified under the Program. Of the significant impacts that would result from the proposed Program, the only impact category that the Greenspot Alternative would eliminate is the Biological Resources impact. This is because this alternative would eliminate the Baldwin Lake Alignment Alternative. While the water supply and water quality impacts at the LV Site as a result of the Program would be reduced slightly due to a smaller volume AWWP at the BBARWA WWTP, thereby discharging a larger volume of water to the LV Site than is anticipated under the Program, it would still contribute to significant Agricultural and Forestry, Hydrology and Water Quality, and Utilities and Services Systems impacts.

Furthermore, while the Greenspot Alternative would meet nearly all of the Program's objectives, it would not meet some of the BBARWA's basic objectives, which are to develop promote a thriving community through enhanced recreation and protecting diverse habitats in Big Bear Valley. The discharge to Big Bear Lake via Stanfield Marsh is paramount to enhancing the recreational opportunities outlined in the Program objectives, as the provision of additional water in Big Bear Lake is anticipated to enhance the setting within Big Bear Lake and Stanfield Marsh, making recreation therein more appealing to those living and visiting the area. Additionally, the provision of additional water within Big Bear Lake and Stanfield Marsh would benefit the habitat supported by these water bodies. Therefore, as the Greenspot Alternative would not include discharge to Stanfield Marsh or Big Bear Lake, thus failing to meet this project objective.



## 5.5 GROUNDWATER RECHARGE AT SAND CANYON AND GREENSPOT

The Groundwater Recharge at Greenspot and Sand Canyon Alternative (Greenspot & Sand Canyon Alternative) was developed as part of the Bear Valley Water Sustainability Project Recycled Water Facilities Planning Study (**Appendix 20**) prepared by WSC in December of 2016. The Greenspot & Sand Canyon Alternative analyzes the impacts from a scenario in which the Alternative utilizes the similar AWPf upgrades at the BBARWA WWTP as identified under the Program to send blended tertiary and advanced treated water to both the Greenspot Recharge Site and Sand Canyon Recharge area (**Figure 5-2**). Because this Alternative would not discharge to Big Bear Lake, both tertiary and advanced treatment systems would be utilized. It is assumed that 22% of the recharge water would receive tertiary treatment, and 78% would receive advanced treatment.

The considerations for the feasibility of groundwater recharge at the Greenspot site are detailed under **Subsection 5.4**, under the Greenspot Alternative. The feasibility of recharge at the Sand Canyon Recharge area has been detailed in **Chapter 3, Program Description**, as this option is considered under the Program. The Bear Valley Water Sustainability Project Recycled Water Facilities Planning Study anticipated that the recharge capacity at the Greenspot site would be 1,000 AFY, and that the recharge capacity at Sand Canyon would be 750 AFY. Given that further study of the Sand Canyon Recharge Project has been analyzed in **Appendix 4**, the 2017 Sand Canyon Recharge Evaluation prepared by Thomas Harder & Co., and found that the recharge potential at Sand Canyon is approximately 380 AFY over a 6-month period, based on a recharge area of approximately 4.2 acres and a recharge rate of 2.1 ft/day, this Alternative assumes that the Sand Canyon Recharge Project potential is approximately 380 AFY. Thus, the Greenspot & Sand Canyon Alternative assumes that up to 1,380 AFY could be recharged to the Bear Valley Basin for reuse, and that the upgraded portion of the BBARWA WWTP would be capable of handling at least 1.38 MGD, thereby producing the requisite 1,380 AFY of blended tertiary and advanced treated water.

It is assumed that, at a general level, the Greenspot & Sand Canyon Alternative would require the following infrastructure components:

- 6 extraction wells with a 100 gpm capacity at each well
- 2 monitoring wells
- Upgrades to the BBARWA WWTP, to include 1.38 MGD of full advanced treatment, producing up to 1,380 AFY of blended tertiary and advanced treated water. The secondary effluent from the existing WWTP would be fed to the advanced treatment process train consisting of:
  - Microfiltration/ultrafiltration (MF/UF)
  - Reverse Osmosis (RO)
  - Ultraviolet Advanced Oxidation (UV/AOP)
  - Brine Disposal
- Approximately 50,200 LF of 12-in pipeline (approximately 16,200 LF to Greenspot and 34,000 LF to Sand Canyon)
- 2 MW Solar Array
- The Greenspot Recharge Site is assumed to be a 7-acre site to allow more than five acres of area for surface water spreading, plus the necessary additional land for berms and maintenance access.
- The Sand Canyon Recharge area is assumed to be the same as that which has been incorporated as part of the proposed Program.

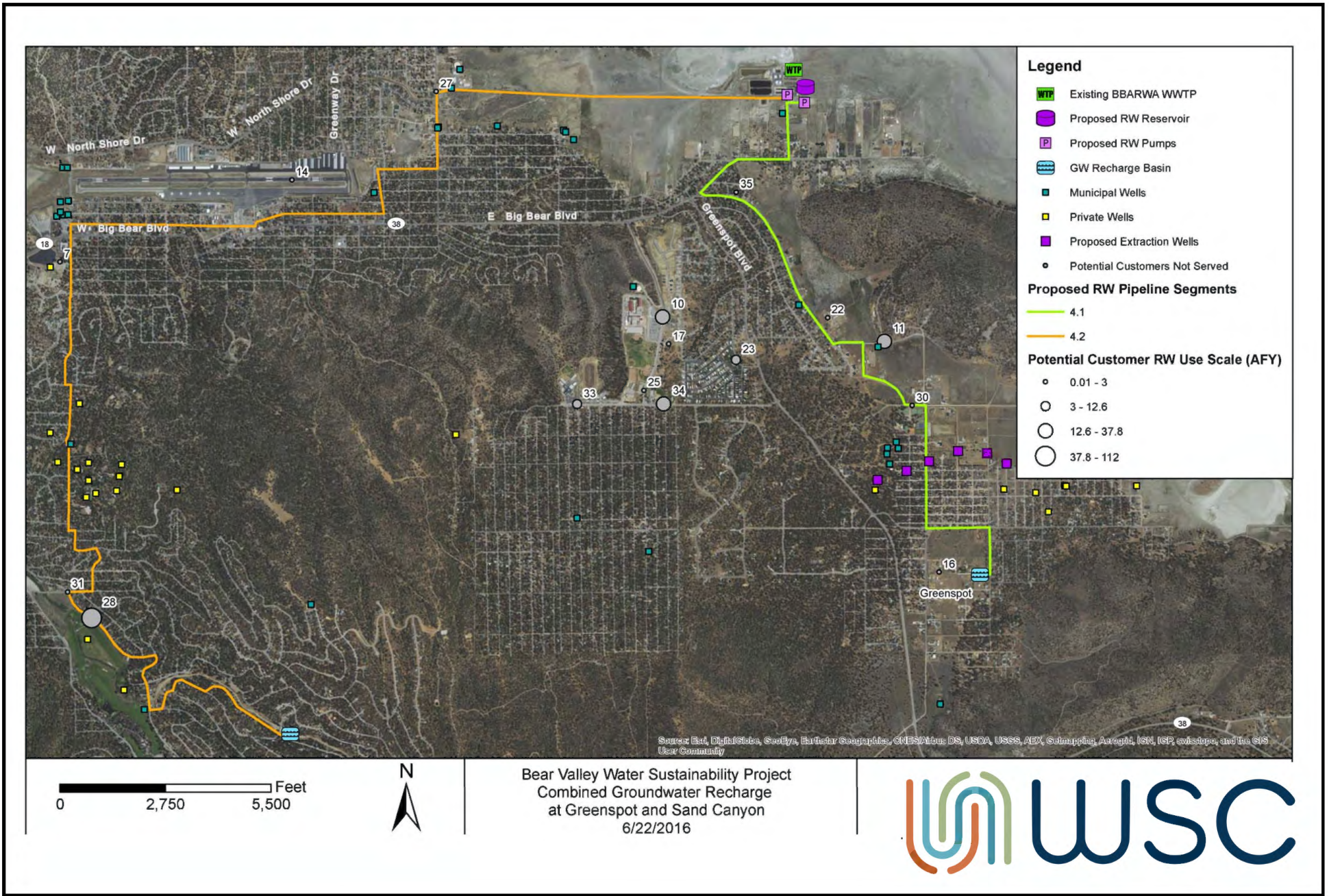


FIGURE 5-2

- Solar evaporation ponds (Vibratory Shear-Enhanced Processing (VSEP) would be used to reduce the volume of concentrate. The reduced concentrate would then be conveyed to new, lined evaporation ponds on the LV Site).

The location of the facilities required for the Greenspot & Sand Canyon Alternative are shown in **Figure 5-2**.

A summary comparative discussion of the Greenspot & Sand Canyon Alternative in terms of the specific issues evaluated in this DPEIR is provided below.

**Aesthetics:** The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to Figure 5-2), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Like the Program, the presence of construction equipment and related construction materials could be visible from public vantage points such as open space areas and public ROW such as roadways and sidewalks. However, construction impacts related to aesthetics would be temporary and short-term in nature and would not substantially affect scenic vistas or resources in the area. Construction would primarily occur in the daytime and would not result additional sources of light and glare. Overall, aesthetic impacts during construction would be comparably intensive when compared to the Program as a result of the larger amount of pipeline that would need to be installed to accomplish this alternative; however, the level of significance of construction-related aesthetic impacts is similar to that which would occur under the proposed Program and both would be less than significant with the implementation of mitigation.

Landscape disturbance from the development of new facilities and structures has the highest potential to result in potentially significant permanent effects to scenic vistas and resources from conflict with local agency design guidelines. Most of the facilities would likely be underground, small, and/or similar to nearby existing facilities. Once constructed certain facilities could conflict with the existing views of any nearby scenic resources. Aesthetic impacts to scenic vistas and resources from disturbance would be potentially significant, but can be reduced to less than significant by shielding facilities and landscaping or revegetating disturbed areas either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area, as specified in **MMs AES-1, AES-5, and AES-6**. Program facilities shall be located outside of scenic viewsheds or otherwise undergo subsequent CEQA documentation **MM AES-2**. Additionally, implementation of **MM AES-3** is required to ensure that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a less than significant level, and **MM AES-4** is required to ensure that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof. **MMs AES-7 and AES-8** would minimize light and glare conflicts from future facility construction and operation. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would result in comparable overall aesthetic impacts; however, the level of significance of aesthetic impacts to scenic vistas and scenic resources from this alternative would be similar to that which would occur under the proposed Program and both would be less than significant with implementation of mitigation.

Like the Program, facilities construction under the Greenspot & Sand Canyon Alternative may include nighttime security lighting which could result in spill over lighting onto adjacent land uses. Also similar to the Program some new facilities could be a source of glare depending on reflectivity of the materials used. Given that roughly the same type and number of above ground facilities



would be developed under the Greenspot & Sand Canyon Alternative, measures to reduce impacts related to light and glare, as specified in **MMs AES-5** and **AES-6**, would be required to reduce light and glare impacts to less than significant. As such, under this evaluation and set of assumptions, the level of significance of aesthetics impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Agricultural and Forestry Resources: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. There are no agricultural resources within the Big Bear Valley, but as BBARWA discharges its secondary effluent to the LV Site, which contains substantial agricultural resources, any reduction in secondary effluent would result in a commensurate reduction in land that can be farmed at the LV Site. The Program would have a potential to impact agricultural and forestry resources located within Big Bear Valley, mitigation is available to minimize impacts to Forestry Resources to a level of less than significant, and this same mitigation would be necessary should any forest trees require removal as part of construction of the Greenspot & Sand Canyon Alternative facilities. However, no feasible **MMs** exist to avoid a significant impact from the conversion of agricultural lands as a result of Program implementation. As the Greenspot & Sand Canyon Alternative would also result in a reduction in discharge to the LV Site, in order to retain the blended tertiary and advanced treated water in Big Bear Valley and Watershed, it also would result in a significant loss of important farmland. As such, under this evaluation and set of assumptions, the level of significance of agricultural and forestry resource impacts of this alternative would be similar to that which would occur under the Program and both would be significant and unavoidable.

Air Quality: As with the proposed Program, operations of the Greenspot & Sand Canyon Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. Therefore, as with the Program, this alternative would not lead to unplanned population, housing or employment growth that exceeds the forecasts used in the development of the SCAQMD's AQMP. The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Similar to the proposed Program, construction and operation of these components would generate criteria air pollutant emissions. Comparable or an even greater intensity of facilities would be constructed under the Greenspot & Sand Canyon Alternative as compared to the proposed Program. Therefore, construction and operational criteria air pollutant emissions would likely be modestly comparable if slightly greater than those of the proposed Program. The intensity of daily construction activities under the Greenspot & Sand Canyon Alternative would potentially be similar to that which would occur under the proposed Program. As such, similar to the Program, maximum daily emissions during construction of the Greenspot & Sand Canyon Alternative may exceed SCAQMD regional significance thresholds. Therefore, implementation of **MM AQ-1** would be required for the Greenspot & Sand Canyon Alternative to address the exceedance(s) and would likely reduce impacts to a less than significant level, as with the proposed Program. Furthermore, similar to that which would occur under the Program, the relatively small scale of construction projects and operation and maintenance activities under the Greenspot & Sand Canyon Alternative would minimize the potential for the exposure of sensitive receptors to substantial concentrations of carbon monoxide and toxic air contaminants. This alternative also would not likely include new facilities with the potential to generate substantial odorous emissions.

Therefore, the level of impact of this alternative and the proposed Program is equivalent with implementation of **MM AQ-1**. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would likely have similar or slightly greater overall construction and operational emissions as the proposed Program, and the level of significance of the air quality impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Biological Resources: Development of the Greenspot & Sand Canyon Alternative would result in a pipeline that would traverse Baldwin Lake, and as a result would have a potential to result in a significant and unavoidable impact to bird-foot checkerbloom, a State and Federal endangered species. When mitigation is implemented—primarily avoidance of biologically sensitive areas or compensation to offset losses to sensitive biological resources—the proposed Program and Greenspot & Sand Canyon Alternative would be expected to approach a level of less than significant regarding biological resource, but a potential still exists for significant impacts under the Program and Greenspot & Sand Canyon Alternative as a result of the construction of the Baldwin Lake Pipeline Alignment Option thus impacting the bird-foot checkerbloom as **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species. This alternative would not provide the anticipated habitat and recreational benefits, which are objectives of the Program, and that would result from the Program's discharge to Stanfield Marsh and Big Bear Lake. Regardless, under this evaluation and set of assumptions, the Program's effects on biological resources are considered to be comparable to the Greenspot & Sand Canyon Alternative, and both would result in a significant impact on biological resources.

Cultural Resources: As with the proposed Program, operations of the Greenspot & Sand Canyon Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. The Big Bear Valley is a large expanse of area that contains known historical, archaeological, or paleontological resources. As such, future Program projects may be developed within sites that contain such resources which, due to the similar scope of the Greenspot & Sand Canyon Alternative, may also occur under the Greenspot & Sand Canyon Alternative. Mitigation imposed to minimize impacts to cultural resources at future Program facilities that would also apply to the Greenspot & Sand Canyon Alternative. As such, when mitigation is implemented—primarily avoidance of culturally sensitive areas, further site-specific study the Sand Canyon Monitoring Wells, archaeological monitoring in sensitive areas, and specific treatment requirements for buried cultural materials that may be uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to cultural resources. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would likely have a potential to impact cultural resources comparable to the Program, and the level of significance of the cultural impacts that would result from the Greenspot & Sand Canyon Alternative would be similar to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Energy: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Similar to the proposed Program, construction and operation of these components would consume energy. Modestly greater facilities would be constructed under the Greenspot & Sand Canyon Alternative as compared to the proposed Program, as a result of the increased length in pipeline necessary to reach Sand Canyon. Therefore, construction and operational energy consumption would likely be somewhat greater than that which would occur under the Program. However, as with the Program, the

potential for wasteful, inefficient, or unnecessary energy consumption during construction activities would be minimized by compliance with existing applicable regulations. Furthermore, operational energy usage under the Greenspot & Sand Canyon Alternative would not be wasteful, inefficient, or unnecessary because it would be in furtherance of increasing local water supply reliability, providing a new local water supply for the Big Bear Valley, and additionally would install solar to accommodate energy use by the upgrades to the BBARWA WWTP. In addition, construction and operation of the Greenspot & Sand Canyon Alternative would be conducted in accordance with existing applicable regulations related to energy efficiency and vehicle fuel economy. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would result in similar overall construction and operational energy consumption, and the level of significance of its energy impacts would be comparable to that which would occur under the Program and both would be less than significant.

Geology and Soils: As with the proposed Program, operations of the Greenspot & Sand Canyon Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. Similar to the proposed Program, construction and operation of these components would be subject to geologic and soils-related constraints. Because comparable facilities would be constructed under the Greenspot & Sand Canyon Alternative as compared to the proposed Program, there would be comparable overall potential for the Greenspot & Sand Canyon Alternative to expose persons or structures to geologic hazards. Due to the substantial geologic and soils-related constraints, installation of future Program and the Greenspot & Sand Canyon Alternative related facilities in locations where such constraints may occur could result in a potential for significant geology and soils impacts. However, several **MMs** were identified to minimize geology and soils impacts would be applicable to both the Program and the Greenspot & Sand Canyon Alternative, including those **MMs** that would: reduce potential impacts from geological hazards through a design level geotechnical investigation with implementation of specific design recommendations, relocation of the site, or subsequent CEQA documentation; minimize impacts to paleontological resources through requiring site-specific studies, where necessary. Under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would result in comparable overall geology and soils impacts to the Program. Given that site-specific geotechnical investigations have not yet been performed for most of the components of either the Program or the Greenspot & Sand Canyon Alternative, the same mitigation that will apply to future Program facilities would also apply to facilities proposed under the Greenspot & Sand Canyon Alternative. As such, the level of significance of the geology and soils impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Greenhouse Gas: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Similar to the proposed Program, construction and operation of these components would generate GHG emissions. Modestly greater facilities would be constructed under the Greenspot & Sand Canyon Alternative as compared to the proposed Program. Therefore, construction and operational GHG emissions would likely be somewhat greater than those of the proposed Program. Construction-related GHG emissions associated with the Program would fall below the SCAQMD thresholds. Given the comparable levels of construction required to develop the facilities proposed under the Greenspot & Sand Canyon Alternative, construction related GHG impacts would be comparable to those projected for the Program, and thereby would be considered less than significant. As



such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would likely result in similar or potentially cumulatively greater overall construction and operational GHG emissions, and the level of significance of the GHG emissions impacts of the Greenspot & Sand Canyon Alternative would be similar to that which would occur under the Program and both would be less than significant.

Hazards and Hazardous Materials: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Similar to the Program, construction and operation of these components would be subject to hazards. Because comparable facilities would be constructed under the Greenspot & Sand Canyon Alternative as compared to the Program, there would be comparable overall potential for the Greenspot & Sand Canyon Alternative to expose a site or persons to hazards and hazardous materials. Due to substantial hazard-related constraints, the installation of future Program and the Greenspot & Sand Canyon Alternative facilities may occur at locations where such constraints may exist. As such, a potential for significant hazards and hazardous materials issue impacts from implementation of both the Program and the Greenspot & Sand Canyon Alternative exists. However, several **MMs** were identified to minimize hazards and hazardous materials impacts, which would apply to both the Program and the Greenspot & Sand Canyon Alternative. Those **MMs** include those that would: ensure that applicable facilities Business Plans incorporate BMPs designed to minimize the potential for accidental release of such chemicals; ensure that applicable facilities Business Plans identify the equipment and response capabilities required to provide immediate containment, control and collection of any released material; ensure sensitive receptors will not be exposed to significant health threat by modeling the pathways of release and implementing specific measures that would minimize potential exposure to acutely hazardous materials; ensure hazardous materials are disposed of and delivered to licensed facilities; ensure establishment of and adherence to specific thresholds of acceptable clean-up of hazardous materials; ensure the preparation of and adherence to vector management plans; ensure remediation of an accidental spill or discharge of hazardous material in compliance with State and local regulations; ensure that sites for future facilities obtain a Phase I Environmental Site Assessment and either avoid or remediate a site that is contaminated; ensure that any unknown contamination is remediated and handled according to the local CUPA; ensure that construction traffic is managed safely; and ensure that fire hazard reduction measures are enforced. Therefore, though there will be some adverse impacts as a result of implementing either the Program or the Greenspot & Sand Canyon Alternative, specific **MMs** would reduce potential project specific and cumulative (direct and indirect) effects to a less than significant impact level for hazards and hazardous material issues. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would likely have comparable potential to result in significant hazard and hazardous materials impacts; the level of significance of the hazard and hazardous materials impacts that would result from this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Hydrology and Water Quality: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. As the intent of the Greenspot & Sand Canyon Alternative to address long-term groundwater supply vulnerabilities, it is anticipated that the Greenspot & Sand Canyon Alternative would not result in

any new water quality or water supply related issues beyond those addressed and mitigated as part of the Program. The Program will provide a local, drought-resistant water supply with up to 380 AFY used to sustain groundwater levels and storage in the Bear Valley Basin, with even greater potential for water savings through use of Lake water to serve the Bear Mountain Golf Course, Snow Summit Bike Park, and other uses. The Greenspot & Sand Canyon Alternative would, similar to the Program, address the challenges with managing the Bear Valley Basin, including that, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. The Greenspot Alternative would provide up to 1,380 AFY to sustain groundwater levels and storage in the Bear Valley Basin, which has been determined to be greater than what is needed to address long term supply deficiencies. Therefore, the Greenspot & Sand Canyon Alternative is anticipated to result in the same or similar hydrology and water quality impacts in the Big Bear Valley as that which were identified under the Program.

The Program would result in a significant water quality impact and groundwater impact on the Lucerne Valley Basin. This is as a result of the reduced discharge to the LV Site that would result from the proposed Program. The Greenspot & Sand Canyon Alternative would also result in a reduction in discharge to the LV Site, but as the Greenspot & Sand Canyon Alternative does not require as large of a capacity AWWPF upgrade, it is anticipated that it would continue to discharge a modestly larger volume of water to the LV Site than the Program. Due to the volume of water that the BBARWA discharge to the LV Site represents in terms of recharge to the Lucerne Valley Basin, it is anticipated that a significant water quality, groundwater volume, and Colorado Basin Plan impact would occur in the Lucerne Valley Basin from both the Program and the Greenspot & Sand Canyon Alternative.

Both the Program and the Greenspot & Sand Canyon Alternative would require implementation of mitigation that would: ensure that drainage is managed through either runoff collection or development of a drainage plan for a given Program project; require all disturbed areas that are not covered in hardscape or vegetation to be revegetated or landscaped at future Program facility sites; ensure that the Sand Canyon Recharge occurs within the appropriate area at Sand Canyon and only during the appropriate times of the year; and, monitor percolation performance at the recharge site. However, the Greenspot & Sand Canyon Alternative would not require mitigation specific to the Sand Canyon Recharge Project, or specific to the AMMP required for the proposed discharge to Stanfield Marsh. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative and the Program would have equal hydrology and water quality impacts; the level of significance of the hydrology and water quality impacts that would result from this alternative would be comparable to that which would occur under the Program and both would be significant and unavoidable as a result of the reduced discharge to the LV Site.

Land Use and Planning: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Like the Program, the facilities that could be constructed for the Greenspot & Sand Canyon Alternative would not be anticipated to have features that would create a barrier or physically divide an established community. Land would need to be purchased for some of the proposed facilities, where no co-located at existing agency facilities, such as the BBARWA WWTP. It can be reasonably assumed that siting of the facilities would include determination of the most suitable locations to place facilities, taking into consideration surrounding land uses. However, because the precise location for some of the future facilities is presently unknown, the facilities may be developed across other designated land uses. Per Government Code Section 53091, building ordinances of local cities

or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, any facilities constructed under the Greenspot & Sand Canyon Alternative that could potentially conflict with local General Plan land use designations would not be subject to a conditional use permit or general plan amendment. In addition, the City of Big Bear Lake and San Bernardino County that are within the Big Bear Valley have adopted General Plans that support the provision of adequate water supply, and also support retaining water in the Big Bear Valley and discontinuing the discharge from the LV Site; therefore, facilities constructed under the Greenspot & Sand Canyon Alternative would not conflict with the goals and policies of the applicable General Plans. As with the Program, new facilities may conflict with adjacent land uses and as such **MM LU-1** would be required to minimize land use incompatibilities (such as lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would result in comparable overall land use impacts; the level of significance would be similar to that which would occur under the Program and both would be less than significant with mitigation.

Mineral Resources: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Like the Program, construction of the facilities for the Greenspot & Sand Canyon Alternative are unlikely to interfere with mining of mineral resources. Much of the Big Bear Valley is forested and therefore does not lend itself to mining activities, as no mineral extraction land uses exist in Big Bear Valley. Installation and operation of the Greenspot & Sand Canyon Alternative facilities would have little potential to result in a direct adverse impact on mineral resources, and as the Program is not anticipated to impact mineral resources, nor would the Greenspot & Sand Canyon Alternative. There would be comparable potential for impacts to mineral resources under both the Program and the Greenspot & Sand Canyon Alternative; as such, both would result in less than significant impacts.

Noise: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Construction activities under the Greenspot & Sand Canyon Alternative may generate temporary increases in ambient noise levels and excessive groundborne vibration levels in excess of FTA and the Caltrans daytime and nighttime construction thresholds at the nearest sensitive receivers. In addition, facilities constructed under the Greenspot & Sand Canyon Alternative may include noise-generating components that could result in a substantial permanent increase in ambient noise levels at nearby sensitive receptors, if present, depending on the equipment type, whether equipment is enclosed in a structure, the distance between equipment and nearby sensitive receivers, and the local jurisdiction's noise standards. Therefore, as with the Program, construction and vibration impacts for the Greenspot & Sand Canyon Alternative would be potentially significant, and implementation of mitigation to minimize noise from well drilling activities would be required. As with the Program, implementation of this **MM** would reduce the Greenspot & Sand Canyon Alternative's impacts to less than significant levels. Accordingly, under this evaluation and set of assumptions, the level of noise and vibration impacts of the Greenspot & Sand Canyon Alternative and the Program is equivalent and both would be less than significant with the implementation of mitigation.

Population and Housing: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. As with the Program, BBARWA operations of the Greenspot & Sand Canyon Alternative would be intended to existing customers as well as future customers associated with planned growth in the Big Bear Valley. The Greenspot & Sand Canyon Alternative would not include construction of new homes or businesses and would therefore not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley area. Like the Program, any facilities constructed under the Greenspot & Sand Canyon Alternative would be growth accommodating but would not induce population growth. Also similar to the Program, the majority of construction and operations and maintenance staff for any new facilities can be expected to be drawn from the existing population within the Big Bear Valley. Furthermore, comparable construction and operation and maintenance staff would be required. As such, under this evaluation and set of assumptions, the level of significance of the population and housing impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant.

Public Services: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Facilities constructed under the Greenspot & Sand Canyon Alternative would not include construction of new homes or businesses that would result in a direct increase in population or new jobs that would increase demand for public services. Operation of the new facilities could require fire and police services in the unlikely event of an emergency; however, any increase in demand would be nominal. Similar to the Program, a HMBP would be required for use of chemicals at any of the new facilities, which would minimize the potential need for emergency services. Any new facilities would be fenced or access controlled to prevent illegal trespass, as required by **MM PS-1**. In addition, the majority of any new employees for operation and maintenance of new facilities would likely come from the existing population with the Big Bear Valley, and any increase in demand for schools, parks, or other public services would be nominal. As such, under this evaluation and set of assumptions, the level of significance of the public service impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Recreation: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. The Greenspot & Sand Canyon Alternative would not require construction or expansion of recreational facilities. The Greenspot & Sand Canyon Alternative would also not include construction of new homes or businesses. Therefore, there would not be a direct increase in population or a substantial number of new jobs that would result in increased demand for parks and recreational facilities within the Big Bear Valley area. Also similar to the Program, the majority of construction and operations and maintenance staff for any new facilities can be expected to be drawn from the existing population within the Big Bear Valley. The proposed Program may result in enhanced settings at Stanfield Marsh and Big Bear Lake, which is an objective of the Program and thereby may increase recreational opportunities therein. However, recreational infrastructure and fee mechanisms are in place to accommodate any increase in recreation at these locations. The Greenspot & Sand

Canyon Alternative would not result in any enhancements of the Stanfield Marsh or Big Bear Lake. Under this evaluation and set of assumptions, the level of significance of the recreational impacts of this alternative would be similar to that which would occur under the proposed Program and both would be less than significant.

Transportation: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Construction activities associated with these new facilities may generate temporary increases in heavy truck and construction worker trips that could affect roadway, transit, bicycle, and pedestrian circulation as well as emergency access. This could be due to construction equipment staged within a public ROW affecting transit stops, bicycle, and/or pedestrian facilities, construction disturbance under existing transit, bicycle, and/or pedestrian thoroughfares, potential lane or road closures, construction vehicles affecting roadway movement and circulation, and/or blockage of emergency vehicle roadway and driveway access during construction. Therefore, the construction-related circulation and emergency access impacts of the Greenspot & Sand Canyon Alternative would be potentially significant. However, with implementation of mitigation, specifically **MM TRA-1**, which requires preparation and implementation of a construction TMP, construction-related circulation and emergency access impacts under the Greenspot & Sand Canyon Alternative would be reduced to a less-than-significant level with the implementation of mitigation.

There would be slightly greater facilities constructed under the Greenspot & Sand Canyon Alternative as compared to the Program, because the Greenspot & Sand Canyon Alternative would include a longer pipeline to Sand Canyon. As such, operational VMT and potential operational impacts related to transportation circulation, design safety, and emergency access under the Greenspot & Sand Canyon Alternative would be slightly less than under the Program. Therefore, compared to the proposed Program, the Greenspot & Sand Canyon Alternative would result in slightly greater impacts related to transportation. However, the level of significance would be comparable to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Tribal Cultural Resources: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Simply because the Program and the Greenspot & Sand Canyon Alternative would disturb a similar amount of area, the potential for encountering TCRs is comparable under both alternatives. When mitigation is implemented—primarily avoidance of tribally sensitive areas, tribal and archaeological monitoring, and specific treatment requirements for buried TCRs that may be uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to tribal cultural resources. Under this evaluation and set of assumptions the Greenspot & Sand Canyon Alternative would have comparable impacts on TCRs to the Program; however, the level of significance would be similar to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Utilities and Service Systems: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Under the

Program, significant impacts to stormwater drainage, energy, natural gas telecommunications, or solid waste were determined to be less than significant with the implementation of mitigation, and as with the Program, specifically as it relates to utilities infrastructure, it is anticipated that the Greenspot & Sand Canyon Alternative would have comparable potential to impact these utility systems than the Program. Under the Program mitigation is required to minimize impacts related to stormwater through implementation of a drainage plan to reduce downstream flows for future Program projects; this would be required to minimize impacts from the facilities that would be developed under the Greenspot & Sand Canyon Alternative. As the Greenspot & Sand Canyon Alternative and Program would both generate solid waste during operation and construction, mitigation is required to address potential impacts related to solid waste including those that would: ensure that construction and demolition materials that are salvageable are recycled, and thereby diverted from the local landfill, which will minimize the potential for Program projects to generate waste in excess of local landfill capacities; and, ensure that soils that would generally be exported from a given construction site are salvaged where possible for recycled and ultimately reuse, thereby diverting this waste stream from the local landfill. The construction of infrastructure related to energy and natural gas under the Program was analyzed and determined to be less than significant with the implementation of mitigation that would ensure that Program projects not located in an area containing adjacent access to electricity and natural gas infrastructure would require subsequent CEQA documentation. This mitigation would also be required to reduce those same impacts under the Greenspot & Sand Canyon Alternative as this alternative would be installed within locations that have not yet been selected. Under the Program, the construction of infrastructure related to telecommunications was determined to be less than significant with the implementation of mitigation that would ensure that Program projects not located in an area containing adjacent access to telecommunication infrastructure would require subsequent CEQA documentation. This mitigation would also be required to reduce those same impacts under the Greenspot & Sand Canyon Alternative as this alternative would be installed within locations that have not yet been selected. However, for the issues of solid waste, stormwater drainage, electricity, natural gas, and telecommunications, mitigation would be required to minimize impacts to a level of less than significant for both the Program and the Greenspot & Sand Canyon Alternative.

The extension of water and wastewater related infrastructure was determined to be significant under the Program, because the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact, which would also be anticipated for the Greenspot & Sand Canyon Alternative as it too would potentially involve construction of a pipeline through Baldwin Lake. As with the Program, the Greenspot & Sand Canyon Alternative would contribute to the provision of sufficient wastewater treatment capacity at BBARWA's WWTP, as the Program is not anticipated to require an increase in overall capacity at the WWTP. Furthermore, as described under hydrology and water quality, the action towards addressing groundwater supply challenges, given Big Bear Valley's remote location, that would be addressed by the Program and the Greenspot Recharge Alternative would ensure sufficient supply in the Big Bear Valley. However, the reduction in discharge of secondary effluent to the Lucerne Valley Basin would result in a significant impact on Lucerne Valley Basin water supply. As the Greenspot & Sand Canyon Alternative would also contribute to reducing discharge to the LV Site, it too would result in a significant impact to the Lucerne Valley Basin water supply. Given that the Greenspot & Sand Canyon Alternative does not eliminate the potential for significant water supply impacts, it could likewise result in comparable impacts; thus, under both alternatives, utilities and service systems impacts are significant and unavoidable.



**Wildfire:** The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. The locations of Program facilities were determined to be located in designated high and very high FHSZs. Comparatively, since the proposed the Greenspot & Sand Canyon Alternative would be developed within the Big Bear Valley, it is likely that these facilities would have a potential to be located within a very high FHSZ. The Program, and by extension, the Greenspot & Sand Canyon Alternative, would require mitigation to minimize impacts to wildfire that would: reduce the project's potential traffic conflicts that could be exacerbating in high FHSZs by requiring all construction activities to be conducted in accordance with an approved construction traffic control plan; and, ensure fire hazard reduction measures are incorporated into a fire management plan/fuel modification plan for the proposed facility. As such, the Program would achieve a level of less than significant with mitigation. Thus, with implementation of mitigation to minimize wildfire impacts, neither the Program nor the Greenspot & Sand Canyon Alternative would cause significant unavoidable adverse wildfire impacts. Under this evaluation and set of assumptions the Greenspot & Sand Canyon Alternative would have comparable impacts on Wildfire when compared to the Program both would be less than significant with the implementation of mitigation.

## **Conclusion**

The Greenspot & Sand Canyon Alternative is comparable to the Program in terms of environmental impacts. Because the Greenspot & Sand Canyon Alternative would result in the development of some of the same types of facilities proposed by the Program, it is comparable in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site and greater lineal feet of conveyance pipeline, and therefore, all of the impacts related to this alternative are the same as those identified under the Program. Of the significant impacts that would result from the proposed Program, no significant impacts would be eliminated by the Greenspot & Sand Canyon Alternative, though the severity of the impact to the Lucerne Valley Basin would likely be reduced. The water supply and water quality impacts at the LV Site as a result of the Program would be reduced slightly due to a smaller volume AWWPF at the BBARWA WWTP, thereby discharging a larger volume of water to the LV Site than is anticipated under the Program, it would still contribute to significant Agricultural and Forestry, Biological Resources, Hydrology and Water Quality, and Utilities and Services Systems impacts.

Furthermore, while the Greenspot & Sand Canyon Alternative would meet nearly all of the Program's objectives, it would not meet one of the BBARWA's basic objectives, which is to develop promote a thriving community through enhanced recreation and protecting diverse habitats in Big Bear Valley. This is because it would not include discharge to Stanfield Marsh or Big Bear Lake, thus failing to meet this project objective.

## **5.6 SUMMARY OF ALTERNATIVES**

A summary of impacts of the alternatives compared to the Proposed Program is included in **Table 1.6-1**, pursuant to State CEQA Guidelines Section 15126.6(d).

**Table 1.6-1  
 TABULAR COMPARISON OF PROJECT, NO PROGRAM, GREENSPOT, AND  
 GREENSPOT & SAND CANYON ALTERNATIVES**

	<i>Would the Program Result in Significant Adverse Impact?</i>	<i>Would the Alternative Result in Equal, Greater, or Less Impacts than the Program?</i>		
	<b>Proposed Program</b>	<b>No Program Alternative</b>	<b>Greenspot Alternative</b>	<b>Greenspot &amp; Sand Canyon Alternative</b>
Aesthetics	No Impacts LSM	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Agricultural and Forestry	Yes Impacts would be Significant	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Air Quality	No Impacts LSM	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Biological Resources	Yes Impacts would be Significant	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Cultural Resources	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Energy	No Impacts LSM	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Geology and Soils	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Greenhouse Gas	No Impacts LS	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Hazards and Hazardous Materials	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Hydrology and Water Quality	Yes Impacts would be Significant	Impact level would be greater than the Program	Impact level would be equal	Impact level would be equal
Land Use and Planning	No Impacts LSM	Impacts would be Significant	Impact level would be equal	Impact level would be equal
Mineral Resources	No Impacts LS	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Noise	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Population and Housing	No Impacts LS	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Public Services	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Recreation	No Impacts LS	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Transportation	No Impacts LSM	Impact level would be less than the Program	Impact level would be less than the Program	Impact level would be equal
Tribal Cultural Resources	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal
Utilities and Service Systems	Yes Impacts would be Significant	Impact level would be greater than the Program	Impact level would be equal	Impact level would be equal
Wildfire	No Impacts LSM	Impact level would be less than the Program	Impact level would be equal	Impact level would be equal

LSM = less than significant with **MMs**  
 LS = less than significant without **MMs**

## 5.7 CONCLUSION

State CEQA Guidelines Section 15126.6(b), indicates that a list of reasonable alternatives must be developed and considered by the Lead Agency. Elimination of potential environmental impacts of the proposed Program should be considered when developing potential alternatives. As evaluated in **Chapter 2, Introduction** of this DPEIR, the significant impacts of the proposed Program are: Agricultural and Forestry Resources, Biological Resources, Hydrology and Water Quality, and Utilities and Service Systems.

While the NPA would reduce impacts related to Agriculture and Forestry Resources and Biological Resources, it would not avoid significant Hydrology and Water Quality or Utilities and Service Systems impacts. Additionally, there are a number of goals and policies pertaining to water resources in the San Bernardino Countywide Plan and Big Bear Lake General Plan that the NPA may conflict with through lack of action to manage water supplies in Big Bear Valley.

As such, given that the NPA would conflict with the Bear Valley Basin GSP, San Bernardino Countywide Plan and Big Bear Lake General Plan, a significant Land Use and Planning impact would result from the NPA. Further, although the NPA would reduce potentially significant impacts identified in this DPEIR as compared to the proposed Program, it would lead to greater impacts on Big Bear Valley, and the Bear Valley Basin in some other areas, including Hydrology and Water Quality and Utilities and Service Systems. In the final analysis, the NPA cannot be considered the environmentally superior alternative to the proposed Program from a total environment standpoint, because the environmental damage from implementing it is forecast to cause new significant adverse impacts when compared to implementing the Program.

As with the NPA, the Greenspot Alternative has comparable environmental impacts for all of the resource issues to the Program, except for those related to biological resources. Of the significant impacts that would result from the proposed Program, the only impact category that the Greenspot Alternative would eliminate is the Biological Resources impact. This is because this alternative would eliminate the Baldwin Lake Pipeline Alignment Option, thereby preventing impacts to the bird-foot checkerbloom, should BBARWA select the Baldwin Lake Pipeline Alignment Option as the preferred Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option. While the water supply and water quality impacts at the LV Site as a result of the Program would be reduced slightly due to a smaller volume AWWPF at the BBARWA WWTP, thereby discharging a larger volume of water to the LV Site than is anticipated under the Program, it would still contribute to significant Agricultural and Forestry, Hydrology and Water Quality, and Utilities and Services Systems impacts. Furthermore, while the Greenspot Alternative would meet nearly all of the Program's objectives, it would not meet some of the BBARWA's basic objectives, which are to develop promote a thriving community through enhanced recreation and protecting diverse habitats in Big Bear Valley. This is because it would not include discharge to Stanfield Marsh or Big Bear Lake, thus failing to meet this project objective. However, as this is the only alternative that would reduce a significant and unavoidable impact without contributing to new significant and unavoidable impacts (as is the case for the NPA creating new Hydrology and Water Quality and Utilities and Service Systems impacts), it would be the environmentally superior alternative, when considered against the scenario in implementing the Program in which BBARWA selects the Baldwin Lake Pipeline Alignment Option, and thereby may result in significant and unavoidable impacts to impacts to the bird-foot checkerbloom.

The Greenspot & Sand Canyon Alternative is comparable to the Program in terms of environmental impacts, as all of the impacts related to this alternative are the same as those

identified under the Program. Of the significant impacts that would result from the proposed Program, no significant impacts would be eliminated by the Greenspot & Sand Canyon Alternative, though the severity of the impact to the Lucerne Valley Basin would likely be reduced. The water supply and water quality impacts at the LV Site as a result of the Program would be reduced slightly due to a smaller volume AWWP at the BBARWA WWTP, thereby discharging a larger volume of water to the LV Site than is anticipated under the Program, it would still contribute to significant Agricultural and Forestry, Biological Resources, Hydrology and Water Quality, and Utilities and Services Systems impacts. Furthermore, while the Greenspot & Sand Canyon Alternative would meet nearly all of the Program's objectives, it would not meet some of the BBARWA's basic objectives, which is to develop and promote a thriving community through enhanced recreation and protecting diverse habitats in Big Bear Valley. The discharge to Big Bear Lake via Stanfield Marsh is paramount to enhancing the recreational opportunities outlined in the Program objectives, as the provision of additional water in Big Bear Lake is anticipated to enhance the setting within Big Bear Lake and Stanfield Marsh, making recreation therein more appealing to those living and visiting the area. Additionally, the provision of additional water within Big Bear Lake and Stanfield Marsh would benefit the habitat supported by these water bodies. Therefore, as the Greenspot & Sand Canyon Alternative would not include discharge to Stanfield Marsh or Big Bear Lake, thus failing to meet this project objective.

## CHAPTER 6 – TOPICAL ISSUES

Each environmental document contains a certain amount of duplication to ensure that information is conveyed to the decision-makers and interested members of the public in an organized fashion. Chapter 4 contains a detailed discussion of environmental effects that may result from implementing the Program. This includes a discussion of program specific and cumulative environmental impacts, as well as discussion of unavoidable adverse impacts for each topic evaluated in the DPEIR. This section of the DPEIR combines three “topical issues” that are mandated in State CEQA Guidelines Section 15126, which states: “The subjects listed below shall be discussed ... preferably in separate sections or paragraphs of the EIR.” These sections: (c) Significant Irreversible Environmental Changes Which Would be Involved in the Proposed Project Should it be Implemented and (d) Growth-Inducing Impact of the Proposed Project. State CEQA Guidelines Section 15130 also requires a discussion of Cumulative Impacts. Because of the importance of this topic, a summary of the Program’s cumulative effects is included in this Chapter. The other major topics required in an EIR (Significant Environmental Effects; Unavoidable Significant Environmental Effects; and **MMs**) are specifically addressed in Chapters 1 and 4 of this DPEIR. Alternatives to the proposed Program are evaluated in Chapter 5.

### 6.1 GROWTH-INDUCING IMPACTS

CEQA requires a discussion of the ways in which a project could be growth inducing. (Public Resources Code, §21100(b)(5); State CEQA Guidelines, §§15126(d), 15126.2(d).) The State CEQA Guidelines identify a project as growth-inducing if it would foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Growth inducement is not considered necessarily negative or beneficial. (Ibid.)

A project may indirectly induce growth by reducing or removing barriers to growth, or by creating a condition that attracts additional population or new economic activity. Projects that induce growth directly would include commercial or industrial development that hire new employees and residential development that provides housing. These direct forms of growth have a secondary effect of expanding the size of local markets and inducing additional economic activity in an area. Growth inducement may also occur if a project provides infrastructure or service capacity that accommodates growth beyond the levels currently permitted by local or regional land use plans. Further, growth that is consistent with local and regional plans, i.e., development within that already planned for an area, may not result in a significant effect on a community. Regardless, a project’s potential to induce growth does not automatically result in actual growth. Growth only happens when the private or public sector responds to a change in the underlying development potential of an area with capital investment.

Typically, significant growth is induced in one of three ways. In the first instance, a project developed in an isolated area may bring sufficient urban infrastructure to cause new or additional development pressure on the intervening and surrounding land. This type of induced growth leads to conversion of adjacent acreage to higher intensity uses, either unexpectedly or through accelerated development. This conversion occurs because the adjacent land becomes more suitable for development and, hence, more valuable because of the availability of the new infrastructure. This type of growth inducement is often termed “leap frog” or “premature” development because it creates an island of higher intensity developed land within a larger area of lower intensity existing land uses.

The second type of significant growth inducement is caused when the development of a large-scale project, relative to the surrounding community or area, produces a “multiplier effect” resulting in substantial indirect community growth, although not necessarily adjacent to the development site or of the same type of use as the project itself. This type of stimulus to community growth is typified by the development of major destination facilities, such as Disney World near Orlando, Florida, or around military facilities, such as the Marine Corps Air Ground Combat Center, near Twentynine Palms.

A third, subtler type of significant growth inducement occurs when land use plans are established that create a potential for growth because the available land and the land uses permitted result in the attraction of new development. This type of growth inducement is also attributed to other plans developed to provide the infrastructure necessary to meet the land use objectives, or community vision, contained in the governing land use agency’s general plan. In this type of growth inducement, the ultimate vision of future growth and development within a Program Area is established in a city or county’s General Plan or other comprehensive land use plan. The net effect of a General Plan’s land use designations is to establish a set of expectations regarding future land use and growth that may or may not occur in the future, depending upon the actual demand and other circumstances when development is proposed. Thus, a plan may assign an area 100,000 square feet of commercial space, but if actual development does not ultimately generate demand for this much retail square footage, it may never be realized.

The proposed Program is unusual because its implementation will not directly contribute to growth within the Big Bear Valley. During its implementation the purified Program water would be discharged to Big Bear Lake via Stanfield Marsh for beneficial use for habitat and recreation enhancements, and to enhance water supplies through the Sand Canyon Recharge portion of the Program. The proposed Program was identified in the Bear Valley Basin GSP to accommodate anticipated growth in the Big Bear Valley based on projections in the area General Plans, and also projections in the Urban Water Management Plans for BBCCSD and BBMWD. If Sustainable Yield of the Bear Valley Basin declines over time, growth in the Big Bear Valley continues and water users have limited ability for further conservation, additional supply will likely be needed in the future to maintain supply reliability. The drought proof supply provided by the Program will become more critical to maintain water reliability in times of extended drought and provide insurance against climate change uncertainty. The Program will not induce growth directly since the additional number of employees is estimated to be five persons within an area currently populated with about 23,000 residents. Further, no indirect growth will be created because Program infrastructure will be used to meet the existing Big Bear Valley population demands for water.

In summary, implementation of the proposed Program would not result in a significant growth inducing impact through the extension of significant urban infrastructure to an isolated area. Moreover, the proposed Program would also not indirectly induce substantial population growth through the creation of jobs and it would not be a new large project with the potential to create a “multiplier effect” that has not already been provided for in the local land use planning documents and that could induce growth beyond that anticipated in those planning documents. Finally, the Program would not create or change a land use plan that might cause a potential for growth because the available land and the land uses permitted result in the attraction of new development. Though the Program would create limited job growth, the amount in which it would indirectly induce growth is not considered to be significant.



## 6.2 CUMULATIVE IMPACTS

The intent of a cumulative impact evaluation is to provide the public and decision-makers with an understanding of a given project's contribution to area-wide or community environmental impacts when added to other development that has occurred or that is proposed to occur in the region. Typically, cumulative impacts are discussed in relation to a list of past, present, and reasonably anticipated projects or in relation to broad growth projections and related area-wide impacts identified in general (city or county General Plan) or regional plans (such as, SCAQMD's Air Quality Management Plan, AQMP). (State CEQA Guidelines § 15130(b).) For the proposed Program, cumulative impacts are evaluated in the context of both types of cumulative impact forecast methodologies. The cumulative impact projections were made using regional planning documents and site-specific technical studies, and more specifically modeling that takes into account the existing and projected conditions within the Bear Valley Basin, with the proposed Program being analyzed against these existing and projected conditions. Cumulative impacts are discussed in each issue subchapter of Chapter 4 in this DPEIR, and are either located at the end of each subchapter, or at the end of each individual issue under each subchapter.

Cumulatively considerable impacts from the implementation of the Program were identified for the topics of Agricultural and Forestry Resources, Biological Resources, Hydrology and Water Quality, and Utilities and Service Systems. Please refer to each individual subchapter of Chapter 4 (Chapters 4.3, 4.5, 4.11, and 4.20) for an expanded discussion of cumulative impacts.

The following summary of cumulative impacts is provided for all the issues addressed in the Draft PEIR.

Aesthetics: Construction of the new facilities could alter existing views and contribute to significant cumulative aesthetic impacts in combination with other projects in the Program Area. The implementation of **MMs AES-1** through **AES-8**, in addition to **MM AGF-1** would ensure that the proposed facilities' contribution to cumulative aesthetic impacts would be reduced to less than cumulatively considerable by: ensuring that facilities and landscaping comply with local design standards and are integrated with local surroundings; ensuring that impacts to scenic resources from the implementation of future Program facilities will be avoided or assessed further in future CEQA documentation; ensuring that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a level of less than significant; ensuring that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof ensuring compliance with the applicable zoning code; ensuring that future facilities will conform with design requirements established by local jurisdictions; and, ensuring that light and glare impacts from future structures associated with the Program are minimized. Thus, the proposed Program would not cause cumulatively considerable contributions to cumulative aesthetics impact.

Agricultural and Forestry Resources: The proposed Program will not cause any adverse impacts to agricultural land in Big Bear Valley and very minimal impact to forest land (a few acres at most). Based on the minimal impacts to these resources from implementing the proposed Program, the cumulative impacts of the proposed Program are determined to not result in a considerable contribution to cumulative impacts to agricultural and forestry resources within the Big Bear Valley following implementation of the single **MM**.

However, the conversion of up to 190 acres of designated agricultural land at BBARWA's LV Site is necessary in order to implement the Program, and thereby utilize the majority of the wastewater

generated in Big Bear Valley locally as Program Water, rather than exporting all the undisinfected secondary effluent generated by the BBARWA WWTP process to Lucerne Valley. Thus, the conversion of up to 190 acres of designated agricultural land at BBARWA's LV Site is considered sufficient to contribute to Statewide cumulative loss of agricultural land. Therefore, the proposed Program has the potential to result in a cumulatively considerable adverse contribution to any cumulative agricultural resource impacts. Thus, cumulative adverse impacts to agricultural resources are significant and unavoidable. However, with the implementation of mitigation, impacts to forestry resources are considered less than cumulatively considerable, and, therefore, are less than significant.

Air Quality: As previously shown in **Table 4.4-3**, the CAAQS designate the Program Area as nonattainment for O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> while the NAAQS designates the Program Area as nonattainment for O<sub>3</sub> and PM<sub>2.5</sub>.

The SCAQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution*. In this report the AQMD clearly states (Page D-3):

*"...the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or Environmental Impact Report (EIR). The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for TAC emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.*

*Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."*

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the Bear Valley Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

Biological Resources: Cumulative development within the Big Bear Valley includes conversion of open undeveloped land to urban and rural development. This future cumulative development has the potential to significantly impact biological resources. To mitigate the effects of the cumulative impacts on special status species and habitat values from implementation of the proposed Program, **MMs** identified in **Subchapter 4.5** would ensure that project related impacts on all special status species would be minimized to a level of less than significant, except for the potential Program impacts on the bird-foot checkerbloom.

There are other areas within the overall Program Area of potential impact where the resource impacts from constructing new infrastructure may cause unavoidable significant adverse impacts on biological resources. These areas are highly dependent upon the final design of each Program facility, i.e., individual project, and if those actions cannot be reasonably or feasibly offset, the ultimate design of these Program improvements must be based on sound engineering. In each case where most environmental impacts cannot be fully avoided, it may be possible to avoid certain impacts by designs that avoid such impacts through sound mitigation-based planning at each step. Given the speculative nature of the locations of proposed Program facilities, there is a potential that an individual Program facility may be developed and have operations within an area containing biological resources that cannot be avoided, even at the design level. This is anticipated to be the case for the bird-foot checkerbloom.

The loss of potentially suitable habitat for special-status species as a result of cumulative development would primarily result from the total conversion of undeveloped land to urban and rural development. This potential conversion by cumulative development is considered a potentially significant impact on special-status species. Since the Program would also result in potentially significant impacts on special-status species, the Program's contribution is considered cumulatively considerable, however, for all species identified in **Table 4.5-3**, except the bird-foot checkerbloom, the Program's contributions to cumulatively considerable significant impacts under this issue, can be mitigated to a level of less than cumulatively considerable. Regardless, impacts to the bird-foot checkerbloom are forecast to potentially experience an unavoidable cumulatively significant impact if the Baldwin Lake Pipeline Alignment Option is selected as the preferred Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment. Thus, a cumulatively significant impact may result.

Certain areas within the Big Bear Valley that contain critical habitat for species may not be fully mitigable, and an unavoidable significant adverse biological resource impact may occur. As project specific impacts on critical habitat, riparian habitat or other sensitive natural communities are less than significant with mitigation, the project-specific impacts to critical habitat, riparian habitat or other sensitive natural communities would not be substantial enough to contribute cumulatively considerable contributions to significant adverse impacts thereof.

The conversion of undeveloped areas to cumulative development, within the Big Bear Valley may increase effects on protected wetland habitats. Cumulative development that encroaches into wetland habitat areas or indirectly impacts wetland habitat through the increase of upstream urban runoff could result in a cumulatively significant impact. Other cumulative impacts may include direct impacts such as the removal or modification of local hydrology, the redirection of flow, and the placement of fill material. Since the Program could potentially benefit wetlands and habitats at Stanfield Marsh and Big Bear Lake, and because the proposed Program would not significantly impact wetlands elsewhere in the Big Bear Valley as a result of development of Program facilities, the Program's contribution to potential impacts on wetland habitat would be less than cumulatively considerable with the implementation of mitigation. Implementation of **MMs BIO-14 through BIO-27** would reduce the future facilities under the Program's contribution to cumulative wetland impacts to less than cumulatively considerable through compensation and implementation of construction and operational BMPs to control stormwater pollutants from exiting a proposed facility site and compliance with regulatory requirements.

Furthermore, as project specific impacts on critical habitat, riparian habitat or other sensitive natural communities are less than significant with mitigation, the project-specific impacts to critical habitat, riparian habitat or other sensitive natural communities would not be substantial enough

to contribute cumulatively considerable contributions to significant adverse impacts thereof. Thus, the Program's contribution to cumulative impacts would be less than cumulatively considerable.

Since development in accordance with the Program could result in potential impacts to biological resources protected by local policies or ordinances, the Program's contribution to cumulative impacts could be considerable without the implementation of mitigation. Implementation of **MMs AES-4 and AGF-1** would reduce the proposed Program's contribution to cumulative biological resources impacts to less than cumulatively considerable through compliance with the local regulations that protect biological resources.

Since development in accordance with the Program could result in potential impacts to existing CAL FIRE regulations, the Program's contribution to cumulative impacts could be considerable without the implementation of mitigation. The implementation of **MM AGF-1** would reduce some contribution to cumulative impacts through compliance with CAL FIRE regulations. Therefore, based on the discussion above, the Program's contribution under this issue is considered less than cumulatively considerable, and would not result in a significant or cumulatively considerable adverse impact.

Cultural Resources: As the Big Bear Valley continues to develop with projected growth, new residential, commercial, and industrial developments would occur. The project vicinity contains many historical, archaeological, tribal cultural and paleontological resources that, in many cases, have not been well documented or recorded. Thus, there is the potential for ongoing and future development projects in the vicinity to destroy known or unknown historical, archaeological, and paleontological resource sites resulting in a significant cumulative impact.

The potential construction impacts of the Program, in combination with other projects as a result of growth in the area, could contribute to a cumulatively significant impact to specific historical, archaeological, and paleontological resources if encountered during project construction. However, implementation of **MMs CUL-1 through CUL-4** would minimize the contributions of the Program to cumulatively significant impact on specific historical, archaeological, and paleontological resources, and the Program's contribution would not be cumulatively considerable.

The Big Bear Valley contains urbanized and rural areas, with many areas that have not historically been disturbed at depth. As the area continues to develop, it is possible, but unlikely, that construction activities could impact unknown human remains. However, since the treatment of human resources is governed by PRC Section 5097.98 and Health and Safety Code Section 7050.5, the cumulative potential to impact human remains would be less than significant. Therefore, the implementation of the Program would not result in a cumulatively considerable contribution to impacts on human remains.

Energy: The cumulative analysis of each energy issue evaluated in this DPEIR determined that the proposed Program would not result in a cumulatively considerable contribution to cumulative energy impacts within the Big Bear Valley without the need for mitigation. While cumulative development within the region may result in significant cumulative impacts related to area energy consumption, the potential for the proposed Program to contribute to a cumulatively considerable contribution to such impacts has been minimized through the offset in energy consumption due to incorporation of solar facilities as a Program Component. Since this is an essential component of the Program, no mitigation is required. Therefore, the implementation of the Program would not result in a cumulatively considerable contribution to energy impacts.

Geology and Soils: Future cumulative development in the Big Bear Valley may experience significant impacts associated with geotechnical constraints within the Big Bear Valley, including impacting resources such as paleontological resources, which occur belowground. Similarly, development of the Program would be affected by limited geotechnical constraints that occur within the Big Bear Valley. None of the future on-site or off-site project-related activities are forecast to cause cumulatively considerable changes in geology or soils or the constraints affecting the Program Area that cannot be fully mitigated. Therefore, with the implementation of **MMs GEO-1** through **GEO-4**, and adherence to the relevant regulatory requirements, the proposed Program would have a less than significant contribution to cumulatively considerable geology or soils impacts within the Big Bear Valley.

Greenhouse Gases/Global Climate Change: As discussed under the cumulative impact analysis presented in the GHG impact evaluation, GHG emissions are, by definition, cumulative impacts because they affect the worldwide accumulation of GHGs in the atmosphere. For the analysis of impacts related to GHG emissions, CEQA focuses on whether the incremental contribution of a proposed project is cumulatively considerable and thus significant in and of itself. The Program would be consistent with many of the goals of applicable State and local plans and programs, which are designed to reduce the cumulative impact of GHG emissions. Furthermore, based upon the 2022 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2020 GHG emissions period, California emitted an average 369.2 million metric tons of CO<sub>2</sub>e per year (MMTCO<sub>2</sub>e/yr) or 369,200 Gg CO<sub>2</sub>e (6.17% of the total United States GHG emissions).<sup>128</sup> The proposed project will generate approximately 1,499.63 metric tons of CO<sub>2</sub>e per year, or about 0.0004062% of this amount. An individual project such as the proposed Program cannot generate enough greenhouse gas emissions to effect a discernible change in global climate. Therefore, the proposed Program would not contribute to global climate change through an incremental contribution of greenhouse gases because the GHG emissions are well below the SCAQMD thresholds. As such, the proposed project would not result in a cumulatively considerable/significant adverse greenhouse gas impact.

Hazards and Hazardous Materials: The cumulative analysis of each Hazards and Hazardous Materials issue in **Subchapter 4.10** of the DPEIR determined that the proposed project would not result in a cumulatively considerable contribution to cumulative hazards and hazardous materials impacts within the Big Bear Valley or Lucerne Valley as a result of implementation of **MMs**. While cumulative development within the region may result in significant cumulative impacts related to exposure to hazards, the potential for the proposed Program to result in a cumulatively considerable contribution to such impacts has been minimized to a level of less than significant through the implementation of **MMs**.

Hydrology and Water Quality: No mitigation is available to reduce the significant and unavoidable conflict with the water quality standards set forth in the Colorado Basin Plan that may result from Program implementation, and furthermore, no mitigation is available to reduce the potentially substantial degradation of the groundwater quality of the Lucerne Valley Basin. However, **MM HYD-1** would reduce the potential for the proposed Program to conflict with the beneficial uses of the Marsh and Big Bear Lake. Cumulative development would not result in a violation of water quality standards, waste discharge requirements, or otherwise substantially degrade water quality. However, because the Program would result in a significant water quality impact, the Program's contribution to cumulative impacts associated with violation of water quality standards,

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<sup>128</sup> CARB, 2023. 2000-2020 GHG Inventory (2022 Edition). <https://ww2.arb.ca.gov/ghg-inventory-data> (accessed 09/05/23)

waste discharge requirements, or degradation of water quality would be cumulatively considerable.

Cumulative development within the Big Bear Valley and Lucerne Valley areas could result in a decrease in groundwater supplies or interference with groundwater recharge, thereby impeding sustainable groundwater management of the respective groundwater basins. For the Big Bear Valley, the Program would enhance Bear Valley Basin groundwater supplies through the recharge component of the Program proposed at Sand Canyon. The proposed groundwater recharge is being considered as part of the Program in response to the potential for cumulative demand on groundwater supplies. The Sand Canyon Recharge Project would require **MMs HYD-2 and HYD-3** to ensure that the operation of the Sand Canyon Recharge Project is regulated. As such, with the implementation of the above mitigation, the Program Team would be able to minimize impacts on the Bear Valley Basin, thereby reducing any potential for the Program to contribute cumulatively considerable impacts on the Bear Valley Basin. However, for the Lucerne Valley Basin, the Program would have a potential to reduce groundwater recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to an average of 340 AFY under future BBARWA operations. Cumulative development in the Lucerne Valley could result in greater demand for water supplies, thereby further contributing to the need for water supplies that are currently being utilized at a higher rate than the Lucerne Valley Basin is being replenished. As the Program would contribute to reducing groundwater recharge in the Lucerne Valley Basin, the Program would result in a cumulatively considerable impact on sustainable management of the Lucerne Valley Basin.

Cumulative projects could result in significant impacts to local drainage systems after rapid development of structures. The Program projects could result in potentially significant impacts associated with the alteration of drainage patterns. Since the project could result in potential significant impacts, the project's contribution to cumulative impacts is considered cumulatively considerable, and therefore, would require mitigation as identified above, which would reduce the project's contribution to less than cumulatively considerable, therefore reducing the project's contribution to cumulative impacts under this issue to a level of less than significant.

Finally, by implementing the Program, the Program Team (BBARWA, BBCCSD, BBLDWP, and BBMWD) will ensure that the Program will not contribute to cumulatively considerable impacts on the Bear Valley Basin resulting in the obstruction of implementation of the GSP. However, cumulative development in the Lucerne Valley Basin could result in greater demands for groundwater or greater contributions of higher TDS or nitrate water sources, such that the Colorado Basin Plan would be further obstructed. Given that the Program would result in a significant and unavoidable impact on the water quality of the Lucerne Valley Basin, thereby conflicting with the Colorado Basin Plan, the Programs would result in a cumulatively considerable contribution to cumulative impacts under this issue in the Lucerne Valley Basin.

Land Use and Planning: The project would not divide an established community and would not contribute to cumulative impacts related to the physical division of an established community. Implementation of the proposed Program would increase the resiliency and sustainability of water resources management within the Big Bear Valley. The Program would help support water supply needs of future development within City of Big Bear Lake and unincorporated areas of San Bernardino County as envisioned in the applicable General Plans. With implementation of mitigation to ensure land use conflicts are minimized upon implementation of the Program, the Program would not conflict with any land use plan, policy, or regulation in a manner that could result in a considerable contribution to a cumulative land use impact, significant or otherwise.



**Mineral Resources:** The Program has a minimal potential to result in the loss of availability of mineral resources. Future cumulative development could be located in areas known to contain locally important mineral resources. However, given that the Program would not preclude future mining activities, and the overall lack of mineral resources in the Big Bear Valley, implementation of the proposed Program will not contribute to cumulative loss of mineral resources or mineral resource values. As such, the Program's contribution to cumulative impacts would be less than cumulatively considerable. Therefore, the proposed Program's cumulative impact on mineral resources is less than significant.

**Noise:** The geographic scope for cumulative noise impacts is generally within 0.5 mile of the locations of individual projects that may be implemented under the proposed Program. This geographic scope is appropriate for noise because the proposed program's noise impacts are localized and site-specific. Beyond this distance, typical construction and operational noise would be indistinguishable from the background noise level due to distance attenuation and interference from environmental conditions (e.g., topography and air disturbance).

### **Construction Noise**

The Program specific noise impact analysis presented in **Subchapter 4.14** assumed that concurrent construction activities would occur, but it was determined that the combined construction noise would not have the potential to impact the same sensitive receivers and result in cumulative construction noise levels that exceed the applicable thresholds of significance. The severity of the impacts would vary depending upon the intensity of construction activities for cumulative projects and the proximities of residential, commercial, and industrial land uses to each construction site. Therefore, cumulative construction noise impacts may be potentially significant. Nevertheless, per **MM NOI-1**, the monitoring well drilling and related construction activities with the potential to generate construction noise in proximity to sensitive receivers and other concurrent construction activities would be required to incorporate noise reduction measures to reduce noise levels to the FTA daytime and nighttime construction noise standards. As a result, regardless of whether a significant cumulative construction noise impact is occurring, the proposed Program's noise contribution would not be cumulatively considerable with incorporation of **MM NOI-1**.

### **Operational Noise**

Cumulative operational noise impacts may be potentially significant if, when combined with regional operational noise, Program facility contributions to noise levels in the area exceed the established noise regulations of the jurisdiction within which the facility(s) are located. Based on the anticipated reduction of noise that would result from enclosure of the noisiest equipment proposed to be installed as part of the Program—pumps, AWPF equipment—operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases. As a result, the proposed Program's noise contribution would not be cumulatively considerable.

### **Off-site Traffic Noise**

Cumulative growth in the Big Bear Valley would result in increased traffic volumes on local and regional roadways during construction, with minor contributions during operations. However, as discussed in **Subchapter 4.14**, due to the relatively low number of anticipated operation and maintenance trips associated with individual Program projects, impacts related to off-site roadway noise would be incremental and likely imperceptible when compared to the surrounding background traffic noise; therefore, the proposed Program would not have a cumulatively considerable contribution to this potential cumulative impact, significant or otherwise.

### **Vibration**

The geographic scope for cumulative vibration impacts is generally within 0.5 mile of the locations of individual projects that may be implemented under the proposed Program. This geographic scope is appropriate for vibration because the proposed Program's vibration impacts are localized and site-specific. Beyond this distance, typical construction and operational vibration would be indistinguishable from the background vibration level due to distance attenuation and interference from environmental conditions. If concurrent construction activities occur in close proximity to proposed Program activities, combined construction vibration would have the potential to impact the same sensitive receivers and result in cumulative construction vibration levels that exceed the applicable thresholds of significance. However, given that the proposed Program would not contribute to a significant vibration impact at nearby sensitive receptors, it is anticipated that the proposed Program's vibration contribution would be less than cumulatively considerable, and therefore less than significant.

### **Airport Noise**

The Big Bear Airport is the only airport located within the Big Bear Valley. Individual projects and cumulative projects would be required to comply with the applicable airport land use plan, Federal and State OSHA regulations, and applicable CBC standards related to the protection of residents and workers from exposure to excessive aircraft noise. As a result, regardless of whether a significant cumulative noise impact related to airport operations exists, the proposed program would not have a cumulatively considerable contribution to this potential cumulative impact, significant or otherwise, and no mitigation is required.

Population and Housing: The Program would not result in a cumulatively considerable contribution to population growth within the Big Bear Valley. The Program is not forecast to cause significant growth inducement in the community or to cause the elimination of a substantial number of homes with the subsequent relocation of a substantial population. Thus, the Program would have a less than cumulatively considerable potential to impact the local population or housing and would therefore, not result in a considerable contribution to cumulative impacts to population and housing.

Public Services: The Program would not result in a cumulatively considerable contribution to population growth within the region, and as such, the Program would not substantially increase demand for public services. The Program is not anticipated to create a significant new demand for fire protection services beyond that which existing facilities presently demand, and as such, it is not anticipated that the Program implementation would result in a cumulatively considerable impact to fire protection services through the implementation of **MMs TRAN-1, WF-1, and WF-2**. With the implementation of **MMs TRAN-1, WF-1, and WF-2**, fire protection and emergency response impacts would be reduced to a level of less than cumulatively considerable, and therefore would not contribute to significant cumulative impacts thereof. The Program is not anticipated to decrease parkland within the region, and as such would not impact the cumulatively available parkland within the region, thus reducing the impacts to parks to less than cumulatively considerable. Similarly, the Program is not anticipated to create a significant new demand for fire protection services beyond that which existing facilities presently demand, and as such would not impact the cumulatively available library services within the region, thus reducing the impacts to library services to less than cumulatively considerable. However, the Program has a potential to result in greater demand for police protection without **MM PS-1**, which requires all Program project sites to be fenced, to avoid attracting trespass. With the implementation of **MM PS-1**, police protection impacts would be reduced to a level of less than cumulatively considerable, and therefore would not contribute to significant cumulative impacts thereof. While cumulative

development within the region may result in significant cumulative impacts related to demand for public services, the potential for the Program to contribute a cumulatively considerable contribution to such impacts has been minimized to a level of less than significant through the implementation of **MMs**.

**Recreation:** As discussed above in **Subchapter 4.15**, the proposed project would not result in a cumulatively considerable contribution to population growth within the region, and as such, the project would not substantially increase demand for recreation facilities. The Big Bear Valley, within which the Program would be implemented, is expected to experience growth over the next few decades. The City of Big Bear Lake is anticipated to grow by about 35% between 2020 and 2045, according to the SCAG Connect SoCal Demographics and Growth Forecast<sup>129</sup>, resulting in development of commercial, industrial, and residential land uses. Similarly, the growth anticipated as part of Mountain Region of Unincorporated San Bernardino County, within which the Program would also be implemented, is anticipated to grow by about 4% between 2016 and 2040, according to the San Bernardino Countywide Plan EIR. As cumulative development occurs, the Big Bear Valley may experience substantial increases in the demand for additional parks to maintain a ratio of 2.5 acres per 1,000 residents in unincorporated San Bernardino County in the Big Bear Valley (San Bernardino County Standard), and three acres per 1,000 residents in the City of Big Bear Lake (Big Bear Lake Standard). Depending on the location of a new park and recreation facilities, there could be significant impacts, such as significant air quality and greenhouse gas emissions, or significant trip generation or vehicle miles traveled, from the construction and operation of new facilities. Because the proposed Program would result in minimal direct increase in demand for park and recreation facilities, and that the Program does not propose to construct or expand any recreation facilities through implementation of the Program directly, the project's contribution to cumulative environmental effects associated with the construction of any new facilities would be less than cumulatively considerable.

However, as discussed under **Subsection 4.17.5**, while the proposed Program would not install any recreational facilities, it would result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. Objectives of the Program itself are to “provide new inflow to Big Bear Lake to increase inflows and Lake level, enhance recreational opportunities and aquatic habitat,” and to provide “a consistent water source to sustain habitat and increase education opportunities for the community and visitors” at Stanfield Marsh. Cumulative recreational use of Big Bear Lake is limited to Big Bear Lake capacity as a result of the dam, and is accommodated through the requirement that Lake users contribute permit fees for registered and nonregistered vessels to BMWWD, which can be further directed toward addressing any potential deterioration of existing recreational facilities on Big Bear Lake. Thus, as the proposed Program would not result in a significant potential deterioration of existing recreational facilities on Big Bear Lake, the Program's contribution thereof would be less than cumulatively considerable. Furthermore, in regards to the enhanced setting at Stanfield Marsh that may result from the additional provisions of water at Stanfield Marsh, a purpose of the proposed Program is to draw visitors to the Stanfield Marsh Wildlife and Waterfowl Preserve, which has existing facilities that can accommodate existing and new visitors that may utilize the walking paths and boardwalks as a result of the provision of greater water, and possibly enhanced habitat, at Stanfield Marsh. Thus, as the proposed Program would not result in a significant potential deterioration of existing recreational facilities at Stanfield Marsh, the Program's contribution thereof would be less than cumulatively considerable. Thus, the Program's contribution to cumulative environmental effects on recreational facilities would be less than

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<sup>129</sup> SCAG, 2020. SCAG Connect SoCal Demographics and Growth Forecast. [https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial\\_demographics-and-growth-forecast.pdf?1606001579](https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial_demographics-and-growth-forecast.pdf?1606001579) (accessed 08/07/23)

cumulatively considerable. Therefore, the project would not result in a considerable contribution to cumulative impacts to recreation.

Transportation:

**Construction Impacts**

Overlapping cumulative construction activities, simultaneous lane/road closures, and simultaneous staging of construction equipment and materials in public ROW could result in cumulative construction impacts related to transportation circulation patterns in the Program Area, transit stops, bicycle and pedestrian facilities, and/or emergency access. Cumulative construction activities are expected to increase construction vehicles traveling on the roadways. While individual emergency vehicles could be slowed if traveling behind a slow-moving truck, vehicle codes require vehicles to yield to emergency vehicles using a siren and red lights. As such, cumulative impacts related to construction transportation circulation and emergency access within Big Bear Valley would be potentially significant. However, the Program would be required to implement **MM TRAN-1**, which requires coordination with other active construction projects within 0.25 mile of Program construction sites to minimize simultaneous lane and/or road closures, major deliveries, and haul truck trips. **MM TRAN-1** also requires designating alternate detour routes and construction transportation routes that avoid these projects to the maximum extent practicable. Similarly, **MM WF-1** would require the preparation of a traffic control plan with comprehensive strategies to reduce disruption to traffic in general, but particularly to maintain emergency access or evacuation capabilities. Therefore, with mitigation incorporated, the Program would not have a cumulatively considerable contribution to the significant cumulative impact related to construction transportation circulation and emergency access.

**Operational Impacts**

Operations related to buildout of cumulative development within the Program Area, including the projects assumed under buildout of the two land use jurisdictions within the Big Bear Valley, would gradually increase cumulative operational roadway vehicle volumes on local roadways. The cumulative increase in roadway vehicle volumes would have the potential to increase cumulative operational VMT in the Program Area. As such, cumulative impacts related to operational transportation circulation and VMT within the Big Bear Valley could be potentially significant. However, Program-related VMT would be negligible in comparison to the high volumes of VMT generated by the types of residential, commercial, and industrial projects assumed under buildout of the two general plans controlling land use in the Big Bear Valley. Therefore, the Program would not have a cumulatively considerable contribution to the significant cumulative impact related to operational transportation circulation and VMT.

Tribal Cultural Resources (TCRs): Program implementation can proceed without causing any unavoidable significant adverse impacts to TCRs. Implementation of the Program is not forecast to cause any direct, significant adverse impact to any site specific TCRs following implementation of identified **MMs**, and as a result the Program has no potential to make a cumulatively considerable contribution to TCR impacts in the Program Area, i.e., the Big Bear Valley. This is because impacts to individual TCRs at specific sites would be mitigated, as such, the Program's contribution to cumulative impacts, whether significant or mitigated below significance thresholds, would not be cumulatively considerable. Any TCRs discovered on a project site that would be adversely impacted by proposed future projects would be mitigated by implementing the TCR **MMs** identified in **Subchapter 4.19**. With implementation of the appropriate measures, future Program site-specific projects are not forecast to cause or contribute to cumulatively considerable tribal cultural resource impacts.

**Utilities and Service Systems:** The cumulative analysis of each Utilities and Service System issue evaluated in this **Subchapter 4.20** determined that the proposed Program would result in a cumulatively considerable contribution to cumulative utilities and service system impacts within the Big Bear Valley. Additionally, the Program would contribute a cumulatively considerable contribution to utilities and service systems impacts as the potential for the proposed Program in the Lucerne Valley Basin. For the Lucerne Valley Basin, the Program would have a potential to reduce groundwater recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to an average of 340 AFY under future BBARWA operations. Cumulative development in the Lucerne Valley could result in greater demand for water supplies, thereby further contributing to the need for water supplies that are currently being utilized at a higher rate than the Lucerne Valley Basin is being replenished. As the proposed Program would contribute to impairing groundwater recharge in the Lucerne Valley Basin, the proposed Program would result in a cumulatively considerable impact on utilities and service systems, specifically water supply, within the Lucerne Valley Basin. Furthermore, as construction of the proposed water and wastewater facilities would result in significant biological resources impacts to the bird-foot checkerbloom if the Baldwin Lake Pipeline Alignment Option is the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option. If BBARWA does not select the Baldwin Lake Pipeline Alignment Option, a significant cumulative impact under this issue would be avoided. Regardless, as the Baldwin Lake Pipeline Alignment Option may be the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option, the Program is anticipated to contribute a cumulatively considerable contribution to utilities and service systems impacts in the Big Bear Valley.

**Wildfire:** The cumulative analysis off each Wildfire issue evaluated in this **Subchapter (4.21)** of the DPEIR determined that the proposed Program would not make a cumulatively considerable contribution to cumulative wildfire hazards for two primary reasons: 1) most, if not all, of the Program infrastructure is proposed to be located within urban areas or outside of very high FHSZs or, 2) if a facility must be located within a severe wildfire hazard area, **MMs WF-1** and **WF-2** would be implemented. As such, while overall wildfire risk may be exacerbated by other cumulative development within very high FHSZs, with the implementation of **MMs WF-1** and **WF-2**, the proposed Program would not result in a cumulatively considerable contribution to wildfire impacts from such occurrences.

### **Conclusion**

As summarized in the preceding text, a substantial majority of the environmental topics addressed in the DPEIR were determined to contribute a less than cumulatively considerable adverse impact to the environment in which the Program will be implemented. The following issues fall into this less than cumulatively considerable category: aesthetics, air quality, cultural resources, energy, geology and soils, greenhouse gas, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, tribal cultural resources, and wildfire.

Cumulatively considerable impacts from the implementation of the Program were identified for the topics of Agricultural and Forestry Resources, Biological Resources, Hydrology and Water Quality, and Utilities and Service Systems. The basis for these findings is explained in the text presented above, and in the respective Subchapters in **Chapter 4, Subchapters 4.3, 4.5, 4.11, and 4.20.**

### 6.3 SIGNIFICANT IRREVERSIBLE AND/OR UNAVOIDABLE ENVIRONMENTAL IMPACTS

In considering the topic of “Significant Irreversible and/or Unavoidable Environmental Impacts,” it is important to define the terminology that is used in making impact forecasts. For example, an “unavoidable significant adverse environmental impact” is an effect of a proposed project that cannot be avoided or reduced below some specific threshold of significance by any available or feasible MM or feasible alternative to that project. These impacts are discussed in the subchapter text for each environmental issue in **Chapter 4** of this DPEIR. Four unavoidable significant adverse environmental impacts have been forecast to occur if the Program is implemented. These four unavoidable significant adverse environmental impacts are: Agricultural and Forestry Resources, Biological Resources, Hydrology and Water Quality, and Utilities and Service Systems. Please refer to the pertinent Subchapters (**Agricultural and Forestry Resources: Subchapter 4.3, Biological Resources: Subchapter 4.5, Hydrology and Water Quality: Subchapter 4.11, and Utilities and Service Systems Subchapter 4.20**) for the detailed findings regarding these forecast unavoidable significant adverse environmental impacts.

An irreversible impact is an impact that, once experienced, cannot be changed or modified, by any means. Irreversible impacts have more nuance than unavoidable impacts. For example, if a project results in the death of the last individual of an endangered species, this impact cannot be reversed (at least with technology available at this time). For the present, we cannot make any more individuals of the species. On the other hand, if air emissions from a project exceed established thresholds and are considered unavoidably significant, it is feasible that future improvements in air emissions controls could reverse this impact and reduce (reverse) or perhaps eliminate the air emissions and reduce or reverse the significant impact. For example, if a project’s mobile source emissions contribute to a significant air quality impact, increased availability and/or adoption of electric vehicles could reduce the air quality emissions attributable to that project. Thus, the potential for a reversal of an identified impact, be it less than significant or significant, depends on the time scale used for evaluation (forever or just next year) and the likelihood that sufficient resources (societal or individual) will be applied to reverse an impact.

Another example that illustrates this topic is the potential exposure of people to an accidental spill of an acutely hazardous or toxic substance. If the threat is significant enough, society will demand that such exposure be eliminated immediately. Thus, such a spill and the related exposure to the hazard may be a significant environmental impact, but it is typically immediately reversed. Where it is not reversed, the potential significant effects will remain until sufficient individual or societal resources are expended to eliminate the impact.

The significant impact projections were made using regional planning documents and site-specific technical studies. Significant impacts are discussed for each issue in 20 of the 21 Subchapters of Chapter 4 in this document. A discussion of significant impacts, including unavoidable significant impacts, can be found at the end of each Subchapter for each topic discussed in Chapter 4. As noted above, four significant unavoidable impacts were determined to result from the implementation of the Program. Please refer to each individual Subchapter of Chapter 4 for an expanded discussion of significant unavoidable impacts.

Of these four unavoidable significant impacts, three are considered reversible, again assuming that society is willing to allocate sufficient resources to reverse the impacts. For example, through adaptive management in the Lucerne Valley Basin and with an adequate budget, it may be possible to provide sufficient water resources to recharge the Lucerne Valley Basin with the same



or better quality water than that which is presently discharged from BBARWA to the LV Site. The responsibility for this action is, however, not BBARWA's responsibility, and the water discharged to the LV Site is owned and generated by BBARWA in the Big Bear Valley. Based on the current resources and management strategy, and that BBARWA and the Program Team have no influence on the allocation of water resources in the Lucerne Valley as a result of being located in a different watershed, the impact on the Lucerne Valley Basin groundwater levels and Lucerne Valley Basin water quality would be unavoidably significant and adverse. Relative to Agricultural Resources, this unavoidable significant adverse impact could be reversed, through dedicating water resources and funds to return the potentially fallow agricultural lands at the LV Site to active farmland once again. However, there are not presently any other water resources available to BBARWA at the LV Site to continue the agricultural operation with a different water source, and furthermore, to do so would be cost prohibitive at this time. Similarly, the Utility and Service System impacts were found unavoidable because of the reduction in available water supply in Lucerne Valley as a result of the reduction in discharge to the LV Site that would occur under the proposed Program. As noted, this finding for Utilities and Service Systems can ultimately be mitigated through adaptive management in the Lucerne Valley Basin and with an adequate budget that could provide sufficient water resources to recharge the Lucerne Valley Basin with the same or better quality water than that which is presently discharged from BBARWA to the LV Site.

The Biological Resources impact would be irreversible, as take of the bird-foot checkerbloom, even with the attempted replanting of this species, does not guarantee that some of the specimens would be harmed or killed. As such, there is no way to reverse the take of a plant species, and therefore this impact would be irreversible.

Additionally, there are some less than significant impacts where the impacts are irreversible. For example, energy consumption is irreversible. Once consumed, the energy resources cannot be recreated. Minerals and materials (iron and steel for example) consumed to support Program Infrastructure may be recycled, but in general these resources are disposed of and their consumptive use cannot be reversed. Thus, there are less than significant environmental resources that will be consumed in conjunction with Program implementation, and this consumption is not considered reversible in our current societal context.

## CHAPTER 7 – PREPARATION RESOURCES

### 7.1 REPORT PREPARATION

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#### 7.1.3 EIR Technical Consultants

- Appendix 1: WSC, Final Draft Lake Alternative Evaluation for the Bear Valley Water Sustainability Project, December 19, 2019
- Appendix 2: Dr. Michael Anderson, Big Bear Lake Analysis: Replenish Big Bear Final Report, January 21, 2021
- Appendix 3: WSC and Larry Walker Associates (LWA), Antidegradation Analysis for Proposed Discharges to Stanfield Marsh/Big Bear Lake and Shay Pond, February 2022
- Appendix 4: Thomas Harder & Co., Technical Memorandum re: Sand Canyon Recharge Evaluation, November 29, 2017
- Appendix 5: WSC and LWA, Report of Waste Discharge for Big Bear Area Regional Wastewater Agency Regional Treatment Plant, February 2021
- Appendix 6: Thomas Harder & Co., Groundwater Quality Evaluation at the Lucerne Valley Land Discharge Location, December 22, 2017
- Appendix 7: WSC, Irrigation Management Plan for the Lucerne Valley Facility, April 8, 2021
- Appendix 8: Thomas Harder & Co. and WSC, Bear Valley Basin Groundwater Sustainability Plan, January 2022
- Appendix 9: Thomas Harder & Co., Technical Memorandum re: Response to Comments Regarding Potential Impacts of the Replenish Big Bear Project on the Lucerne Valley Land Discharge Location, March 8, 2023
- Appendix 10: Dr. Michael Anderson, Replenish Big Bear: Modeling of Higher Flows and with Zero TP Load, February 24, 2022
- Appendix 11: Urban Crossroads, Replenish Big Bear Program Air Quality Impact Analysis, September 8, 2023
- Appendix 12: Jacobs, Biological Resources & Jurisdictional Water Assessment, October 2023

- Appendix 13: CRM TECH, Identification and Evaluation of Historic Properties Replenish Big Bear Program DEIR, August 27, 2023
- Appendix 14: Urban Crossroads, Replenish Big Bear Program Energy Analysis, September 7, 2023
- Appendix 15: USDA NRCS, Web Soil Survey, April 18, 2023
- Appendix 16: Urban Crossroads, Replenish Big Bear Program Greenhouse Gas Analysis, September 7, 2023
- Appendix 17: State Water Resources Control Board, GeoTracker, April 12, 2023
- Appendix 18: WSC, Sand Canyon Background Data, October 21, 2023
- Appendix 19: GEI Consultants, Analysis of Aquatic Life Effects and Water Quality of Replenish Big Bear Project's Discharge to Stanfield Marsh and Big Bear Lake, October 19, 2023
- Appendix 20: WSC, Bear Valley Water Sustainability Study, December 2016
- Appendix 21: Urban Crossroads, Replenish Big Bear Program Noise Impact Analysis, October 2, 2023
- Appendix 22: California Regional Water Quality Control Board Colorado River Basin Region, Order R7-2021-0023, May 11, 2021

## 7.2 BIBLIOGRAPHY

### Chapters 1 & 2

- Jiao, J., Li, Y., Song, Q., Wang, L., Luo, T., Gao, C., Liu, L., & Yang, S. (2022). Removal of Pharmaceuticals and Personal Care Products (PPCPs) by Free Radicals in Advanced Oxidation Processes. *Materials* (Basel, Switzerland), 15(22), 8152. <https://doi.org/10.3390/ma15228152>
- SCAQMD, 2023. Permit Application Forms. <http://www.aqmd.gov/home/permits/permit-application-forms> (accessed 09/01/23)
- SCAQMD, 2017. Instructions for Form 400-CEQA. <http://www.aqmd.gov/docs/default-source/permitting/ceqa-2017/400ceqa-instructions-august2017.pdf?sfvrsn=8> (accessed 09/01/23)
- State Water Board, 2023. Wastewater Change Petition Checklist. [https://www.waterboards.ca.gov/water\\_issues/programs/recycled\\_water/docs/2021/1211\\_checklist\\_v2\\_accessible\\_3.pdf](https://www.waterboards.ca.gov/water_issues/programs/recycled_water/docs/2021/1211_checklist_v2_accessible_3.pdf) (accessed 10/17/23)

### Aesthetics

- Bill LaHaye, 2023. Photo. [https://www.fs.usda.gov/wildflowers/regions/Pacific\\_Southwest/BaldwinLake/index.shtml](https://www.fs.usda.gov/wildflowers/regions/Pacific_Southwest/BaldwinLake/index.shtml) (accessed 1/25/23)
- California Department of Transportation. 2021. California State Scenic Highway System Map. <https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aaca> (accessed 01/23/23)
- California Office of Planning and Research, 2023. Site Check. <https://sitecheck.opr.ca.gov/> (accessed 09/21/23)
- City of Big Bear Lake, 1999. City of Big Bear Lake General Plan.
- City of Big Bear Lake, April 6, 2023. Pebble Plains Spring to Life. <https://www.bigbear.com/blog/pebble-plains-spring-to-life/> (accessed 01/23/23)
- San Bernardino County. 2020. San Bernardino Countywide Plan. <https://countywideplan.com/> (accessed 01/23/23)
- San Bernardino County. 2020. San Bernardino Countywide Plan Environmental Impact Report. <http://countywideplan.com/eir/> (accessed 01/23/23)
- San Bernardino County, 2023. Development Code. <https://lus.sbcounty.gov/planning-home/development-code/> (09/21/23)
- State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(b)(c): [https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form\\_rev112020.pdf](https://www.fire.ca.gov/media/o1mpuojj/caltrees-utility-row-exemption-form_rev112020.pdf) (accessed 09/21/23)
- State of California Department of Forestry and Fire Protection: Notice of timber operations that are exempt from conversion and timber harvesting plan requirements rm-73 (1104.1(a): <https://www.fire.ca.gov/media/30xkpwxu/caltrees-less-than-3-acre-conversion-exemption-form.pdf> (accessed 09/21/23)

### Agricultural and Forestry Resources

- California Department of Conservation, 2023. Farmland Mapping and Monitoring Program. Available at: <https://maps.conservation.ca.gov/dlrp/ciff/>. Accessed on March 20, 2023.
- City of Big Bear Lake, 1999. City of Big Bear Lake General Plan.
- San Bernardino County, 2021. 2020 San Bernardino County Crop Report <https://awm.sbcounty.gov/wp-content/uploads/sites/84/2022/04/AWM-CROP-REPORT-2020-080521.pdf> (accessed 03/20/23)
- San Bernardino County, 2020. 2021 San Bernardino County Crop Report <https://awm.sbcounty.gov/wp-content/uploads/sites/84/2022/10/N4454-AWM-CROP-REPORT-2021-Web.pdf> (accessed 03/20/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan, Final Environmental Impact Report. <https://countywideplan.com/resources/document-download/> (accessed 04/12/23)

- San Bernardino County, October 2020. San Bernardino Countywide Plan. <https://countywideplan.com/resources/document-download/> (accessed 04/12/23)
- United States Department of Agriculture, 2023. Natural Resources Conservation Service Web Soil Survey. Available at: <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. (accessed 04/12/23)
- USDA, 2023. U.S. Land Use and Soil Classification. <https://www.ars.usda.gov/ARSUserFiles/np215/Food%20security%20talk%20inputs%20Lunch%2003-15-11.pdf> (accessed 08/24/23)

#### Air Quality

- CARB. 2005. Air Quality and Land Use Handbook: A Community Health Perspective. <https://www.arb.ca.gov/ch/handbook.pdf> (accessed 08/28/23).
- San Bernardino County, 2020. San Bernardino Countywide Plan. <https://countywideplan.com/> (accessed 08/28/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan Environmental Impact Report. <http://countywideplan.com/eir/> (accessed 08/28/23)
- SCAQMD, 2017. Instructions for Form 400-CEQA. <http://www.aqmd.gov/docs/default-source/permitting/ceqa-2017/400ceqa-instructions-august2017.pdf?sfvrsn=8> (accessed 09/01/23)
- SCAQMD, 2023. Permit Application Forms. <http://www.aqmd.gov/home/permits/permit-application-forms> (accessed 09/01/23)
- SCAQMD, 2022. SCAQMD 2022 AQMP. <http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16> (accessed 09/01/23)
- Urban Crossroads, 2023. Replenish Big Bear Program Air Quality Impact Analysis. Appendix 11, Volume 2 of this DPEIR.

#### Biological Resources

- Al-Shehbaz, Ihsan A. 2012. *Thelypodium stenopetalum*, in Jepson Flora Project (eds.) Jepson eFlora, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=46370](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=46370), accessed on September 04, 2023.
- Anderson, M. 2022a. Assessment of Inflow Temperature on Temperature in Stanfield Marsh and Big Bear Lake.
- Anderson, M. 2022b. Effect of Sand Canyon and Irrigation Withdrawals on Lake Level. Draft Technical Note. 5 pp.
- Avault, J. W. 1996. Fundamentals of Aquaculture: a step-by-step guide to commercial aquaculture. AVA Publishing, Baton Rouge, LA.
- Ayers, R.S. and D.W. Westcott. 1985. Water Quality for Agriculture. Food and Agriculture Organization of the United Nations. Accessed at: <https://www.fao.org/3/T0234E/T0234E00.htm#TOC> (accessed 10/19/23)
- Bolster, B.C., editor. 1998. Terrestrial Mammal Species of Special Concern in California. Draft Final Report prepared by P.V. Brylski, P.W. Collins, E.D. Pierson, W.E. Rainey and T.E. Kucera. Report submitted to California Department of Fish and Game Wildlife Management Division, Nongame Bird and Mammal Conservation Program for Contract No. FG3146WM.
- Brouillet, Luc. 2012. *Taraxacum californicum*, in Jepson Flora Project (eds.) Jepson eFlora, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=5221](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=5221), accessed on September 04, 2023.
- Calflora: Information on California plants for education, research and conservation. [web application]. 2022. Berkeley, California: The Calflora Database [a non-profit organization]. Available at: <http://www.calflora.org/>. (Accessed: April 3, 2023).
- Calflora: Information on California plants for education, research and conservation. [web application]. 2022. Berkeley, California: The Calflora Database [a non-profit organization]. Available at: <http://www.calflora.org/>. (Accessed: April 3, 2023).
- California Department of Fish and Game (CDFW). California Interagency Wildlife Task Group. 1999. Life History Account for Bald Eagle. Sacramento, California.

- California Department of Fish and Wildlife (CDFW), 2016. Bald Eagles in California. Retrieved from: <https://www.wildlife.ca.gov/Conservation/Birds/Bald-Eagle>.
- City of Big Bear Lake, 1999. City of Big Bear Lake General Plan.
- CMME. 2009. Canadian water quality guidelines for the protection of aquatic life: boron. Canadian Council of Ministers and Environment. Available online: <http://ceqg-rcqe.ccme.ca>. (accessed 10/19/23)
- Davis, J., and Gould Jr., G. 2008. California Spotted Owl (*Strix occidentalis occidentalis*). In W.D. Shuford and T. Gardali (Eds.), *California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1*. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento
- Gale, P. M., K. R. Reddy, and D. A. Graetz. 1994. Phosphorus retention by wetland soils used for treated wastewater disposal. *Journal of Environmental Quality* 23(2):370-377.
- Hill, Steven R. 2012. *Sidalcea pedata*, in Jepson Flora Project (eds.) Jepson eFlora, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=44435](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=44435), accessed on September 04, 2023.
- Jacobs Engineering Group, *Biological Resources & Jurisdictional Delineation Assessment, Big Bear Valley Partner Agencies Replenish Big Bear Project*, September 12, 2023 (provided as Appendix 12, Volume 2 of this DPEIR)
- Keasler, Gary L. 1982. Eastern San Bernardino Mountain southern rubber boa survey. Report prepared for the U.S. Department of Agriculture, Forest Service, San Bernardino National Forest, San Bernardino, California; 22 p. and 2 maps.
- Keil, David J. and Nesom, Guy L. 2012, *Erigeron parishii*, in Jepson Flora Project (eds.) Jepson eFlora, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=2744](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=2744), accessed on August 30, 2023.
- LaHaye, William S. and Gutiérrez, R. J. 2005. The Spotted Owl in Southern California: Ecology and Special Concerns for Maintaining a Forest-Dwelling Species in a Human-Dominated Desert Landscape. In Barbara E. Kus and Jan L. Beyers (technical coordinators), *Planning for Biodiversity: Bringing Research and Management Together*. Gen. Tech. Rep. PSW-GTR-195. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 274 p.
- Rosenberg, K. V., and M. G. Raphael. 1984. Effects of forest fragmentation on vertebrates in douglas-fir forests. Pp. 263-272 In: *Wildlife 2000: Modeling habitat relationships of terrestrial vertebrates*, (J. Verner, M. L. Morrison, and C. J. Ralph, eds). Univ. Wisconsin Press, Madison, WI. 1-470 pp.
- San Bernardino County, 2020. San Bernardino Countywide Plan Environmental Impact Report. <http://countywideplan.com/eir/> (accessed 09/12/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan. <https://countywideplan.com/> (accessed 09/12/23)
- Schoderboeck, L. S. Muhleger, A. Losert, C. Guasterer, and R. Hornek. 2011. Effects assessment: boron compounds in the aquatic environment. *Chemosphere* 82: 483-487.
- Song, K-Y., K-D., Zoh, and H. Kang. 2007. Release of phosphate in a wetland by changes in hydrological regime. *Science of the Total Environment* 380(1-3):13-18.
- Soreng, Robert J. 2012, *Poa atropurpurea*, in Jepson Flora Project (eds.) Jepson eFlora, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=38798](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=38798), accessed on August 30, 2023.
- State Water Resources Control Board (State Water Board). 2017. Groundwater Information Sheet: Boron (B). Division of Water Quality Gama Program. 7 pages. Accessed at: [https://www.waterboards.ca.gov/gama/docs/coc\\_boron.pdf](https://www.waterboards.ca.gov/gama/docs/coc_boron.pdf) (accessed 10/19/23)
- Steffenhagen, P., D. Zak, K. Shultz, T. Timmermann, and S. Zerbe. 2012. Biomass and nutrient stock of submersed and floating macrophytes in shallow lakes formed by rewetting of degraded fens. *Hydrobiologia* 692:99-109.
- Stewart, Glenn R. 1988. The rubber boa (*Charina bottae*) in California, with particular reference to the southern subspecies, *C. b. umbratica*. In: De Lisle, H. F.; Brown, P. R.; Kaufman, B.; McGurty, B.M., editors. *Proceedings of the conference on California herpetology*. Southwestern



- Herpetologists Society, Special Publication (4); 131-138.
- Stewart, Glenn R., Jennings, Mark R., and Goodman Jr., Robert H. 2005. Sensitive Species of Snakes, Frogs, and Salamanders in Southern California Conifer Forest Areas: Status and Management. USDA Forest Service Gen. Tech. Rep. PSW-GTR-195. 2005.
  - Surridge, B. W. J., A. L. Heathwaite, and A. J. Baird. 2012. Phosphorus mobilization and transport within a long-restored floodplain wetland. *Ecological Engineering* 44:348-359.
  - USFWS. 2008. *Poa atropurpurea* (San Bernardino Bluegrass) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 21 pp.
  - USFWS. 2009a. *Astragalus albens* (Cushenbury milk-vetch) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 21 pp.
  - USFWS. 2009a. *Astragalus albens* (Cushenbury milk-vetch) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 21 pp.
  - USFWS. 2009b. *Erigeron parishii* (Parish's daisy) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 21 pp.
  - USFWS. 2009c. *Eriogonum ovalifolium* var. *vineum* (Cushenbury buckwheat) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 19 pp.
  - USFWS. 2009d. *Physaria* (*Lesquerella*) *kingii* subsp. *bernardina* (San Bernardino Mountains Bladderpod) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 18 pp.
  - USFWS. 2009e. Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) 5-year Review: Summary and Evaluation. Ventura Fish and Wildlife Office, Ventura, California. 37 pp.
  - USFWS. 2011a. *Sidalcea pedata* (pedate checker-mallow) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 35 pp.
  - USFWS. 2011b. *Thelypodium stenopetalum* (slender-petaled mustard) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 34 pp.
  - USFWS. 2013a. *Castilleja cinerea* (Ash-gray Paintbrush) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 44 pp.
  - USFWS. 2013a. *Castilleja cinerea* (Ash-gray Paintbrush) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 44 pp.
  - USFWS. 2013b. *Taraxacum californicum* (California Taraxacum) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 55 pp.
  - USFWS. 2015a. *Eremogone ursina* (Bear Valley sandwort) 5-year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 47 pp.
  - USFWS. 2015b. *Eriogonum kennedyi* var. *austromontanum* (southern mountain wild buckwheat) 5-year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 49 pp.
  - USFWS. 2021. Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) 5-year Review: Summary and Evaluation. Ventura Fish and Wildlife Office, Ventura, California. 21 pp.
  - USFWS. National Wetlands Inventory. Available at: <http://wetlands.fws.gov>. (Accessed: April 3, 2023).
  - Walter, Hartmut, PhD. and Garrett, Kimbal L. 1981. The Effects of Human Activity on Wintering Bald Eagles in the Big Bear Valley, California. Unpublished report to U.S. Forest Service, 89 pp.
  - Wojciechowski, Martin F. and Spellenberg, Richard. 2012, *Astragalus albens*, in Jepson Flora Project (eds.) Jepson eFlora, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=14672](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=14672), accessed on August 30, 2023.
  - Wojciechowski, Martin F. and Spellenberg, Richard. 2012, *Astragalus albens*, in Jepson Flora Project (eds.) Jepson eFlora, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=14672](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=14672), accessed on August 30, 2023.
  - Anderson, 2023. Personal communication 08/2023
  - GEI, October 2023. Analysis of Aquatic Life Effects of Replenish Big Bear Project's Discharge to Stanfield Marsh." (provided as Appendix 19, Volume 2 of this DPEIR)

### Cultural Resources

- CRM TECH, 2023. Identification and Evaluation of Historic Properties: Replenish Big Bear Program DEIR, Big Bear Valley Area, San Bernardino County, California. Appendix 13, Volume 2 of this DPEIR.
- San Bernardino County. 2020. San Bernardino Countywide Plan. <https://countywideplan.com/> (accessed 08/28/23)
- San Bernardino County. 2020. San Bernardino Countywide Plan Environmental Impact Report. <http://countywideplan.com/eir/> (accessed 08/28/23)

### Energy

- BVES, 2021. BVWD Power Mix. <https://www.energy.ca.gov/filebrowser/download/4602> (accessed 10/16/23)
- National Society of Professional Engineers—California (NSPE-CA), 2023. Inception of the CA PE Act. <https://www.nspe-ca.org/licensure/inception-of-the-ca-pe-act> (accessed 10/16/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan. <https://countywideplan.com/> (accessed 08/28/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan Environmental Impact Report. <http://countywideplan.com/eir/> (accessed 08/28/23)
- Urban Crossroads, 2023. Replenish Big Bear Program Energy Analysis. Appendix 14, Volume 2 of this DPEIR.
- US Energy Information Administration, 2023. California State Energy Profile <https://www.eia.gov/state/print.php?sid=CA> (accessed 08/28/23)

### Geology and Soils

- Bear Valley Basin Groundwater Sustainability Agency, January 2022. *Bear Valley Basin Groundwater Sustainability Plan*.
- California Department of Conservation (DOC), 2023. DOC Ground Motion Interpolator. <https://www.conservation.ca.gov/cgs/Pages/PSHA/ground-motion-interpolator.aspx> (Accessed 08/30/23)
- Flint, L.E. and Martin, P., eds., with contributions by Brandt, J., Christensen A.H., Flint A.L., Flint, L.E., Hevesi, J.A. Jachens, R., Kulongoski, J.T., Martin, Peter, and Sneed, Michelle, 2012. Geohydrology of Big Bear Valley, California: Phase 1—Geologic Framework, Recharge, and Preliminary Assessment of the Source and Age of Groundwater. USGS Scientific Investigations Report 2012-5100. 112 p.
- Geoscience, 2004a. Geohydrologic Evaluation of Artificial Recharge Potential in the Big Bear Valley, California. Prepared for BBARWA. Dated October 1, 2004.
- Geoscience, 2005. Results of Drilling and Testing – Big Bear Valley Ground Water Exploration Program - 2004. Prepared for BBLDWP. Dated July 8, 2005.
- Miller, F. K., 2004. Preliminary Geologic Map of the Big Bear City 7.5' Quadrangle, San Bernardino County, California. U.S. Geological Survey Open File Report 2004-1193, Version 1.0.
- Miller, F. K., 1987. Reverse-Fault System Bounding the North Side of the San Bernardino Mountains, in Recent Reverse Faulting in the Transverse Ranges, California. USGS Professional Paper 1339, p 83-95.
- Natural Resources Conservation Service (NRCS). 2022. *Web Soil Survey. Map Unit Descriptions. San Bernardino County Area, California*. Available at: <http://websoilsurvey.mrcs.usda.gov/app/HomePage.htm>.
- National Society of Professional Engineers—California (NSPE-CA), 2023. Inception of the CA PE Act. <https://www.nspe-ca.org/licensure/inception-of-the-ca-pe-act> (accessed 10/16/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan, Final Environmental Impact Report. <https://countywideplan.com/resources/document-download/> (accessed 04/12/23)
- San Bernardino County, October 2020. San Bernardino Countywide Plan. <https://countywideplan.com/resources/document-download/> (accessed 04/12/23)

- Simas & Associates LTD, 2023. What is the Board for Professional Engineers, Land Surveyors, and Geologists? <https://simasgovlaw.com/what-is-the-board-for-professional-engineers-land-surveyors-and-geologists/> (accessed 11/02/23)

#### Greenhouse Gas

- BOR, 2013. Santa Ana Watershed Basin Study. <https://www.usbr.gov/watersmart/bsp/docs/finalreport/SantaAnaWatershed/SantaAnaBasinStudySummaryReport.pdf> (accessed 10/18/23)
- CAIT Climate Data Explorer, 2023. <https://www.climatewatchdata.org> (accessed 09/05/23)
- CARB, 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. [https://www.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf) (accessed 09/06/23).
- CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. [ww3.arb.ca.gov/cc/inventory/pubs/reports/2000\\_2019/ghg\\_inventory\\_trends\\_00-19.pdf](http://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf) (accessed 09/06/23).
- CARB, 2023. 2000-2020 GHG Inventory (2022 Edition). <https://ww2.arb.ca.gov/ghg-inventory-data> (accessed 09/05/23)
- IPCC, 2014. IPCC Fifth Assessment Report. <https://www.ipcc.ch/assessment-report/ar5/> (accessed 09/05/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan Environmental Impact Report. <http://countywideplan.com/eir/> (accessed 08/28/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan. <https://countywideplan.com/> (accessed 08/28/23)
- San Bernardino County, 2021. San Bernardino County Regional Greenhouse Gas Reduction Plan. [https://www.gosbcta.com/wp-content/uploads/2019/09/San\\_Bernardino\\_Regional\\_GHG\\_Reduction\\_Plan\\_Main\\_Text\\_Mar\\_2021.pdf](https://www.gosbcta.com/wp-content/uploads/2019/09/San_Bernardino_Regional_GHG_Reduction_Plan_Main_Text_Mar_2021.pdf) (accessed 09/05/23)
- SCAQMD, 2008. "Board Meeting Agenda No. 31: Interim CEQA Greenhouse Gas (GHG) Significance Threshold." October. [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2) (accessed 09/05/23)
- United Nations Framework Convention on Climate Change, 2023. [https://di.unfccc.int/time\\_series\\_data](https://di.unfccc.int/time_series_data) (accessed 09/05/23)
- United Nations, 2023. Global Warming Potentials (IPCC Second Assessment Report). <https://unfccc.int/process/transparency-and-reporting/greenhouse-gas-data/greenhouse-gas-data-unfccc/global-warming-potentials> (accessed 09/05/23)
- Urban Crossroads, 2023. Replenish Big Bear Program Greenhouse Impact Analysis. **Appendix 16, Volume 2** of this DPEIR.
- World Resources Institute, 2023. Climate Analysis Indicator Tool (CAIT). [Online] <http://cait.wri.org> (accessed 09/05/23)

#### Hazards and Hazardous Waste

- Bear Valley Basin Groundwater Sustainability Agency, 2022. *Bear Valley Basin Groundwater Sustainability Plan*. **Appendix 8, Volume 2** to this DPEIR.
- Big Bear Airport District, 2005. *Big Bear City Airport Master Plan*. <https://www.bigbearcityairport.com/wp-content/uploads/2014/12/Big-Bear-City-Airport-Master-Plan-56.5MB.pdf> (accessed 04/12/23)
- Big Bear Fire Department, 2023. Station Equipment. <https://bigbearfire.com/about-us/station-equipment> (accessed 07/14/23)
- California Health and Safety Code Chapter 6.95, Section 25501(p).
- DTSC, 2023. EnviroStor. <http://www.envirostor.dtsc.ca.gov/public/> (accessed 04/12/23)
- Geoscience, 2000. Results of Drilling, Construction, Testing and Pump Design for BBCCSD Well No. 3B. Prepared for BBCCSD. Dated October 23, 2000.

- Geoscience, 2003a. Well 8 (Palomino Site) Results of Drilling, Construction, Testing, and Pump Design. Prepared for BBCCSD. Dated August 21, 2003.
- Geoscience, 2003b. Well 9 (Greenway Park Site) Results of Drilling, Construction, Testing, and Pump Design. Prepared for BBCCSD. Dated November 20, 2003.
- Geoscience, 2003c. Well 10 (Booster Station Site) Results of Drilling, Construction, Testing, and Pump Design. Prepared for BBCCSD. Dated December 9, 2003.
- Geoscience, 2003d. Summary of Drilling and Testing at Four Test Drilling Sites – Big Bear Lake Watershed. Prepared for BBLDWP. Dated August 8, 2003.
- Geoscience, 2004b. Recommended Casing, Screen, and Filter Pack Design – Canvasback Production Well. Letter to Gerry Gruber of BBLDWP dated July 22, 2004.
- San Bernardino County Fire Chiefs' Association, 2014.  
<http://www.sbcounty.gov/Uploads/SBCFire/content/pdf/Mutual-Aid-Manual-with-Zone11.pdf>  
(accessed 07/14/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan, Final Environmental Impact Report. <https://countywideplan.com/resources/document-download/> (accessed 04/12/23)
- San Bernardino County, 2022. San Bernardino County Multi-Jurisdictional Hazard Mitigation Plan. <https://www.sbcounty.gov/uploads/SBCFire/documents/EmergencyServices/Hazard-Mitigation-Plan-202212.pdf> (accessed 07/26/23) San Bernardino County Fire Department (SBCFD). 2023. About CUPA (Certified Unified Program Agency). <https://sbcfire.org/hazmatcupa/> (accessed 04/12/23)
- San Bernardino County, February 2020. San Bernardino County Emergency Operations Plan. [https://www.sbcounty.gov/uploads/SBCFire/documents/OES/2018\\_EOP\\_Update.pdf](https://www.sbcounty.gov/uploads/SBCFire/documents/OES/2018_EOP_Update.pdf) (accessed 04/12/23)
- San Bernardino County, October 2020. San Bernardino Countywide Plan. <https://countywideplan.com/resources/document-download/> (accessed 04/12/23)
- SWRCB, 2023. GeoTracker. <http://geotracker.waterboards.ca.gov/>(accessed 04/12/23)

#### Hydrology and Water Quality

- Avault, J. W. 1996. Fundamentals of Aquaculture: a step-by-step guide to commercial aquaculture. AVA Publishing, Baton Rouge, LA.
- Ayers, R.S. and D.W. Westcott. 1985. Water Quality for Agriculture. Food and Agriculture Organization of the United Nations. Accessed at: <https://www.fao.org/3/T0234E/T0234E00.htm#TOC> (accessed 10/19/23)
- Big Bear Area Regional Wastewater Agency, Bear Valley Basin Groundwater Sustainability Agency. <https://www.bbarwa.org/bear-valley-basin-groundwater-sustainability-agency/> (accessed 04/06/23).
- California Department of Water Resources, Sustainability Groundwater Management Act (SGMA). <https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management> (accessed 04/06/23).
- California Regional Water Quality Control Board, Santa Ana Region, 2008. Water Quality Control Plan Santa Ana River Basin (Region 8) 1995. Updated February 2008.
- California State Water Control Resources Board (SWRCB), Division of Drinking Water – Water Quality Analyses Database. Accessed December 8, 2017.  
[http://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/EDTlibrary.shtml](http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/EDTlibrary.shtml)
- CMME. 2009. Canadian water quality guidelines for the protection of aquatic life: boron. Canadian Council of Ministers and Environment. Available online: <http://ceqg-rcqe.ccme.ca>. (accessed 10/19/23)
- Dr. Anderson, M. 2022a. Assessment of Inflow Temperature on Temperature in Stanfield Marsh and Big Bear Lake
- Dr. Anderson, M. 2022b. Effect of Sand Canyon and Irrigation Withdrawals on Lake Level. Draft Technical Note. 5 pp.
- FEMA, Map Service Center, Accessed 10/6/21 at: <https://msc.fema.gov/portal/home>
- Gale, P. M., K. R. Reddy, and D. A. Graetz. 1994. Phosphorus retention by wetland soils used for treated wastewater disposal. Journal of Environmental Quality 23(2):370-377

- GEI, September 2023. Analysis of Aquatic Life Effects of Replenish Big Bear Project's Discharge to Stanfield Marsh." **(Appendix 19)**
- Geoscience, 2003. Summary of Drilling and Testing at Four Test Drilling Sites – Big Bear Lake Watershed. Prepared for BBLDWP. Dated August 8, 2003.
- Geoscience, 2004. Recommended Casing, Screen, and Filter Pack Design – Canvasback Production Well. Letter to Gerry Gruber of BBLDWP dated July 22, 2004.
- Michael A. Anderson, 2021. Big Bear Lake Analysis: Replenish Big Bear Final Report. **(Appendix 2)**
- Mojave Basin Area Watermaster, 2019. Consumptive Water Use Study and Production Safe Yield Update for 2017-2018. Dated May 1, 2019. [https://www.mojavewater.org/wp-content/uploads/2022/06/CU\\_Study\\_PSY\\_Update\\_20190501.pdf](https://www.mojavewater.org/wp-content/uploads/2022/06/CU_Study_PSY_Update_20190501.pdf) (accessed 06/19/23)
- Mojave Basin Area Watermaster, 2023. Watermaster Annual Report for Water Year 2021-22. Dated May 1, 2023. <https://www.mojavewater.org/wp-content/uploads/2023/03/29AR2122.pdf>
- Mojave Water Agency, 2019. Consumptive Water Use Study and Production Safe Yield Update for 2017-2018. [https://www.mojavewater.org/wp-content/uploads/2022/06/CU\\_Study\\_PSY\\_Update\\_20190501.pdf](https://www.mojavewater.org/wp-content/uploads/2022/06/CU_Study_PSY_Update_20190501.pdf) (accessed 07/05/23)
- Mojave Water Agency, 2023. Sustainable Groundwater Management Act. <https://www.mojavewater.org/basin-management/regional-planning/sgma/> (accessed 07/06/23)
- Mojave Water Agency, May 1, 2023. Watermaster Annual Report for Water Year 2021-22. <https://www.mojavewater.org/wp-content/uploads/2023/03/29AR2122.pdf> (accessed 06/07/23)
- Schlumberger, 2007. Groundwater Quality Analysis Technical Memorandum/Phase 1. Prepared for the Mojave Water Agency. Dated May 7, 2007.
- Schoderboeck, L. S. Muhleger, A. Losert, C. Guasterer, and R. Hornek. 2011. Effects assessment: boron compounds in the aquatic environment. Chemosphere 82: 483-487.
- Song, K-Y., K-D., Zoh, and H. Kang. 2007. Release of phosphate in a wetland by changes in hydrological regime. Science of the Total Environment 380(1-3):13-18
- State Water Resources Control Board (State Water Board). 2017. Groundwater Information Sheet: Boron (B). Division of Water Quality Gama Program. 7 pages. Accessed at: [https://www.waterboards.ca.gov/gama/docs/coc\\_boron.pdf](https://www.waterboards.ca.gov/gama/docs/coc_boron.pdf) (accessed 10/19/23)
- Steffenhagen, P., D. Zak, K. Shultz, T. Timmermann, and S. Zerbe. 2012. Biomass and nutrient stock of submersed and floating macrophytes in shallow lakes formed by rewetting of degraded fens. Hydrobiologia 692:99-109
- Surridge, B. W. J., A. L. Heathwaite, and A. J. Baird. 2012. Phosphorus mobilization and transport within a long-restored floodplain wetland. Ecological Engineering 44:348-359
- Thomas Harder & Co, 2023. Response to Comments Regarding Potential Impacts of the Replenish Big Bear Project on the Lucerne Valley Land Discharge Location. **(Appendix 9)**
- Thomas Harder & Company, 2017. Groundwater Quality Evaluation at the Lucerne Valley Land Discharge Location. Dated December 22, 2017. **(Appendix 6)**
- Thomas Harder & Company, 2017. Sand Canyon Recharge Evaluation Technical Memorandum. Dated November 29, 2017. **(Appendix 4)**
- Thomas Harder & Company, 2022. Bear Valley Basin Groundwater Sustainability Plan. **(Appendix 8)**
- USFWS, 2021. USFWS Unarmoured Threespine Stickleback 5-Year Review. [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/1506.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1506.pdf) (accessed 10/20/23)
- USGS, 2022. Hydrogeology and Simulation of Groundwater Flow in the Lucerne Valley Groundwater Basin, California. <https://pubs.usgs.gov/sir/2022/5048/sir20225048.pdf> (accessed 06/19/23)
- WSC and Larry Walker Associates (LWA), 2022. Antidegradation Analysis for Proposed Discharges to Stanfield Marsh/Big Bear Lake and Shay Pond. February 2022. **(Appendix 3)**
- WSC and Larry Walker Associates (LWA), 2022. Report of Waste Discharge for Big Bear Area Regional Wastewater Agency Regional Treatment Plant. February 2022. **(Appendix 5)**



- WSC, 2021. Irrigation Management Plan for the Lucerne Valley Facility. Dated April 8, 2021. **(Appendix 7)**
- WSC, 2023. Memorandum: Sand Canyon Water Quality Analysis. **(Appendix 18)**

#### Land Use and Planning

- City of Big Bear Lake, 1999. City of Big Bear Lake General Plan. [https://www.citybigbearlake.com/images/downloads/city\\_departments/business/plan\\_checks/general\\_plan\\_elements/land%20use%20element.pdf](https://www.citybigbearlake.com/images/downloads/city_departments/business/plan_checks/general_plan_elements/land%20use%20element.pdf) (accessed 05/12/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan, Final Environmental Impact Report. <https://countywideplan.com/resources/document-download/> (accessed 04/12/23)
- San Bernardino County, October 2020. San Bernardino Countywide Plan. <https://countywideplan.com/resources/document-download/> (accessed 04/12/23)
- SBCTA, 2023. About Us. <https://www.gosbcta.com/about-us/about-sbcta/> (05/17/23)

#### Mineral Resources

- California Department of Conservation, Division of Mine Reclamation. 2021. Mines Online. <https://maps.conservation.ca.gov/mol/Index.html> (access 08/22/23)
- City of Big Bear Lake, 1999. City of Big Bear Lake General Plan Energy Resources Element, Chapter 5 Energy and Mineral Resources
- County of San Bernardino, 2020. San Bernardino Countywide Plan Final PEIR. June. [http://countywideplan.com/wp-content/uploads/2019/06/Ch\\_05-11-MIN.pdf](http://countywideplan.com/wp-content/uploads/2019/06/Ch_05-11-MIN.pdf) (access 08/22/23)

#### Noise

- California Department of Transportation Environmental Program, September 2013. Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol. Sacramento, CA : s.n.
- Environmental Protection Agency Office of Noise Abatement and Control, March 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. EPA/ONAC 550/9/74-004. California Department of Transportation. 2020. Transportation and Construction Vibration Guidance Manual (CT-HWANP-RT-20-365.01.01). September. <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf> (accessed August 2021).
- American National Standards Institute (ANSI). *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013*.
- California Department of Transportation Environmental Program, September 2013. *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol*. Sacramento, CA : s.n..
- California Department of Transportation, April 2020. *Transportation and Construction Vibration Guidance Manual*.
- California Office of Planning and Research. 2017. *State of California 2017 General Plan Guidelines – Appendix D: Noise Element Guidelines*. July 2017. [https://opr.ca.gov/docs/OPR\\_Appendix\\_D\\_final.pdf](https://opr.ca.gov/docs/OPR_Appendix_D_final.pdf) (accessed September 2021).
- San Bernardino County, 2020. San Bernardino Countywide Plan. <https://countywideplan.com/> (accessed 01/23/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan Environmental Impact Report. <http://countywideplan.com/eir/> (accessed 01/23/23)
- U.S. Department of Transportation, Federal Highway Administration, April 2000. *Highway Traffic Noise in the United States, Problem and Response*. p. 3.
- U.S. Department of Transportation, Federal Transit Administration, May 2006. *Transit Noise and Vibration Impact Assessment Manual, FTA-VA-90-1003-06*.
- U.S. Department of Transportation, Federal Transit Administration, September 2018. *Transit Noise and Vibration Impact Assessment Manual*.
- U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, January, 2006. *FHWA Roadway Construction Noise Model*.



- U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control, October 1979 (revised July 1981). *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise*. EPA 550/9/82/106.
- US EPA, EPA Identifies Noise Levels Affecting Health and Welfare. April 12, 1974.
- US Environmental Protection Agency Office of Noise Abatement and Control, March 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. EPA/ONAC 550/9/74-004.
- U.S. Department of Transportation, Federal Transit Administration, September 2018. *Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123*.
- Urban Crossroads, 2023. Replenish Big Bear Noise Impact Analysis County of San Bernardino (NIA) dated September 26, 2023, provided as **Appendix 21, Volume 2** to this DPEIR.

#### Population and Housing

- BBLDWP, March 2022. 2020 Urban Water Management Plan (Revised Final).
- BBCCSD, June 7, 2021. 2020 Urban Water Management Plan (Final).
- City of Big Bear, 1999. City of Big Bear Lake General Plan.
- San Bernardino County. 2020. San Bernardino Countywide Plan. <https://countywideplan.com/> (accessed 01/23/23)
- San Bernardino County. 2020. San Bernardino Countywide Plan Environmental Impact Report. <http://countywideplan.com/eir/> (accessed 01/23/23)
- Southern California Association of Governments. SCAG, 2020. Local Profiles. [https://scag.ca.gov/sites/main/files/file-attachments/2021\\_local\\_profiles\\_dataset.xlsx?1661892901](https://scag.ca.gov/sites/main/files/file-attachments/2021_local_profiles_dataset.xlsx?1661892901) (accessed 06/05/23)
- US Census Bureau, 2023. US Census Bureau Explore Census Data. <https://data.census.gov/> (accessed 06/05/23)

#### Public Services

- Big Bear Fire Department, 2023. Station Equipment. <https://bigbearfire.com/about-us/station-equipment> (accessed 07/14/23)
- Big Bear Fire Department, 2023. Stations. <https://bigbearfire.com/about-us/stations> (accessed 07/14/23)
- CAL FIRE, 2023. Cooperative Efforts. <https://www.fire.ca.gov/what-we-do/fire-protection/cooperative-efforts/> (accessed 07/14/23)
- CAL FIRE, 2023. Fire Protection. <https://www.fire.ca.gov/what-we-do/fire-protection> (accessed 07/14/23)
- California Highway Patrol, 2023. (865) Arrowhead. [https://www.chp.ca.gov/Find-an-Office/Inland-Division/Offices/\(865\)-Arrowhead](https://www.chp.ca.gov/Find-an-Office/Inland-Division/Offices/(865)-Arrowhead) (accessed 07/14/23)
- Education Data Partnership, 2023. District Summary. <https://www.ed-data.org/district/San-Bernardino/San-Bernardino-County-Office-of-Education> (accessed 07/14/23)
- Education Data Partnership, 2023. San Bernardino County – County Summary. <http://www.ed-data.org/County/San-Bernardino> (accessed 07/14/23)
- San Bernardino County Fire Chiefs' Association. 2014. <http://www.sbcounty.gov/Uploads/SBCFire/content/pdf/Mutual-Aid-Manual-with-Zone11.pdf> (accessed 07/14/23)
- San Bernardino County Fire Protection District, 2023. About the San Bernardino County Fire Protection District. <https://sbcfire.org/about/> (accessed 07/14/23)
- San Bernardino County Fire Protection District, 2023. San Bernardino County Fire Statistics (FY 2020-21). <https://sbcfire.org/statistics-fy-2020-21/#district-facts-anchor> (accessed 07/14/23)
- San Bernardino County Sheriff's Department, 2023. About Us. <https://wp.sbcounty.gov/sheriff/about-us/> (accessed 07/14/23)

#### Recreation

- California Department of Recreation, 2023. About Us. [https://www.parks.ca.gov/?page\\_id=91](https://www.parks.ca.gov/?page_id=91) (accessed 07/17/23)

- California State Office of Planning and Research, 2023. SCH Number 1993072081 <https://ceqanet.opr.ca.gov/Project/1993072081> (accessed 07/17/23)
- City of Big Bear Lake, 2023. City Parks and Trails. <https://www.citybigbearlake.com/index.php/services-main/city-parks-and-city-trails> (accessed 07/17/23)
- Discover Big Bear Lake, 2023. Hiking Trails: Serene Wetland Boardwalk Trail. <https://www.discoverbigbearlake.com/things-to-do/hiking/stanfield-marsh-wildlife-and-waterfowl-preserve> (accessed 07/17/23)
- San Bernardino County Regional Parks, 2023. About Us. <https://parks.sbcounty.gov/about-us/> (accessed 07/17/23)
- San Bernardino County, 2020. County of San Bernardino Countywide, County Policy Plan. October. [https://countywideplan.com/resources/maps-tables-figures/content/uploads/2020/12/CWP\\_PolicyPlan\\_20201027\\_adopted.pdf](https://countywideplan.com/resources/maps-tables-figures/content/uploads/2020/12/CWP_PolicyPlan_20201027_adopted.pdf) (accessed 07/17/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan Environmental Impact Report. <http://countywideplan.com/eir/> (accessed 08/07/23)
- San Bernardino County, 2020. San Bernardino Countywide Plan. <https://countywideplan.com/> (accessed 08/07/23)
- SCAG, 2020. SCAG Connect SoCal Demographics and Growth Forecast. [https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial\\_demographics-and-growth-forecast.pdf?1606001579](https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial_demographics-and-growth-forecast.pdf?1606001579) (accessed 08/07/23)

#### Transportation

- California Department of Transportation, 2015. Transportation Management Plan Guidelines.
- California Department of Transportation, 2020. Transportation Analysis Framework – First Edition.
- California Department of Transportation, 2020. Transportation Analysis under CEQA – First Edition.
- California State Transportation Agency, 2021. California Transportation Plan.
- California Governor’s Office of Planning and Research, 2018. Technical Advisory on Evaluation of Transportation Impacts in CEQA.
- San Bernardino Associated Governments, 2020. 2045 San Bernardino County Long Range Transit Plan.
- Southern California Association of Governments, 2020. 2045 Regional Transportation Plan/Sustainable Communities Strategy (also known as SoCal Connect)
- City of Big Bear Lake, 1999. City of Big Bear Lake General Plan.
- San Bernardino County, 2020. San Bernardino Countywide Plan, Final Environmental Impact Report. <https://countywideplan.com/resources/document-download/> (accessed 04/12/23)
- San Bernardino County, October 2020. San Bernardino Countywide Plan. <https://countywideplan.com/resources/document-download/> (accessed 04/12/23)

#### Tribal Cultural Resources

- Bean, Lowell John, and Charles R. Smith, 1978. Serrano. In Robert F. Heizer (ed.): *Handbook of North American Indians*, Vol. 8: *California*; pp. 570-574. Smithsonian Institution, Washington, D.C.
- Bean, Lowell John, and Charles R. Smith, 1978. Gabrielino. In Robert F. Heizer (ed.): *Handbook of North American Indians*, Vol. 8: *California*; pp. 538-549. Smithsonian Institution, Washington, D.C.
- CRM TECH, 2023. Identification and Evaluation of Historic Properties: Replenish Big Bear Program DEIR, Big Bear Valley Area, San Bernardino County, California. Appendix 13, Volume 2 of this DPEIR.
- Kroeber, Alfred L, 1925. *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Government Printing Office, Washington, D.C.

- Strong, William Duncan, 1929. *Aboriginal Society in Southern California*. University of California Publications in American Archaeology and Ethnology 26. Reprinted by Malki Museum Press, Banning, California, 1972.

#### Utilities and Service Systems

- Administration, U.S. Energy Information. California State Profile and Energy Estimates.: <https://www.eia.gov/state/data.php?sid=CA#ConsumptionExpenditures> (Accessed 08/07/23)
- BBARWA, 2023. Operations. [bbarwa.org/operations](http://bbarwa.org/operations) (accessed 08/07/23)
- BBCCSD, 2021. BBCCSD 2020 Urban Water Management Plan [https://www.bbccsd.org/index.php/component/easyfolderlistingpro/?view=download&format=raw&data=eNpNj91ugzAMhV8lygtcMO3UduYKSu86ivojLIFaDI0UfpSkW6Vp7z6HFG1XiY\\_9HR8LiFwi-DawAt4MqkbNYwPLNXDZiRZNk3KfH9IsiNQJufdsdp2xTm4HNmKl\\_ZJ7oaJ5w-D2uNmkoCHc6t9oLF\\_1uRcXFWT5qqNR3vRoStD4O5ZeVXWPJYQekijGoW9\\_5tclraRCmf2bQk8TbfbU8Yu-ip6VggLmn2Inu7osLesUKQ2g2aLcDHFwKf9vUb6-aVD5-j1Gjm5RHtE9aK29258Pg6qe9EaPyU-OXvosztMLSKsvz8Al-2aRw](https://www.bbccsd.org/index.php/component/easyfolderlistingpro/?view=download&format=raw&data=eNpNj91ugzAMhV8lygtcMO3UduYKSu86ivojLIFaDI0UfpSkW6Vp7z6HFG1XiY_9HR8LiFwi-DawAt4MqkbNYwPLNXDZiRZNk3KfH9IsiNQJufdsdp2xTm4HNmKl_ZJ7oaJ5w-D2uNmkoCHc6t9oLF_1uRcXFWT5qqNR3vRoStD4O5ZeVXWPJYQekijGoW9_5tclraRCmf2bQk8TbfbU8Yu-ip6VggLmn2Inu7osLesUKQ2g2aLcDHFwKf9vUb6-aVD5-j1Gjm5RHtE9aK29258Pg6qe9EaPyU-OXvosztMLSKsvz8Al-2aRw) (accessed 08/07/23)
- BBLDWP, 2021. BBLDWP 2020 Urban Water Management Plan <https://www.bbldwp.com/DocumentCenter/View/2149/2020-Urban-Water-Management-Plan> (accessed 08/07/23)
- California Energy Commission, 2021. Transportation Energy Demand Forecast 2021-2035. <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2021-integrated-energy-policy-report/2021-1> (Accessed 08/07/23)
- California Department of Resources Recycling and Recovery, 2023. Solid Waste Information System (SWIS). <https://www2.calrecycle.ca.gov/SolidWaste/Site/Search> (Accessed 08/07/23)
- California Department of Resources Recycling and Recovery, 2023. Solid Waste Information System (SWIS)
  - <https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1880?siteID=2662> (accessed 08/07/23)
  - <https://www2.calrecycle.ca.gov/SolidWaste/Site/Details/2688> (accessed 08/07/23)
  - <https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4554?siteID=2777> (accessed 08/07/23)
- County of Santa Clara, 2023. Understand Senate Bill (SB) 1383. <https://reducewaste.sccgov.org/food-recovery/understand-senate-bill-sb-1383#3925188384-318395615> (accessed 04/20/23)
- San Bernardino County. 2020. San Bernardino Countywide Plan. <https://countywideplan.com/> (accessed 08/07/23)
- San Bernardino County. 2020. San Bernardino Countywide Plan Environmental Impact Report. <http://countywideplan.com/eir/> (accessed 08/07/23)
- Santa Ana Regional Board, 2023. Stormwater Program. [https://www.waterboards.ca.gov/santaana/water\\_issues/programs/stormwater/](https://www.waterboards.ca.gov/santaana/water_issues/programs/stormwater/) (08/04/23)
- SWRCB, 2023. National Pollutant Discharge Elimination System (NPDES) General Permit For Stormwater Discharges Associated with Construction and Land Disturbance (General Permit) Order WQ 2022-0057-DWQ NPDES No. CAS000002 [https://www.waterboards.ca.gov/water\\_issues/programs/stormwater/construction/docs/2022-0057-dwq-with-attachments/cgp2022\\_order.pdf](https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction/docs/2022-0057-dwq-with-attachments/cgp2022_order.pdf) (accessed 08/03/23)
- U.S. Department of Energy, 2023. Alternative Fuels Data Center. <https://afdc.energy.gov/states/ca> (Accessed 08/07/23)
- U.S. Energy Information Administration, 2023. California State Profile and Energy Estimates. <https://www.eia.gov/state/?sid=CA#tabs-2> (Accessed 08/07/23)
- U.S. Energy Information Administration, 2023. Jet fuel consumption, price, and expenditure estimates, 2021. [https://www.eia.gov/state/seds/sep\\_fuel/html/fuel\\_jf.html](https://www.eia.gov/state/seds/sep_fuel/html/fuel_jf.html) (Accessed 08/07/23)
- US Energy Information Administration, 2023. California State Energy Profile <https://www.eia.gov/state/print.php?sid=CA> (Accessed 08/07/23)

### Wildfire

- CAL FIRE, 2023. 2018-2021 Redbooks: [https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2021\\_redbook\\_final.pdf?rev=525959073bbe4bbe816d67624911e4c3&hash=CFD17F879B2CE984AB5BA9FEA4F73A56](https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2021_redbook_final.pdf?rev=525959073bbe4bbe816d67624911e4c3&hash=CFD17F879B2CE984AB5BA9FEA4F73A56), [https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2020\\_redbook\\_final.pdf?rev=72030b4d2cb7466aa573754ecb4f656e&hash=337DB407876BE384081C7D722D82B1BF](https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2020_redbook_final.pdf?rev=72030b4d2cb7466aa573754ecb4f656e&hash=337DB407876BE384081C7D722D82B1BF), [https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2019\\_redbook\\_final.pdf?rev=0f4b0e8ec5ca4580b7072ab311519f9f&hash=7C7B0266E97136539C0E81D30B3F47F1](https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2019_redbook_final.pdf?rev=0f4b0e8ec5ca4580b7072ab311519f9f&hash=7C7B0266E97136539C0E81D30B3F47F1), [https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2018\\_redbook\\_final.pdf?rev=26c8ffc6fef04ea8a77e00f488cb83bd&hash=19B77F82A19D93A7684C7618B6337482](https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2018_redbook_final.pdf?rev=26c8ffc6fef04ea8a77e00f488cb83bd&hash=19B77F82A19D93A7684C7618B6337482). (accessed 09/05/23)
- CAL FIRE, 2023. California Fire Hazard Severity Zone Viewer. <https://egis.fire.ca.gov/FHSZ/> (accessed 09/03/23)
- CAL FIRE, 2023. El Dorado Fire. <https://www.fire.ca.gov/incidents/2020/9/5/el-dorado-fire> (accessed 09/05/23)
- CAL FIRE, 2023. Incident Archive 2022. <https://www.fire.ca.gov/incidents/2022> (accessed 09/05/23)
- California Public Utilities Commission, 2023. *Fire Threat Map* as accessed September. <https://ia.cpuc.ca.gov/firemap/> (accessed 09/03/23)
- CARB, 2023. 2000-2020 GHG Inventory (2022 Edition). <https://ww2.arb.ca.gov/ghg-inventory-data> (accessed 09/05/23)
- City of Big Bear Lake, 1999. City of Big Bear Lake General Plan. (accessed 09/03/23)
- San Bernardino County, 2019. San Bernardino Countywide Plan Environmental Impact Report. <http://countywideplan.com/eir/> (accessed 09/03/23)
- San Bernardino County, 2019. San Bernardino Countywide Plan. <https://countywideplan.com/> (accessed 09/03/23)

### Chapter 7 Topical Issues

- SCAG, 2020. SCAG Connect SoCal Demographics and Growth Forecast. [https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial\\_demographics-and-growth-forecast.pdf?1606001579](https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial_demographics-and-growth-forecast.pdf?1606001579) (accessed 08/07/23)

## **CHAPTER 8 – APPENDICES**

- 8.1 NOTICE OF PREPARATION (NOP)**
  
- 8.2 NOP COMMENT LETTERS, SCOPING MEETING COMMENTS & RESPONSES TO NOP AND SCOPING MEETING COMMENTS**
  
- 8.3 NOP DISTRIBUTION LIST**

**APPENDIX 8.1**  
**NOTICE OF PREPARATION (NOP)**



# **NOTICE OF PREPARATION AND NOTICE OF PUBLIC SCOPING MEETING REPLENISH BIG BEAR PROGRAM**

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**TO:** California Office of Planning and Research  
Responsible AND Trustee Agencies AND Federal Agencies  
Other Interested Parties

**SUBJECT:** Notice of Preparation of a Draft Environmental Impact Report and Notice of Public Scoping Meeting

**PROJECT:** Replenish Big Bear Program

**LEAD AGENCY:** Big Bear Area Regional Wastewater Agency (BBARWA)

**Date:** November 30, 2022

## **NOTICE OF PREPARATION:**

The Big Bear Area Regional Wastewater Agency (BBARWA) will serve as the Lead Agency and will prepare an Environmental Impact Report (EIR) for the proposed Replenish Big Bear Program (Project or Program). BBARWA is seeking input from the general public, public agencies, and interested parties regarding the scope and content of the environmental information that should be analyzed in the EIR, including input regarding any topics or specific issues that are germane to a particular agency's statutory responsibilities in connection with the proposed Program. A short description of the Replenish Big Bear Program, as well as the location and potential environmental effects, are discussed below. A detailed project description is provided as an attachment to this Notice of Preparation (NOP). In accordance with Section 15060(d) of the State CEQA Guidelines, BBARWA has determined that an EIR will be prepared to address all the standard issues identified in the Standard Environmental Assessment Form/Initial Study. Thus, no Initial Study accompanies this NOP in accordance with Section 15060(d) of the State CEQA Guidelines.

**PROJECT ENTITLEMENT:** BBARWA is preparing the Replenish Big Bear Program as the Lead Agency, together with the following cooperating agencies: City of Big Bear Lake Department of Water and Power (BBLDWP), Big Bear City Community Services District (BBCCSD), and Big Bear Municipal Water District (BBMWD). These agencies, in addition to BBARWA, make up the Project Team. Other responsible agencies include the California Department of Water Resources (DWR), the California Department of Fish and Wildlife (CDFW), San Bernardino County, City of Big Bear Lake, Santa Ana Regional Water Quality Control Board (SARWQCB), Colorado River Basin Regional Water Quality Control Board (CRRWQCB), United States Fish and Wildlife Service (USFWS), United States Army Corps of Engineers (USACOE), San Bernardino County Flood Control District, and Big Bear City Airport as responsible agencies.

The proposed project has been awarded a grant for the project from the United States Bureau of Reclamation (BOR). The proposed project may seek grants or loans from other federal agencies, such as the United States Environmental Protection Agency (EPA). Thus, the EIR will also be prepared to meet National Environmental Policy Act (NEPA) standards to enable BOR and the EPA to process this project under a separate NEPA documentation process.

If the BBARWA Governing Board approves and certifies the Replenish Big Bear Program EIR, the remaining entities that make up the Project Team and CEQA Responsible Agencies will utilize the Draft

EIR as CEQA Responsible Agencies. The Project Team can then issue contracts to begin the construction of facilities associated with the Replenish Big Bear Program.

**PROJECT LOCATION:** The Big Bear Valley is located in the San Bernardino Mountains of San Bernardino County, California. The area includes approximately 135 square miles within a 12-mile long valley surrounded by mountain ridges and rugged slopes. Land surface elevations range from 6,000 to 9,900 ft and the area is entirely surrounded by the San Bernardino National Forest. The proposed project is located within the SGMA - Bear Valley Basin (8-009). Big Bear Lake and Baldwin Lake are located in the Basin.

The project will span just east of Big Bear Lake to the Wastewater Treatment Plant (WWTP) at Baldwin Lake and then south to Shay Pond, and southeast of Big Bear Lake to the Ski Resort / Golf Course Pond and Sand Canyon Recharge Area. Each of these elements are discussed in further detail below. The project is located within several USGS 7.5-minute topographic maps, including the following: Big Bear City, CA; Big Bear Lake, CA Moonridge, CA; and, San Gorgonio, CA. The central point for this project is the BBARWA WWTP, for which the geographic coordinates of the proposed project are 34.268906°, -116.815575°, which is located in Section 7, Township 2 North, Range 2 East of the Big Bear City, CA USGS 7.5-minute topographic map.

**PROJECT DESCRIPTION:** Replenish Big Bear includes permitting, design, and construction of full advanced treatment facility upgrades at the existing BBARWA WWTP, more than 7 miles of pipeline for product water and RO brine minimization, three pump stations, a groundwater recharge facility, and up to four monitoring wells. **Figure 1**, below, shows the project.

The Program is currently estimated to produce approximately 1,950 acre-feet per year (AFY) of high-quality purified water, and may produce up to 2,210 AFY by 2040 through operation of a high-recovery brine minimization technology. Piloting will be conducted to confirm the feasibility of the higher yield estimates. For the purposes of this document, 2,210 AFY is used to be conservative in evaluating environmental impacts. The Shay Pond discharge will replace potable water currently discharged to the water body to maintain the water flow through the pond. Up to 80 AFY of purified water will be sent to Shay Pond, and any remaining purified water will be sent to the Stanfield Marsh Wildlife and Waterfowl Preserve (Stanfield Marsh), a tributary of Big Bear Lake (Lake). The objectives of the Project remain the same and include the following uses and benefits:

- Purified water will be discharged to Shay Pond to sustain habitat for the federally listed Unarmored Threespined Stickleback fish, which is currently sustained using potable groundwater;
- Purified water will be discharged to the Stanfield Marsh, providing a consistent water source to sustain habitat and increase educational opportunities for the community and visitors;
- Purified water will flow through Stanfield Marsh and provide new inflow to the Lake to increase inflows and Lake level, enhance recreational opportunities and aquatic habitat, and support water quality improvements;
- When needed, purified water stored in the Lake will be pumped to Sand Canyon to recharge the groundwater basin to strengthen the sustainability of the groundwater basin;
- Purified water stored in the Lake for can be used for golf course irrigation and dust control by the Big Bear Mountain Resorts (Resorts) in the summer;
- During wet periods, excess purified water stored in the Lake could be stored locally as snow, providing flexibility to further enhance winter recreation, reduce spills from Big Bear Lake, augment spring runoff and increase groundwater recharge. This activity is not currently planned to be implemented as part of the Program, but the Program provides the flexibility to adapt if more extreme hydrologic conditions occur in the future; and,
- Additional inflow may enable BBMWd to modify their current Big Bear Lake management strategy to minimize spills and optimize releases to enable additional water to be captured downstream for recharge of the San Bernardino Basin, rather than discharged to the ocean.

For redundancy purposes, BBARWA is also seeking to maintain its current discharge location in Lucerne Valley, where undisinfected secondary effluent is currently conveyed to irrigate crops used for livestock feed.

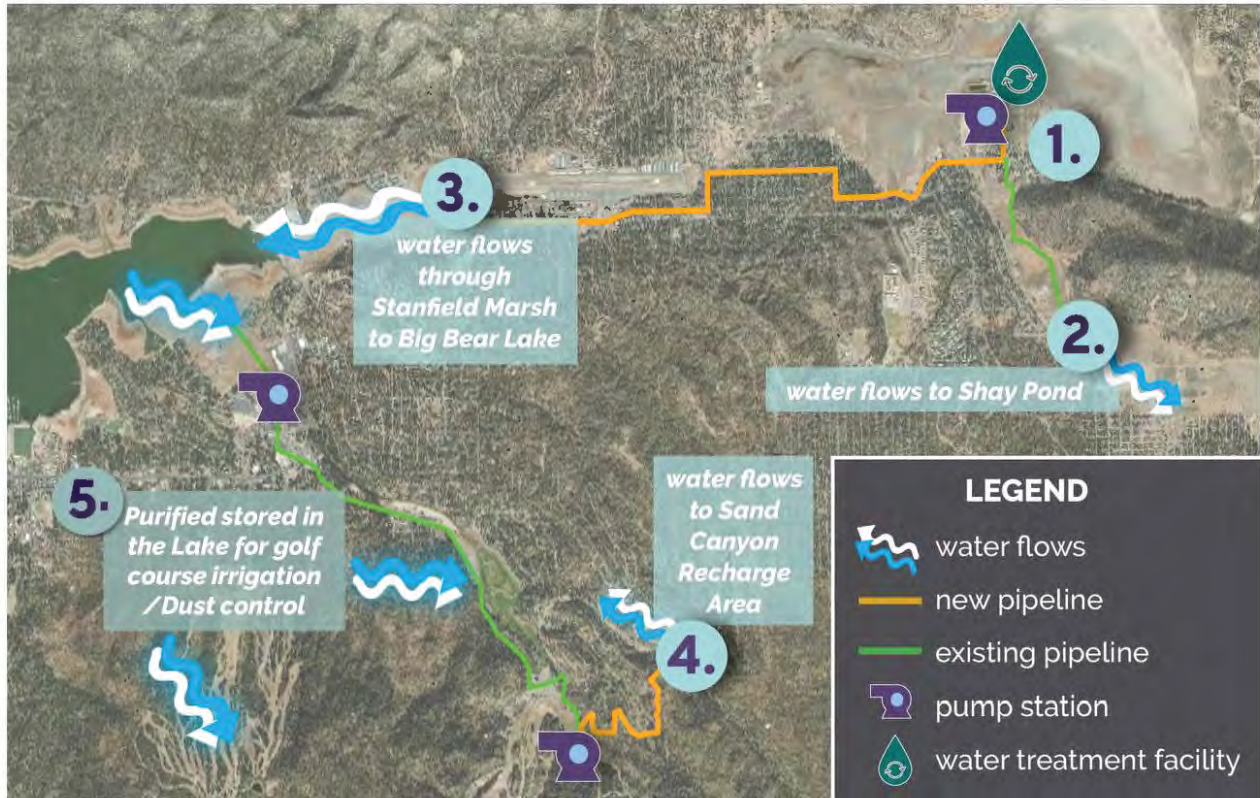


Figure 1. Replenish Big Bear Program Overview

The following environmental issues will be analyzed in the EIR: aesthetics, agriculture and forestry resources, air quality, biological resources, cultural resources, energy, geology/soils, greenhouse gas emissions/climate change, hazards and hazardous materials, hydrology/water quality, land use/planning, mineral resources, noise, population/housing, public services, recreation, transportation, tribal cultural resources, utilities/service systems, and wildfire.

**SCOPING MEETING:** Two public scoping meetings will be held to receive verbal public comments and suggestions on the environmental issues associated with implementation of the Replenish Big Bear Program that will be addressed in the EIR. These meetings will be identical in nature and will enable two meetings for each of the community areas within which the Program would be installed. These meetings will include a brief presentation providing an overview of the scope and facilities proposed for the Replenish Big Bear Program and will provide an overview of the CEQA process itself. After the presentation, oral comments will be accepted. Written comment cards will be made available for those who wish to submit comments in writing at the scoping meeting. The scoping meetings will be open to the public and held at the following locations and at the following times:

City of Big Bear Lake, Department of Water and Power  
 41972 Garstin Drive  
 Big Bear Lake, CA 92315  
 From **6:00 PM to 7:00 PM** on **January 5, 2023**

Big Bear Area Regional Wastewater Agency  
 121 Palomino Drive  
 Big Bear City, CA 92314  
 From **6:00 PM to 7:00 PM** on **January 10, 2023**

In the event that more time is needed to receive public comment on the Program at either or both of the scoping meetings, additional time shall be considered.

**COMMENT PERIOD:** Pursuant to State CEQA Guidelines (Cal Code Regs., Title 14 para. 15000 *et seq.*) Section 15082(a), any response and/or comments must be submitted to this office (address provided below) as soon as possible, but **not later than forty-five (45) days** after the date upon this Notice. The Notice of Preparation comment period begins on November 30, 2022 and ends on January 17, 2023.

A copy of the NOP and attached Project Description are available electronically at the following web address: <https://www.replenishbigbear.com/documents>.

Please send your written responses to this Notice, including any comments you may have on this project, by 5:00 PM on January 17, 2023 via regular mail or e-mail to:

Bridgette Burton  
Big Bear Area Regional Wastewater Agency  
121 Palomino Drive  
P.O. Box 517  
Big Bear City, CA 92314  
Email: [bburton@bbarwa.org](mailto:bburton@bbarwa.org) | Telephone: 909-584-4524

## CHAPTER 3 – PROJECT DESCRIPTION

All Chapter 3 figures are located at the end of this chapter, not immediately following their reference in the text.

### 3.1 INTRODUCTION

Together the following agencies—Big Bear Area Regional Wastewater Agency (BBARWA), Big Bear City Community Services District (BBCCSD), Big Bear Lake Department of Water and Power (BBLDWP), and Big Bear Municipal Water District (BBMWD) henceforth referred to jointly as the Project Team—are proposing to implement the Replenish Big Bear Program (Project or Program), previously known as the Bear Valley Water Sustainability Project. The Project includes upgrades and additions to BBARWA’s wastewater treatment plant (WWTP) to produce purified water through full advanced treatment to protect the receiving waters and their beneficial uses.

The agency leading the Project Team is BBARWA, who will take the position of Lead Agency for compliance with the California Environmental Quality Act (CEQA) on behalf of this Project. The Project has been awarded federal grants, so compliance with the National Environmental Policy Act (NEPA) is also needed. Therefore, this document has been prepared to meet National Environmental Policy Act (NEPA) standards to enable the Bureau of Reclamation (BOR) and other federal agencies to process this project under a separate NEPA documentation process. The Replenish Big Bear Program would upgrade BBARWA’s WWTP to produce full advanced treated water that would be retained within the Big Bear Valley (Valley) watershed to be used to increase the sustainability of local water supplies, consequently, wastewater currently delivered to Lucerne Valley will be modified.

As detailed in this project description, many of the activities that make up the Replenish Big Bear Program are in the planning and design phase. This Program Environmental Impact Report (PEIR) analysis focuses on both the plan level and project level implementation, including site-specific construction and operation details of individual program elements, where individual elements are known. As such, the level of information and analysis provided for each individual action is commensurate with this PEIR approach.

### 3.2 PROJECT LOCATION

The Valley is located in the San Bernardino Mountains of San Bernardino County, California. The area includes approximately 135 square miles within a 12-mile long valley surrounded by mountain ridges and rugged slopes. Land surface elevations range from 6,000 to 9,900 ft and the area is entirely surrounded by the San Bernardino National Forest. The proposed project is located within the Big Bear Valley Groundwater Management Zone (GMZ or Basin). Big Bear Lake and Baldwin Lake are located in the middle of this Basin. The overall project area consists of the Valley. The BBARWA Sewer Service Area and the Valley potable water service areas are shown on **Figure 3-1** to illustrate the regional context of the proposed Replenish Big Bear Program. The proposed elements of the Replenish Big Bear Program that are located within the Valley are shown on **Figures 3-2 through 3-17**, which depict the project area from a regional and site-specific level. The site-specific Figures depict areas in which new infrastructure is required in support of the project and also depicts portions of the project that will utilize existing infrastructure that will be required in support of project operation.

The project will span just east of Big Bear Lake to the WWTP at Baldwin Lake and then south to Shay Pond, and southeast of Big Bear Lake to the southeast to the Ski Resort Pond and Sand

Canyon Recharge Area. Each of these elements are discussed in further detail below. The project is located within several USGS 7.5-minute topographic maps, including the following: Big Bear City, CA; Big Bear Lake, CA Moonridge, CA; San Gorgonio, CA; and, Lucerne Valley, CA. The central point for this project is the BBARWA WWTP, for which the geographic coordinates of the proposed project are 34.268906, -116.815575, which is located in Section 7, Township 2 North, Range 2 East of the Big Bear City, CA USGS 7.5-minute topographic map.

### **3.3 PROJECT PURPOSE AND OBJECTIVES**

The goal of the Project Team is to partner to recover a water resource that is currently being transported out of the Valley to Lucerne Valley, close the water loop, and keep the water in the Valley for beneficial reuse. This goal will be achieved through development of a multi-benefit water reuse project that:

- Augments natural recharge for water supply sustainability;
- Protects the rare and diverse habitat and species in the Valley;
- Promotes a thriving community through enhanced recreation;
- Creates a new and sustainable water supply;
- Educates the community about the water cycle, recycled water treatment process, and water quality to gain public support;
- Creates a project that benefits all agencies involved;
- Develops a cost-effective project to offset potable water demands; and
- Takes advantage of current outside funding opportunities.

#### **3.3.1 Project Characteristics**

The Project Team envisions the facilities described in this Section as a key element in the long-term sustainability of local water supplies for the whole of the Valley. Drought conditions and a long-term decline in precipitation trends have led the local water management agencies to investigate opportunities for supplemental water supplies, which are extremely limited due to its isolated location at the top of the Santa Ana River watershed (**Figure 3-18**). As such, the Replenish Big Bear Program has been designed to retain local water in the Valley to increase the sustainability of water supplies. The following agencies within the Valley have partnered to jointly fund and develop the Replenish Big Bear Program; though the lead agency for this project is BBARWA:

- BBARWA: BBARWA provides wastewater treatment to the entire Valley (79,000 acres).
- BBCCSD: BBCCSD's services include water, wastewater collection, fire protection & emergency medical services, solid waste collection, and street lighting services. BBCCSD's water service area includes Big Bear City and portions of San Bernardino County. BBCCSD's wastewater collection area includes Big Bear City and portions of unincorporated communities such as Sugarloaf, Erwin Lake, Whispering Forest, and Moonridge.
- BBLDWP: BBLDWP was formed in 1989 with the purchase of the retail water system from Southern California Water Company and currently provides water service to the City of Big Bear Lake, located along the south side of Big Bear Lake, as well as the unincorporated communities of Fawnskin, Sugarloaf, Erwin Lake and Lake Williams.
- BBMWD: BBMWD is an independent special district that is responsible for the overall management of the Lake.

Replenish Big Bear includes permitting, design, and construction of full advanced treatment facility upgrades at the existing BBARWA WWTP, more than 7 miles of pipeline for product water



and RO brine minimization, three pump stations, a groundwater recharge facility, and up to four monitoring wells. The Program is currently estimated to produce approximately 1,950 acre-feet per year (AFY) of high-quality purified water, and may produce up to 2,210 AFY by 2040 through operation of a high-recovery brine minimization technology. Piloting will be conducted to confirm the feasibility of the higher yield estimates. For the purposes of this document, 2,210 AFY is used to be conservative in evaluating environmental impacts.

The Shay Pond discharge will replace potable water currently discharged to the water body to maintain the water flow through the pond, which is shown on **Figure 3-19**. Up to 80 AFY of purified water will be sent to Shay Pond, and any remaining purified water will be sent to the Stanfield Marsh Wildlife and Waterfowl Preserve (Stanfield Marsh), a tributary of Big Bear Lake (Lake).

For redundancy purposes, BBARWA is also seeking to maintain its current discharge location in Lucerne Valley, where undisinfected secondary effluent is currently conveyed to irrigate crops used for livestock feed.

The Project Team intends to implement the Replenish Big Bear Program, which was first discussed in detail in **Appendix 1** “Bear Valley Water Sustainability Project Final Draft Lake Alternative Evaluation” prepared by WSC, Inc. dated December 19, 2018. Since 2018, some aspects of the Project have been modified. However, the objectives of the Project remain the same and include the following uses and benefits:

- Purified water will be discharged to Shay Pond to sustain habitat for the federally listed Unarmored Threespined Stickleback fish, which is currently sustained using potable groundwater
- Purified water will be discharged to the Stanfield Marsh Wildlife and Waterfowl Preserve (Stanfield Marsh), providing a consistent water source to sustain habitat and increase education opportunities for the community and visitors;
- Purified water will flow through Stanfield Marsh and provide new inflow to the Lake to increase inflows and Lake level, enhance recreational opportunities and aquatic habitat, and support water quality improvements;
- When needed, purified water stored in the Lake will be pumped to Sand Canyon to recharge the groundwater basin to strengthen the sustainability of the groundwater basin;
- Purified water stored in the Lake for can be used for golf course irrigation and dust control by the Big Bear Mountain Resorts (Resorts) in the summer.
- During wet periods, excess purified water stored in the Lake could be stored locally as snow, providing flexibility to further enhance winter recreation, reduce spills from Big Bear Lake, augment spring runoff and increase groundwater recharge. This activity is not currently planned to be implemented as part of the Program, but the Program provides the flexibility to adapt if more extreme hydrologic conditions occur in the future.
- Additional inflow may enable BBMWD to modify their current Big Bear Lake management strategy to minimize spills and optimize releases to enable additional water to be captured downstream for recharge of the San Bernardino Basin, rather than discharged to the ocean.

The Replenish Big Bear Program will require significant upgrades to the treatment process at the WWTP to meet stringent discharge requirements for the Big Bear Lake discharge and the Sand Canyon recharge portion.

### **3.4 PROJECT BACKGROUND AND EXISTING CONDITIONS**

#### **3.4.1 Groundwater Management in Big Bear Valley**

The Bear Valley Groundwater Basin (Basin Number 8-009) was initially designated by the California Department of Water Resources (DWR) as a medium priority basin. Medium priority basins that are not in critical overdraft are scheduled to submit a Groundwater Sustainability Plan (GSP) to DWR by January 31, 2022. DWR reclassified the Bear Valley Basin as a very low priority basin, but encouraged the Bear Valley Basin Groundwater Sustainability Agency (BVBGSA) to continue with the planned preparation of the GSP. Given the fact that natural precipitation is the only source of recharge and water supply to the valley, the BVBGSA member agencies have already been proactive in implementing many of the groundwater monitoring and management elements required by Sustainable Groundwater Management Act (SGMA) in an effort to protect this critical resource. Thus, the BVBGSA, a “local agency” comprised of BBCCSD, BBLDWP, BBARWA, and BBMWD, prepared the Bear Valley Basin GSP in January 2022. The GSP is available at <https://www.bvbgsa.org/>.

Groundwater pumping within the Bear Valley Basin, as a whole, has historically been within the Sustainable Yield resulting in relatively stable long-term groundwater levels. While there have periodically been localized groundwater level declines, pumping sustainability has been maintained through adaptive management of pumping distribution between management areas and implementation of conservation measures. To maintain pumping sustainability into the future, the BVBGSA plans to continue these effective management actions on a routine basis and implement projects as needed that support sustainable management. Additionally, groundwater level Measurable Objectives at each Representative Monitoring Site (RMS) are monitored against the average 2019 groundwater level at that site (refer to **Figure 3-20**). These management actions and monitoring programs are detailed further in the GSP.

#### **3.4.2 Water Demand in Big Bear Valley**

Water demands served by BBLDWP are primarily residential, which account for approximately 70 percent of BBLDWP's total demand, while commercial demands account for approximately 19 percent of BBLDWP's total demand. The remaining 11 percent is attributed to unbilled consumption and water loss. BBCCSD provides potable water to all its customers, which are comprised of about 88% residential and 12% commercial accounts. On average, BBCCSD's water uses are about 80% residential, 11% commercial, and 9% losses. The projected water demands for BBLDWP and BBCCSD area are presented in **Table 3-1**.

**Table 3-1  
 WATER DEMAND PROJECTIONS FOR BEAR VALLEY WATER AGENCIES (AFY)**

<b>Water Agency</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
BBLDWP	2,332	2,147	2,164	2,190	2,231	2,283
BBCCSD	1,067	1,185	1,206	1,227	1,249	1,271
<b>Total</b>	<b>3,399</b>	<b>3,332</b>	<b>3,370</b>	<b>3,417</b>	<b>3,480</b>	<b>3,554</b>

Source: BBLDWP 2020 UWMP; BBCCSD 2020 UWMP

**3.4.3 Big Bear Lake Water Management**

Big Bear Lake is an important resource that provides extensive recreational, economic, ecological, and aesthetic benefits for the local community as well as the larger inland southern California region. Together, Stanfield Marsh and the Lake have a surface area of nearly 3,000 acres, a storage capacity of 73,320 af, and an average depth of 32 feet (ft). Stanfield Marsh and the Lake are both waters of the State of California (State) and United States (U.S.), which have several designated beneficial uses. For reference, **Table 3-2** shows the designated beneficial uses of the Lake and Stanfield Marsh per the 1995 Water Quality Control Plan for the Santa Ana River Basin Plan (Basin Plan), as amended in 2008, 2011, 2016, and 2019. In addition, the Nutrient TMDL was adopted to address concerns with phosphorus and nitrogen impacts on the Lake. **Table 3-3** presents the Lake regulatory limits set to protect the Lake benefits.

**Table 3-2  
 BENEFICIAL USES OF BIG BEAR LAKE AND STANFIELD MARSH**

Beneficial Uses	Big Bear Lake	Stanfield Marsh
AGR - Agricultural Supply	✓	
COLD - Cold Freshwater Habitat	✓	✓
GWR - Groundwater Recharge	✓	
MUN - Municipal and Domestic Supply	✓	✓
RARE - Rare, Threatened, or Endangered Species	✓	✓
REC1 - Water Contact Recreation	✓	✓
REC2 - Non-Contact Water Recreation	✓	✓
SPWN - Spawning, Reproduction, and/or Early Development	✓	
WARM - Warm Freshwater Habitat	✓	
WILD - Wildlife Habitat	✓	✓

**Table 3-3  
 LAKE REGULATORY LIMITS FOR CONSTITUENTS OF INTEREST**

Constituent	Basin Plan WQO (mg/L)	Nutrient TMDL (mg/L)
<b>Total Dissolved Solids (TDS)</b>	<b>175</b>	
Hardness	125	
Sodium	20	
Chloride	10	
<b>Total Inorganic Nitrogen (TIN) (mg/L-N)</b>	<b>0.15</b>	
Sulfate	10	
<b>Total Phosphorus (TP) (mg/L-P)</b>	<b>0.15</b>	<b>0.035</b>
Total Nitrogen (TN) (mg/L-N)		1
Chlorophyll-a (µg/L)		14

Note: **Bolded** constituents were identified as priority in previous regulatory meetings and are specifically evaluated in this study.  
 WQO = Water Quality Objectives

The Lake is located about 6,743 ft (2,055 m) above mean sea level (MSL) in the San Bernardino Mountains in San Bernardino County. The Lake was formed following construction of the Bear Valley Dam in 1883-1884 to serve as an irrigation supply for the citrus industry in the downstream

Redlands-San Bernardino communities. Since that time, the Lake has served as a vital engine for economic growth in the Valley, and the region has developed into a year-round destination with extensive recreational and commercial activities, primary and secondary residences, vacation properties, hospitality, and other services.

As with all other natural and man-made lakes in Southern California, the Lake is subject to dramatic variability in water surface elevation; surface elevations reached as low as -48.5 ft relative to dam crest (72.33 ft maximum depth) in November 1961, corresponding to a volume of less than 1,000 af and a lake surface area on the order of 200-300 acres during the extended drought in the late 1950's and early 1960's. BBMWD was subsequently formed in 1964 to manage and help stabilize the water level in the Lake. The region's natural hydrology includes severe protracted droughts and is influenced by the Pacific Decadal Oscillation (PDO) and El Nino-La Nina climate systems, which makes lake level stabilization a tremendous challenge. This wide variability in Lake level, in turn, can have dramatic impacts on recreational, economic, and aesthetic values of the Lake, as well as ecological conditions and Lake water quality.

The proposed Replenish Big Bear Program would not only provide purified water to serve existing uses, but it also envisions replenishing the Lake through Stanfield Marsh.

Big Bear Lake, as stated above, is managed by BBMWD, which has rights to the lake bottom, Bear Valley Dam, and the right to utilize and manage the surface of Big Bear Lake from Bear Valley Mutual (BVM or Mutual). Bear Valley Mutual maintains a storage right and ownership of all water inflow into the Lake. BVM has the right to request Lake releases commensurate with what may be reasonably necessary to meet the requirements of Mutual's stockholders, not exceeding 65,000 AF in any ten (10) year period.

BBMWD is able to maintain a higher water level in the lake by delivering water to Mutual from an alternate source of water. This alternate source of water (In-Lieu Water) comes mainly from the State Water Project through a contract executed in 1996 with San Bernardino Valley Municipal Water District (Valley District).

BBMWD's current Lake Release Policy was adopted in 2006 provides guidance on how Mutual demands will be met depending on the Lake level.

- When the Lake is in the top 4 feet, Mutual's demands will be met with Lake releases;
- When the Lake is between 4 and 6 feet below full, Lake releases will be made in the months of November through April and In-Lieu Water will be obtained from May to October
- When the Lake is more than 6 feet below full, In-Lieu Water will be obtained

### ***Snowmaking Withdrawals***

BBMWD currently has a contract with the Big Bear Mountain Resorts, allowing the withdrawal of an allocated amount of water from the Lake to use for snowmaking purposes. Currently, Big Bear Mountain Resort is authorized to withdraw a maximum of 11,000 acre-feet (AF) of water from the Lake over a 10-year rolling period, not exceeding 1,300 AF in any single year. It is calculated that about half of the water withdrawn from the lake for this purpose is returned as runoff.

### ***Fish Protection Releases***

In 1995, the State Water Resources Control Board (SWRCB) issued Order No. 95-4, which requires BBMWD and Mutual to release water from the Lake for fishery protection in Bear Creek. Sufficient water must be released from the Lake to maintain specific flow standards, which vary by month and by hydrologic year type (normal, above normal or below normal precipitation).

### **3.4.4 Wastewater Characteristics and Facilities**

BBARWA owns and operates a 4.89 million gallon per day (MGD) capacity WWTP located just south of Baldwin Lake on the east side of the Valley. In 2021, the WWTP treated approximately 1.85 MGD of municipal wastewater collected from BBCCSD, the City of Big Bear Lake, and County of San Bernardino Service Area (CSA) 53 in Fawnskin.

The existing treatment process includes the following:

- Preliminary treatment consisting of a mechanical coarse screen and an aerated grit chamber;
- Secondary treatment consisting of extended aeration oxidation ditches and secondary clarifiers; and
- Solids handling through a dewatering belt filter press.

Treated effluent is temporarily stored on-site prior to discharge to Lucerne Valley. Dewatered solids are hauled off-site.

The influent flows to BBARWA's WWTP are comprised of three components:

- Flow from full-time residential homes
- Flows due to tourism, commercial activities and part-time residential homes
- Flows from Infiltration and Inflow (I/I) due to precipitation

These components create a seasonal variation in the wastewater flows treated at the plant. BBARWA's 2010 Sewer Master Plan (2010 SMP) estimated that the full-time residential rate is 38% of the overall customer population within the area. The tourism season is largely concentrated in the months of December through April due to the local ski resorts; additionally, the months of June and July also see a slight rise in tourism due to Lake recreation activities. The average daily flow is presently approximately 2.0 MGD and the maximum month flow is 5.4 MGD.

BBARWA's WWTP is located on a 93.5-acre property. The WWTP process components occupy 11.2 acres, and the remaining 82.3 acres include storage ponds and evaporation ponds. Influent flows are conveyed through three BBARWA operated sewer mains and lift stations to the plant. The WWTP currently provides preliminary and secondary treatment.

Treated secondary effluent is discharged to a 480-acre site in Lucerne Valley (LV Site)—about 20 miles north of the Big Bear Valley—for irrigation of fodder and fiber crops that are used as feed for livestock. Use of recycled water for crop irrigation at the LV Site began in 1980 and 100% of the WWTP effluent is currently discharged to the LV Site. Discharge to the LV Site must meet the Colorado River Basin Regional Water Quality Control Board (RWQCB) Waste Discharge Requirement (WDR), which has an effluent limit for TDS of 550 mg/L over a 12-month period.

### **3.4.5 Shay Pond and Stickleback Fish Habitat**

The Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*), also known as UTS (referred to as "Stickleback" herein) is listed as both a Federal and State of California Endangered Species under the respective Endangered Species Acts. There has been a population of Stickleback in the Shay Creek area on the east side of the Valley, as shown in **Figure 3-21**, which includes Shay Pond, Sugarloaf Pond, Juniper Springs, Motorcycle Pond, Shay Creek, Wiebe Pond, and Baldwin Lake. By the summer of 1990, it was thought that the

Stickleback remained in only Shay Pond; however, several years of above-average precipitation in the mid-1990s resulted in the establishment of a pool of water in Baldwin Lake.

There is a long history of study and group effort regarding the Stickleback in the Shay Creek area. The main stakeholders include the United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), the San Bernardino National Forest (SBNF), BBCCSD, BBLDWP, and BBARWA. The Shay Creek Working Group, which includes representatives from the USFWS, CDFW, SBNF, BBCCSD, DWP, and BBARWA, was formed during the process of preparing the USFWS' 2002 Biological Opinion (BO) for the area.

There are habitat threats that are specific to the Shay Creek area, including wetland vegetation growth and encroachment, pollution or eutrophication from contamination from horse manure, and loss of flow in the creek due to property development in the area. To mitigate wetland vegetation growth and encroachment, Shay Pond was dredged by BBCCSD in 2011, and again most recently in 2017. **Photos 3-1** and **3-2** show the pond before and after the 2011 dredging, respectively.



**Photo 3-1. Shay Pond Before Dredging**





**Photo 3-2. Shay Pond After Dredging**

The requirements of the 2002 BO state that BBCCSD will continue to provide water to Shay Pond to maintain a minimum 20-gallon-per-minute (gpm) outflow from Shay Pond. To meet this outflow requirement, BBCCSD discharges 50 gpm of potable water into the pond. Based on the average volumes of discharges between 2012 and 2020, BBCCSD discharges approximately 50 AFY of potable water into Shay Pond to maintain the fish population. However, the proposed NPDES permit will permit up to 80 AFY of discharge. The objective is to maintain a minimum pond water level that will support suitable habitat conditions for the fish. BBCCSD currently meets this requirement by discharging potable water into Shay Pond.

### **3.5 PROJECTED USES OF RECYCLED WATER GENERATED BY THE PROGRAM**

The following uses are anticipated as part of the Replenish Big Bear Program and are discussed in more detail in subsequent sections.

- Continuous water supply to Stanfield Marsh Wildlife and Waterfowl Preserve, which will then flow into Big Bear Lake
- Continuous water supply to Shay Pond Unarmored Threespined Stickleback habitat
- Periodic groundwater recharge in Sand Canyon during summer months
- Potential periodic storage in the watershed as snow during wet winter periods
- Irrigation water for Bear Mountain Golf Course
- Potential water supply for downstream users when purified water exceeds needs in the Valley

### **3.5.1 Stanfield Marsh and Big Bear Lake**

The Stanfield Marsh began a transformation in 1982 when BBMWD, working with CDFW, dredged basins, laid culvert pipes to connect to the Lake, and planted the shoreline, followed by numerous other enhancements in subsequent years. Stanfield Marsh is hydrologically connected to the Lake through a set of culverts under Stanfield Cutoff.

Stanfield Marsh is now a scenic 145-acre nature park that includes a gazebo, walking paths, and two boardwalks that extend out into the marsh so that visitors can observe the wildlife in, under and around the water. Stanfield Marsh is home to rare and diverse species of birds, fish, amphibians, and mammals.

As previously stated, rainfall and snowmelt are the only sources of water for Stanfield Marsh, so the water level varies from season to season and throughout longer hydrologic cycles. During wet periods, Stanfield Marsh is a thriving wildlife preserve. During extended drought conditions, the water level recedes dramatically, the boardwalks extend over dry soil, and the wildlife become scarce. In the last 15 years, Stanfield Marsh has been less than half full nearly 40 percent of the time. Full advanced treated water would provide a new, drought proof source of inflow to stabilize the water levels and sustain habitat in Stanfield Marsh even during dry periods.

Water from Stanfield Marsh will also provide new inflow into the Lake and increase Lake levels relative to no Project conditions. The proposed outlets into the Lake at Stanfield Marsh would occur at one of two points just west of the Big Bear Airport, shown on **Figure 3-2**.

Per conversations with the California State Water Resources Control Board Division of Drinking Water (DDW), the Lake may be designated as a non-restricted recycled water impoundment and the subsequent use of purified water in the Lake, such as snowmaking, landscape irrigation, dust control, and groundwater recharge would be subject to recycled water regulations. Additional coordination and studies are being conducted to regulate these uses. It is anticipated that a separate WDR permit will be obtained to regulate the Sand Canyon groundwater recharge project. The non-potable recycled water uses for landscape irrigation, dust control, snowmaking, and nonrestricted impoundment are anticipated to be regulated under the Statewide Water Reclamation Requirements for Recycled Water Use (Oder WQ 2016-0068-DDW).

In 2000, BBARWA was issued a National Pollutant Discharge Elimination System (NPDES) permit (Santa Ana Region Board Order No. 00-12), which included the Marsh and a proposed new Stickleback habitat in Baldwin Lake as authorized discharge points, subject to construction of tertiary treatment and disinfection upgrades. The NPDES permit limited discharges to the Marsh to periods of lower water levels when the Marsh was not hydraulically connected to the Lake. The tertiary treatment upgrades were not completed, and the discharge point was never used so the NPDES permit was not renewed when it expired in 2005. In 2005, the Santa Ana RWQCB issued Order No. R8-2005-0044, which does not allow discharge to the Marsh. A new NPDES permit, which BBARWA is in the process of acquiring, would be required for the Replenish Big Bear Program to address discharges into Stanfield Marsh/Lake, and the Shay Pond Stickleback habitat.

### **3.5.2 Stickleback Fish Habitat**

As stated under **Subsection 3.4.5**, above, the Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*), is listed as both a Federal and State of California Endangered Species under the respective Endangered Species Acts. There is a long history of study and group effort

regarding the Stickleback in the Shay Creek area. While the objective is to maintain a minimum pond water level that will support suitable habitat conditions for the fish, and BBCCSD currently meets this requirement by discharging potable water into Shay Pond, the 2002 BO also states that, should a suitable alternative supply of water be found to be appropriate for the stickleback in the future, BBCCSD may use an 'in-lieu' water supply, which could include the use of tertiary-treated water. Replenish Big Bear would provide an in-lieu water supply (i.e., full advanced treated water, which exceeds tertiary treated water) for Shay Pond to meet the requirements of the 2002 BO, which would enable BBCCSD to recover this potable supply to serve their customers.

### **3.5.3 Groundwater Recharge at Sand Canyon**

Groundwater recharge at Sand Canyon was evaluated by Thomas Harder & Co. (Harder) to assess the feasibility of recharging the groundwater aquifer at Sand Canyon using surface water from Big Bear Lake and estimate the annual recharge capacity. This study can be found in the "Sand Canyon Recharge Evaluation" prepared by Thomas Harder & Co, dated November 29, 2017 (**Appendix 4**). Harder found that the recharge potential at Sand Canyon is approximately 380 AFY over a 6-month period, based on a recharge area of approximately 4.2 acres and a recharge rate of 2.1 ft/day.

The Sand Canyon recharge concept involves extracting purified water stored in the Lake (a blend of surface water and purified water) and discharging it into Sand Canyon, which serves as a flood control channel. The recharge operation would only occur during summer months when needed to supplement groundwater supply and would be operated intermittently as needed to avoid interference with flood flows.

Recharge to Sand Canyon would occur through either constructing a series of small berms along the streambed to create a percolation area, modifying stream channel to create a meandering stream with small natural ponds to slow the water down and enhance percolation, or utilizing inflatable rubber dams in the channel which could be inflated to create percolation ponds during the recharge operation only and deflated at all other times so as not to impact the natural function of the channel. All of these concepts will need to be coordinated with the flood control agency (San Bernardino County Flood Control District) to ensure that the capacity of the flood control channel remains sufficient to meet the primary purpose of providing flood protection. If these improvements resulted in a decrease in surface flow entering the Lake, the impact to surface water rights under the 1977 Judgment will be evaluated.<sup>1</sup>

When water is needed for recharge in Sand Canyon, it is assumed that the existing lake pump station owned by Big Bear Mountain Resort (Ski Resort) could be used to transfer water through an existing pipeline into the existing storage pond located at Bear Mountain Ski Resort. These facilities are used primarily for snowmaking in the winter and are expected to be available for the proposed recharge operation, which would only occur from April through October when the resorts are not making snow. It is anticipated that a separate WDR permit by BBLDWP will be obtained to regulate the Sand Canyon groundwater recharge project.

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<sup>1</sup> The Big Bear Dam was originally constructed to provide water storage for BVM which was formed in 1903 by the citrus growers of the Redlands/Highland area to ensure water supply for irrigation needs. The historic operation of the Big Bear Lake as an irrigation reservoir resulted in drastic fluctuations in lake levels, which conflicted with the goals of BBMWD and the community of Big Bear Valley. A legal conflict over the water rights and management of the lake was ultimately settled out of court through the 1977 Judgement. Under the terms of this judgement, BBMWD purchased the lake bottom, Bear Valley Dam, and the right to utilize and manage the surface of Big Bear Lake from BVM. BVM retained a storage right and ownership of all water inflow into the Lake.

### **3.5.4 Snow Storage**

During wet periods, excess water could be stored as snow at the Resorts using their existing snowmaking infrastructure. This would reduce spills from the Lake, keep more of the water in the Valley, and enhance winter recreation by providing additional snowmaking water to the Resorts beyond their current allotment from the Lake. When the snow melts in the spring, runoff would be augmented, which is expected to increase natural groundwater recharge and may improve fish spawning habitat in streams tributary to the Lake. Title 22 provides that disinfected tertiary recycled water may be used for artificial snowmaking for commercial outdoor use. The Replenish Big Bear Program is anticipated to exceed the level of treatment required. This activity is not currently planned to be implemented as part of the Program, but the Program provides the flexibility to adapt if more extreme hydrologic conditions occur in the future.

### **3.5.5 Golf Course Irrigation**

A new proposed use under the proposed Program is to pump purified water stored in the Lake from the Bear Mountain intake pump (also owned by the Ski Resort) for landscape irrigation of the Bear Mountain Golf Course located at 43092 Goldmine Drive, Big Bear Lake, CA 92315. The golf course is typically open to the public from mid-May through October of each year from 7:30 AM to 5:30 PM.

Golf course irrigation would keep additional water in the Valley, the existing snowmaking facilities could also be used to deliver irrigation water to the Bear Mountain Golf Course in the summer, if desired. The water demand for the Bear Mountain Golf Course is estimated to be 120 AFY. This option would allow the Resort to rest its groundwater irrigation wells and reduce pumping from the Basin. Title 22 provides that disinfected tertiary recycled water may be used for irrigation of unrestricted access golf courses, subject to the restriction that irrigation shall not take place within 50 feet of an unshielded domestic water supply well and that recycled water impoundment may not occur within 100 feet of a domestic water supply well. Additionally, some adjustments to irrigation practices may be needed to comply with the site use requirements in Title 22, which would need to be coordinated with the Resort.

### **3.5.6 Dust Control**

A new proposed use under the proposed Program is to use purified water stored in the Lake to provide dust control for a bike park at the Snow Summit Ski Resort. Each spring, the Snow Summit Ski resort is transformed into a bike park. Purified water stored in the Lake could be used from April to October for this purpose. It is estimated that about 120 AFY of purified water stored in the Lake could be utilized in support of this use under the proposed Program.

### **3.5.7 Downstream Recharge**

Additional inflows into the Lake will provide BBMWD with more flexibility in managing Lake releases, while still maintaining high Lake levels. In particular, during wet periods, additional flood control releases are anticipated to flow down the Santa Ana River to the Seven Oaks Dam, which is upstream of the San Bernardino Groundwater Basin area. BBMWD intends to coordinate with San Bernardino Valley Municipal Water District (Valley District) in an effort to optimize the volume of releases from the Lake that can be captured for recharge of the Bunker Hill Basin, rather than flow past to the ocean.

### 3.6 WASTEWATER TREATMENT UPGRADES

In order to meet the objectives of the Replenish Big Bear Program, the BBARWA WWTP must be upgraded to meet the correlating water quality standards and objectives for the types of uses proposed as part of this Program. As such, the following section discusses the Basin Plan water quality objectives, and the treatment upgrades required to treat wastewater to the degree required to comply with local, state, and federal water quality regulations.

#### 3.6.1 Basin Plan Water Quality Objectives

In order to discharge to the proposed locations, the treated effluent must meet the water quality objectives set by the Santa Ana River Basin Water Quality Control Plan (Basin Plan). The Basin Plan establishes beneficial uses and water quality objectives (WQO) for the ground and surface waters of the region and includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and protect the water quality standards. The Basin Plan provides a general narrative regarding the WQO for each water body type and specific numeric objectives for total dissolved solids (TDS), hardness, sodium, chloride, total inorganic nitrogen (TIN), total phosphorus (TP), sulfate, and chemical oxygen demand (COD).

- **Stanfield Marsh** has narrative objectives, as numeric objectives have not been established
- **Inland Surface Stream Rathbone Creek** has a TDS objective of 300 micrograms per Liter( $\mu\text{g/L}$ )
- **Big Bear Lake** has a TDS objective of 175  $\mu\text{g/L-P}$ , a hardness objective of 125  $\mu\text{g/L-P}$ , a sodium objective of 20  $\mu\text{g/L-P}$ , a chloride objective of 10  $\mu\text{g/L-P}$ , a TIN objective of 0.15  $\mu\text{g/L-P}$ , and a Sulfate objective of 10  $\mu\text{g/L-P}$ 
  - In addition to the numeric and narrative WQOs, Big Bear Lake is subject to a Total Maximum Daily Load (TMDL) numeric target of 35  $\mu\text{g/L-P}$  for total phosphorus during dry hydrologic conditions, per Resolution No. R8-2006-0023. By 2020, the total phosphorus numeric target must be achieved at all times.
- **Groundwater Management Zone Big Bear Valley** has a TDS objective of 300  $\mu\text{g/L-P}$ , a hardness objective of 225  $\mu\text{g/L-P}$ , a sodium objective of 20  $\mu\text{g/L-P}$ , a chloride objective of 10  $\mu\text{g/L-P}$ , a TIN objective of 5  $\mu\text{g/L-P}$ , and a Sulfate objective of 20  $\mu\text{g/L-P}$
- Shay Creek, which flows into **Shay Pond**, has narrative objectives, as numeric objectives have not been established.

The nutrient limits for an NPDES permit to Stanfield Marsh/Big Bear Lake are expected to align with the Basin Plan WQOs and the TMDL numeric targets to protect the beneficial uses of the Lake. The anticipated effluent nutrient limits of 35  $\mu\text{g/L-P}$  for total phosphorus and 0.15  $\text{mg/L-N}$  for total inorganic nitrogen would require multiple process treatment steps and consistent treatment through seasonality. In addition, the Replenish Big Bear Project Team is committed to working with the Santa Ana RWQCB and State Water Resources Control Board's Division of Drinking Water (DDW) to protect the municipal (MUN) beneficial use of Big Bear Lake (Lake). As a reflection of that commitment, the Project Team is proposing to implement full advanced treatment and conduct additional monitoring to ensure that the proposed NPDES discharge is protective of the MUN beneficial use.

#### 3.6.2 Groundwater Recharge Requirements

The Groundwater Recharge Regulations require a minimum "response retention time" or minimum groundwater travel time of two months between the point of surface application or

injection, and the point of extraction. Harder's preliminary analysis shows that the recharge water will reach the nearest production well (Sheephorn Well) in a little more than approximately 13 months. For preliminary recharge siting purposes, a "credit" of 0.25 was applied for travel time calculations using an analytical model. Thus, the credited retention time is interpreted to be 9.75 months (39 x 0.25). This credited retention time meets/exceeds the minimum retention time of 2 months, indicating that the simulated recharge operation is feasible based on the data assumptions in the analysis. Refer to **Appendix 4**.

Pathogen controls include specific provisions for log reduction of microorganisms and treatment process requirements. The treatment process used to treat recharge water for a Groundwater Replenishment Reuse Project must provide treatment that achieves at least 12-log enteric virus reduction, 10-log Giardia cyst reduction, and 10-log Cryptosporidium oocyst reduction from raw sewage to usable groundwater. The treatment train shall consist of at least three separate treatment processes. For each pathogen (i.e., virus, Giardia cyst, or Cryptosporidium oocyst), a separate treatment process may be credited with no more than 6-log reduction, with at least three processes each being credited with no less than 1.0-log reduction. If the treatment process itself does not achieve the required pathogen control credits, additional credit can be gained through underground retention time prior to extraction.

### **3.6.3 BBARWA WWTP Treatment Upgrades**

BBARWA's existing wastewater facility will be upgraded to meet the water quality objectives identified for Big Bear Lake in the Santa Ana Basin Plan. TIN and TP must be removed through multiple in-series processes because a single process cannot reliably reduce effluent TIN and TP concentrations to the levels required for Big Bear Lake's WQOs. To achieve these strict effluent limits, BBARWA will need to implement a series of upgrades to existing unit processes and integrate new unit processes.

As part of the Replenish Big Bear Program, proposed upgrades to the BBARWA WWTP include:

- Upgrade the existing oxidation ditches to biological nutrient removal process;
- Tertiary filtration and nutrient removal via denitrification filters
- Ultrafiltration (UF) and reverse osmosis (RO) membrane filtration;
- Brine pellet reactor for brine minimization; and
- Ultraviolet disinfection and advanced oxidation process (UV/AOP).

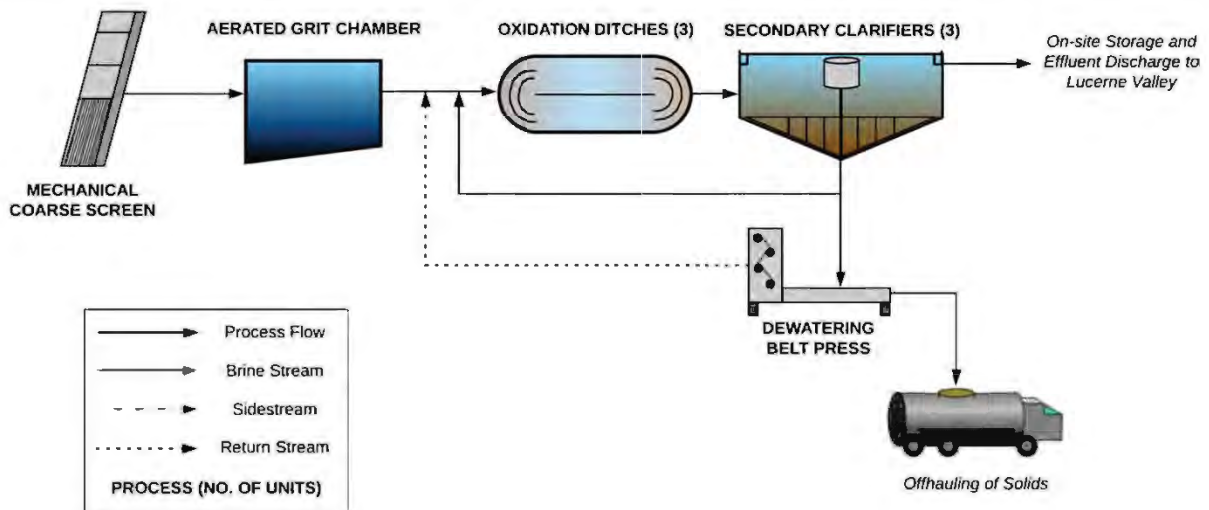
The new facilities would be designed for a treatment capacity of 2.2 MGD, with operational ability to divert a portion of the denitrification filter effluent directly to UV/AOP process depending on effluent water quality targets, treatment performance and discharge permit requirements. However, it is anticipated that 100% of the water discharged will be treated with RO and UV/AOP disinfection. The anticipated completion date is 2027. A detailed summary of the treatment process upgrades is shown in **Table 3-4**.



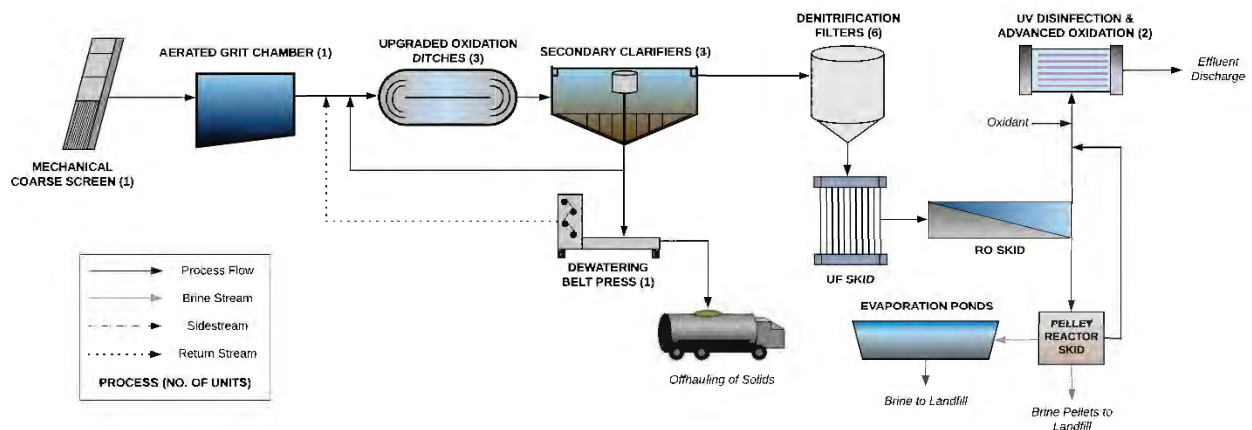
**Table 3-4  
 SUMMARY OF TREATMENT PROCESS UPGRADES**

Treatment Mode	Processes
<b>Biological Nutrient Removal</b>	<b>Nitrification-Denitrification:</b> Retrofit existing oxidation ditches to a Modified Ludzack-Ettinger (MLE) configuration with turbo blowers and diffused aeration for nitrogen removal.
<b>Tertiary Filtration &amp; Nutrient Removal</b>	<b>Denitrification Filter:</b> Construct denitrification filters for nitrogen and phosphorus removal. Chemical provisions for supplemental carbon and chemical precipitant addition will be provided for denitrification and phosphorus removal, respectively.
<b>Membrane Filtration</b>	<b>Ultrafiltration and Reverse Osmosis:</b> Construct skid-mounted pressurized UF membranes and RO membrane facilities capable of high product recovery, high TDS removal, and removal of residual nutrients. Chemical provisions for antiscalant, pH adjustment, and remineralization chemicals will be provided. Brine from the RO system will be conveyed to the Pellet Reactor for brine minimization.
<b>Disinfection</b>	<b>UV Disinfection:</b> Construct closed vessel UV disinfection unit process for disinfection of denitrification filter effluent or RO permeate water. UV transmittance will be high for disinfection of the high-quality RO permeate and the UV dose will be higher than standard UV disinfection to provide strong oxidation capacity for the UV/AOP process. <b>AOP:</b> Construct a chemical injection and mixing system to dose a strong oxidant downstream of the UV process to destroy trace contaminants. The oxidant would be sodium hypochlorite or hydrogen peroxide, with final oxidant selection depending on final preliminary design decisions.
<b>Brine Minimization</b>	<b>Pellet Reactor:</b> Construct a skid-mounted pellet reactor system which provides brine minimization through additional RO membrane filtration and precipitation of partially soluble salts through a fluidized bed reactor.
<b>Brine Management</b>	The RO brine management option included in the preliminary design for Replenish Big Bear is a brine minimization pellet reactor to reduce the volume of brine produced by the RO process. The reduced brine stream from the pellet reactor will be conveyed to evaporation ponds located on BBARWA WWTP property. It is assumed that an RO recovery of 90% at 2.2 MGD influent flow would result in 0.22 MGD of RO brine to be minimized through the pellet reactor and approximately 0.022 MGD of liquid brine to be conveyed to the evaporation pond based on a pellet reactor recovery of 90%. A total evaporation pond area of 23 acres is needed for the brine stream. However, if a higher yield cannot be achieved up to a total evaporation pond area of 57 acres would be required. Site specific treatment performance of the pellet reactor will be evaluated during the piloting phase. Adjustments to total system recoveries and the brine management process could be made based on site-specific piloting results.

For comparison purposes, a schematic of the existing treatment processes is shown in **Exhibit 3-2**, and the proposed upgraded treatment process schematic is shown in **Exhibit 3-3**.



**Exhibit 3-2: EXISTING TREATMENT PROCESS SCHEMATIC**



**Exhibit 3-3: FUTURE UPGRADED TREATMENT PROCESS SCHEMATIC**

The proposed upgrades (i.e., new advanced treatment train) would be designed for a treatment capacity of 2.2 MGD. By 2040, accounting for expected growth, it is estimated that the WWTP could produce 2,210 AFY of full advanced treated effluent, assuming a 99% total recovery rate could be achieved (90% RO recovery and 90% recovery of brine through brine minimization). The WWTP currently produces about 2.0 MGD of undisinfected secondary effluent on an average annual basis.

BBARWA also plans to maintain the existing Lucerne Valley discharge location. All WWTP process water in excess of the new treatment train’s 2.2 MGD capacity will continue to be treated to undisinfected secondary levels and conveyed to the existing Lucerne Valley site, consistent with the current permitted discharge requirements of the existing BBARWA WWTP.

More specifically, the treatment upgrades would include the following:

- Modify and upgrade the existing oxidation ditch extended aeration process to a MLE process for increased biological nitrification-denitrification (NDN). Denitrification occurs in anoxic conditions which will be incorporated into the existing infrastructure with

modifications to the tankage to provide volume without aeration. If needed, chemical precipitation of soluble phosphorus can be performed through addition of a metal salt within the activated sludge tankage, upstream of clarification.

- Nutrient-laden liquid sidestreams, which are produced during solids handling processes, may require management or treatment due to the potential negative impacts of returning high nutrient loads to other unit processes. Sidestream treatment would require additional on-site tankage and mechanical aeration. The need for side stream treatment will be determined during subsequent phases of the project when piloting and plant-wide process modeling is performed; however, because digestion of solids will not be performed at the upgraded WWTP, sidestream treatment is not likely to be required.
- Retrofit or operational modifications to secondary clarifiers for settling of phosphorus precipitates such as adding a chemical injection and mixing location and modifications to the baffling within the clarifier. Removal of phosphorus through chemical precipitation would increase solids production and require additional operational time of the WWTP's existing sludge dewatering equipment to process the increased solids load. It is anticipated chemical precipitation of phosphorus will not be required, which will be verified during subsequent phases of the project when piloting and plant-wide process modeling is performed.
- Addition of a tertiary filtration and nutrient removal process using biologically active denitrification filter with sand or synthetic media. Chemical precipitation of phosphorus with a metal salt (e.g., polyaluminum chloride or aluminum potassium sulfate) will be incorporated to provide phosphorus removal within the filter. The denitrification process will likely require an external carbon source (e.g., glycerol) to facilitate the reduction of nitrate.
- Low pressure ultrafiltration (UF), to reduce solids upstream of the reverse osmosis (RO) process.
- RO to reduce TDS concentration and nutrient concentrations. The assumed operational recovery for the RO system is 90% of the design flow. Emerging RO technologies that are configured for brine recirculation, multiple pass, or in-series operation to achieve high recoveries (such as closed-circuit reverse osmosis) have been demonstrated to achieve high recovery rates with reduced energy consumption at comparable capital costs to conventional RO. Such technologies would need to be piloted with BBARWA's specific water quality characteristics to verify expected performance for this application. The low-pressure filtration and RO unit processes are expected to provide the physical filtration for reduction of the 0.5 to 2 mg/L of TIN and TP coming from upstream processes. RO is the only unit process capable of removing TDS, making it a critical unit process for compliance with WQOs. It is assumed that 100% of the design flow will need to receive RO treatment to meet the WQOs. RO offers the advantage of removing TDS, organics, inorganics and nutrients to a sufficient level for meeting nutrient WQOs.

Projected treatment performance downstream of each unit process is shown in **Table 3-5**. Potential water quality performance for TIN, TP and TDS constituents are estimated for each unit process; however, the performance of each of these unit processes is highly site specific based on the water quality composition being treated. A pilot test of each unit process is required to refine performance estimates and establish design criteria.

**Table 3-5  
 PROJECTED TREATMENT PERFORMANCE FOR THE PROPOSED TREATMENT PROCESS**

Constituent	Primary Treatment	Biological Nutrient Removal	Denitrification Filter	UF/RO	UV/AOP	Water Quality Objectives
TIN (mg/L-N)	30	4	0.8	0.1	0.1	0.15
TP (mg/L-P)	8	2	0.3	0.03	0.03	0.035
TDS (mg/L)	450	450	450	50	50	175

The scope of the upgrades are shown in **Figures 3-22 through 3-28**. **Figure 3-22** shows the location of the BBARWA WWTP overlaid on the Federal Emergency Management Agency Flood Hazard Areas. **Figure 3-23** shows the location within the existing BBARWA WWTP at which the anoxic zone mixers, diffused air grid systems, and 4 turbo blowers in precast buildings are proposed to be located. **Figure 3-24** shows the location within the existing BBARWA WWTP at which the effluent pump station and pipeline will be installed, while **Figure 3-25** shows this same area in more detail, showing a diagram of the facilities and processes located in this building. **Figure 3-26** shows the location within the existing BBARWA WWTP site at which up to 57 acres of evaporation ponds would be installed. **Figure 3-27** shows the site availability at the BBARWA WWTP site, and indicates existing equipment and facilities to remain, to be removed, or with a tentative status. **Figure 3-28** is a continuation of the previous figure showing site availability and areas to be preserved within the BBARWA WWTP.

**Anticipated Water Quality and Annual Flow**

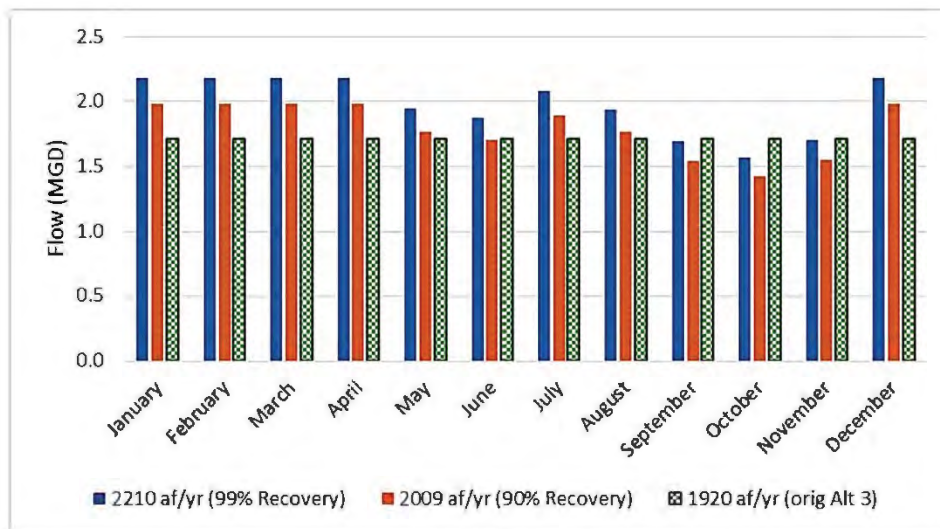
An analysis of the Lake was completed in 2021 and 2022 to evaluate the water quality impacts of key constituents on Stanfield Marsh and Lake. The analysis assumed that the discharge would be 100% treated and disinfected with RO and UV, which is referred to as “Alternative 3”. Since the completion of this analysis, BBARWA agreed to add AOP to the treatment to protect the MUN use of the Lake. Therefore, the water quality is expected to improve for some constituents. **Table 3-6** presents the Lake discharge flow projections that were considered in the Lake Analysis model (**Appendix 2**) and in the 2022 update to the Lake Analysis provided as an Appendix to the Lake Analysis Model.

**Table 3-6  
 INITIAL AND UPDATED LAKE DISCHARGE FLOW RATE PROJECTIONS**

Modeled Scenario	Program Inflow (AFY)	Daily Program Inflow (MGD)
<b>Baseline (No Project)</b>	0	0
<b>Alternative 3 <sup>(a)</sup></b>	1,920	1.71
<b>High Flow (99% recovery) <sup>(b)</sup></b>	2,210	1.57-2.18
<b>Mid Flow (90% recovery) <sup>(b)</sup></b>	2,009	1.42-1.98

Notes: **a)** Alternative 3 was assessed in the 2021 Lake Analysis and assumed that of the total Replenish Big Bear effluent contribution considered in the Lake Analysis (i.e., 2,000 AFY), 80 AFY would be delivered to Shay Pond. Therefore, only 1,920 AFY would be discharged to the Lake at a constant flow. **B)** In the 2022 Lake Analysis update it was assumed that no discharge to Shay Pond would occur and all full advanced treated water would be discharged to the Lake under two different total recovery rates scenarios and monthly fluctuations.

The Lake discharge is expected to vary seasonally, as shown in **Exhibit 3-4**. Inflows to the WWTP are lower in the summer months due to reduced inflow and fewer visitors relative to the winter season.



**Exhibit 3-4: PROJECTED 2040 MONTHLY BBARWA DISCHARGES TO THE LAKE UNDER THREE INFLOW SCENARIOS**

Since the Replenish Big Bear Program proposed Lake discharge has not been assigned a waste load allocation (WLA) for TP in the nutrient TMDL, a TP Offset Program is proposed to attain a net zero TP contribution to be consistent with the Nutrient TMDL assumptions. The TP loads added to the Lake by the Lake Discharge will be offset through triennial alum applications to attain net zero TP loadings for the upcoming three years. In the event of extreme runoff (defined here as exceeding about 25,000 acre-feet per year [AFY]<sup>2</sup>), which has the potential to bury the reactive alum cap on the sediments and reduce its effectiveness, an alum treatment will be conducted that following spring-summer and the triennial treatment schedule will be reset.

***Effluent Temperature***

Lake water temperatures and WWTP effluent temperatures vary seasonally. While they are relatively similar in the summer months, the WWTP effluent temperature is considerably higher than the Lake temperature in the winter. It is expected that the discharge permit for this alternative would include limits for effluent temperature, and/or the allowable temperature change in the Lake caused by the discharge to avoid adverse thermal impacts to aquatic habitat.

<sup>2</sup> Approximately the 80th percentile annual inflow based on WaterMaster data for 1977-2018.

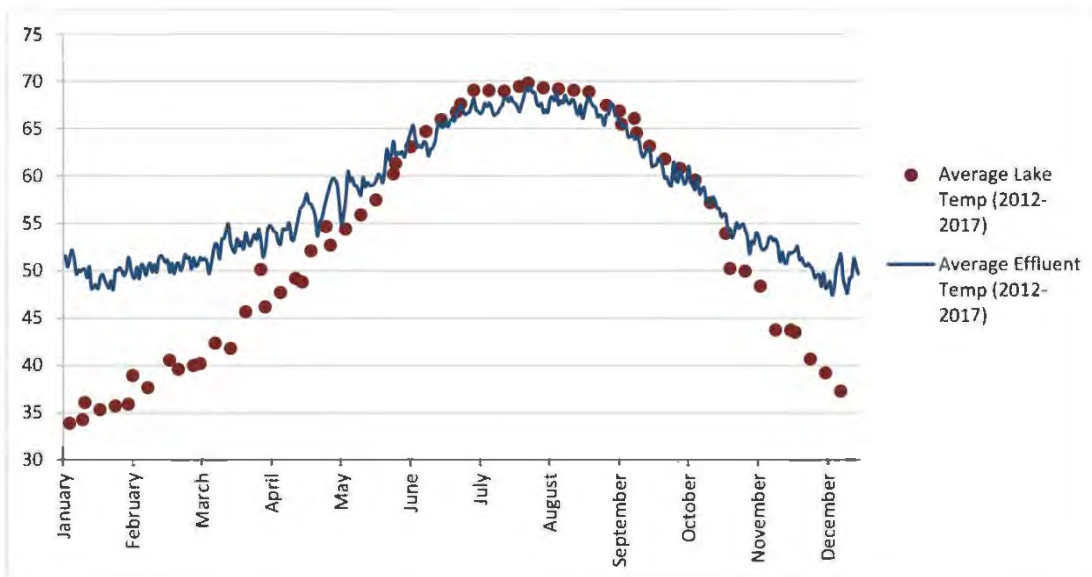


Exhibit 3-5: COMPARISON OF AVERAGE LAKE AND BBARWA EFFLUENT TEMPERATURES (2012-2017)

A supplemental simulation was conducted in 2022, which assessed the influence of the temperature of inflowing water from the Replenish Big Bear project on predicted near-surface (1 m) temperatures in Stanfield Marsh (Segment #4) and the eastern edge of Big Bear Lake (Segment #12) (**Exhibit 3-6**). Segment 4 is approximately 450 m from the inflow, corresponding to about 25% of the total length of Stanfield Marsh (about 1750 m).

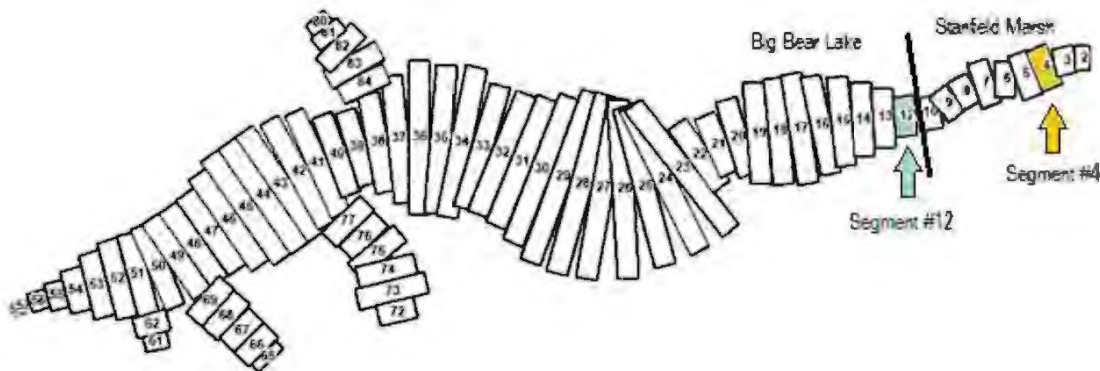


Exhibit 3-6: LAKE MODEL SEGMENTATION HIGHLIGHTING SEGMENT #4 IN STANFIELD MARSH AND SEGMENT #12 AT THE EASTERN EDGE OF BIG BEAR LAKE

Predicted mean temperatures for the two sites under the two different inflow temperature scenarios are summarized in **Table 3-7**.



**Table 3-7  
 PREDICTED AVERAGE NEAR-SURFACE (1 M) TEMPERATURES IN STANFIELD MARSH (SEGMENT 4) AND  
 BIG BEAR LAKE (SEGMENT 12)**

Location	Original	+ Heat
Stanfield Marsh (Segment 4)	11.71 ± 6.99	12.51 ± 6.54
Big Bear Lake (Segment 12)	11.99 ± 7.05	12.00 ± 7.07

Notes: See Exhibit 3-6 for segment locations.

While the above analysis is not intended to serve as a detailed evaluation of fine-scale temperature effects on Stanfield Marsh resulting from discharge of advanced treated Replenish Big Bear water, results highlight some important general findings. First of all, warm advanced treated water discharged to the easternmost section of Stanfield Marsh quickly loses heat through exchange with the atmosphere and is diluted with existing water; higher lake levels afford greater opportunity for heat loss and dilution such that temperature effects are more likely at low lake levels. As a result, addition of warm advanced treated water to Stanfield Marsh does not, based on this modeling, meaningfully alter the heat budget for Big Bear Lake and is not predicted to alter lake temperature or duration or intensity of thermal stratification.

### **3.6.4 Brine Disposal – Solar Evaporation Ponds**

Implementation of RO treatment requires management of brine concentrate. The most common brine concentrate disposal options include deep well injection (where permitted), surface water discharge (including the ocean), discharge to a wastewater treatment plant (such as via the Inland Empire Brine Line), land disposal, and solar evaporation or Zero Liquid Discharge with disposal of solids to a landfill.

The Project Team is considering the use of solar evaporation pond(s), while all other methods of brine disposal have been ruled infeasible. Evaporation ponds rely on solar energy to evaporate water from the brine concentrate stream, leaving behind precipitated salts, which ultimately are disposed of in a landfill. Evaporation ponds for brine concentrate disposal are most appropriate for smaller volume flows and for regions having a relatively warm, dry climate with high evaporation rates, level terrain, and low land costs. Evaporation ponds are relatively easy to construct, are low maintenance and have no mechanical equipment except for pumps to convey brine to the ponds. However, pond size requirements can be quite high depending on the brine flow and evaporation rates and the regulatory requirement for impervious liners of clay or synthetic membranes substantially increases the cost of construction. A monitoring well or wells will be required to be installed to verify that seepage from the ponds is not contaminating underlying groundwater.

The preliminary RO brine management option for Replenish Big Bear is a brine minimization pellet reactor to reduce the volume of brine waste from the RO process. The reduced brine stream from the pellet reactor will be conveyed to evaporation ponds located on BBARWA WWTP property. Using an RO recovery of 90% at 2.2 MGD influent flow would result in 0.22 MGD of RO brine to be minimized through the pellet reactor, and approximately 0.022 MGD of brine to be conveyed to the evaporation pond based on a pellet reactor recovery of 90%. A total evaporation pond area of 23 acres is needed for the brine stream. However, if the higher yield cannot be achieved up to a total evaporation pond area of 57 acres would be required. Site specific treatment performance of the pellet will be evaluated during the piloting phase. Adjustments to total system recoveries and the brine management process could be made based on site-specific piloting results.

### **3.6.5 Treated Water Storage and Distribution**

#### ***Lake Discharge***

The treated water is planned to be discharged continuously to Shay Pond and Stanfield Marsh; therefore, treated water storage at the WWTP is not required. A single effluent pump station is assumed to pump wastewater effluent treated water to meet discharge requirements for both Shay Pond and Stanfield Marsh; the variation in elevation of the two discharge points is approximately 15 feet. The pump station capacity will match the capacity of the advanced treatment facility, which is 2.2 MGD, or approximately 1,520 gpm. A new effluent pump station may be required, but if the existing effluent auxiliary pumps could be used as the primary secondary effluent pump station, the existing secondary effluent pump station may be able to be repurposed to avoid the need for a new effluent pump station.

A new 12-inch pipe will need to be installed from the WWTP to the proposed discharge points in Stanfield Marsh, as shown in **Figure 3-2**, which depicts the proposed alignment alternatives for the lake discharge.

#### ***Sand Canyon Recharge***

When water is needed for recharge in Sand Canyon, it is assumed that the Resort's existing snowmaking facilities will be used to transfer water into the existing storage pond located at Bear Mountain Ski Resort and a new pump station would be constructed near the pond to convey water through a new pipeline to discharge into Sand Canyon, as shown in **Figure 3-29 and 3-32**. The pump station and pipeline are sized to convey 380 AF of recharge water over a 6-month period, which equates to approximately 471 gpm (refer to **Figure 3-30**). If a joint use arrangement for the Resort's snowmaking facilities cannot be negotiated, constructing new pumping and conveyance facilities to reach Sand Canyon would be required; however, this approach would substantially increase the Program's costs. The Sand Canyon Recharge Evaluation showing the underflow analysis prepared by Thomas Harder & Co. Groundwater Consulting is provided as **Figure 3-31 (refer to Appendix 2)**.

#### ***Shay Pond Discharge***

As part of the Replenish Big Bear Program, up to 80 AFY of full advanced treated water is proposed for discharge to Shay Pond. The proposed Shay Pond discharge is intended to replace potable water that is currently discharged to the pond to support the Stickleback, which, as previously stated, is a federal and State listed endangered species. There is an existing 6-inch C-900 PVC pipeline that begins at the intersection of Shay Road and Palomino Drive and terminates near Shay Pond that can be used to convey the purified water to Shay Pond, with an extension of approximately 710 feet to reach Shay Pond. This nearby pipeline was constructed in 1986 for future use, but has never been put into service. It is possible that this pipeline may not be useable, and as such, a pipeline traversing this same alignment and sized comparably to the existing pipeline may be required, in addition to the proposed 710 foot extension to reach Shay Pond. The length of this pipeline would be 5,600 feet.

Shay Pond has a surface area of approximately 10 acres and is located about 1.2 miles southeast of the BBARWA WWTP, shown on **Figure 3-33**. According to the Bear Valley Basin Groundwater Sustainability Plan (GSP), "*Shay Pond is a natural surface water body at the southern base of an unnamed ridge that separates it from Baldwin Lake. The nature of this pond is unknown, but it may be fed, in part, from spring flow, surface runoff, and periodically, groundwater intersecting the land surface. Although the pond may have historically been fed from surface water runoff in the ephemeral, upstream segment of Shay Creek, urban development has altered the course of this stream, and it no longer flows into the pond. Surface water exits Shay Pond via the*

*downstream segment of Shay Creek, which flows northwards toward Baldwin Lake and intermittently provides water to Baldwin Lake.” “Surface water sources to Baldwin Lake are primarily in the form of ephemeral streams with relatively low flow volumes. The only stream where surface water flow periodically has been measured is Shay Creek at its outlet from Shay Pond.” “Surface water runoff does not reach Baldwin Lake during most years but percolates into the groundwater system. However, during prolonged precipitation, surface water does flow into Baldwin Lake. All surface water that enters Baldwin Lake is lost to evaporation. The high clay content of the playa sediments prevents vertical migration, and the topographical configuration of the lake prevents outflow from Baldwin Lake.”* **Figure 3-21** shows how Baldwin Lake, an ephemeral lake, is connected to Shay Pond via Shay Creek. This figure also shows the population of Stickleback fish in the vicinity of Shay Pond.

The population of Stickleback is unique in that it occurs at a high elevation, about 6,700 ft above mean sea level, while all other Stickleback populations inhabit streams below 3,000 ft. As previously stated, the requirements of the 2002 BO state that BBCCSD will provide water to Shay Pond to maintain a minimum 20-gallon-per-minute outflow from Shay Pond. The objective is to maintain a minimum pond water level that will support suitable habitat conditions for the fish. BBCCSD currently meets this requirement by discharging potable water into Shay Pond, but the 2002 BO also states that, should a suitable alternative supply of water be found to be appropriate for the stickleback in the future, BBCCSD may use an ‘in-lieu’ water supply, which could include the use of tertiary-treated water. The potable water discharged to Shay Pond represents approximately 5% of BBCCSD’s customer water demand and could be reserved for potable use instead of discharging to Shay Pond.

The discharge rate needed to maintain the required outflow, accounting for evaporation and infiltration, has varied from year to year. However, based on the average volume of discharges measured between 2012 and 2020, BBCCSD discharges approximately 50 AFY of potable water to Shay Pond on average. At times, the required discharge has been up to 80 AFY; this maximum volume is used as the basis for the project design and analysis to be conservative. **Figure 3-19** shows an aerial view of Shay Pond and the proposed discharge location.

### **Applicable Water Quality Standards**

Per the Basin Plan, the protection of beneficial uses designated for Shay Creek and Baldwin Lake is primarily provided by narrative water quality objectives. Refer to the “Big Bear Area Regional Wastewater Agency Replenish Big Bear Antidegradation Analysis for Proposed Discharges to Stanfield Marsh/Big Bear Lake and Shay Pond” provided as **Appendix 3** to review beneficial uses of Shay Pond receiving waters—Shay Creek and Baldwin Lake—on Table 12 therein, and also to review a comparison of most stringent water quality objective or criterion to current BBCCSD potable water supply quality and projected effluent quality of proposed discharge on Table 13 therein.

To summarize the outcome of the comparison of WQOs provided in **Appendix 3**, the projected effluent quality of the proposed discharge to Shay Pond is better than the current potable water supply for chloride, hardness, sodium, sulfate, TDS, TN, aluminum, and specific conductance. The projected effluent quality of the proposed discharge is expected to be of similar quality as existing potable water supplies for ammonia, fluoride, MBAS, cadmium, copper, and lead. However, additional data may be needed to confirm these findings. Boron may be the only constituent that could be above the existing potable water supply quality. However, the average boron concentration in the full advanced treated water proposed for discharge to the pond is well below the 0.75 mg/L Basin Plan objective for boron for the protection of sensitive agricultural

crops, which is not a use of Shay Pond water. Additional coordination with the CDFW will be conducted to ensure the Stickleback fish are protected.

### **3.6.6 Replenish Big Bear Overview**

The following represents a summary of the facilities required to support the Replenish Big Bear Program:

- The existing BBARWA WWTP will be upgraded to produce full advanced treated water to serve the objectives outlined in this Project Description. These upgrades would treat wastewater to full advanced treatment at a capacity of 2.2 MGD, or approximately 2,210 AFY. Upgrades that would occur within the BBARWA WWTP are as follows:
  - Oxidation Ditches
  - Denitrification Filter
  - UF and RO
  - UV/AOP
  - Pellet Reactor: 0.22 MGD
- Development between 23 and 57 acres of solar evaporation ponds, depending on the total system recovery rate achieved, at BBARWA's WWTP site to accommodate 22,000 gpd to 55,000 gpd of brine concentrate.
- Installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the solar evaporation ponds.
- Installation of a 50 gpm brine pump station.
- Installation of one or more monitoring wells at the evaporation pond on the WWTP Site to monitor groundwater quality, as required by the future discharge permit.
- Installation of an anticipated 1,500 to 1,600 gpm pump station at the BBARWA WWTP to pump purified water to Shay Pond and Stanfield Marsh.
- Installation of a new 471 gpm pump station at the snowmaking pond to convey water to Sand Canyon.
- Installation of a new pipeline that will discharge into Sand Canyon that will be 8" in diameter, and 7,210 feet in length.
- Installation of two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF (**Figure 3-34**).
- Installation of a pipeline utilizing one of three alignments shown on **Figure 3-2** from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12" in diameter.

### **3.7 SUMMARY OF FACILITY CONSTRUCTION AND OPERATIONS**

The Replenish Big Bear Program would, as stated under Subsection 3.3, Project Purpose and Objectives, partner with Big Bear Valley agencies to recover a lost water resource that is currently being transported out of the Valley to Lucerne Valley, close the water loop, and keep the water in the Valley for beneficial reuse. This section of the Project Description is intended to outline operational and construction scenarios for the specific types of facilities and/or improvements that could result from the implementation of the Replenish Big Bear Program.

The implementation of the facilities proposed as part of the Replenish Big Bear Program consists of construction and operation of the various facilities summarized below. These potential facilities are separated into four project categories:

- 1) Project Category 1: Conveyance Pipelines
- 2) Project Category 2: Ancillary Facilities including Pump Stations and Monitoring Wells
- 3) Project Category 3: Evaporation Pond
- 4) Project Category 4: BBARWA WWTP Upgrades.

Below are general descriptions of the facilities and operations proposed as part of the Replenish Big Bear Program. Each Project Category has been formed utilizing the greatest number, intensity, lengths, and capacities for each type of facility proposed under the Replenish Big Bear Program. For example, the pipeline lengths and sizes considered under Project Category 1 represent the option(s) that would require the greatest pipeline length to achieve that “Component” of the Replenish Big Bear Program.

***Project Category 1: Conveyance Pipelines***

The Replenish Big Bear Program would ultimately install a total of about 6.59 miles or 34,810 LF of various types of pipelines. Potential alignments include the following:

- Pipeline to Lake: 12” 19,940 LF
- Pipeline to Stickleback: 4” 710 LF, and possible additional 6” 5,600 LF where the existing pipeline cannot be utilized
- Pipeline from Resort Storage Pond to Sand Canyon: 8” 7,210 LF
- Brine Pipeline (within BBARWA WWTP property): 8” 1,350 LF

***Project Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations***

The Replenish Big Bear Program would ultimately install monitoring wells in order to facilitate project operation as follows:

- Up to four (4) monitoring wells
  - Two downstream of the Sand Canyon recharge area.
  - Two near the brine Evaporation Ponds at the BBARWA WWTP site.

The Replenish Big Bear Program would ultimately install three pump stations in order to facilitate project operation as follows:

- Effluent Pump Station @ WWTP 1,520 gpm
- Pump Station @ Resort Storage Pond 471 gpm
- Brine Pump Station @ WWTP: 20 gpm

***Project Category 3: Evaporation Pond***

The Replenish Big Bear Program would between 23 and 57 acres of evaporation ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine.

***Project Category 4: BBARWA WWTP Upgrades***

This Project Category includes upgrades to the BBARWA WWTP, to include 2.2 MGD of full advanced treatment, producing up to 2,210 AFY of purified water. The upgrades include the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

### 3.7.1 Project Category 1: Conveyance Pipelines

#### ***Operational Scenario: Pipelines***

**Pipelines:** Once a pipeline or turnout is installed, operations do not require any visits unless unforeseen circumstances arise that would require maintenance or repair of the pipelines. In the event of routine maintenance one vehicle trip per maintenance event would be required.

#### ***Construction Scenario: Pipelines***

An estimated 6.59 miles or 34,810 LF of pipeline may be installed in support of the Replenish Big Bear Program. The maximum pipe length that would be installed in a single year would be 29,210 LF. Installation of 29,210 LF of pipeline could occur over a period of one year to coincide with the opening year (2027) of the 2.2 MGD upgraded BBARWA WWTP.

Preliminary analysis has identified that the piping will range from 4-inch to 12-inch diameter. It is assumed that an underground utility installation team can install an average of 200-400 LF of pipeline per day. A team consists of the following:

- 200-400 feet of pipeline installed per day
- 1 Excavator
- 1 Backhoe
- Compaction equipment
- 2 pickup trucks with supplies and hand tools
- 1 Paver
- 1 Roller
- 1 Water truck
- Traffic Control Signage and Devices
- 10 Dump/delivery trucks (up to 80 miles round trip distance)
- Employees (10 members per team, 80-mile round-trip commute)

The emissions calculations are based upon the above assumptions for each pipeline installation team. Typically, up to 400 feet of pipeline trench could be excavated, the pipe installed, backfilled, and compacted each day during pipeline installation in undeveloped areas whereas only 200 ft per day can be installed in developed roadways. In either case equipment would be operated for roughly the same portion of the day and daily equipment emissions would be the same, except, that undeveloped areas would not require pavement removal and reinstallation.

It is assumed that up to of 1,000 LF per day would be installed utilizing multiple teams (up to four teams working on any given day). It is assumed that the proposed pipeline installation will occur for a maximum of 260 days in one calendar year.

Ground disturbance emissions assume roughly half an acre of land would be actively excavated on a given day. It is anticipated that installation of pipeline in developed locations will require the use of a backhoe, compactor, roller/vibrator, pavement cutter, grinder, haul truck, and two dump trucks operating 6 hours per day; a water truck and excavator operating 4 hours per day and a paving machine and compactor operating 2 hours per day. Installation of pipeline in undeveloped locations would require the same equipment without the paving equipment (cutter, grinder, paving machine). Pipeline trenches will have a depth of approximately 4.5' to 6'. Trench widths could be as small as 1.5' for 4" piping and could be as wide as 4.5' for 12" piping.



The pipelines that would be installed in support of Replenish Big Bear are anticipated to use push-on joints (e.g., gasketed bell-and-spigot) that do not require welding. However, the Contractor may occasionally use a portable generator and welder for equipment repairs or incidental uses.

### **3.7.2 Project Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations**

#### ***Operational Scenario: Ancillary Facilities including Monitoring Wells***

**Monitoring Wells:** The Replenish Big Bear Program anticipates the installation of up to four new monitoring wells; 2 for the Sand Canyon and 2 for evaporation ponds. The four monitoring wells will be visited by a field technician on a monthly to quarterly frequency. There is negligible energy consumption in obtaining groundwater levels from a monitoring well.

**Pump Stations:** Pump stations that are incorporated into the project will be operated to convey the water or brine generated by the proposed BBARWA WWTP Upgrades, the capacity and amounts of water pumped varies. A total of 3 pump stations will be installed.

It is assumed that the brine pump station would be 20 gpm capacity with 5 HP pumps and the effluent pump station would be 1,500 to 1,600 gpm with 25 HP pumps.

#### ***Construction Scenario: Well Development***

Four new monitoring wells will be drilled and constructed approximately one year prior to the initiation of the Program in 2027.

The depth of a new wells are anticipated to range between 250 and 750 feet below ground surface, or as directed by the hydrogeologist. The average area of disturbance required to drill and construct each new well is anticipated to be half an acre or less. Drilling of up to 4 new wells during a given year, with flexibility to construct the four wells over a period of two or more years, will require the delivery and set up of the drilling rig at each site. It is anticipated these wells may be drilled concurrently, or at different times and the drilling equipment will be transported to and from the sites on separate occasions. For the purposes of this evaluation, it is forecast that delivery of the drilling equipment 4 times in a year will result in four 80-mile round-trips for the drill rigs.

It is anticipated that about five persons will be on a given well site at any one time to support drilling and well construction: three drillers, the hydrogeologist inspector, and a foreman. During the course of well drilling and construction at any given site, trips to and from the well site will include: one roundtrip for the drilling rig; between 2 and 3 roundtrips for cement trucks; about 5 trips to deliver pipe; and about 4 round trips per day for employees.

For analysis purposes it is assumed that each well would be drilled using the direct rotary or fluid reverse circulation rotary drilling methods. The average area of disturbance to drill and construct each well is estimated to be one-half an acre or less. Access to the drilling site for the drilling rig and support vehicles would be from adjacent roadways. Typically, site improvements to allow well drilling requires only minimal earth movement and/or grading.

The drilling and development of each well will require drilling to—in most cases—between 250 and 750 feet below ground surface (bgs). The proposed schedule for constructing each well would be as follows: drilling, construction, and testing, where required, of each well would require approximately six weeks to complete (about 45 days, of which 15 to 20 days would include 24-hour, 7-day a week drill activity). For planning purposes, a construction and testing schedule

duration of 60 days per well is assumed to account for unforeseen circumstances (e.g., extreme weather, equipment breakdowns, etc.) that could affect the drilling and testing schedule. The well casings are expected to be flush-threaded PVC wells and it will be assumed that well development and installation will require a two week use of a diesel generator.

The borehole for the well would be drilled using at least two separate drilling passes. The first pass, or pilot borehole, would be drilled to an estimated maximum depth below the ground surface, which would correspond to the top of the consolidated bedrock in the area, or a depth selected by the project hydrologist/hydrogeologist. Upon completion of the geophysical logs, the pilot borehole would be enlarged (reamed) to a diameter of 24 inches to approximately the same depth to accommodate the well casing, screen and filter pack.

Once each well is constructed it would immediately be developed through a process of swabbing and airlifting. During this process, drilling fluids and suspended sediment would be removed from the well. After the drilling fluids are removed along with most of the suspended sediment, the well would be further developed through pumping.

Each monitoring well will be completed at the surface with either a flush mounted, traffic rated manhole cover that is bolted in place or a 12-inch diameter steel monument that extends approximately 3 feet above the ground. The monument will be fitted with a locking lid and surrounded by four traffic bollards. The final footprint of the completed monitoring well will be approximately 10' by 10'.

***Construction Scenario: Pump Stations***

The total number of pump stations to be constructed in support of the Replenish Big Bear Program is anticipated to be three.

It is forecasted that, at each site, no more than 0.5 acre will be actively graded on a given day for site preparation of each pump station. Construction of each pump station will require the delivery and installation of equipment and materials. It is anticipated that grading activities will occur over a 5-day period and this phase of construction will result in 6 truck trips on the worst-case day with an average round trip of 80 miles delivering construction materials and equipment (concrete, steel, pipe, etc.). Installation of the pump station will require the use a crane, forklift, backhoe and front loader operating 4 hours per day. Calculations assume five workers will each commute 80 miles round-trip to the work site.

Each pump station is assumed to be housed within a CMU building, and will require a transformer to be installed to provide electric power to the pumps. The proposed pump station building may include a pump room and electric control room. Construction of the pump stations would involve site preparation and grading, construction of structural wet wells and foundations, installation of piping and electrical equipment, pump and motor installation, and final sitework.

Two of the pump stations proposed are located at the BBARWA WWTP site and one is located offsite (Sand Canyon). The onsite pump stations will have the same backup power that supplies the BBARWA WWTP process equipment, and the Sand Canyon pump station will have a portable backup generator.

### **3.7.3 Project Category 3: Evaporation Pond**

#### ***Operational Scenario: Evaporation Pond***

Operations at this evaporation pond consists of storage and evaporation of the brine stream from the pellet reactor process. The energy required to pump brine from the pellet reactor process to the onsite evaporation ponds is presently unknown, but it is expected to be low since the pump station is only sized for 50 gpm and it is conveying brine to a lower elevation than the pellet reactor process. The evaporation pond will be segmented into different basins so they can rotate in cycles of filling with brine, evaporating the water from the brine, and performing maintenance to remove the brine from basins that have completed the evaporation stage. Basin maintenance is expected to occur approximately 2-3 times a year, consisting of removal of the brine, maintenance of liners and grading, removal of vegetation, and vector management.

#### ***Construction Scenario: Evaporation Pond***

The Replenish Big Bear Program would install between 23 and 57 acres of solar evaporation ponds at the BBARWA WWTP Site shown on **Figure 3-26**, depending on total system recovery.

With respect to new evaporation pond, it is forecast that for site preparation, no more than 8 acres will be actively graded on a given day. Each new pond is anticipated to be 8 to 10 feet deep with berms built up from the existing grade to create pond areas. Given the area required to install the new evaporation ponds, it is anticipated that the time required for the construction is about 3-6 months.

The pellet reactor process will “reject” a brine stream with high dissolved solids content (i.e., brine). Single basin dimensions would range from about 400 to 800 feet long and 400 to 800 feet wide, or about 3.75 to 7.5 acres to provide 6 to 10 ponds to accommodate the brine discharged from the treatment process. The berms would be built up so that the top of the berms are level with the existing grade of the WWTP. This would provide protection from flooding in that area without requiring excavation much below the existing grade in that area.

As stated above, the evaporation ponds would be constructed using large construction equipment; earthen berms would be installed; and the basins would be lined with an impermeable liner to prevent percolation of the brine into the underlying soil. Periodically, the residual solids (primarily consisting of salts left after evaporation) would be collected and disposed of at an appropriately licensed disposal facility.

It is anticipated that grading activities will occur over a 90 to 120-day period and will require two bulldozers, two front end loaders, two water trucks, several scrapers, two excavators and four dump/haul trucks operating 6-8 hours per day. Calculations assume 10 workers will each commute 80 miles round-trip to the evaporation pond construction site at the BBARWA WWTP.

Construction of the new evaporation ponds will require the delivery and installation of equipment and materials. It is not known whether each site will require import or export of soil, as the new evaporation ponds will require some excavation of the existing area to provide fill dirt for the earthen berms to create the pond areas. Given the size of the proposed 6 to 10 ponds (400 feet to 800 feet wide x 400 feet to 800 feet long x 10 feet in depth), it is anticipated that a cut amount from 1 to 2-feet of the existing grade will provide enough fill dirt to create the earthen berms of the ponds. However, it is anticipated that no more than a total of 175,000 CY of materials would be hauled off site by 15 to 30 CY trucks, as an estimated one half of the cut material will be used as fill material to enhance flood control from installation of the proposed basins. No more than 100 round trips per day at an 80 mile round-trip distance would be required to accomplish the

effort to remove excess materials off-site. This would occur over the 30+ year Program horizon of construction for the Replenish Big Bear Program with some periods without hauling activities, and other periods that would reach 100 round trips per day. An estimated total of 8,000 round trips total (trucks and employees) would be required to haul excess materials to a soil receiving facility.

In addition to the above construction equipment, heavy duty trucks will be employed for on-site deliveries. Smaller trucks and automobiles will be utilized for on-site supervision and employee commuting. The diesel delivery trucks are assumed to require 100 on-road miles per day for a total of 30 days.

### **3.7.4 Project Category 4: BBARWA WWTP Upgrades**

#### **Operational Scenario: BBARWA WWTP Upgrades**

Please refer to Exhibit 3-3, which depicts the proposed modifications to the BBARWA WWTP to enable the installation of the proposed advanced water treatment facility.

The Operational Scenario for the upgrades to the BBARWA WWTP include 2.2 MGD of advanced treatment, producing up to 2,210 AFY of advanced treated water. The updates include:

- Oxidation Ditches
- Denitrification Filter
- UF and RO
- UV Disinfection
- Pellet Reactor: 0.22 MGD

The advanced treatment plant will operate 100% of the time at 70%-100% capacity. The existing facility uses about 3,250 MW-hours/year, and the advanced treatment plant will use an additional 3,800 MW-hours/year.

#### **Construction Scenario: BBARWA WWTP Upgrades**

The construction activities to install upgrades at the BBARWA WWTP consists of the following range of activities: demolition of existing concrete basins, grading activities to prepare site for new construction, construction of concrete foundations and supports, installation of piping, equipment, and instrumentation, connection to existing electrical equipment and onsite utility water system construction of building foundations and building structures, and installation of treatment equipment.

Civil and site work for the proposed BBARWA WWTP Upgrades would include demolition, grading, drainage, and site improvements. The area around new structures and processes would be backfilled to match existing finished surfaces. All disturbed areas would be paved, covered with crushed stone, or landscaped with ground cover. Areas that require routine vehicle access would be bituminous concrete roadways, consisting of a 12-inch gravel base course, a 2.5-inch bituminous concrete binder course and a 1.5-inch bituminous concrete top course. Areas that require routine pedestrian access would have concrete sidewalks. The sidewalk would consist of 4 inches of reinforced concrete on an 8-inch gravel base course. Painted steel bollards (approximately 4 inches in diameter and 42 inches high) would be provided as needed to protect equipment or structures that are near roadways.

Standard construction equipment will be used, ranging from dozers, graders and cranes, to backhoes. It is anticipated that the maximum number of construction personnel on the WWTP project site on any given day will be 50 persons. A maximum number of truck deliveries, probably

during pouring of concrete for facilities, are forecasted at 25 per day. Construction of the WWTP Upgrades is expected to require about 24 months.

### **3.8 ENTITLEMENTS, APPROVALS AND OTHER AGENCY PARTICIPATION**

There are a wide range of other agencies that may have an interest in or may be involved in the review and approval of the facilities outlined above. The following list is not intended to be exhaustive, but it provides a sense of the agencies that may participate in the review or approval of this program and specific projects. The potential participating agencies are arranged based on the individual topics contained in the standard CEQA Initial Study Environmental Checklist Form.

Aesthetics: Local jurisdictions, San Bernardino County, City of Big Bear Lake

Air Quality: South Coast Air Quality Management District (SCAQMD), permit the operation of the Upgraded BBARWA WWTP and possibly individual pieces of equipment (ex: stand-by emergency generator)

Biology: The U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife (CDFW) may have to issue incidental take permits. Local jurisdictions issue plant removal permits. The Corps of Engineers, CDFW and Colorado River Basin Regional Water Quality Control Board (CRBWQCB) and Santa Ana Regional Water Quality Control Board (SARWQCB) will participate in review of discharge of fill into or alteration of a streambed.

Hydrology & Water Quality: A wide range of participation will occur for these issues. The CRBRWQCB will issue a modified WDR to BBARWA, as will the SARRWQCB will issue a WDR and Water Recycling Requirements (WRR) for use of recycled water. The California Department of Public Health must also review and approve the future use of recycled water. The County and local jurisdictions must ensure that stormwater discharges from each of the facility sites meet the current municipal separate stormwater sewer standards (MS4); and Stormwater Pollution Prevention Plan(s) (SWPPP) must be implemented for each location where disturbance exceeds one acre. To construct the facilities a Notice of Intent must be submitted to the State Water Resources Control Board for a General Construction Permit, which is then enforced by the CRBRWQCB, only for construction of any facilities located within Lucerne Valley and the SARWQCB for all other facilities proposed as part of the Program within Big Bear Valley. NPDES Permit(s) are required and will be implemented through the SARWQCB; the NPDES Permit Program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Finally, if any flood hazard areas are affected by the proposed project, County Flood Control, the City, and FEMA may perform reviews for this project.

Noise: Compliance with local jurisdiction Noise Element and Noise Ordinance may be necessary due to proximity of facilities to sensitive noise receptors.

Transportation: The proposed project may require encroachment permits from San Bernardino County, City of Big Bear Lake, and possibly Caltrans to construct the pipeline within existing road rights-of-way.

Other: The proposed project has been awarded a grant for the project from the BOR. The proposed project may seek grants or loan from other federal agencies, such as the United States Environmental Protection Agency (EPA).

No other reviewing or permitting agencies have been identified.

### **3.9 CEQA RESPONSIBLE AGENCIES**

#### Partner Agencies

BBCCSD  
BBLDWP  
BBMWD

#### Other Potential Responsible Agencies

San Bernardino County  
City of Big Bear Lake  
SARRWQCB  
CRRWQCB  
CDFW  
USFWS  
SCAQMD  
USACOE  
DDW  
San Bernardino County Flood Control District  
Big Bear City Airport

#### Federal Agencies

BOR  
EPA

### **3.10 USES OF THIS ENVIRONMENTAL IMPACT REPORT**

Before any of the proposed facilities can be implemented, BBARWA must approve the proposed projects and the remaining entities that make up the Project Team and CEQA Responsible Agencies will utilize the Draft EIR as CEQA Responsible Agencies. This document has also been prepared in order to meet National Environmental Policy Act (NEPA) standards to enable the BOR and EPA to process this project under a separate NEPA documentation process.

The County, City and or Caltrans may issue encroachment or development permits for the proposed upgrades and additions to BBARWA's WWTP, proposed recycled water conveyance lines, brine storage basins, monitoring wells, and pump stations. These approvals can rely upon this Draft EIR as the basis for compliance with the CEQA. The City and County would also utilize the Draft EIR as CEQA Responsible Agencies.

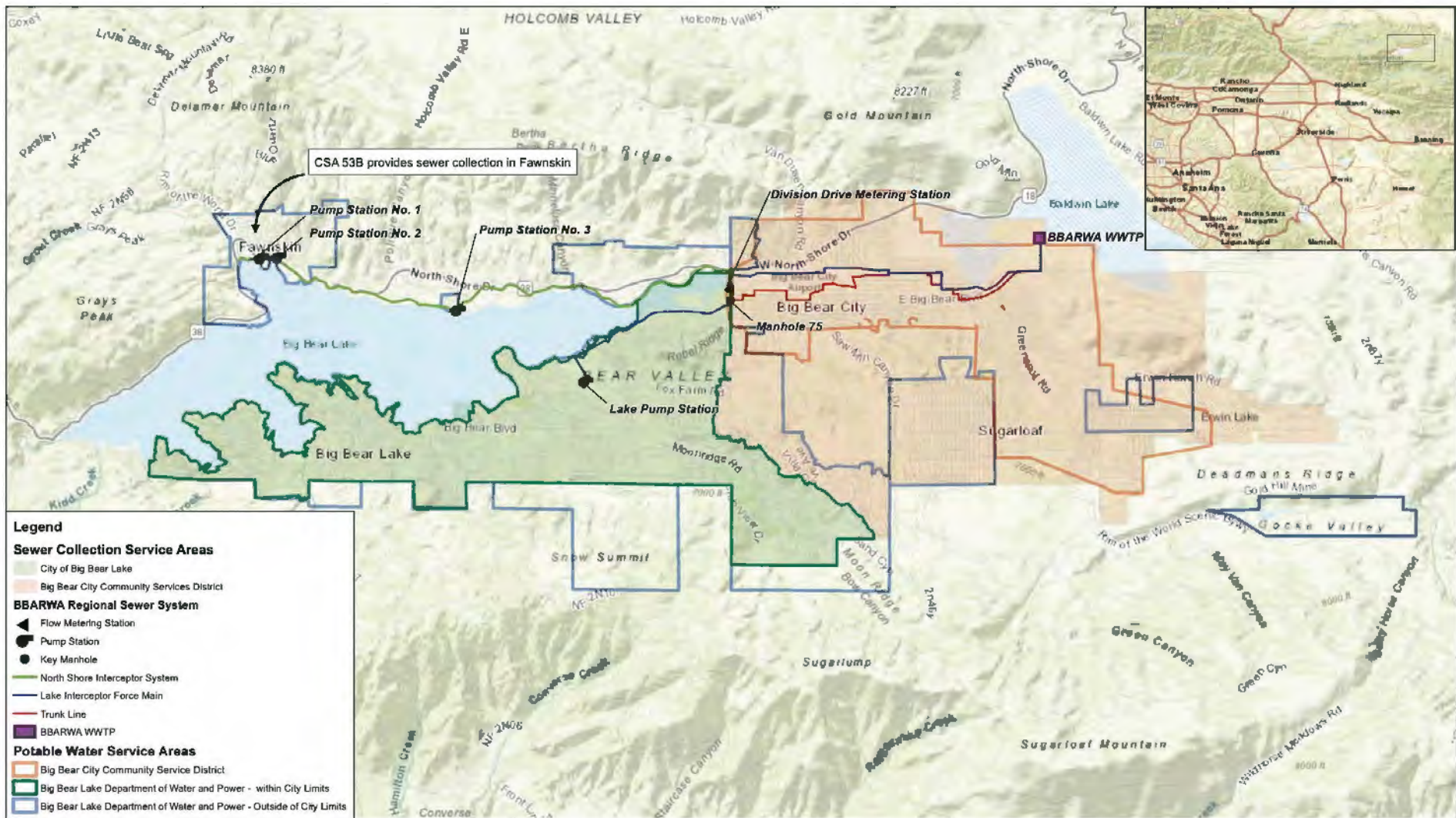
Other agencies listed under Section 3.9 may use this document as CEQA Responsible Agencies to grant other approvals or entitlements.



**ACRONYMS**

AF	Acre Feet
AFY	Acre Feet per Year
BBARWA	Big Bear Area Regional Wastewater Agency
BBCCSD	Big Bear City Community Services District
BBLDWP	Big Bear Lake Department of Water and Power
BBMWD	Big Bear Municipal Water District
BO	Biological Opinion
BVM	Bear Valley Mutual
BVWSP	Bear Valley Water Sustainability Project
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
COD	Chemical Oxygen Demand
CRBRWQCB	Colorado River Basin Regional Water Quality Control Board
DEIR	Draft Environmental Impact Report TDS – Total Dissolved Solids
EIR	Environmental Impact Report
FEMA	Federal Emergency Management Agency
GMZ	Groundwater Management Zone
GPD	Gallons per Day
GPM	Gallon Per Minute
LV Site	Lucerne Valley Site
MF	Microfiltration
MGD	Million Gallon(s) per Day
MS4	Municipal Separate Stormwater Sewer Standards
NDN	Nitrification-Denitrification
NHF	National Heritage Foundation
NPDES	National Pollutant Discharge Elimination System
PEIR	Program Environmental Impact Report
PFD	Process Flow Diagram
RO	Reverse Osmosis
RWQCB	Regional Water Quality Control Board
SARWQCB	Santa Ana Regional Water Quality Control Board
SBNF	San Bernardino National Forest
SMP	Sewer Master Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TIN	Total Inorganic Nitrogen
TNC	The Nature Conservancy
TP	Total Phosphorus
UF	Ultrafiltration
µg/L	Micrograms per Liter
USFWS	U.S. Fish and Wildlife Service
UV	Ultraviolet
WDR	Waste Discharge Requirement

WQO	Water Quality Objective
WRR	Water Recycling Requirements
WWTP	Wastewater Treatment Plant



- Legend**
- Sewer Collection Service Areas**
- City of Big Bear Lake
  - Big Bear City Community Services District
- BBARWA Regional Sewer System**
- Flow Metering Station
  - Pump Station
  - Key Manhole
  - North Shore Interceptor System
  - Lake Interceptor Force Main
  - Trunk Line
  - BBARWA WWTP
- Potable Water Service Areas**
- Big Bear City Community Service District
  - Big Bear Lake Department of Water and Power - within City Limits
  - Big Bear Lake Department of Water and Power - Outside of City Limits



Big Bear Area Regional Wastewater Agency  
 Sewer Service Area and Big Bear Valley  
 Potable Water Service Areas  
 1/28/2022

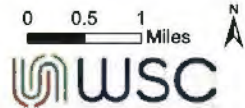


FIGURE 3-1



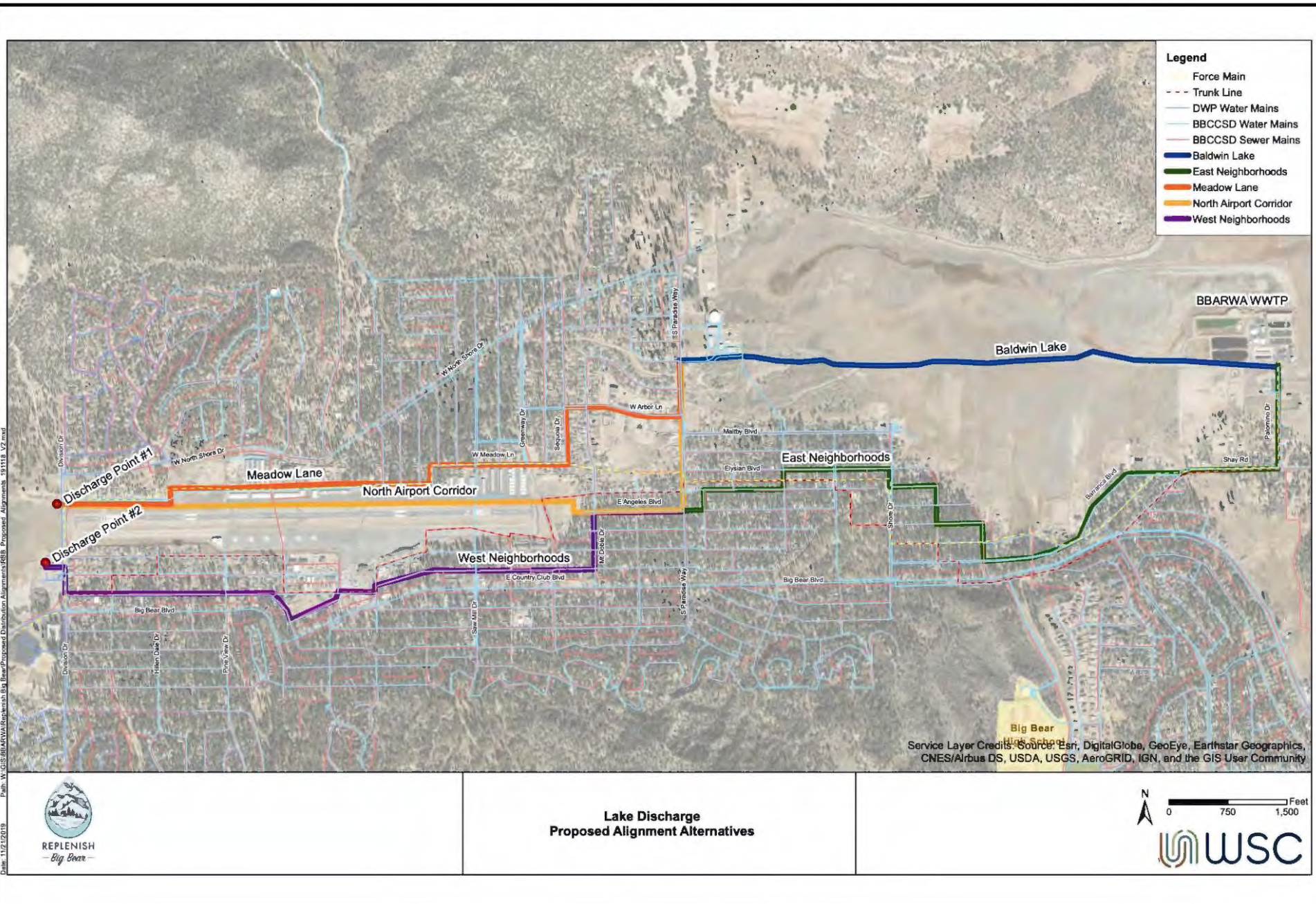


FIGURE 3-2



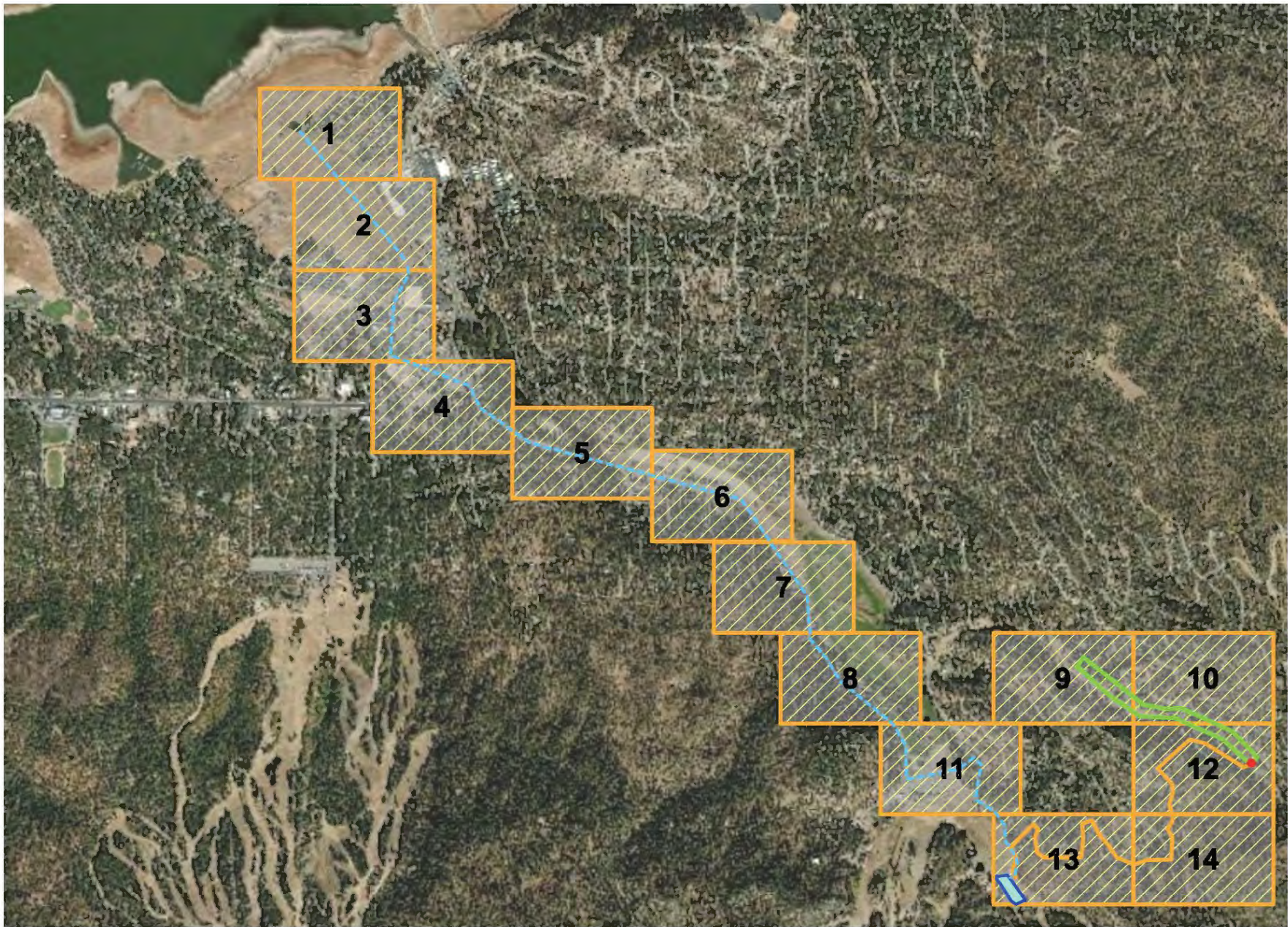


FIGURE 3-3





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-4





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-5

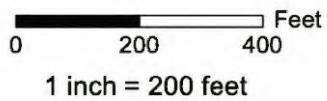
**Tom Dodson & Associates**  
Environmental Consultants

**Replenish Big Bear Program West Existing Pump Station and Pipeline Alignment**





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Replenish Big Bear



REPLENISH  
- Big Bear -



FIGURE 3-6





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-7





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet  
1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-8





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



FIGURE 3-9

**Tom Dodson & Associates**  
Environmental Consultants

**Replenish Big Bear Program West Existing Pipeline Alignment**





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-10





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGM, and the GIS User Community



0 200 400 Feet  
1 inch = 200 feet

Replenish Big Bear



FIGURE 3-11









Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet  
1 inch = 200 feet

Replenish Big Bear



FIGURE 3-13





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-14





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-15

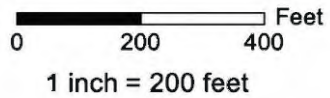
Tom Dodson & Associates  
Environmental Consultants

Replenish Big Bear Program Sand Canyon Recharge Area and  
Proposed Pipeline Alignment





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-16

**Tom Dodson & Associates**  
Environmental Consultants

**Replenish Big Bear Program West Existing and Proposed Pipeline Alignments,  
Proposed Pump Station, and Existing Bear Mountain Resort Recharge**





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



0 200 400 Feet

1 inch = 200 feet

Replenish Big Bear



REPLENISH  
— Big Bear —



FIGURE 3-17



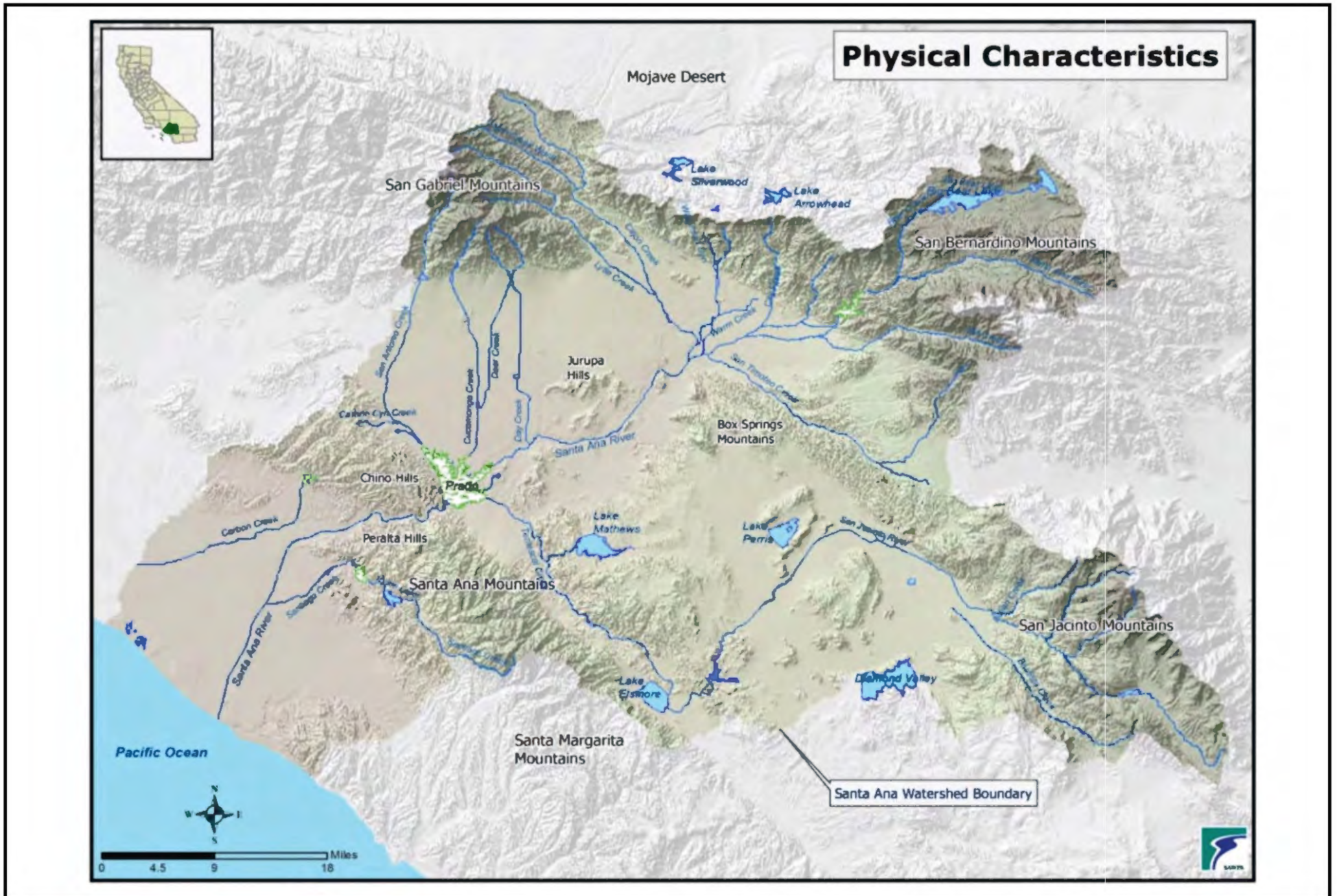


FIGURE 3-18





FIGURE 3-19





January 2022

**Bear Valley Basin  
Groundwater Sustainability Plan**



**Map Features**

- Monitoring Well
  - BBCCSD
  - BBLDWP
  - RMS Well
- ▭ Management Areas
- ▭ Bear Valley Groundwater Basin (DWR Bulletin 118, Rev. 2018)

0 0.5 1 2 Miles  
NAD 83 UTM Zone 11

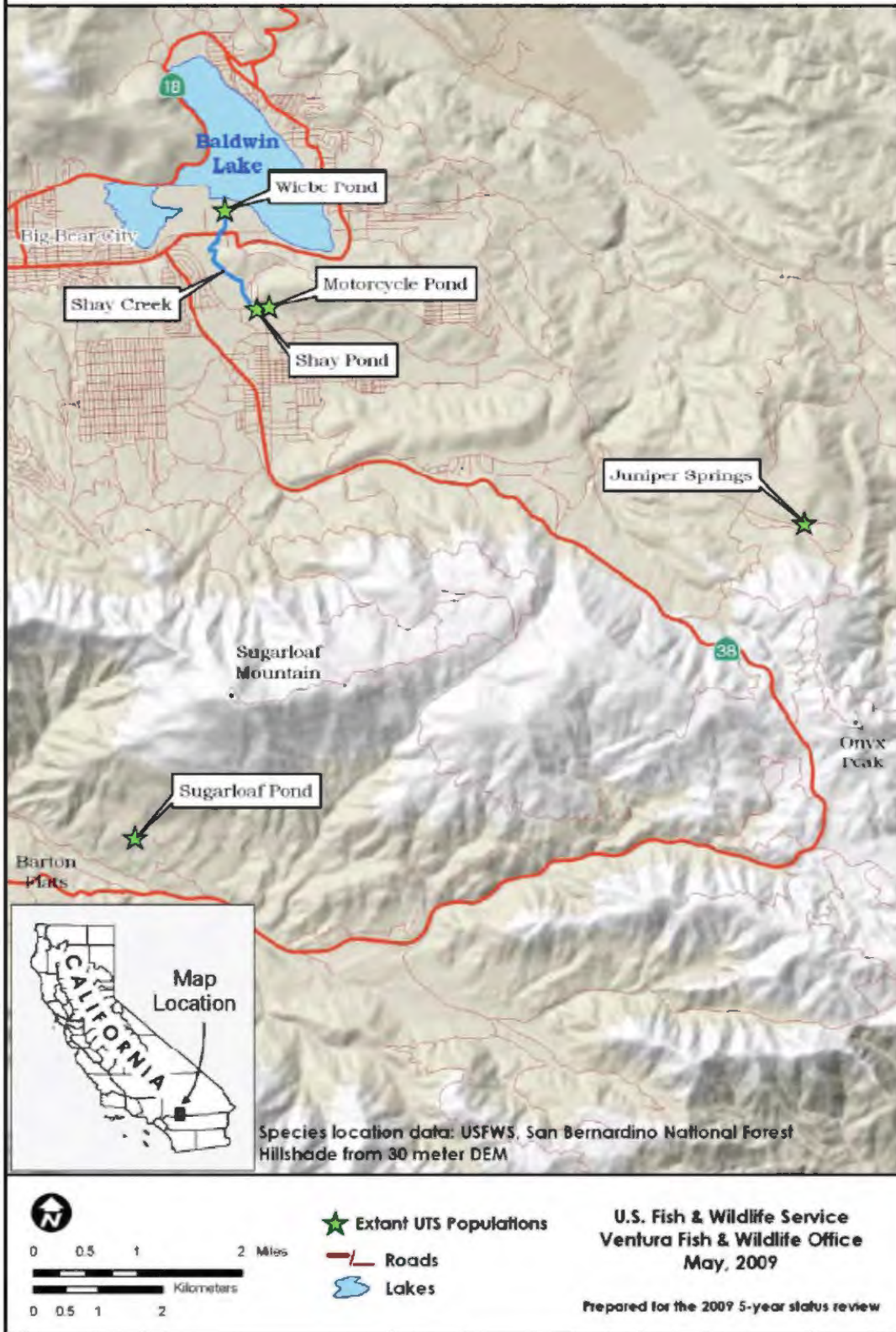
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User Community



**Bear Valley Basin  
Monitoring Network**  
Figure 2-31

FIGURE 3-20

**Figure 2. Populations of Unarmored Threespine Sticklebacks in the Vicinity of Shay Creek**



**FIGURE 3-21**



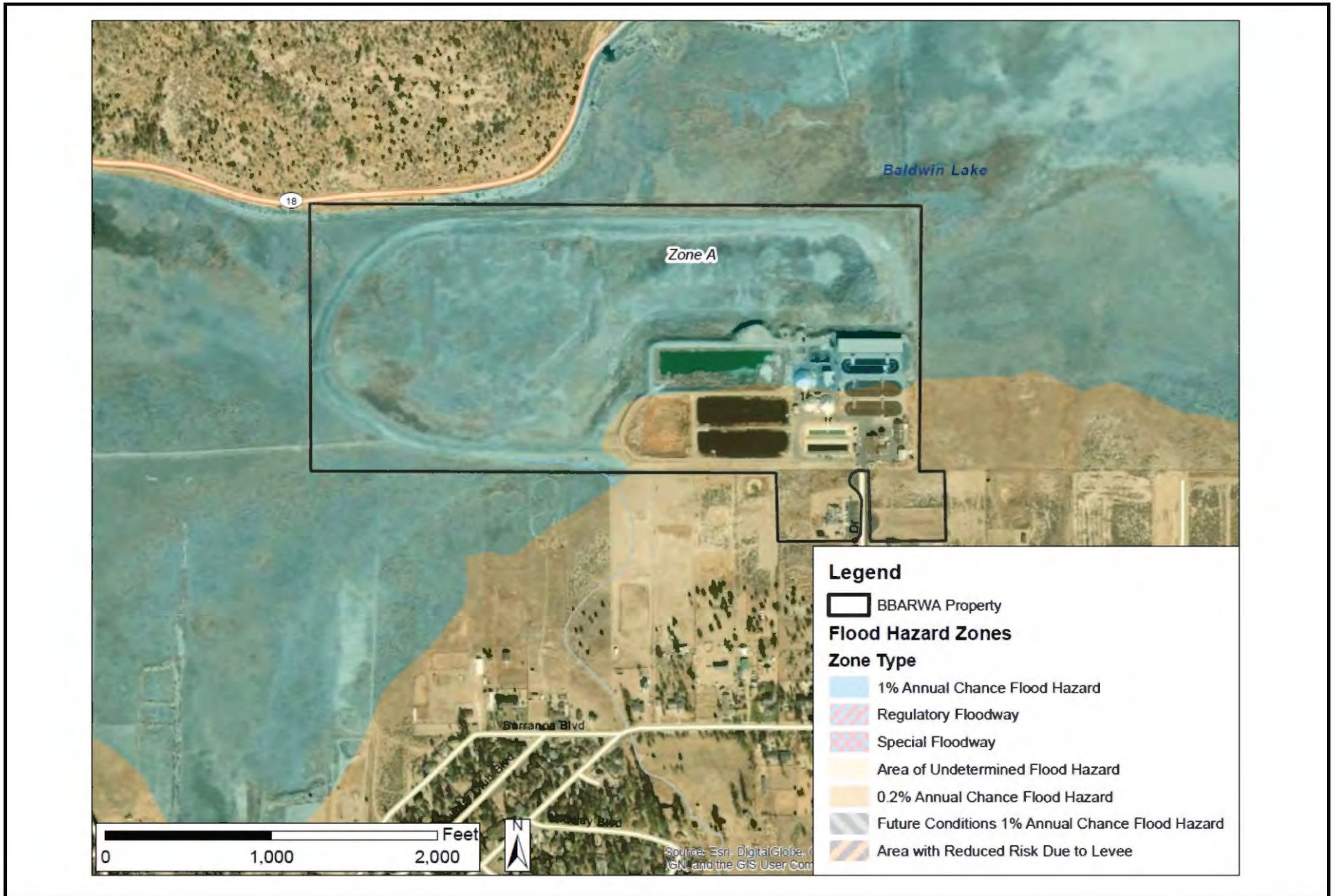


FIGURE 3-22



# Scope of Upgrades

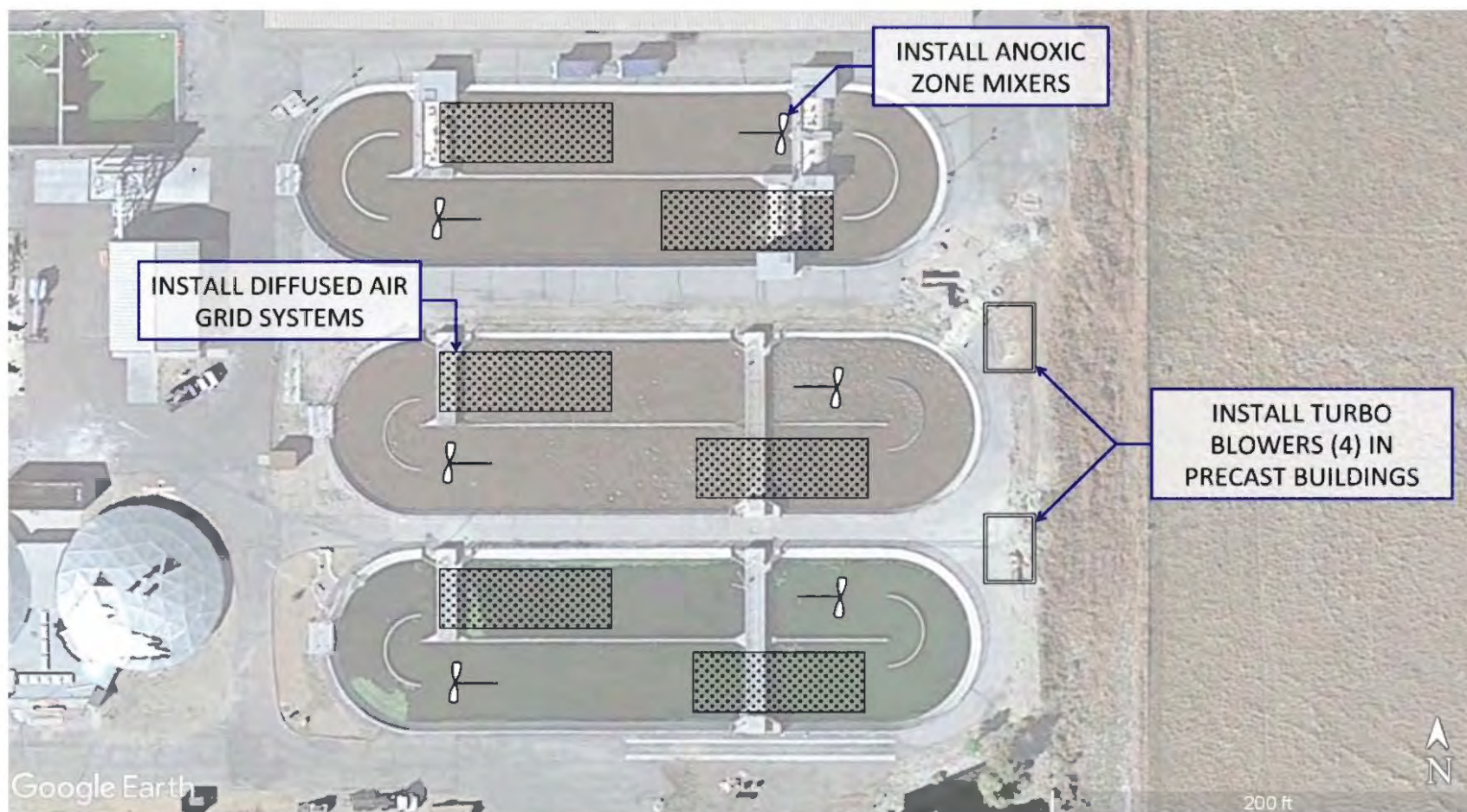


FIGURE 3-23



REPLENISH  
- Big Bear -

# Scope of Upgrades

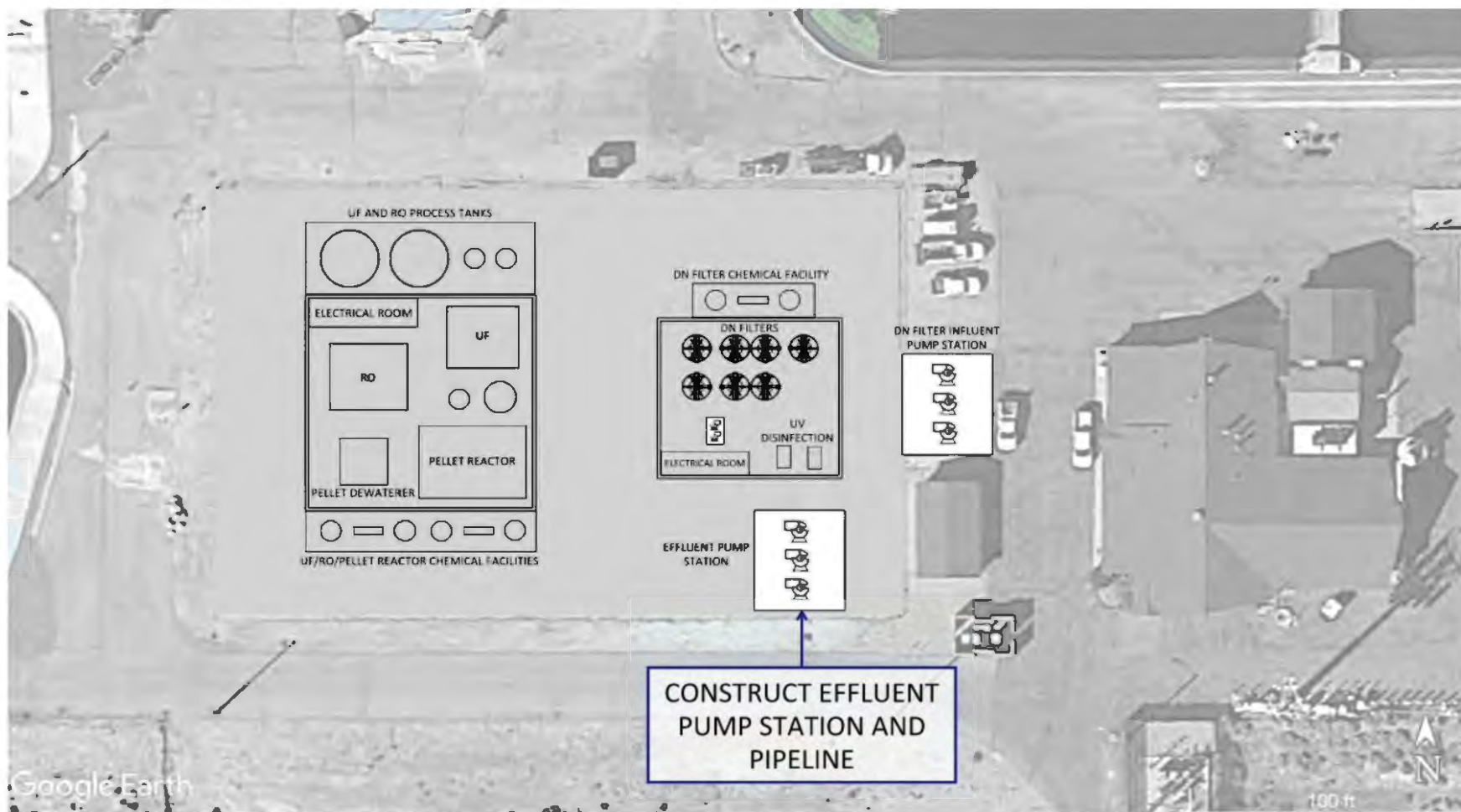


FIGURE 3-24





REPLENISH  
- Big Bear -

# Scope of Upgrades

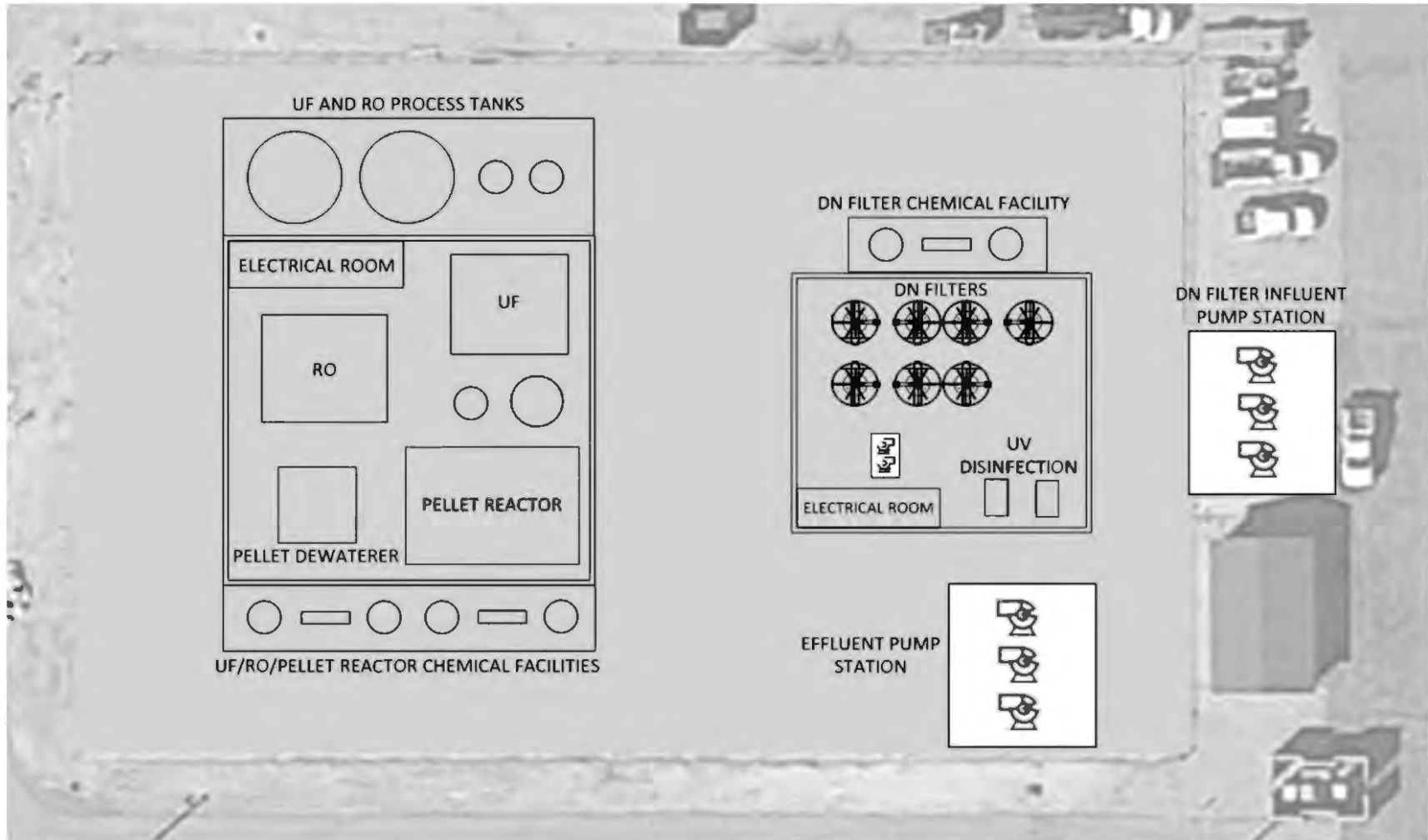


FIGURE 3-25



REPLENISH  
- Big Bear -

# Scope of Upgrades



FIGURE 3-26



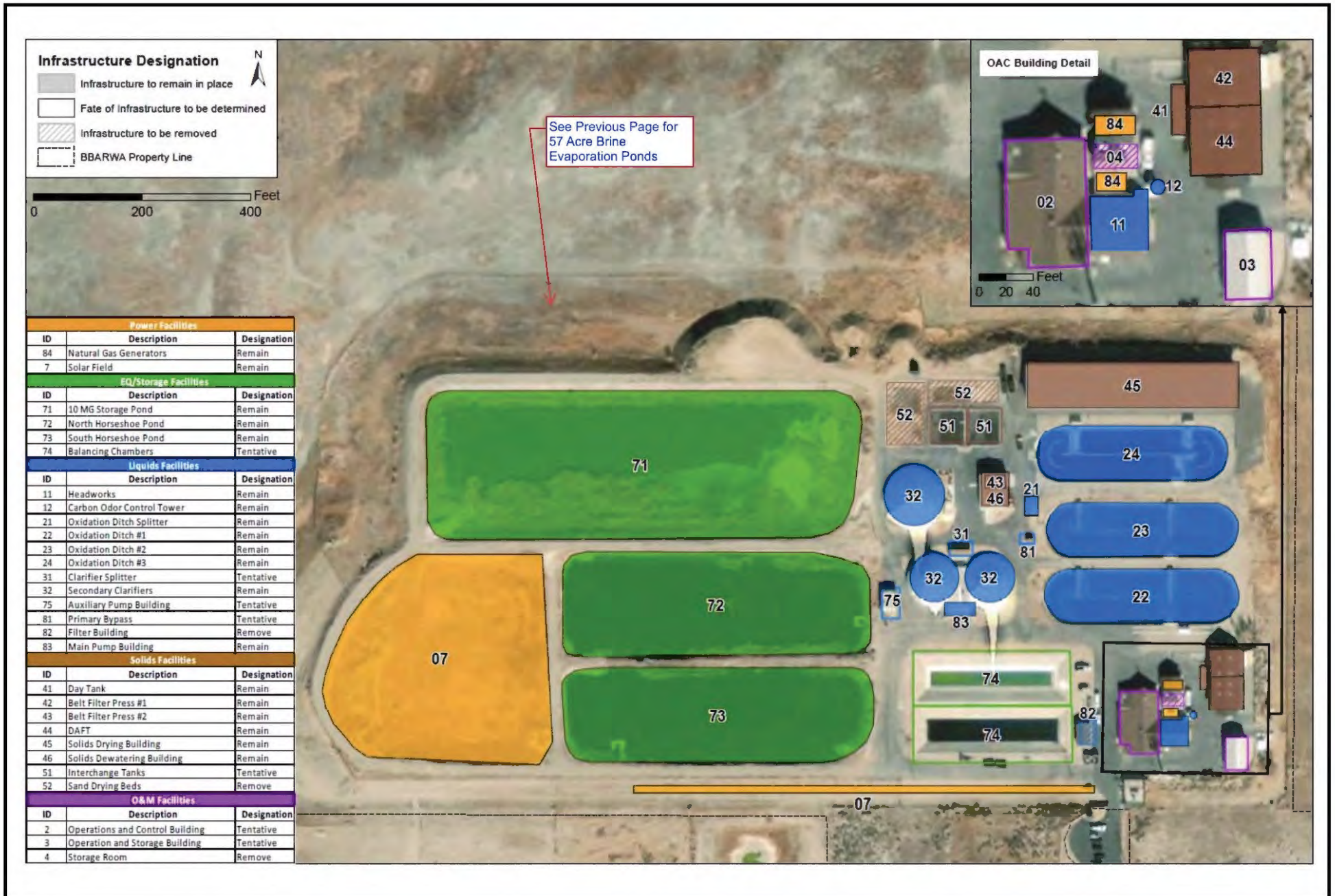


FIGURE 3-27



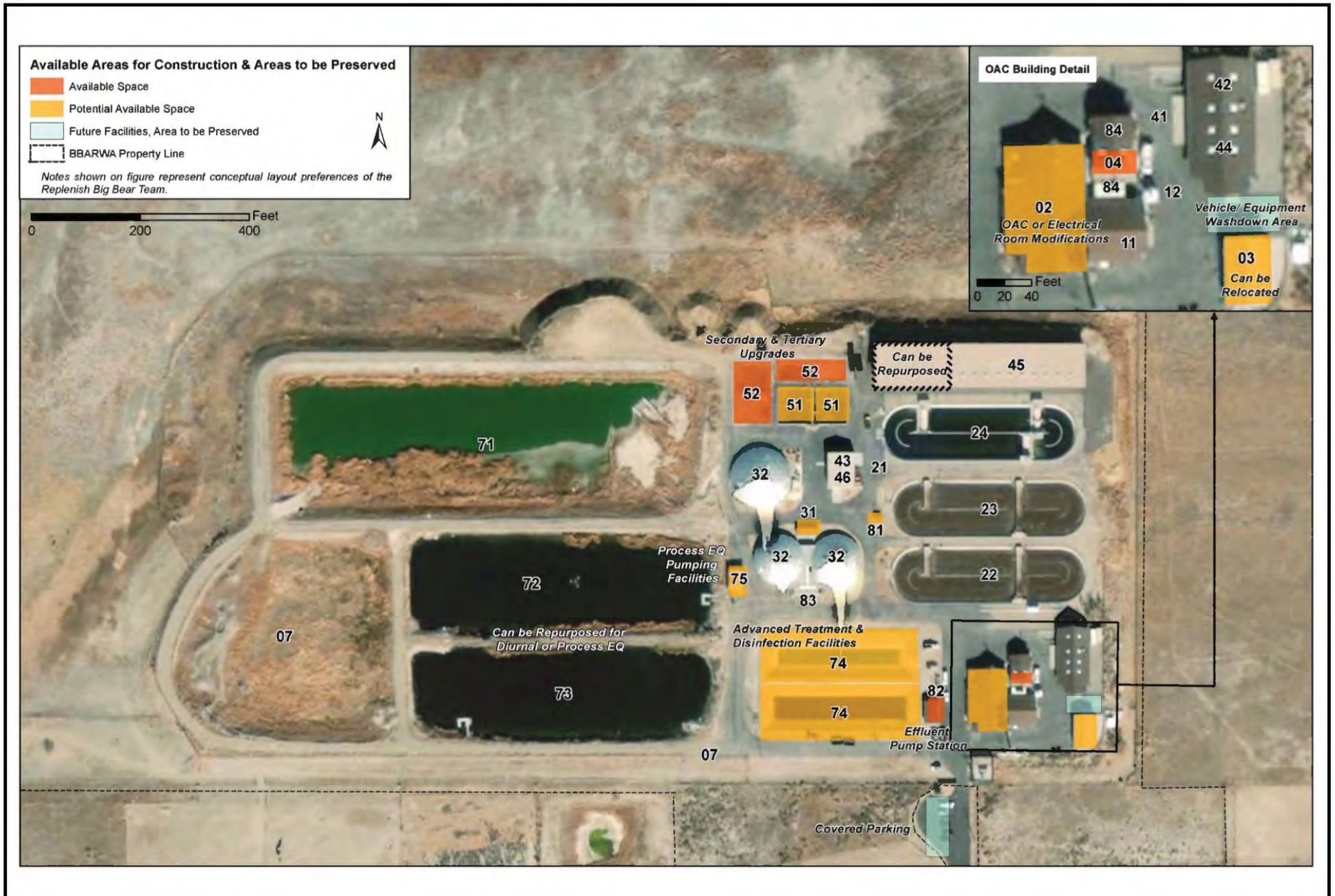


FIGURE 3-28



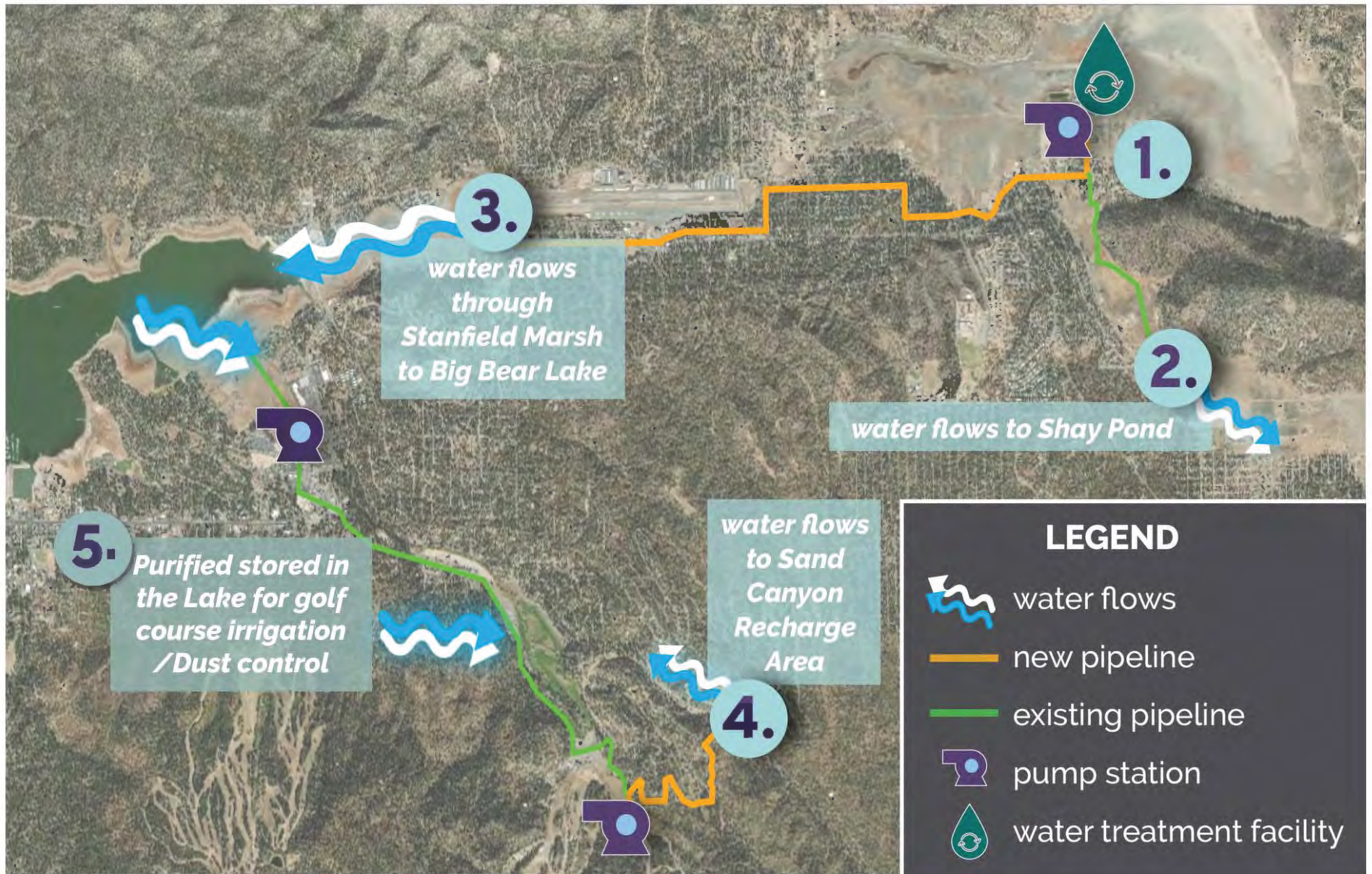


FIGURE 3-29





FIGURE 3-30



See next page

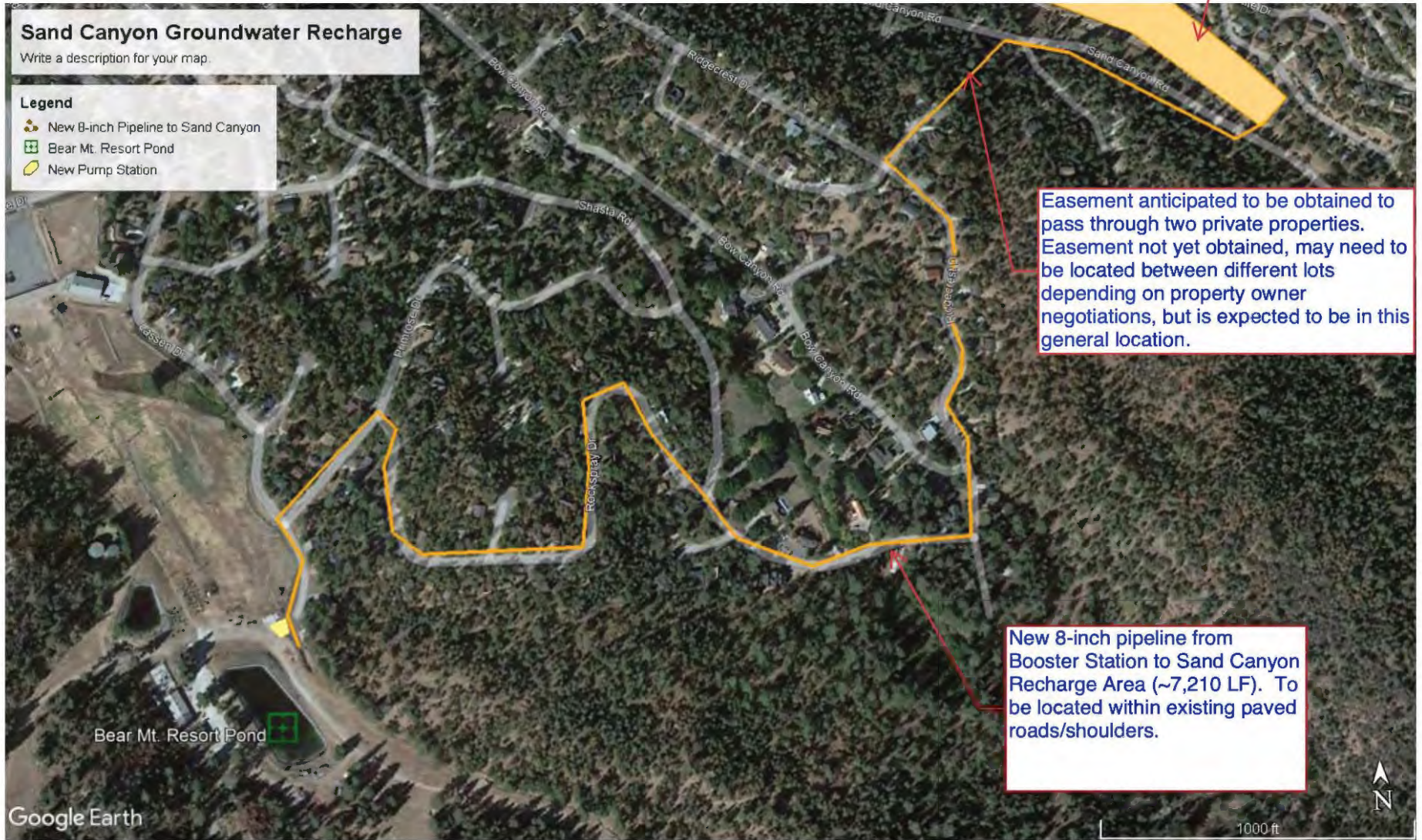
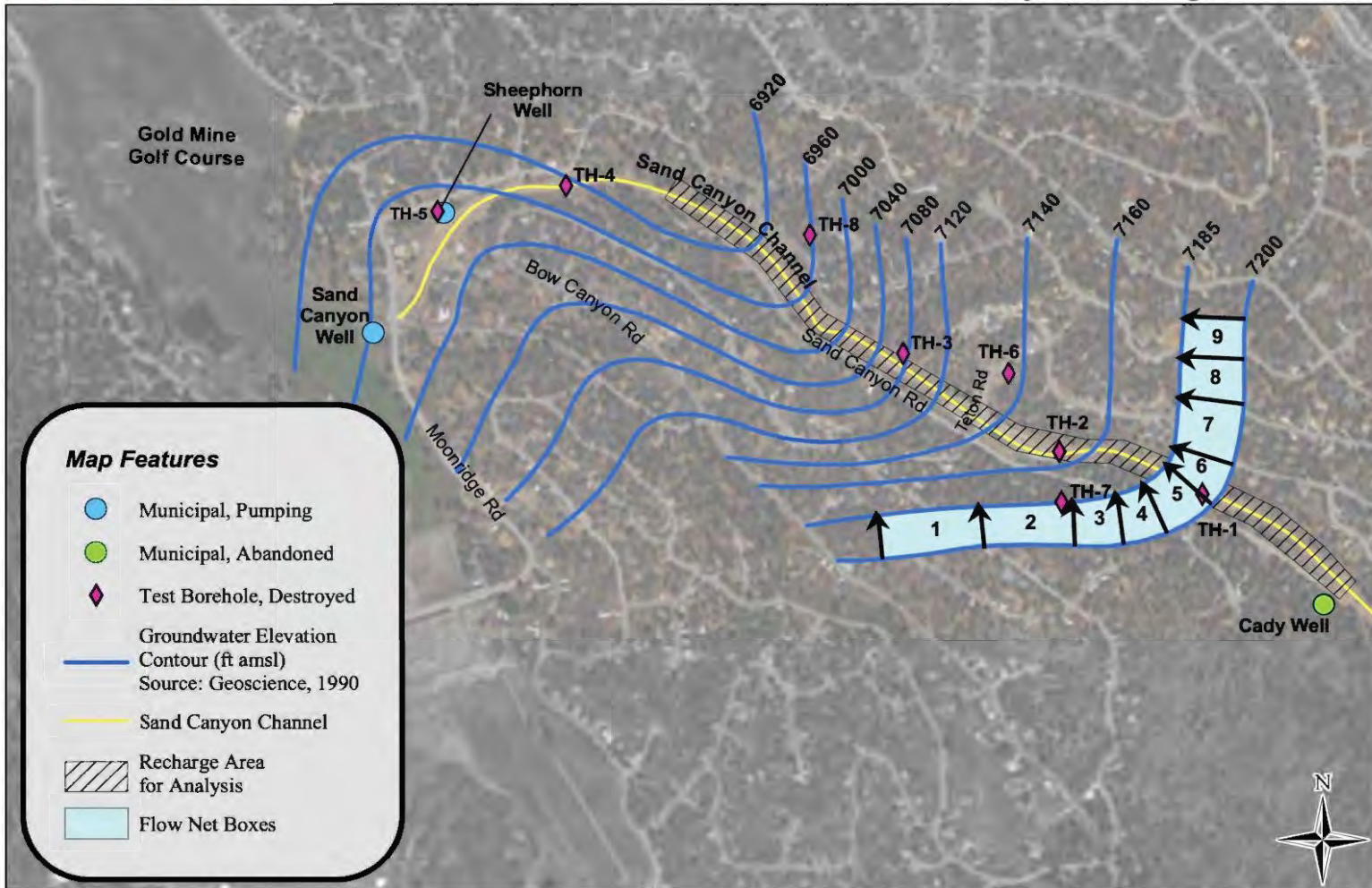


FIGURE 3-31



**Sand Canyon Recharge Evaluation**



29-Nov-17

**Thomas Harder & Co.**  
 Groundwater Consulting

0 250 500 1,000 Feet

NAD 83 UTM Zone 11

**Sand Canyon Underflow Analysis**

**Figure 3**

**FIGURE 3-32**





FIGURE 3-33





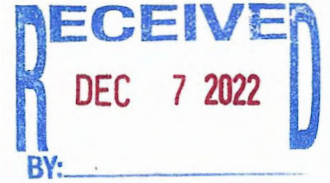


**APPENDIX 8.2**

**NOP COMMENT LETTERS, SCOPING  
MEETING COMMENTS AND RESPONSES  
TO NOP AND SCOPING MEETING COMMENTS**



## NATIVE AMERICAN HERITAGE COMMISSION



November 30, 2022

Bridgette Burton  
Big Bear Area Regional Wastewater Agency  
P.O. Box 517  
Big Bear City, CA 92314

CHAIRPERSON  
**Laura Miranda**  
Luiseño

**Re: 2022110595, Replenish Big Bear Program Project, San Bernardino County**

VICE CHAIRPERSON  
**Reginald Pagaling**  
Chumash

Dear Ms. Burton:

SECRETARY  
**Sara Dutschke**  
Miwok

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines § 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

COMMISSIONER  
**Isaac Bojorquez**  
Ohlone-Costanoan

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

COMMISSIONER  
**Buffy McQuillen**  
Yokayo Pomo, Yuki,  
Nomlaki

COMMISSIONER  
**Wayne Nelson**  
Luiseño

COMMISSIONER  
**Stanley Rodriguez**  
Kumeyaay

COMMISSIONER  
**[Vacant]**

COMMISSIONER  
**[Vacant]**

EXECUTIVE SECRETARY  
**Raymond C.  
Hitchcock**  
Miwok/Nisenan

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

**Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

**NAHC HEADQUARTERS**  
1550 Harbor Boulevard  
Suite 100  
West Sacramento,  
California 95691  
(916) 373-3710  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)  
[NAHC.ca.gov](http://NAHC.ca.gov)

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

- 1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project:** Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

  - a.** A brief description of the project.
  - b.** The lead agency contact information.
  - c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
  - d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).
  
- 2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report:** A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

  - a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).
  
- 3. Mandatory Topics of Consultation If Requested by a Tribe:** The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

  - a.** Alternatives to the project.
  - b.** Recommended mitigation measures.
  - c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).
  
- 4. Discretionary Topics of Consultation:** The following topics are discretionary topics of consultation:

  - a.** Type of environmental review necessary.
  - b.** Significance of the tribal cultural resources.
  - c.** Significance of the project's impacts on tribal cultural resources.
  - d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).
  
- 5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process:** With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).
  
- 6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document:** If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

  - a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
  - b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

- 7. Conclusion of Consultation:** Consultation with a tribe shall be considered concluded when either of the following occurs:
- a.** The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
  - b.** A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).
- 8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document:** Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).
- 9. Required Consideration of Feasible Mitigation:** If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).
- 10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:**
- a.** Avoidance and preservation of the resources in place, including, but not limited to:
    - i.** Planning and construction to avoid the resources and protect the cultural and natural context.
    - ii.** Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
  - b.** Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
    - i.** Protecting the cultural character and integrity of the resource.
    - ii.** Protecting the traditional use of the resource.
    - iii.** Protecting the confidentiality of the resource.
  - c.** Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
  - d.** Protecting the resource. (Pub. Resource Code §21084.3 (b)).
  - e.** Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
  - f.** Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).
- 11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource:** An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
- a.** The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
  - b.** The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
  - c.** The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: [http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation\\_CalEPAPDF.pdf](http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf)



## SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: [https://www.opr.ca.gov/docs/09\\_14\\_05\\_Updated\\_Guidelines\\_922.pdf](https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf).

Some of SB 18's provisions include:

1. **Tribal Consultation:** If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. **No Statutory Time Limit on SB 18 Tribal Consultation.** There is no statutory time limit on SB 18 tribal consultation.
3. **Confidentiality:** Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. **Conclusion of SB 18 Tribal Consultation:** Consultation should be concluded at the point in which:
  - a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
  - b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: <http://nahc.ca.gov/resources/forms/>.

## NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center ([https://ohp.parks.ca.gov/?page\\_id=30331](https://ohp.parks.ca.gov/?page_id=30331)) for an archaeological records search. The records search will determine:
  - a. If part or all of the APE has been previously surveyed for cultural resources.
  - b. If any known cultural resources have already been recorded on or adjacent to the APE.
  - c. If the probability is low, moderate, or high that cultural resources are located in the APE.
  - d. If a survey is required to determine whether previously unrecorded cultural resources are present.
2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
  - b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
  - a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
  - b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.
  
4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
  - a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
  - b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
  - c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subs. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address:  
[Cameron.Vela@nahc.ca.gov](mailto:Cameron.Vela@nahc.ca.gov).

Sincerely,

*Cameron Vela*

Cameron Vela  
Cultural Resources Analyst

cc: State Clearinghouse



**From:** [Amie](#)  
**To:** [Bridgette Burton](#)  
**Subject:** NOP Replenish Big Bear  
**Date:** Wednesday, November 30, 2022 9:21:43 AM

---

I support the Replenish Big Bear project and feel it's a necessity for the economic survival of the Bear Valley, and for Big Bear Lake itself.

Thank you  
Amie Kinne  
818 Conklin Rd  
Big Bear Lake, CA 92315

[Sent from the all new AOL app for Android](#)

**From:** [Fred Mooneyham](#)  
**To:** [Bridgette Burton](#)  
**Subject:** [BULK] Comments  
**Date:** Wednesday, November 30, 2022 6:49:25 PM  
**Importance:** Low

---

As a local resident, it is nice to see this finally moving ahead. I am surprised that anyone could be in opposition to this, and just wish this could have been done years ago.

It's a shame that the process cant be moved up to get this completed sooner. Please thank everyone involved for driving this project forward as I am sure it can be a frustrating endeavor.

Regards,

Fred Mooneyham



Virus-free [www.avast.com](http://www.avast.com)

12/5/2022 Wing Jewelers via Instagram

With the recycled water, I have heard studies (and please correct me if I'm wrong) that pharmaceuticals cannot be completely filtered out of the water and are still present at testable levels in the water. What effect will this have on wildlife, including fish in the lake that people catch and eat? This is the topic I would find most interesting and concerning if these studies are in fact true. Thanks so much!

**From:** [bigbearcooker@aol.com](mailto:bigbearcooker@aol.com)  
**To:** [Bridgette Burton](#)  
**Date:** Friday, December 16, 2022 2:13:17 PM

---

I am a retired Health Care V.P. with 35 years part time and 23 years full time resident in the Big Bear Valley.

I fully support the water replenish program. Please expedite its replenishment.

Richard Wright  
870 Alpenweg Dr.  
Big Bear Lake, CA 92315  
909 584-8976

I



SOUTHERN CALIFORNIA  
ASSOCIATION OF GOVERNMENTS  
900 Wilshire Blvd., Ste. 1700  
Los Angeles, CA 90017  
T: (213) 236-1800  
www.scag.ca.gov

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Frank Yokoyama, Cerritos

Energy & Environment  
Deborah Robertson, Rialto

Transportation  
Ray Marquez, Chino Hills

January 11, 2023

Bridgette Burton, Management Analyst  
Big Bear Area Regional Wastewater Agency  
121 Palomino Drive P.O. Box 517  
Big Bear City, California 92314  
Phone: (909) 584-4524  
E-mail: [bburton@bbarwa.org](mailto:bburton@bbarwa.org)

**RE: SCAG Comments on the Notice of Preparation of a Draft Environmental Impact Report for the Replenish Big Bear Program [SCAG NO. IGR10795]**

Dear Bridgette Burton,

Thank you for submitting the Notice of Preparation of a Draft Environmental Impact Report for the Replenish Big Bear Program (“proposed project”) to the Southern California Association of Governments (SCAG) for review and comment. SCAG is responsible for providing informational resources to regionally significant plans, projects, and programs per the California Environmental Quality Act (CEQA) to facilitate the consistency of these projects with SCAG’s adopted regional plans, to be determined by the lead agencies.<sup>1</sup>

Pursuant to Senate Bill (SB) 375, SCAG is the designated Regional Transportation Planning Agency under state law and is responsible for preparation of the Regional Transportation Plan (RTP) including the Sustainable Communities Strategy (SCS). SCAG’s feedback is intended to assist local jurisdictions and project proponents to implement projects that have the potential to contribute to attainment of Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) goals and align with RTP/SCS policies. Finally, SCAG is the authorized regional agency for Intergovernmental Review (IGR) of programs proposed for Federal financial assistance and direct Federal development activities, pursuant to Presidential Executive Order 12372.

SCAG staff has reviewed the Notice of Preparation of a Draft Environmental Impact Report for the Replenish Big Bear Program in San Bernardino County. The proposed project includes the construction of full advanced treatment facility upgrades at the existing Big Bear Area Regional Wastewater Agency wastewater treatment plant, more than 7 miles of pipeline for product water and RO brine minimization, three pump stations, a groundwater recharge facility, and up to four monitoring wells. The program is estimated to produce up to 2,210 acre-feet per year of high-quality purified water.

**When available, please email environmental documentation to [IGR@scag.ca.gov](mailto:IGR@scag.ca.gov) providing, at a minimum, the full public comment period for review.**

If you have any questions regarding the attached comments, please contact the Intergovernmental Review (IGR) Program, attn.: Annaleigh Ekman, Associate Regional Planner, at (213) 630-1427 or [IGR@scag.ca.gov](mailto:IGR@scag.ca.gov). Thank you.

Sincerely,

Frank Wen, Ph.D.  
Manager, Planning Strategy Department

<sup>1</sup> Lead agencies such as local jurisdictions have the sole discretion in determining a local project’s consistency with the 2020 RTP/SCS (Connect SoCal) for the purpose of determining consistency for CEQA.

**COMMENTS ON THE NOTICE OF PREPARATION OF A  
DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE  
REPLENISH BIG BEAR PROGRAM [SCAG NO. IGR10795]**

**CONSISTENCY WITH CONNECT SOCIAL**

SCAG provides informational resources to facilitate the consistency of the proposed project with the adopted 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS or Connect SoCal). For the purpose of determining consistency with CEQA, lead agencies such as local jurisdictions have the sole discretion in determining a local project’s consistency with Connect SoCal.

**CONNECT SOCIAL GOALS**

The SCAG Regional Council fully adopted [Connect SoCal](#) in September 2020. Connect SoCal, also known as the 2020 – 2045 RTP/SCS, builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. The long-range visioning plan balances future mobility and housing needs with goals for the environment, the regional economy, social equity and environmental justice, and public health. The goals included in Connect SoCal may be pertinent to the proposed project. These goals are meant to provide guidance for considering the proposed project. Among the relevant goals of Connect SoCal are the following:

SCAG CONNECT SOCIAL GOALS	
Goal #1:	<i>Encourage regional economic prosperity and global competitiveness</i>
Goal #2:	<i>Improve mobility, accessibility, reliability and travel safety for people and goods</i>
Goal #3:	<i>Enhance the preservation, security, and resilience of the regional transportation system</i>
Goal #4:	<i>Increase person and goods movement and travel choices within the transportation system</i>
Goal #5:	<i>Reduce greenhouse gas emissions and improve air quality</i>
Goal #6:	<i>Support healthy and equitable communities</i>
Goal #7:	<i>Adapt to a changing climate and support an integrated regional development pattern and transportation network</i>
Goal #8:	<i>Leverage new transportation technologies and data-driven solutions that result in more efficient travel</i>
Goal #9:	<i>Encourage development of diverse housing types in areas that are supported by multiple transportation options</i>
Goal #10:	<i>Promote conservation of natural and agricultural lands and restoration of habitats</i>

For ease of review, we encourage the use of a side-by-side comparison of SCAG goals with discussions of the consistency, non-consistency or non-applicability of the goals and supportive analysis in a table format. Suggested format is as follows:



SCAG CONNECT SOCIAL GOALS	
Goal	Analysis
Goal #1: <i>Encourage regional economic prosperity and global competitiveness</i>	<i>Consistent: Statement as to why;                      Not-Consistent: Statement as to why;                      Or                      Not Applicable: Statement as to why;                      DEIR page number reference</i>
Goal #2: <i>Improve mobility, accessibility, reliability and travel safety for people and goods</i>	<i>Consistent: Statement as to why;                      Not-Consistent: Statement as to why;                      Or                      Not Applicable: Statement as to why;                      DEIR page number reference</i>
etc.	etc.

**Connect SoCal Strategies**

To achieve the goals of Connect SoCal, a wide range of land use and transportation strategies are included in the accompanying twenty (20) technical reports. Of particular note are multiple strategies included in Chapter 3 of Connect SoCal intended to support implementation of the regional Sustainable Communities Strategy (SCS) framed within the context of focusing growth near destinations and mobility options; promoting diverse housing choices; leveraging technology innovations; supporting implementation of sustainability policies; and promoting a Green Region. To view Connect SoCal and the accompanying technical reports, please visit the [Connect SoCal webpage](#). Connect SoCal builds upon the progress from previous RTP/SCS cycles and continues to focus on integrated, coordinated, and balanced planning for land use and transportation that helps the SCAG region strive towards a more sustainable region, while meeting statutory requirements pertinent to RTP/SCSs. These strategies within the regional context are provided as guidance for lead agencies such as local jurisdictions when the proposed project is under consideration.

SCAG staff would like to call your attention to the [Water Action Resolution](#) unanimously adopted by SCAG’s Regional Council on October 6, 2022 that formally affirmed the drought and water shortage emergency in Southern California and called on local and regional partners to join together to adopt an “all of the above” approach to addressing the region’s water challenges and catalyzing opportunities. The Resolution calls on SCAG to take action and support partners to reduce water use; improve water conservation, reuse, and efficiency; enhance water systems’ health and resilience; pursue and potentially implement new water supply and storage opportunities; and support investments in water infrastructure and conservation practices that support the region’s economic and population growth and fosters planning for the region’s housing needs.

**DEMOGRAPHICS AND GROWTH FORECASTS**

A key, formative step in projecting future population, households, and employment through 2045 for Connect SoCal was the generation of a forecast of regional and county level growth in collaboration with expert demographers and economists on Southern California. From there, jurisdictional level forecasts were ground-truthed by subregions and local agencies, which helped SCAG identify opportunities and barriers to future development. This forecast helps the region understand, in a very general sense, where we are expected to grow, and allows SCAG to focus attention on areas that are experiencing change and may have increased transportation needs. After a year-long engagement effort with all 197 jurisdictions one-on-one, 82 percent of SCAG’s 197 jurisdictions provided feedback on the forecast of future growth for Connect SoCal. SCAG also sought feedback on potential sustainable growth strategies from a broad range of stakeholder groups – including local jurisdictions, county transportation commissions, other partner agencies, industry groups, community-based organizations, and the general public. Connect SoCal utilizes a bottom-up approach in that total projected growth for each jurisdiction reflects feedback received from jurisdiction staff, including city managers, community development/planning directors, and local staff. Growth at the neighborhood

level (i.e., transportation analysis zone (TAZ) reflects entitled projects and adheres to current general and specific plan maximum densities as conveyed by jurisdictions (except in cases where entitled projects and development agreements exceed these capacities as calculated by SCAG). Neighborhood level growth projections also feature strategies that help to reduce greenhouse gas emissions (GHG) from automobiles and light trucks to achieve Southern California’s GHG reduction target, approved by the California Air Resources Board (CARB) in accordance with state planning law. Connect SoCal’s Forecasted Development Pattern is utilized for long range modeling purposes and does not supersede actions taken by elected bodies on future development, including entitlements and development agreements. SCAG does not have the authority to implement the plan -- neither through decisions about what type of development is built where, nor what transportation projects are ultimately built, as Connect SoCal is adopted at the jurisdictional level. Achieving a sustained regional outcome depends upon informed and intentional local action. To access jurisdictional level growth estimates and forecasts for years 2016 and 2045, please refer to the [Connect SoCal Demographics and Growth Forecast Technical Report](#). The growth forecasts for the region and applicable jurisdictions are below.

	Adopted SCAG Region Wide Forecasts				Adopted City of Big Bear Lake Forecasts			
	Year 2020	Year 2030	Year 2035	Year 2045	Year 2020	Year 2030	Year 2035	Year 2045
Population	19,517,731	20,821,171	21,443,006	22,503,899	5,157	5,722	6,004	6,569
Households	6,333,458	6,902,821	7,170,110	7,633,451	2,194	2,442	2,565	2,813
Employment	8,695,427	9,303,627	9,566,384	10,048,822	4,833	5,207	5,394	5,768

**MITIGATION MEASURES**

SCAG staff recommends that you review the [Final Program Environmental Impact Report](#) (Final PEIR) for Connect SoCal for guidance, as appropriate. SCAG’s Regional Council certified the PEIR and adopted the associated Findings of Fact and a Statement of Overriding Considerations (FOF/SOC) and Mitigation Monitoring and Reporting Program (MMRP) on May 7, 2020 and also adopted a PEIR Addendum and amended the MMRP on September 3, 2020 (please see the [PEIR webpage](#) and scroll to the bottom of the page for the PEIR Addendum). The PEIR includes a list of project-level performance standards-based mitigation measures that may be considered for adoption and implementation by lead, responsible, or trustee agencies in the region, as applicable and feasible. Project-level mitigation measures are within responsibility, authority, and/or jurisdiction of project-implementing agency or other public agency serving as lead agency under CEQA in subsequent project- and site- specific design, CEQA review, and decision-making processes, to meet the performance standards for each of the CEQA resource categories.

**From:** [Paul Mariscal](#)  
**To:** [Bridgette Burton](#)  
**Subject:** City of Redlands - Big Bear Replenish Program Comments  
**Date:** Wednesday, January 11, 2023 12:19:56 PM  
**Attachments:** [Big Bear Replenish Program Notification.pdf](#)

---

Hello Bridgette,

Per the attached notification.

Please note the following comments regarding the BBARWA NOP.

1. The City of Redlands owns and operates (2) two surface water treatment plants that utilizes source water from Big Bear lake to serve drinking water to its customers. As such, the City is requesting to be included in all notifications of spills, releases or exceedances related to the BBARWA operation.
2. The City of Redlands will request BBARWA operations data regarding the impact of source water quality. The data requests will be used for source water regulatory reporting purposes.

Thank you,



**Paul Mariscal**

**City of Redlands**

Water Operations & Maintenance Superintendent

955 Parkford Dr.

Redlands, Ca. 92374

Office : (909) 798-7502 ext.4657

Cell : (909) 231-7355

[pmariscal@cityofredlands.org](mailto:pmariscal@cityofredlands.org)

This message contains confidential information and is intended only for the individual(s) addressed in the message. If you are not the named addressee, you should not disseminate, distribute, or copy this e-mail. If you are not the intended recipient, you are notified that disclosing, distributing, or copying this e-mail is strictly prohibited.

**From:** Chuck Bell chuckb193@outlook.com  
**Subject:** Replenish Big Bear  
**Date:** January 16, 2023 at 10:36 AM  
**To:** bburton@bbarwa.org



(Please acknowledge receipt. Thanks)

To: Bridgette Burton Email: [bburton@bbarwa.org](mailto:bburton@bbarwa.org)  
Big Bear Area Regional Wastewater Agency  
(BBARWA)

From: Chuck Bell, Pres. 760 964 3118  
[chuckb193@outlook.com](mailto:chuckb193@outlook.com)  
Lucerne Valley Economic Development  
Association (LVEDA)  
P. O. Box 193  
Lucerne Valley, CA 92356

Date: 1/15/23

**RE: NOP – EIR - REPLENISH BIG BEAR**

We understand the need for the project. We request that the following analysis be included in the EIR:

-  
Lucerne Valley groundwater is over-drafted and adjudicated within the Mojave River Basin “Judgment”. Our average inflow/recharge to groundwater – considered to be “Physical Safe Yield” (PSY) - includes BBARWA’s effluent at the fields and its recharge basin since their inception - in addition to our natural recharge from precipitation.

The current Watermaster Judge is ‘ramping down’ (decreasing) our water rights at 5%/year – with the objective that our usable water rights – and our ultimate water pumping (“production”) amounts - must be equivalent to our PSY. Based on Watermaster’s calculations – (at least on paper) - BBARWA’s wastewater could account for about one-half of our inflow/PSY.

### DETERMINE ACTUAL AMOUNT OF RECHARGE TO THE LUCERNE VALLEY BASIN:

The EIR (along with Watermaster estimates) should at least try to quantify the typical, annual amount of actual recharge into the LV aquifer from BBARWA effluent (vs.) what has been evapo-transpired into the atmosphere from spray irrigation from inefficient wheel lines (especially with our typical dry winds) – plus what water was “exported” out that was used to grow hay. And how much wastewater went directly to the recharge basin which might have percolated at least to the upper aquifer. Mojave Water Agency’s (MWA) and USGS’ hydrology and water quality reports for the Lucerne Basin show likely groundwater movements – some look to be affected by clay lenses – plus some high nitrate patterns.

If the inflow to our basin from BBARWA is measured at (ie:) 2,300+/- acre’/year - how much actually reached groundwater? Most likely a fraction of it – very likely less than half?

less than that .

That could make a difference on how the Watermaster calculates BBARWA withdrawal's effect on our PSY/inflow. That's a major determining factor on how far the Court will go in ramping down our water rights to match our PSY. With the reduced recharge/PSY to our basin from BBARWA – the more water rights and pumping allowances we lose, and the less water for the community.

This isn't just an issue for the Watermaster. The EIR should inform us of how much 'real' water we are to lose.

## FIELD STABILIZATION/RESTORATION

-  
*“BBARWA is also seeking to maintain its current discharge location in Lucerne Valley”.* Assuming this is a back-up option – likely seldom if at all utilized when the “Replenish” project is completed: How will BBARWA stabilize and restore ALL its fields so dirt doesn't blow off onto residences, etc.? How will it eliminate tumbleweed and other weed growth? For any form of semi successful restoration – BBARWA will need to provide some irrigation for germinating either native desert plants for more permanent cover - and for deep rooted forage for at least temporary stubble and stabilization to get natives started. Spreading gravel over the entire acreage could be a long-term method for reducing erosion blow-off – but it's expensive and



weeds would grow through it depending on precipitation amounts.

BBARWA can work with the Mojave Desert Resource Conservation District (MDRCD) and USDA's Natural Resource Conservation Service (NRCS) for soil stabilization/restoration options – albeit difficult to implement since once desert ground is disturbed – it won't recover without a lot of effort, time and money.

Currently – reduced wastewater flow has resulted in a significant reduction in farmed acreage – allowing erosion and weeds – both difficult for a farmer to control. One way to keep farming the site would be for BBARWA to help a farmer purchase unused water rights from adjudicated parties in Lucerne Valley (assuming any are for sale) – drill an agricultural well – lease it out for continued farming. But again – wouldn't be long before the dry up of water rights would dilute this option.

## NITRATES

- Will the Colorado Basin WQCB require BBARWA to remediate high nitrate-laden groundwater (if found to be from wastewater percolation) at least in our upper aquifer? MWA is planning a recharge basin in Lucerne Valley for State Project Water and is trying to determine the best location so as not to mingle discharge into groundwater with high nitrates.

## ECONOMICS

We're not just losing a water supply – but also the economic benefit of the 480 acre farm – its production – local employment to lease/operate it – hay for public purchase - etc.

**Bottom Line: BBARWA's gain is our loss. These are environmental impacts that have to be divulged and mitigated.**

This potential impact to Lucerne Valley – where we have accommodated Big Bear's wastewater since 1980 - is important for the EIR's analysis. Plus CEQA requires environmental review of impacts beyond a project's immediate boundaries and parameters.



January 16, 2023

Via email @ [bburton@bbarwa.org](mailto:bburton@bbarwa.org)

Bridget Burton, Management Analyst  
Big Bear Area Regional Wastewater Agency  
P.O. Box 517  
121 Palomino Drive  
Big Bear City, CA 92314

Re: Replenish Big Bear Program--Notice of Preparation of draft EIR, SCH 2022110595

Dear Ms. Burton:

The Replenish Big Bear Program (Program) is intended to capture and reuse up to 2,250 acre-feet/year to maintain water levels in Big Bear Lake and other reuse projects. This project will significantly reduce the waste flow to BBARWA's current Lucerne Valley disposal area.

Lucerne Valley is part of the Mojave Basin Area within the Mojave Water Agency and subject to the continuing jurisdiction of the Riverside County Superior Court pursuant to the adjudication of water resources in the case *City of Barstow, et al. v. City of Adelanto et al.* Pumping and use of water supplies are subject to the Riverside Superior Court. The Lucerne Valley area has received the waste since about 1980. The waste is a significant part of the total water supply for this area and any reduction will impact an already severely over drafted groundwater basin.

The Program's project EIR should evaluate any impacts associated with the reduction in flow to Lucerne Valley as well as identify and evaluate water quality impacts from the waste to the Lucerne Valley area for the past 42 years.

Further, we note that there is a desert wash about one mile north to the Lucerne Valley site that carries surface waters when rainfall is abundant. The recharge from the Lucerne Valley site may contribute in the subsurface to waters supporting flow in the wash and potentially desert habitats. Consequently, a Wastewater Change Petition approval may be required from the SWRCB for this Program.

The Mojave Water Agency looks forward to resolving issues regarding the Replenish Program that affect the Mojave Basin Area.

Please continue to maintain MWA on your list for notification on the upcoming draft EIR. If you have any questions, please feel free to contact me or Valerie Wiegenstein at 760-946-7000.

Sincerely,

A handwritten signature in blue ink that reads "Allison Febbo".

Allison Febbo  
General Manager

cc: William J. Brunick  
Valerie Wiegenstein

**From:** [Michael Meyer](#)  
**To:** [Bridgette Burton](#)  
**Subject:** Replenish BB Notice of Preparation Comments  
**Date:** Tuesday, January 17, 2023 2:21:11 PM

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Please accept the following comments to your proposed Replenish Big Bear Notice of Preparation documents:

- 1). Concern regarding possible groundwater contamination at the proposed brine settlement ponds at BBARWA treatment plant. Ponds should be lined and monitored for leaks. Need to identify if issue and possible mitigation measures.
- 2). Concern regarding disposal of brine from settlement ponds. Need to identify whether disposed off site, off hill, and where.
- 3). Concern regarding possible odor emitted from brine settlement ponds. Need to identify if issue and possible mitigation measures.
- 4). Concern regarding waterfowl at brine settlement ponds. Identify if issue and possible mitigation measures.
- 5). Concern regarding monitoring of treated water before discharge into transmission pipelines to Shay pond and Baker pond. Water quality Monitoring should be continuous and ability to shut down flow instantaneous (and possibly automated.) Identify alarms and points of automation. Verify failsafes and responsibilities at all hours of day.
- 6). Concern regarding energy consumption on existing electrical grid at proposed treatment facility at different operational stages. Some of the processes proposed are very energy intensive and should be discussed with electrical utilities company to identify additional strain on their grid. Also to reduce carbon footprint and work towards a “net zero” environmentally friendly project consider renewable energy sources, such as solar, and grants as funding sources.
- 7). Concern regarding water quality from treatment plant and compliance with proposed permit into Baker Pond from the water quality board. Seems difficult to design water quality parameters without having permit conditions. Will project scope change based on actual permit conditions?
- 8). Concern regarding treated water in Baker pond and possible flow into Big Bear Lake. Identify any potential issues with differing water chemistry (with lake water) and if any further (mechanical) mixing between treated and lake water will be required. E.g., will the treated water from Baker Pond create a potential dead zone, either because too pure, lack of nutrients, or low oxygen, etc?

Thank you for the ability to participate and review of my concerns in this highly necessary project.

Sincerely,

Michael Meyer

Sent from my iPhone

DAVID B. KNIGHT  
PRESIDENT

LARRY JACINTO  
VICE PRESIDENT



GEORGE HANSON  
GENERAL MANAGER

KRISTY HOOVER  
SECRETARY AND TREASURER

## BEAR VALLEY MUTUAL WATER COMPANY

101 E. OLIVE AVENUE  
REDLANDS, CALIFORNIA 92373  
(909) 793-4901

January 17, 2023

Ms. Bridgette Burton, Management Analyst  
Big Bear Area Regional Wastewater Agency  
121 Palomino Drive  
Post Office Box 517  
Big Bear City, CA 92314  
bburton@bbarwa.org

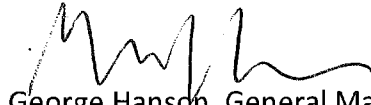
RE: Bear Valley Comment on Notice of Preparation - Replenish Big Bear Project  
(sent via email and US Mail)

Ms. Burton, Bear Valley Mutual Water Company ("Bear Valley" or "Mutual") notes that in the Replenish Big Bear Project Update for September 2022 "...BBARWA's legal counsel has reviewed the 1977 Judgment and concluded that Project Water will not be owned by Mutual if there is excess storage capacity in Big Bear Lake, and a Letter of Intent (LOI) with Bear Valley Mutual is not anticipated...". The 1977 Judgment was agreed by the parties and ordered by the Superior Court of San Bernardino County. Bear Valley receives numerous water resource benefits pursuant to the 1977 Judgment as mentioned in Section 3.4.3 Big Bear Lake Water Management of the Notice of Preparation. And, Bear Valley has relied on, and will continue to rely on, the terms and conditions of the 1977 Judgment.

As for Replenish Big Bear, Bear Valley will rely on the project operator(s) to comply with water quality regulations identified in Sections 3.4.3 Big Bear Lake Water Management and 3.6.1 Basin Water Quality Objectives. Water stored in Big Bear Lake becomes comingled. Big Bear Municipal Water District releases water from Big Bear Lake to meet the State Water Resources Control Board Order 95-4 to protect the fish in Bear Creek and to meet the water supply needs of Bear Valley. Bear Valley diverts the water released from Big Bear Lake into Bear Creek at the Bear Creek confluence with the Santa Ana River. Bear Valley delivers water received from Big Bear Lake to its shareholders which in turn use the water for a) agricultural irrigation of crops for human consumption, and b) treatment at municipal drinking water treatment plants.

Bear Valley requests to be included in any discussions and decisions that may in any way impact the water quantity or the water quality of the water in Big Bear Lake that Bear Valley Mutual Water Company receives from Big Bear Lake.

Thank you for allowing Bear Valley Mutual Water Company this opportunity to comment on the Replenish Big Bear Project.

A handwritten signature in black ink, appearing to read "George Hanson". The signature is fluid and cursive, with a long horizontal stroke at the end.

George Hanson, General Manager  
Bear Valley Mutual Water Company

Cc:

Members of the Board of Directors BVMWC  
Big Bear Watermaster

Mr. Mike Stephenson, General Manger, Big Bear Municipal Water District

Mr., John Harris. Director Municipal Utilities and Engineering Department City of Redlands

Mr. Paul Mariscal, Water Operations & Maintenance Superintendent, City of Redlands

Mr. Michael Moore, P.E., General Manager/CEO, East Valley Water District

Mr. Patrick Milroy, Operations Manager, East Valley Water District



SENT VIA E-MAIL:

January 17, 2023

[bburton@bbarwa.org](mailto:bburton@bbarwa.org)

Bridgette Burton, Management Analyst/Board Secretary  
Big Bear Area Regional Wastewater Agency  
121 Palomino Drive  
Big Bear City, California 92314

**Notice of Preparation of a Draft Environmental Impact Report for the  
Replenish Big Bear Program**

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to comment on the above-mentioned document. Our comments are recommendations on the analysis of potential air quality impacts from the Proposed Project that should be included in the Draft Environmental Impact Report (EIR). Please send a copy of the Draft EIR upon its completion and public release directly to South Coast AQMD as copies of the Draft EIR submitted to the State Clearinghouse are not forwarded. **In addition, please send all appendices and technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all emission calculation spreadsheets, and air quality modeling and health risk assessment input and output files (not PDF files). Any delays in providing all supporting documentation for our review will require additional review time beyond the end of the comment period.**

**CEQA Air Quality Analysis**

Staff recommends that the Lead Agency use South Coast AQMD's CEQA Air Quality Handbook and website<sup>1</sup> as guidance when preparing the air quality and greenhouse gas analyses. It is also recommended that the Lead Agency use the CalEEMod<sup>2</sup> land use emissions software, which can estimate pollutant emissions from typical land use development and is the only software model maintained by the California Air Pollution Control Officers Association.

South Coast AQMD has developed both regional and localized significance thresholds. South Coast AQMD staff recommends that the Lead Agency quantify criteria pollutant emissions and compare the emissions to South Coast AQMD's CEQA regional pollutant emissions significance thresholds<sup>3</sup> and localized significance thresholds (LSTs)<sup>4</sup> to determine the Proposed Project's air quality impacts. The localized analysis can be conducted by either using the LST screening tables or performing dispersion modeling.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the Proposed Project and all air pollutant sources related to the Proposed Project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road

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<sup>1</sup> South Coast AQMD's CEQA Handbook and other resources for preparing air quality analyses can be found at: <http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook>.

<sup>2</sup> CalEEMod is available free of charge at: [www.caleemod.com](http://www.caleemod.com).

<sup>3</sup> South Coast AQMD's CEQA regional pollutant emissions significance thresholds can be found at: <http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf>.

<sup>4</sup> South Coast AQMD's guidance for performing a localized air quality analysis can be found at: <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds>.

mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips, and hauling trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers and air pollution control devices), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis. Furthermore, emissions from the overlapping construction and operational activities should be combined and compared to South Coast AQMD's regional air quality CEQA *operational* thresholds to determine the level of significance.

If the Proposed Project generates diesel emissions from long-term construction or attracts diesel-fueled vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment<sup>5</sup>.

The Proposed Project would require permits from South Coast AQMD for its stationary sources. South Coast AQMD should be identified as a Responsible Agency for the Proposed Project in the Draft EIR. The assumptions in the air quality analysis in the EIR will be the basis for evaluating the permit under CEQA and imposing permit conditions and limits. Questions on permits should be directed to South Coast AQMD's Engineering and Permitting staff at (909) 396-3385.

### **Mitigation Measures**

In the event that the Proposed Project results in significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized to minimize these impacts. Any impacts resulting from mitigation measures must also be analyzed. Several resources to assist the Lead Agency with identifying potential mitigation measures for the Proposed Project include South Coast AQMD's CEQA Air Quality Handbook,<sup>6</sup> South Coast AQMD's Mitigation Monitoring and Reporting Plan for the 2022 Air Quality Management Plan,<sup>7</sup> and Southern California Association of Government's Mitigation Monitoring and Reporting Plan for the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy.<sup>8</sup>

South Coast AQMD staff is available to work with the Lead Agency to ensure that air quality, greenhouse gas, and health risk impacts from the Proposed Project are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at [swang1@aqmd.gov](mailto:swang1@aqmd.gov).

Sincerely,

*Sam Wang*

Sam Wang

Program Supervisor, CEQA IGR

Planning, Rule Development & Implementation

SW  
SBC221206-04  
Control Number

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<sup>5</sup> South Coast AQMD's guidance for performing a mobile source health risk assessment can be found at: <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis>.

<sup>6</sup> <https://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook>

<sup>7</sup> South Coast AQMD's 2022 Air Quality Management Plan can be found at: <http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan> (Chapter 4 - Control Strategy and Implementation).

<sup>8</sup> Southern California Association of Governments' 2020-2045 RTP/SCS can be found at: [https://www.connectsocial.org/Documents/PEIR/certified/Exhibit-A\\_ConnectSoCal\\_PEIR.pdf](https://www.connectsocial.org/Documents/PEIR/certified/Exhibit-A_ConnectSoCal_PEIR.pdf).

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## State Water Resources Control Board

JAN 18, 2023

Bridgette Burton  
Big Bear Area Regional Wastewater Agency  
[bburton@bbarwa.org](mailto:bburton@bbarwa.org)

### **REVIEW OF NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR BIG BEAR AREA REGIONAL WASTEWATER AGENCY'S REPLENISH BIG BEAR PROGRAM**

Dear Ms. Burton:

The State Water Resources Control Board Division of Water Rights (Division) appreciates the opportunity to review the Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for Big Bear Area Regional Wastewater Agency's (BBARWA) Replenish Big Bear Program (Project).

#### Project Summary

The Project includes permitting, design, and construction of full advanced treatment facility upgrades at the existing BBARWA wastewater treatment plant (WWTP), more than 7 miles of pipeline for product water and RO brine minimization, three pump stations, a groundwater recharge facility, and up to four monitoring wells. The BBARWA WWTP currently produces up to 1,950 acre-feet per year (AFY) of purified water but has the capacity to produce up to 2,210 AFY. Up to 80 AFY of purified water will be discharged to Shay Pond to replace potable water and the balance of the purified water discharges will go to the Stanfield Wildlife and Waterfowl Preserve, a tributary to Big Bear Lake (Lake). Stored water in the Lake can be removed for golf course irrigation and dust control at the Big Bear Mountain Resorts in the summer. In addition, purified water will be pumped from the Lake, as needed, to Sand Canyon to recharge the groundwater basin.

Water Code section 1211, subdivision (a) states that the owner of a wastewater treatment plant must receive approval from the State Water Board prior to making changes to the point of discharge, place of use, or purpose of use of treated wastewater. That approval is requested through submittal of a wastewater change

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E. JOAQUIN ESQUIVEL, CHAIR | EILEEN SOBECK, EXECUTIVE DIRECTOR

petition to the Division. Subdivision (b) of Water Code section 1211 states that approval from the State Water Board is not required if the changes in discharge or use of the treated wastewater do not result in decreasing flow in any portion of a watercourse. The Project as described above may involve a reduction in storage in the Lake and a change in use of the water. See the links below for a wastewater change petition checklist to determine if a wastewater change petition is needed and additional information regarding wastewater change petitions.

Water Code Section 1211- [Wastewater Change Petition Checklist \(ca.gov\)](#)

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/petitions/wastewater.html](https://www.waterboards.ca.gov/waterrights/water_issues/programs/petitions/wastewater.html)

When completing the checklist and preparing the draft Environmental Impact Report, please include any pertinent information regarding a potential wastewater change petition and any potential environmental impacts resulting from a reduction in discharges.

If you require any further information regarding this matter, please contact Patricia Fernandez at: [Patricia.Fernandez@waterboards.ca.gov](mailto:Patricia.Fernandez@waterboards.ca.gov).

Sincerely,

ORIGINAL SIGNED BY

Sam Boland-Brien, Manager  
Petitions, Licensing, and Registrations Section  
Division of Water Rights

ec: **California Department of Fish and Wildlife**  
Brandy Wood  
[Brandy.Wood@wildlife.ca.gov](mailto:Brandy.Wood@wildlife.ca.gov)

**Santa Ana Regional Water Quality Control Board**  
Julio Lara  
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## BEAR VALLEY MUTUAL WATER COMPANY

101 E. OLIVE AVENUE  
REDLANDS, CALIFORNIA 92373  
(909) 793-4901

January 17, 2023

Ms. Bridgette Burton, Management Analyst  
Big Bear Area Regional Wastewater Agency  
121 Palomino Drive  
Post Office Box 517  
Big Bear City, CA 92314  
bburton@bbarwa.org

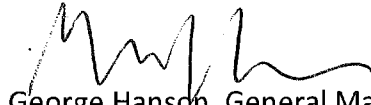
RE: Bear Valley Comment on Notice of Preparation - Replenish Big Bear Project  
(sent via email and US Mail)

Ms. Burton, Bear Valley Mutual Water Company ("Bear Valley" or "Mutual") notes that in the Replenish Big Bear Project Update for September 2022 "...BBARWA's legal counsel has reviewed the 1977 Judgment and concluded that Project Water will not be owned by Mutual if there is excess storage capacity in Big Bear Lake, and a Letter of Intent (LOI) with Bear Valley Mutual is not anticipated...". The 1977 Judgment was agreed by the parties and ordered by the Superior Court of San Bernardino County. Bear Valley receives numerous water resource benefits pursuant to the 1977 Judgment as mentioned in Section 3.4.3 Big Bear Lake Water Management of the Notice of Preparation. And, Bear Valley has relied on, and will continue to rely on, the terms and conditions of the 1977 Judgment.

As for Replenish Big Bear, Bear Valley will rely on the project operator(s) to comply with water quality regulations identified in Sections 3.4.3 Big Bear Lake Water Management and 3.6.1 Basin Water Quality Objectives. Water stored in Big Bear Lake becomes comingled. Big Bear Municipal Water District releases water from Big Bear Lake to meet the State Water Resources Control Board Order 95-4 to protect the fish in Bear Creek and to meet the water supply needs of Bear Valley. Bear Valley diverts the water released from Big Bear Lake into Bear Creek at the Bear Creek confluence with the Santa Ana River. Bear Valley delivers water received from Big Bear Lake to its shareholders which in turn use the water for a) agricultural irrigation of crops for human consumption, and b) treatment at municipal drinking water treatment plants.

Bear Valley requests to be included in any discussions and decisions that may in any way impact the water quantity or the water quality of the water in Big Bear Lake that Bear Valley Mutual Water Company receives from Big Bear Lake.

Thank you for allowing Bear Valley Mutual Water Company this opportunity to comment on the Replenish Big Bear Project.

A handwritten signature in black ink, appearing to read "George Hanson", written in a cursive style.

George Hanson, General Manager  
Bear Valley Mutual Water Company

Cc:

Members of the Board of Directors BVMWC  
Big Bear Watermaster

Mr. Mike Stephenson, General Manger, Big Bear Municipal Water District

Mr., John Harris. Director Municipal Utilities and Engineering Department City of Redlands

Mr. Paul Mariscal, Water Operations & Maintenance Superintendent, City of Redlands

Mr. Michael Moore, P.E., General Manager/CEO, East Valley Water District

Mr. Patrick Milroy, Operations Manager, East Valley Water District



### 8.2.1 Scoping Meeting Comments

*Scoping Meeting Commenter #1: Michael Perry from the 1/5/23 Meeting stated:*

- The commenter asks why the National Environmental Policy Act (NEPA) and CEQA compliance cannot be completed sequentially?

*Scoping Meeting Commenter #2: Kelly Barrett from the 1/5/23 Meeting stated:*

- The commenter states that, given all of the water that has been put toward the Stickleback, the community doesn't want any negative effects on the Stickleback. The commenter asks whether there is certainty that the Program Water would be tolerable to the fish?
- The commenter states that 2.2 MGD is a lot of water. She asks that, if the BBARWA WWTP was to receive more water, such as 3 MGD, during wet weather, are there provisions to store the additional water? What would happen if the WWTP received more than 2.2 MGD.

*Scoping Meeting Commenter #3: Steve Sayer from the 1/5/23 Meeting stated:*

- The commenter asks, at what point would the Program consider making water available to make snow on the ski slopes?
- The commenter asks if the water that is made into snow returns to Big Bear Lake.
- The commenter asks for clarification on the number of pump stations the Program proposes.
- The commenter asks if the Program would first fill the marsh, then Big Bear Lake? Is the Program progressive?
- The commenter asks how will the water move from the marsh to Big Bear Lake?

*Scoping Meeting Commenter #3: Steve Sayer from the 1/10/23 Meeting stated:*

- The commenter asks, what agencies has the Program Team applied for grants with?
- The commenter asks, where would additional funding from?
  - The commenter asks, what additional approvals would occur to assess customer fees at a higher rate to accommodate the Program?
- The commenter asks if there will be wire or screens to catch debris where the water flows into Big Bear Lake.
- The commenter asks for clarity as to whether the residential water service relies on Lake water.
- The commenter asks, would the water being discharged to Lucerne continue to occur, or stop under the Program?
- The commenter relays that he believes the Program is an opportunity to further sustainability in Big Bear Valley and promote ecological diversity in Big Bear Valley.
- The commenter raises a concern that the residents will be impacted by the costs of the Program, when many do not ski, boat, golf, or spend time in the Village. The commenter states that the Program should benefit the residents that live, work, and pay taxes in Big Bear because the residents would pay for the Program over the long term.
- The commenter asks, would the Program be eligible for funding under the infrastructure bill that was recently passed?
- The commenter asks what agencies the people in the room at the Scoping Meeting are from.

*Scoping Meeting Commenter #4: Randy Carroll from the 1/10/23 Meeting stated:*

- The commenter asks, how long would it take for Big Bear Lake to fill up when it is wet? When would overflow and spills occur?
- The commenter asks, will the additional water soak into the ground?
- The commenter asks if the piping that will go to Sand Canyon will be uphill or relatively flat?
- The commenter asks, will there be screening to keep fish out of the marsh?
- The commenter asks, will entities down the mountain contribute money for this Program? How will that balance out the water that is pumped now?
- The commenter, asks where does the Santa Ana River discharge down the mountain?
- The commenter asks what Transient Occupancy Tax (TOT) is?
- The commenter asks are there other funding mechanisms for the Program that could be assessed on tourists?
- The commenter asks, could the current contracts with the ski resort and golf course be modified to assess fees to support the Program?
- The commenter asks if any further community meetings would be held on the Program and what the timeline would be for such meetings.
- The commenter requests that there be regular or irregular articles posted to the Grizzly to ensure participation by more members of the community in commenting on the Program?

### **8.2.2 Responses to NOP and Scoping Meeting Comments**

A response to each issue raised is provided below organized by environmental topic.

**A response to each issue raised is provided below organized by environmental topic.**

#### **CEQA/NEPA Compliance**

**This header is intended to provide a space for comments that apply to the CEQA process and compliance with CEQA.**

Comment Letter #6 SCAG: The Comment Letter requests that the DPEIR is provided to SCAG staff via email during the public review period.

*Response: This request will be carried out as part of the public review for the DPEIR.*

Scoping Meeting Commenter #1 on 1/5/23 Michael Perry: The commenter asks why NEPA and CEQA cannot be completed sequentially?

*Response: The technical studies that will support the CEQA documentation have been prepared to also meet NEPA standards. Thus, the analysis in the DPEIR will ultimately support the NEPA documentation. Because BBARWA and partner agencies have applied for grants from various Federal agencies, the NEPA compliance for the Program is not easily accomplished utilizing one document. Thus, the DPEIR is being prepared with the incorporation of NEPA standards, and follow on documentation, including an Environmental Information Document (EID) prepared for the EPA. Additionally, based on past experience with BOR, it is anticipated that this agency will utilize both the EID and DPEIR to finalize the NEPA documentation to meet BOR standards. Furthermore, typically to obtain grants from Federal agencies, the Notice of Determination (NOD) for the CEQA documentation must be filed before the NEPA documentation can be considered and exceptions or findings of no significant impact (FONSI) made. Thus, the CEQA and NEPA*

*documentations will be prepared concurrently, but the CEQA documentation, which concludes with filing the NOD, must be completed prior to Federal decisionmakers making a decision on the NEPA documentation for the Program.*

Scoping Meeting Commenter #3 on 1/10/23 Steve Sayter: The commenter asks, what agencies has the Program Team applied for grants with? The commenter asks, where would additional funding from? The commenter asks, what additional approvals would occur to assess customer fees at a higher rate to accommodate the Program?

*Response: The Program Team has applied for both State and Federal grants through numerous grant agencies. The Program has been awarded \$16.9 million to date through the Integrated Regional Water Management (IRWM) Disadvantaged Community Involvement Technical Assistance Program, IRWM Proposition 1 Round 1 grant, BOR's Title XVI Water Reclamation and Reuse grant, and the EPA's State and Tribal Assistance grant. BBARWA is in the process of securing a low-interest loan through the Water Infrastructure Finance Innovation Act (WIFIA) loan program. The proposed Program may seek additional grants or loan from other Federal agencies.*

*Customer rate increases must be approved by the BBARWA Governing Board prior to implementation. The sewer user fee is analyzed each year as part of the budget process and reviewed periodically as part of a formal rate study. An adjustment to BBARWA's sewer user fee requires a public hearing as part of a regularly scheduled Board Meeting and adoption by the Governing Board. Notice of the public hearing is published ten days prior to the hearing. The notice must be published two times with at least five days between publishing. Related studies supporting the fee level should be available for inspection ten days prior to the public hearing. Procedures referenced in Government Code 66018 should be followed. A similar process would be applicable for water use or sewer collection under each of the proposed Program partner agencies, as well.*

*Since the Scoping Meeting responses were verbally provided to the commenter, BBARWA's Governing Board adopted a five-year sewer user charge/fee schedule on March 22, 2023. These fees are to fund debt service and required reserves for the Program. Debt service includes interest only on the current bridge loan and future Program funding, such as the WIFIA loan. BBCCSD adopted the Agency's sewer user fees for fiscal year 2023-24, and the City of Big Bear Lake adopted the Agency's sewer user fees through fiscal year 2027-28. The San Bernardino County Service Area 53B absorbed the sewer user charge.*

Scoping Meeting Commenter #4 on 1/10/23 Randy Carroll: The commenter asks if any further community meetings would be held on the Program and what the timeline would be for such meetings.

*Response: Additional community meetings may be held, but the time and date for such meetings has not yet been determined. However, as far as the environmental process is concerned, the next avenue for public engagement is during the public review period for this DPEIR. It is anticipated that a community meeting will be held during this timeframe to engage with the community on questions that they may have on this environmental document. Additionally, once the Final EIR has been prepared, the Final EIR will be put forth before the BBARWA Governing Board, which is a public meeting.*

Scoping Meeting Commenter #4 on 1/10/23 Randy Carroll: The commenter requests that there be regular or irregular articles posted to the Grizzly to ensure participation by more members of the community in commenting on the Program?

*Response: The request is noted, and Program public relations will continue to be carried out by the Program Team over the life of the Program.*

### **Program Description**

This header is intended to provide a space for comments that apply to the Program Description of the Replenish Big Bear Program.

Comment Letter #2 Aime Kinne: The Comment Letter conveys support for the Replenish Big Bear Program and indicates that the commenter feels it is necessary for the economic survival of Big Bear Valley.

*Response: The support relayed in this comment is noted.*

Comment Letter #3 Fred Mooneyham: The Comment Letter conveys support for the Replenish Big Bear Program and indicates that the commenter only wishes the process could be expedited.

*Response: The support relayed in this comment is noted. The Program horizon is for the whole of the Program to be active by 2027.*

Comment Letter #5 Richard Wright: The Comment Letter indicates that Richard Wright has been a full-time resident of the Big Bear Valley for 23 years and conveys support for the Replenish Big Bear Program.

*Response: The support relayed in this comment is noted.*

Scoping Meeting Commenter #3 on 1/5/23 Steve Sayter: The commenter asks for clarification on the number of pump stations the Program proposes.

*Response: The Program would ultimately install three pump stations in order to facilitate Program operation as follows:*

- *Effluent Pump Station @ WWTP 1,520 gpm*
- *Brine Pump Station @ WWTP: 20 gpm*
- *Pump Station @ Resort Storage Pond 471 gpm*

Scoping Meeting Commenter #3 on 1/5/23 Steve Sayter: The commenter asks if the Program would first fill the marsh, then Big Bear Lake? Is the Program progressive? The commenter asks how will the water move from the marsh to Big Bear Lake?

*Response: Program Water is planned to be discharged continuously to Stanfield Marsh. A new 12-inch pipe will need to be installed from the WWTP to the proposed discharge points in Stanfield Marsh, as shown in **Figure 3-2**, which depicts the proposed alignment alternatives for the Lake Discharge. Water from Stanfield Marsh will also provide new inflow into Big Bear Lake and increase Lake levels relative to no Program conditions. The proposed outlets into Stanfield Marsh would occur at one of two points just west of the Big Bear Airport, shown on **Figure 3-2**. The water will flow from Stanfield Marsh under Stanfield Cutoff into Big Bear Lake.*

Scoping Meeting Commenter #3 on 1/10/23 Steve Sayter: The commenter asks if there will be wire or screens to catch debris where the water flows into Big Bear Lake.

*Response: It is anticipated that Stanfield Marsh itself will serve this purpose. Screens would have a potential to cause flooding if clogged. Thus, Stanfield Marsh itself will suffice in capturing debris from entering Big Bear Lake.*

Scoping Meeting Commenter #3 on 1/10/23 Steve Sayter: The commenter asks, would the water being discharged to Lucerne continue to occur, or stop under the Program?

*Response: It is anticipated that, during wet periods and over the winter periods wastewater in excess of the 2,210 AFY planned capacity for the proposed full advanced treatment facility upgrades at the existing BBARWA WWTP, flow would continue to be discharged to Lucerne Valley. The amount of water anticipated to be discharged to Lucerne Valley is anticipated to average about 340 AFY, anticipated to be discharged between the months of December to May.*

Scoping Meeting Commenter #3 on 1/10/23 Steve Sayter: The commenter relays that he believes the Program is an opportunity to further sustainability in Big Bear Valley and promote ecological diversity in Big Bear Valley.

*Response: The support relayed in this comment is noted.*

Scoping Meeting Commenter #3 on 1/10/23 Steve Sayter: The commenter raises a concern that the residents will be impacted by the costs of the Program, when many do not ski, boat, golf, or spend time in the Village. The commenter states that the Program should benefit the residents that live, work, and pay taxes in Big Bear because the residents would pay for the Program over the long term.

*Response: The comment is noted. The mode of financing the Program is not a CEQA issue; however, BBARWA, BBCCSD, BBLDWP, and BBMWD (the Program Team) refined the Program based on feedback from the community over the many years a Program of this type has been contemplated for implementation in the Big Bear Valley.*

Scoping Meeting Commenter #3 on 1/10/23 Steve Sayter: The commenter asks, would the Program be eligible for funding under the infrastructure bill that was recently passed?

*Response: There is opportunity for grants which the Program Team has worked to realize already. There may be additional funding in the future for or through grants under the Infrastructure Bill, but again, for Federal funding, the Program funding is limited to 25% of the Program cost. The goal of the Program Team is to continue to pursue State funding, which the Program Team, thus far, has been successful at obtaining. The goal of the Program Team is to maximize the Federal grants of 25% of the total Program cost and seek additional State funding which does not have the same limitations as Federal grants.*

Scoping Meeting Commenter #3 on 1/10/23 Steve Sayter: The commenter asks what agencies the people in the room at the Scoping Meeting are from.

*Response: The Program Team consists of BBARWA, BBCCSD, BBLDWP, and BBMWD.*

Scoping Meeting Commenter #4 on 1/10/23 Randy Carroll: The commenter asks, will entities down the mountain contribute money for this Program? How will that balance out the water that is pumped now?

*Response: A contract with San Bernardino Valley Municipal Water District for new water exists. This is presently the only mechanism by which to assess funds from the San Bernardino Valley Region Water Agencies. Negotiations with downstream agencies in both the San Bernardino Valley Region and the Lucerne Valley area may be explored where water produced by this Program cannot be used by the Program Team on the Mountain.*

Scoping Meeting Commenter #4 on 1/10/23 Randy Carroll: The commenter, asks where does the Santa Ana River discharge down the mountain?

*Response: The Santa Ana Watershed is shown on Figure 3-18. As shown, water from Big Bear Lake is discharged to Bear Creek, which ultimately discharges to the Seven Oaks Dam near the City of Highland. From here, water flows to the Santa Ana River, which ultimately discharges to the Pacific Ocean.*

Scoping Meeting Commenter #4 on 1/10/23 Randy Carroll: The commenter asks what Transit Occupancy Tax (TOT) is?

*Response: When one stays in a hotel, a TOT tax is assessed as part of the hotel bill.*

Scoping Meeting Commenter #4 on 1/10/23 Randy Carroll: The commenter asks are there other funding mechanisms for the Program that could be assessed on tourists?

*Response: The Program Team is exploring funding mechanisms that could be assessed on visitors to the Big Bear Valley.*

Scoping Meeting Commenter #4 on 1/10/23 Randy Carroll: The commenter asks, could the current contracts with the ski resort and golf course be modified to assess fees to support the Program?

*Response: The Program Team is open to considering this option, however the existing contracts are between the BBMWD and the Resorts and are not planned to be modified. The Resort is under a long-term contract with BBMWD and has an extension option that could be exercised in 2032.*

Scoping Meeting Commenter #4 on 1/10/23 Randy Carroll: The commenter asks if the piping that will go to Sand Canyon will be uphill or relatively flat?

*Response: The pipeline from Big Bear Lake to the Sand Canyon Recharge Area is existing, it is the snow making line that goes to Bear Mountain Resort. The new pipeline will be from the existing holding ponds (**Figure 3-16**) to the Sand Canyon Recharge Area, which is at a slightly lower elevation from the holding pond site. However, due to the varied elevation in this area, a new pump station will be installed at the holding pond site.*

### **Aesthetics**

No comments specific to this topic were received.



### **Agriculture**

**Comment Letter #8 LVEDA:** The commenter asks how BBARWA will eliminate tumbleweed and other weed growth at its fields in Lucerne Valley?

- The commenter suggests that BBARWA should provide some irrigation for germinating either native desert plants for more permanent cover or deep-rooted forage for temporary stubble and stabilization to get the native plants started. The commenter also suggests that BBARWA could spread gravel over the entire field to reduce erosion blow off, but that this method may not work over the long term, and would still enable weeds to grow depending on precipitation.

*Response: On March 30, 2023, the Program Team, LVEDA, and Mojave Desert Resource Conservation District (MDRCD) habitat restoration expert, Ken Lair, met to discuss this very issue. As acknowledged in the meeting, BBARWA desires to find a mutually beneficial path forward to maintain the BBARWA's LV Site. BBARWA is committed to exploring habitat restoration, fugitive dust management through planting low water using crops, or other site maintenance options to stabilize the portions of the LV Site that are not currently or are not planned in the future for farming use. BBARWA will continue to work with the LVEDA and MDRCD to explore habitat stabilization and restoration options for the site; however, as habitat stabilization and restoration and/or enhanced site maintenance as part of the Program is presently conceptual in nature, it would be speculative to commit to a specific means of maintaining the site beyond a commitment to maintain the site going forward in a manner that will limit fugitive dust migration, erosion, and tumbleweeds from occurring on the site such that neighboring property owners are affected for the life of BBARWA's use of the LV Site going forward.*

**Comment Letter #8 LVEDA:** The commenter suggests that BBARWA work with MDRCD, USDA, and NRCS to research stabilization and restoration options.

*Response: Please refer to the response under Comment Letter #8, LVEDA, which addresses this comment in its entirety.*

**Comment Letter #8 LVEDA:** The commenter indicates that reduced wastewater flow occurring at present has resulted in a significant reduction in farmed acreage, which has allowed for erosion and weed growth. The commenter suggests that BBARWA could enable the field to continue to be farmed by helping a farmer purchase unused water rights from adjudicated parties in Lucerne Valley, assuming any are for sale, and drill an agricultural well in support of the field. However, the commenter suggests that this may not be a long-term option due to the availability of water associated with water rights over time.

*Response: BBARWA currently discharges approximately 1,640 AFY of secondarily treated wastewater to the 480-acre property it owns in Lucerne Valley as shown on **Figure 4.2-1**. The proposed Program will substantially reduce the volume of treated effluent discharged at BBARWA's LV Site. Once fully operational, BBARWA anticipates continued discharge to the LV Site. In dry a dry year, BBARWA would send no water, and in a wet year like 2011, it could send up to 1,050 AFY, which could be used to irrigate grain or other alternative use/disposal. Discharge to the LV Site would average approximately 340 AFY of secondarily treated effluent during winter months from December through May. Discussions with the contract farmer indicate that during the winter months, it may be possible to grow grain(s) on approximately 40 acres of the LV Site. If the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) to*

handle the average of 340 AFY of secondarily treated effluent or could make the treated effluent available to another party for an alternative use.

Since the purpose of farming at the LV site to date has been to assist with managing the treated effluent discharge, BBARWA does not anticipate continuing any crop production at the site using groundwater production at the site, particularly given the limited water rights available in the Lucerne Valley Groundwater Basin due to reduced pumping allowances assessed by the MBA Watermaster, who manages the MBA as a result of the adjudication of the Lucerne Valley Basin as a result of the MBA Judgment in 1996. Thus, farming the site utilizing groundwater is not an option BBARWA intends to pursue as a means to continue to utilize the site for farming purposes.

### **Air Quality**

*Response:* A portion or all of the LV Site would become fallow as a result of the reduction or cessation of farming operations, and would continue to be maintained by BBARWA. At present, BBARWA and the farmer who leases the LV Site are responsible for maintaining the site, which includes handling migration of fugitive dust. Under the Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the Site. Enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and eco-conscious weed killing applications;
- Planting cover crops, such as sorghum to prevent dust migration; and/or
- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

Both continued maintenance and enhanced site maintenance would ensure that dust migrating from the LV Site is minimized as all or a portion of the LV Site becomes fallow as a result of Program operations. However, given the concern raised by the LVEDA, in the event that continued maintenance and enhanced site maintenance do not fully address the potential for fugitive dust migration to occur at the site as a result of the change in discharge operations to the LV Site from implementation of the Program, a fugitive dust response program shall be implemented by BBARWA. MM **AQ-2** would ensure that implementation of this program occurs.

Comment Letter #10 Michael Meyer: The Comment Letter conveys concern for odor emitted from the brine settlement ponds, and requests MMs be implemented if odor is a significant issue.

*Response:* As part of the Program, between 23 and 57 acres will be used to construct solar evaporation ponds at the BBARWA WWTP site. The general location of the ponds is shown in **Figure 3-26**. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. Typically, solar evaporation ponds are lined shallow basins in which concentrate evaporates naturally as a result of solar radiation. As the brine evaporates, the minerals in the concentrate are precipitated in salt crystals, which are removed periodically and disposed off-site. The precipitated crystal material will be hauled off to an appropriate disposal facility.

The solar evaporation ponds will be constructed with impervious lining for the protection of the underlying basin. In addition, one or more monitoring wells will be installed at the evaporation

*pond on the WWTP Site to monitor groundwater quality, as required by the future discharge permit.*

*Based on a review of similar solar evaporations pond operations handling brine, odor does not appear to be an issue with operations of this type. BBARWA will maintain the solar evaporation ponds by periodically removing the salt crystals and hauling the precipitated crystal material to an appropriate disposal facility. This is anticipated to prevent odors from accumulating at the solar evaporation ponds and migrating to nearby sensitive receptors. Furthermore, given the location proposed for installation of the solar evaporation ponds at a 0.25 mile distance from the nearest sensitive receptor (residents, hospitals, senior living, churches, schools, etc.) any odors generated by the solar evaporation ponds are anticipated to dissipate before reaching the nearest sensitive receptor. Furthermore, the operations of the BBARWA WWTP involve a greater potential for odors to travel, and odor nuisance has rarely been a reported issue in the community as a result of BBARWA operations. Thus, there has been no indication that odor traveling to sensitive receptors will result from operation of the brine ponds, but mitigation (AQ-2) has been identified that would require odor observation for the first year of the Program, with an odor response component in the event that odors are observed by nearby sensitive receptors.*

Comment Letter #12 SCAQMD: The Comment Letter requests a copy of the DPEIR and all appendices and calculation spreadsheets in regards to air quality be sent to SCAQMD directly, as opposed to through the State Clearinghouse.

*Response: This request will be carried out as part of the public review for the DPEIR.*

Comment Letter #12 SCAQMD: The Comment Letter recommends that the analysis in the EIR utilize the SCAQMD Air Quality Handbook and website as guidance in the preparation of air quality and greenhouse gas analysis. The Comment Letter recommends that the analysis in the EIR quantify criteria pollutant emissions and compare the emissions to SCAQMD's CEQA regional pollutant emissions significance thresholds and localized significance thresholds (LSTs) to determine the Program's air quality impacts. The Comment Letter requests that the EIR identify construction and operational air quality impacts.

*Response: The SCAQMD CEQA Air Quality Handbook was consulted in drafting the technical appendices (Appendices 11 and 16 to Volume 2 of this DPEIR address Air Quality and Greenhouse Gas, respectively) and in crafting the environmental analyses for the Air Quality and GHG Subchapters (4.4 and 4.9).*

Comment Letter #12 SCAQMD: The Comment Letter suggests that a HRA should be prepared if the Program generates long-term construction or attracts diesel fueled vehicular trips.

*Response: The Program would not result in long-term construction (construction is anticipated to occur between January 2025 and January 2027), nor would it attract routine diesel trips during operation. Thus, a Health Risk Assessment (HRA) is not anticipated to be necessary to ascertain Program-related impacts on the health risk of the public in the vicinity of Program facilities or operations.*

Comment Letter #12 SCAQMD: The Comment Letter suggests that the Program would require permits for any stationary sources and if such permits are necessary, the SCAQMD should be listed as a responsible agency in the EIR.

*Response: Program Categories 2 and 4 have facilities that may require air quality permits. Under Program Category 2, three pump stations will be installed. Under Program Category 4, BBARWA will upgrade the existing WWTP, to construct a new 2.2 MGD full AWPf to produce up to 2,200 AFY of purified water. The upgrades include the following facility modifications and new construction in order of process flow:*

- *Upgrades to the Oxidation Ditches*
- *New Denitrification Filter*
- *New UF and RO filtration membranes*
- *New UV Disinfection*
- *New AOP*
- *New Pellet Reactor: 0.22 MGD*

*Per SCAQMD, equipment identified in the SCAQMD Rule 219 may be exempted from an air quality permit. Under Rule 219 section (m), pumps used exclusively for pipeline transfer of liquids are exempted. Rule 2019 section (d) exempts the following general utility equipment:*

- *Comfort air conditioning or ventilating systems which are not designed or used to remove air contaminants generated by, or released from, specific equipment units, provided such systems are exempt pursuant to paragraph (b)(2).*
- *Refrigeration units except those used as or in conjunction with air pollution control equipment.*
- *Equipment used exclusively to generate ozone and associated ozone destruction equipment for the treatment of cooling tower water or for water treatment processes.*
- *Equipment used exclusively for space heating provided such equipment is exempt pursuant to paragraph (b)(2).*
- *Equipment used exclusively to compress or hold purchased quality natural gas, except internal combustion engines not exempted pursuant to paragraph (b)(1).*
- *(8) Emergency ventilation systems used exclusively to scrub ammonia from refrigeration systems during process upsets or equipment breakdowns.*
- *(9) Emergency ventilation systems used exclusively to contain and control emissions resulting from the failure of a compressed gas storage system.*

*A permit to construct and operate applicable components of the Program will be submitted to the SCAQMD.<sup>1,2</sup>*

Comment Letter #12 SCAQMD: The Comment Letter suggests that feasible MMs should be considered and the sources for potentially applicable MMs are listed in the comment.

*Response: MMs have been considered to ensure minimization of impacts under Greenhouse Gas and Air Quality. Under Air Quality, MM **AQ-1** and **AQ-2** shall be implemented. To be filled in upon completion of the AQ/GHG reports.*

*The implementing agencies must meet the performance standard of MM **AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-9** in **Subchapter 4.4, Air Quality**, implementation of this scenario to achieve the performance*

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<sup>1</sup> SCAQMD, 2023. Permit Application Forms. <http://www.aqmd.gov/home/permits/permit-application-forms> (accessed 09/01/23)

<sup>2</sup> SCAQMD, 2017. Instructions for Form 400-CEQA. <http://www.aqmd.gov/docs/default-source/permitting/ceqa-2017/400ceqa-instructions-august2017.pdf?sfvrsn=8> (accessed 09/01/23)

standard of MM **AQ-1** would reduce maximum daily construction emissions of NO<sub>x</sub> to below the SCAQMD regional significance threshold.

Implementation of MM **AQ-2** would ensure that the only potential source of new odor generated by the Program—the solar brine evacuation ponds at BBARWA’s WWTP—would be minimized through an odor complaint and response program, and would thereby ensure Program odor impacts are less than significant.

Program GHG emissions fall below the SCAQMD significance thresholds, and therefore, no mitigation is considered to minimize impacts, as none are required to achieve a determination of less than significant.

### **Biological Resources**

Comment Letter #4 Wings Jewelers: The commenter asks what impact the advanced treated water will have on wildlife, including fish in Big Bear Lake?

*Response: The utilization of the full advanced treated water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. Additionally, the Program may affect the Stickleback by causing a temporary change in water level and/or flow rate within Shay Pond, due to the increased discharge. However, the increased discharge may have a beneficial effect on the Stickleback and its habitat at Shay Pond, but the purified water generated by the AWP at BBARWA, proposed under this Program, could potentially significantly impact the species, if the water source lacks the nutrients necessary to support the species, or contains any constituents that, when introduced into the Stickleback habitat, would adversely impact the species. The impacts to this species were analyzed on a more programmatic level, so that, should the individual project go forward in the future, mitigation would stipulate the steps necessary to minimize impacts from changing the water source at Shay Pond. Therefore, should the Program Team decide to modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by MM **BIO-6**, below. This MM requires coordinate with USFWS and CDFW to obtain verbal agreement on the approach to forecast impacts to the Stickleback. Then, the implementing agency or biologist familiar with the Stickleback shall draft a MOU to lay a solid framework for the development of an AMMP. The MOU will determine if additional permitting will be required from both the State and Federal government for the take of an endangered species. The AMMP itself will identify a sampling and monitoring program for the lifespan of the project (i.e. the change of water source at Shay Pond). This will include any triggers or adaptive management strategies that could be implemented to improve conditions for the Stickleback, including alterations to water temperature, inclusion of bubblers to increase dissolved oxygen or other techniques to be identified. The AMMP requires approval by USFWS and CDFW in order to carry out a Pilot Study in which it will be determined whether the change in water source for the Stickleback is feasible. This determination can only be made with USFWS and CDFW concurrence.*

Comment Letter #10 Michael Meyer: The Comment Letter conveys concern for waterfowl at the brine settlement ponds, and requests MMs be implemented if the waterfowl present a significant issue.

*Response: Waterfowl may utilize the brine settlement ponds, when full, which could result in significant impacts should the waterfowl consume the brine. As such, mitigation is necessary to minimize the potential for birds to utilize the solar evaporation ponds. MM **BIO-29** would protect*

migratory birds that may otherwise use the solar evaporation ponds when full during operation of the proposed Program in the future, and would therefore minimize operational impacts to waterfowl, including migratory and nesting birds.

Scoping Meeting Commenter #2 on 1/5/23 Kelly Barrett: The commenter states that, given all of the water that has been put toward the Stickleback, the community doesn't want any negative effects on the Stickleback. The commenter asks whether there is certainty that the purified water would be tolerable to the fish?

*Response: The utilization of the full advanced treated water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. The impacts to this species were analyzed on a more programmatic level, so that, should the individual project go forward in the future, mitigation would stipulate the steps necessary to minimize impacts from changing the water source at Shay Pond. Therefore, should the Program Team decide to modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**, below. This **MM** requires coordinate with USFWS and CDFW to obtain verbal agreement on the approach to forecast impacts to the Stickleback. Then, the implementing agency or biologist familiar with the Stickleback shall draft a MOU to the lay a solid framework for the development of an AMMP. The MOU will determine if additional permitting will be required from both the State and Federal government for the take of an endangered species. The AMMP itself will identify a sampling and monitoring program for the lifespan of the project (i.e. the change of water source at Shay Pond). This will include any triggers or adaptive management strategies that could be implemented to improve conditions for the Stickleback, including alterations to water temperature, inclusion of bubblers to increase dissolved oxygen or other techniques to be identified. The AMMP requires approval by USFWS and CDFW in order to carry out a Pilot Study in which it will be determined whether the change in water source for the Stickleback is feasible. This determination can only be made with USFWS and CDFW concurrence.*

Scoping Meeting Commenter #4 on 1/10/23 Randy Carroll: The commenter asks, will there be screening to keep fish out of Stanfield Marsh?

*Response: As discussed in the Program Description, the proposed Program would discharge purified water from the new AWPF at BBARWA's WWTP to Big Bear Lake via Stanfield Marsh. The Program Team has determined that, should fish populate Stanfield Marsh, this would be considered a benefit, as the habitat in Stanfield Marsh, when water is available, is supportive of spawning. Thus, no screening is needed to keep fish out of Stanfield Marsh.*

*A detailed discussion of the water quality of the purified discharge to Stanfield Marsh and Big Bear Lake is provided as **Appendix 19**, in the Memo that was prepared by GEI Consultants (GEI) titled "Analysis of Aquatic Life Effects of Replenish Big Bear Project's Discharge to Stanfield Marsh," and dated October 2023. The impacts related to the discharge of Program Water to both Stanfield Marsh and Big Bear Lake on aquatic and other wildlife species is detailed therein as well.*

### **Cultural Resources**

NOP Comment Letter #1 (NAHC): The comment letter supplied by NAHC outlines the circumstances in which an EIR must be prepared, and specifically relays that the Lead Agency must determine whether there are historical resources within the Program APE, and whether such



resources are significant. A copy of all responses to the NOP, including the NAHC letter, is provided in **Subchapter 8.3** of this Volume of the DEIR.

*Response: This comment is noted, and BBARWA has followed through with the preparation of an EIR, within which, under **Subchapter 4.6**, historical and archeological are considered and analyzed under the thresholds provided by the NAHC.*

*The Cultural Resources Assessment specific to the development in the Program has been prepared in accordance with the NAHC's recommended standards. This report is provided as **Appendix 13** to Volume 2 of this DPEIR.*

NOP Comment Letter #1 (NAHC): The comment letter supplied by the NAHC indicates that the Lead Agency must consult with all Native American tribes that are traditionally and culturally affiliated with the geographic area of a proposed Program; the Comment Letter details the AB 52 consultation process.

*Response: This comment is noted, and BBARWA contacted YSMN under the AB 52 consultation process on December 28, 2022 as the only Native American tribe that has requested consultation on future projects under the BBARWA and Program Team jurisdiction.*

NOP Comment Letter #1 (NAHC): The Comment Letter details the provisions of SB 18 and how a Lead Agency would comply with SB 18. SB 18 is a California law that requires a local Lead Agency to enter into consultation with a local tribe(s) when an amendment to a General Plan is being considered to change a local land use designation.

*Response: This comment is noted, and SB 18 is not applicable to BBARWA as BBARWA does not have land use authority to adopt or modify a General Plan or Specific Plan. SB 18 does not apply to the proposed Program.*

NOP Comment Letter #1 (NAHC): The Comment Letter details NAHC recommendations for cultural resource assessments including contacting the appropriate regional archaeological information center for record search, conducting an archaeological inventory survey if required, and submit report per requirements, contacting NAHC for a sacred lands file check, as well as suggestions for mitigation to prevent impacts to subsurface resources.

*Response: The "Identification and Evaluation of Historic Properties: Replenish Big Bear Program DEIR, Big Bear Valley Area, San Bernardino County, California" that was prepared for the Program has been prepared to the specifications provided in this comment. Please refer to **Appendix 13** in Volume 2 of this DPEIR. Detailed programmatic mitigation has been provided to address the potential for subsurface resources to exist within the Program APE; these measures address the treatment and disposition of subsurface resources, should they be discovered. These MMs can be found under **Subsection 4.6.7**.*

## **Energy**

Comment Letter #10 Michael Meyer: The Comment Letter conveys concern regarding energy consumption from the upgraded treatment plant.

- The commenter suggests that the utility companies should be notified of additional strains on the electrical grid.

- The commenter suggests that the Program should seek to reduce the carbon footprint and work towards a “net zero” energy use, through the consideration of renewable energy sources.

*Response: BBARWA is proposing to install a solar array at the BBARWA WWTP that would account for a 3,652,117 kWh/year, thereby requiring a net electricity demand of 147,883 kilowatt hours (kWh)/year of electricity after netting out the of electricity generated by the Program’s photovoltaic solar design feature. In the context of electricity demand and usage in California (280,738 gigawatt hours [gWh/year]), the Program accounts for an increased electricity demand of just 0.00005%. The Program would result in 760,427 kBTU (British thermal units)/year of natural gas, which in the context of natural gas usage in California (1,192.2 million BTU), would account for an increase in natural gas demand of 0.0638%. As described throughout **Subchapter 4.7, Energy**, these energy demands would not be significant increases in the context of available energy resources.*

### **Geology and Soils**

No comments specific to this topic were received.

### **Greenhouse Gases**

No comments specific to this topic were received.

### **Hazards and Hazardous Materials**

No comments specific to this topic were received.

### **Hydrology and Water Quality**

Comment Letter #4 Wings Jewelers: The commenter asks for clarification as to whether pharmaceuticals can be filtered out of the advanced treated water.

*Response: BBARWA is producing Program Water by treating 100% of the water discharged to Shay Pond and Stanfield Marsh/Big Bear Lake with UF, RO and UV/AOP disinfection. UV/AOP disinfection is effective at removing pharmaceuticals and personal care products (PPCPs) from water environments. The UV/AOP system uses free radicals to decompose PPCPs into non-toxic and small-molecule compounds. A review of various AOPs and their removal of PPCPs by different free radicals was investigated by a group of scientists in China. Their review concluded that AOP systems can completely destroy PPCPs (Jiao et. al).<sup>3</sup> In general, any water that does not meet the treatment requirements and limits set to protect the environment and/or the public, will be diverted to either the front of the treatment train or will be sent to the LV Site, where undisinfected secondary effluent is permitted to use to grow crops used for livestock feed or dispose of the water via percolation basins.*

Comment Letter #7 City of Redlands: The Comment Letter indicates that the City of Redlands will, in future, request BBARWA operations data regarding the impact of source water quality. The data requests will be used for source water regulatory reporting purposes.

*Response: The Program Team met with East Valley Water District (EVWD), Mutual, and the City of Redlands on March 16, 2023 at EVWD. The purpose of this meeting was to respond to some of the questions raised in the comment letters provided by these three entities in regards to the*

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<sup>3</sup> Jiao, J., Li, Y., Song, Q., Wang, L., Luo, T., Gao, C., Liu, L., & Yang, S. (2022). Removal of Pharmaceuticals and Personal Care Products (PPCPs) by Free Radicals in Advanced Oxidation Processes. *Materials* (Basel, Switzerland), 15(22), 8152. <https://doi.org/10.3390/ma15228152>

*Program. In response to the comment raised above, BBARWA will share operational data regarding the source water quality as requested.*

Comment Letter #7 City of Redlands: The Comment Letter requests that the City of Redlands be included in all notifications of spills, releases or exceedances related to the BBARWA operation.

*Response: As discussed at the meeting on March 16, 2023, the Program Team has agreed to notify the City of Redlands of spills, releases, or exceedances related to BBARWA operations.*

Comment Letter #8 LVEDA: The Comment Letter asks that the following analysis be included in the EIR:

- Background data is provided about the Lucerne Valley groundwater, which is over-drafted and adjudicated within the Mojave River Basin “Judgment.”
- The Watermaster is decreasing water rights for Lucerne Valley at 5% per year
  - LVEDA indicates that BBARWA’s wastewater could account for about one half of the Lucerne Valley inflow or “Physical Safe Yield.”

*Response: LVEDA is correct in that, the MBA Watermaster has assumed that 2,000 AFY of BBARWA effluent sent to the LV Site contributes to the Safe Yield of the Lucerne Valley Basin, and this figure is about one-half of the Safe Yield of the Lucerne Valley Basin. However, as discussed further below, and further at the meeting held on March 13, 2023 with MWA and LVEDA, the current estimated amount of recharge to the Lucerne Valley Basin attributable to BBARWA operations is about 1,610 AFY. Note that this estimate is a conservative estimate as it did not account for water losses due to the oasis effect and other factors. Therefore, this volume may be slightly lower. This analysis is presented in Section 4.11.6.2 Water Balance.*

Comment Letter #8 LVEDA: The commenter suggests that the EIR should quantify the:

- Average annual amount of actual recharge into the Lucerne Valley aquifer from BBARWA effluent versus what has been evapo-transpired into the atmosphere from spray irrigation from inefficient wheel lines.

*Response: As discussed in Section 4.11.6.2 Water Balance, to assess the impacts that the Program will have on the LV Site, a water balance was completed to estimate the volume of water that percolates into the Lucerne Valley Basin and estimate the reduction in flows resulting from the Program. Please note that this analysis did not account for the oasis effect and other uncertainties related to data gaps, as it requires many years of data to understand the microclimate of the area. A study to this effect has not been conducted, as the reduction in flow to the LV Site is being proposed as part of this Program. As such, no former efforts to quantify the amount of BBARWA discharge that reaches the Lucerne Valley Basin had, to date, been conducted so far as BBARWA is aware. This information is not available, so a simple water balance was prepared to generally understand conditions.*

*Based on this assessment, the average amount of effluent BBARWA has sent to the LV Site is about 2,190 AFY. Of this amount of effluent, 860 AFY (39%) was sent to the unlined discharge basins on the LV Site, and 1,330 AFY (61%) was used for crop irrigation by the farmer who leases the property from BBARWA. On average, the discharge basins are estimated to lose about 20 AFY (2%) of water through evaporation, so the estimated recharge volume is 840 AFY. It is also assumed that the irrigated crops use about 560 AFY of 1,330 AFY of the applied water, and the remaining 770 AFY is percolated into the Lucerne Valley Basin. Therefore, the BBARWA discharge is estimated to recharge about 1,610 AFY.*

- What water was “exported” out that was used to grow hay?

*Response: See response above, it is estimated that 1,330 AFY was utilized by the farmer for crop production. Refer to **Figure 3-36**.*

- How much wastewater went directly to the recharge basin, which might have percolated at least to the upper aquifer?

*Response: Please refer to the discussion in the paragraph above; it is estimated that 1,610 AFY of the 2,190 AFY undisinfected secondary wastewater effluent sent to the LV Site each year contributes to the Lucerne Valley Basin recharge.*

**Comment Letter #8 LVEDA:** The commenter asks, if the inflow to the Lucerne Valley groundwater basin is measured at 2,300 +/- acre feet per year, what portion of that amount is recharged as groundwater?

- The reason for the inquiry is that this could make a difference in how the Watermaster calculates BBARWA’s withdrawal proposed by the Program would affect the inflow or “Physical Safe Yield.”
- The commenter notes that with the reduced recharge or Physical Safe Yield to the Lucerne Valley groundwater basin from BBARWA – the LVEDA and area at large stands to lose greater water rights and pumping allowances, which has a potential to result in less water for the community.
- The commenter notes that, in short, the EIR should inform the LVEDA how much real water the community stands to lose as a result of the Program.

*Response: As discussed above, currently it is estimated that 1,610 AFY of the 2,190 AFY of the undisinfected secondary effluent sent to the LV Site each year contributes to the Lucerne Valley Basin recharge. As discussed at the meeting between the LVEDA, MWA, and the Program Team, BBARWA plans to send water flows in excess of the 2.2 MGD treatment capacity. The volume of water sent to the LV Site will depend on hydrologic conditions. In a dry year, no water would be sent to the LV Site. However, in a wet year like in 2011, up to 1,050 AFY could be sent to the LV Site. The 2012-2022 period that was used to characterize current conditions was very dry and did not include wet years like 2005, 2011, and 2023. Therefore, a longer period (2005-2023) was used to estimate the average future monthly and annual flows to the LV Site to account for wet years. Based on this period, an average of about 340 AFY of secondary effluent discharge could be sent to the LV Site. The effluent sent to the LV Site will remain undisinfected secondary treated effluent as the effluent sent to the LV Site will not undergo full advanced treatment. As stated under **Subchapter 4.3, Agriculture and Forestry**, discussions with the contract farmer indicate that during the winter months, it may be possible to grow grain(s) on approximately 40 acres of the LV Site. If the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) to handle excess flows of undisinfected secondarily treated effluent or could make the treated effluent available to another party for alternative use. Overall, with the implementation of the Program, on average, the LV Site would lose about 1,270 AFY (1,610 AFY - 340 AFY = 1,270 AFY) of water for recharge of the Lucerne Valley Basin.*

*However, it is important to note that BBARWA’s wastewater flow to the LV Site is not considered an adjudication water right or claim to the LV Basin, but only considered to be an accounting for that supply (**Appendix 23**). Since BBARWA’s wastewater is not included in the LV Basin’s annual*

yield calculation or claim to that supply, BBARWA is not bound by the LV Basin's adjudication and its wastewater can be diverted to be reused in Big Bear Valley at BBARWA's discretion (**Appendix 24**).

BBARWA understands that, to maintain proper water balances within each Subarea, the Judgment of the MBA establishes a decreasing Free Production Allowance (FPA) in each Subarea during the first five years and provides for the Court to review and adjust, as appropriate, the FPA for each Subarea annually thereafter. The production safe yield (PSY) is calculated as the difference between total pumping in a subarea and the deficit between total water supply and consumptive use and outflow. According to the MBA Watermaster Annual Report for Water Year 2021-2022, the PSY for Este Subbasin will be reevaluated within the next year and a recommendation provided to MBA Watermaster and the Court during the 2023-24 Water Year. The 2022-2023 FPA is 12,523 AFY, which is greater than the PSY of 4,728. As the FPA remains higher than PSY in Este Subbasin, the MBA Watermaster determined that additional rampdown is warranted. It is recommended that Este Subbasin FPA be reduced by 5% to 55% for Water Year 2023-24. This is relevant because the proposed reduction in discharge to the Lucerne Valley Basin would have the potential to further decrease the PSY of the Este Subbasin.

The LVEDA asks how the Program will impact the PSY, which is understood to impact the FPA. This is discussed in detail under issue (b), under Section 4.11.10, Impact Discussion, the Program may result in a further reduction in FPA, which impacts Stakeholders of the Este Subbasin/Lucerne Valley Basin's pumpage allowance, thereby further reducing the available water supply to stakeholders of the Lucerne Valley Basin. It is outside of the purview of this DPEIR to determine the actions of the MBA Watermaster in response to the anticipated reduction in supply of the Este Subbasin/Lucerne Valley Basin, as the Program Team have no authority to make such a determination. Regardless, this decrease in recharge to the Este Subbasin/Lucerne Valley Basin would be significant and unavoidable.

Comment Letter #8 LVEDA: The commenter asks whether the Colorado Regional Board would require BBARWA to remediate high nitrate-laden groundwater, if attributable to wastewater percolation, from the Lucerne Valley groundwater basin upper aquifer?

- Background provided includes that the MWA, is planning a recharge basin in Lucerne Valley using SWP, and is working to determine the best location so as to not mingle discharge into groundwater with high nitrates.

*Response:* In 2016, the Colorado Regional Board requested for BBARWA to complete an analysis to assess changes in groundwater quality beneath the LV Site since BBARWA began collecting groundwater quality data in 1991. As shown by this study, provided in **Appendix 5**, the Groundwater Quality Evaluation at the Lucerne Valley Land Discharge Location, dated December 22, 2017 and prepared by Thomas Harder & Co. and WSC, and shown on **Figure 2-1**, the Nitrate concentrations in BBARWA's discharge is lower than all onsite monitoring wells. Based on historical data, the BBARWA effluent has a lower concentration than the local groundwater, indicating that the BBARWA effluent is not the source of nitrate concentrations in groundwater. The BBARWA effluent is only a minor contributor and helps improve water quality. The BBARWA effluent is not the cause of the issue. Additionally, the onsite agricultural operation could be contributing to TDS and nitrate, but there is no evidence that the crops are being over fertilized. In 2021, BBARWA received an updated WDR) Permit (Order R7-2021-0023), which included the findings of this study. To verify that there is no degradation due to nitrogen or TDS is occurring, the Colorado Regional Board is requiring BBARWA to conduct quarterly total nitrogen (TN), nitrate as nitrogen, and TDS monitoring in the groundwater monitoring wells. This permit also established

average monthly effluent limits for TN and TDS of 10 mg/L and 500 mg/L, respectively. Through this permit, the Colorado Regional Board is protecting the water quality of the Lucerne Valley Basin.

Comment Letter #8 LVEDA: Economically, the LVEDA suggests that the Program would not only facilitate the loss of a water supply, but also loss of economic benefit from the 480-acre farm, its production, local employment to lease and operate it, and hay for public purchase.

*Response: Economic considerations are not required to be analyzed under CEQA. However, this EIR acknowledges that the loss of farmland at the LV Site from Program implementation is a significant and unavoidable impact. Refer to issues (a), (b), and (e), under **Subchapter 4.7, Hydrology and Water Quality**, which outline that reasons that a significant and unavoidable cumulative and Program specific hydrology and water quality impact on the Lucerne Valley Basin has been determined.*

Comment Letter #8 LVEDA: The commenter suggests that the Big Bear Valley's gain from the Program would be the Lucerne Valley's loss. Impacts to Lucerne Valley should be divulged and mitigated.

*Response: The comment is noted. The proposed Program has been determined to have a significant and unavoidable potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the Program may impede sustainable groundwater management of the Lucerne Valley Basin. No mitigation is available to reduce the potential for a significant and unavoidable impact to occur on the Lucerne Valley Basin as a result of Program implementation; however, BBARWA and the Program Team are open to working with the MBA Watermaster and MWA to find an alternative use for the excess secondary effluent discharged to the LV Site, should there be a desire to do so. Potential alternatives include selling the undisinfected water to another water agency to help offset potable use, leaving more water in the Lucerne Valley Basin. However, additional treatment may be required for the unrestricted use of BBARWA's recycled water.*

Comment Letter #9 Mojave Water Agency: The Comment Letter relays MWA's concern for the reduced waste flow to existing the Lucerne Valley discharge point in the amount of 2,250 AFY. The Comment Letter states that Lucerne Valley is part of the adjudicated MBA, and that pumping and use of water supplies are therefore subject to the Riverside Superior Court. The Comment Letter indicates that the waste BBARWA discharges to Lucerne Valley is a significant part of the total water supply for the area, and the reduction would have the potential to adversely impact the over drafted groundwater basin. The Comment Letter asks that the PEIR evaluate any impacts associated with the reduction in flow to Lucerne Valley as well as identify and evaluate water quality impacts from the waste to the Lucerne Valley area since the discharge began in 1980.

*Response: Impacts related to the water quality of BBARWA effluent on the Lucerne Valley Basin have been divulged in **Appendix 5**, the Groundwater Quality Evaluation at the Lucerne Valley Land Discharge Location, dated December 22, 2017 that was prepared by Thomas Harder & Co. and WSC. This analysis was updated in 2023, which is included in **Appendix 9** and had the same conclusions. As stated above, the BBARWA effluent is not the source of water quality degradation (high TDS or nitrate concentrations). The water quality of BBARWA effluent that would be discharged to the LV Site will likely remain the same, or slightly better due to the installation of a more advanced nitrate removal treatment system that would apply to the secondary effluent treatment train, resulting in slightly greater nitrate removal in the disinfected secondary effluent*



*sent to the LV Site. Because BBARWA's effluent has lower nitrogen concentrations than the local groundwater supply, by reducing the BBARWA effluent flow, the groundwater will lose a dilution source for nitrate. Refer to the responses above, as previously discussed, refer to issues (a), (b), and (e), under **Subchapter 4.7, Hydrology and Water Quality**, which outline that reasons that a significant and unavoidable cumulative and Program specific hydrology and water quality impact on the Lucerne Valley Basin has been determined.*

Comment Letter #9 Mojave Water Agency: The Comment Letter indicates that there is a desert wash about one mile to the north of the Lucerne Valley discharge site that carries surface water when rainfall is abundant. The PEIR should evaluate whether recharge from the LV Site may contribute in the subsurface to waters supporting flow in the wash and potentially desert habitats and identify whether a wastewater Change Petition approval may be required from SWRCB for the Program.

*Response: As discussed at the meeting between the LVEDA, MWA, and the Program Team on March 13, 2023, Thomas Harder & Co. prepared an analysis to assess if the BBARWA effluent discharge may contribute to subsurface flows. This analysis included a review groundwater level records from 1994 through 2020 from wells located north of the Lucerne Valley Site and within or adjacent to the wash. Data indicated that groundwater near the wash has never been shallower than approximately 110 feet below the land surface. Based on groundwater levels, there is no evidence that groundwater levels have ever reached the ground surface at the wash. Therefore, it is not possible that recharge from the discharge of secondary effluent to the LV Site has ever caused surface water flow in the wash.*

Comment Letter #10 Michael Meyer: The Comment Letter conveys concern for groundwater contamination at the proposed brine settlement ponds at the BBARWA WWTP and suggests that the ponds should be lined or other MMs should be considered to protect the underlying groundwater basin.

*Response: Refer to the response to Comment Letter #10, Michael Meyer, above under Air Quality, which responds to this comment entirely.*

Comment Letter #10 Michael Meyer: The Comment Letter conveys concern for the water quality of treated water before it is discharged to Shay Pond and Baker Pond.

- The commenter suggests monitoring of the water quality should be continuous and that the ability to shut down flow should be instant and automated.
- The alarms and points of automation should be explained in the PEIR, and all fail safes and responsibilities at all hours of the day should be verified in the PEIR.

*Response: The Program will discharge treated effluent to Shay Pond, a tributary of Shay Creek, and to Stanfield Marsh (which is known locally as Baker Pond). BBARWA will maintain its current discharge location in Lucerne Valley to discharge peak flows exceeding 2.2 MGD, which will continue to be disinfected secondary treated effluent that meets the Lucerne Valley permit water quality standards, which are less stringent than Big Bear Lake and Stanfield Marsh water quality standards.*

*BBARWA will prepare a Title 22 Engineering Report describing the upgraded WWTP's reliability features. The Title 22 Engineering Report must be reviewed and approved by DDW) and the Santa Ana Regional Board before the plant becomes operational. The Report will describe each reliability feature and state under what conditions the features will be activated. When alarms*

*indicate system failure, the Report will state who will be notified, where the alarm will be received, how the location is staffed, and the hours that the plant will be staffed.*

Comment Letter #10 Michael Meyer: The Comment Letter conveys concern for the water quality from the treatment plant in relationship to compliance with the proposed permit into Baker Pond from the RWQCB.

*Response: In 2019, BBARWA started working with the Santa Ana Regional Board to permit the Stanfield Marsh/Big Bear Lake Discharge (Stanfield Marsh is known locally also as Baker Pond). As of result of these meetings, BBARWA is implementing full advanced treatment to produce Program Water to protect Big Bear Lake and its beneficial uses. BBARWA is collecting additional water quality data of the Program Water and Big Bear Lake to support the Santa Ana Regional Board permitting process. It is anticipated that the NPDES permit will be obtained in 2025, well before the discharge is initiated in 2027, to which BBARWA must adhere in order to discharge the Program Water into Stanfield Marsh/Big Bear Lake.*

Comment Letter #10 Michael Meyer: The Comment Letter conveys concern regarding treated water utilization at Baker Pond flowing into Big Bear Lake.

- The commenter asks that the EIR identify issues with water chemistry, and if mixing of treated water with Lake water, mechanically, will be necessary.
- The commenter expresses concern that treated water from Baker Pond could create a dead zone due to lack of nutrients or low oxygen content.

*Response: The Program Water will be stabilized with mineral before it is discharged into Shay Pond and Stanfield Marsh. The RO process removes dissolved solids, including minerals, resulting in low levels of calcium hardness and alkalinity. Stabilization is required to protect distribution pipelines, pump stations, and storage tanks.*

*Dr. Michael A. Anderson (Dr. Anderson) simulated the effects of temperature on Stanfield Marsh and Big Bear Lake using his two-dimensional (2D) model. The outcome was that natural wind-mixing and wave action was predicted to readily mix water near the confluence between Stanfield Marsh and Big Bear Lake, without a visible plume of Program Water. The simulation also indicated that Stanfield Marsh would be running warmer than natural conditions, with a gradient from inflow to confluence with Big Bear Lake, but was predicted to function as a (warm) natural wetland-shallow pond. The Pilot Plan currently underway will provide important information to determine if adaptive management of Program flows are needed. The results of simulations are discussed in **Chapter 3, Program Description, Subsection 3.6.3.***

*In addition, the Replenish Big Bear Antidegradation Analysis (**Appendix 3**), concluded that the proposed discharge to Stanfield Marsh/Big Bear Lake is estimated to improve water quality in Big Bear Lake for TDS, TN, total phosphorous (TP), and chlorophyll-a, maintain similar water quality for TIN, and have a very minor impact on boron. Future boron concentrations in Big Bear Lake are estimated to increase very slightly due to the proposed BBARWA discharge but are estimated to remain well below the 0.75 mg/L Santa Ana Basin Plan objective for boron. The Lake Analysis shows that projected ambient Lake concentrations of TIN and chlorophyll-a with the proposed discharge will exist below their relevant WQO (TIN) or TMDL target (chlorophyll-a). The Lake Analysis also shows that ambient Lake concentration of TDS and TP with the proposed discharge are estimated to exceed the 175 mg/L TDS water quality objective (WQO) and the 35 µg/L TP Total Maximum Daily Load (TMDL) target, respectively. However, the modeled baseline (no Program) condition is projected to result in Big Bear Lake concentrations for TDS, TP, TIN, and*

*chlorophyll-a that exceed those concentrations more often than all modeled BBARWA discharge scenarios. Modeled results for the proposed BBARWA discharge, when combined with a TP Offset Program, show the greatest improvements to future, ambient Big Bear Lake concentrations as compared to the modeled baseline (no Program) condition.*

Comment Letter #14 Bear Valley Mutual Water Company:

- The Comment Letter reiterates that the Replenish Big Bear Program Update indicated that Program Water will not be owned by Mutual if there is excess storage capacity in Big Bear Lake per BBARWA Legal Counsel. The Comment Letter reiterates that Mutual receives numerous water resource benefits pursuant to the 1977 Judgment.
- The Comment Letter indicates that Mutual will rely on the project operator(s) to comply with the water regulations identified in the Program Description and requests that Mutual be included in any discussions and decisions that may impact the water quantity and water quality of Big Bear Lake and thereby impact Mutual, which receives water from Big Bear Lake.

*Response: As demonstrated in the Hydrology and Water Quality impact analysis provided in **Subchapter 4.11**, impacts to the water quality of Big Bear Lake from implementation of the Program would comply with the State and Federal antidegradation polices. BBARWA will share operational data regarding their AWWP and inform Mutual of any decisions or activities that may impact downstream water quality.*

Scoping Meeting Commenter #2 on 1/5/23 Kelly Barrett: The commenter states that 2.2 MGD is a lot of water. He asks that, if the BBARWA WWTP was to receive more water, such as 3 MGD, during wet weather, are there provisions to store the additional water? What would happen if the WWTP received more than 2.2 MGD.

*Response: BBARWA plans to send water flows in excess of the 2.2 MGD treatment capacity to LV Site. No additional water would be stored on site.*

Scoping Meeting Commenter #3 on 1/5/23 Steve Sayer: The commenter asks, at what point would the Program consider making water available to make snow on the ski slopes?

*Response: BBMWD has a contract in place with the Resort. This contract offers about 1,100 AFY for use by the Resort for snow making purposes. This contract is not anticipated to change as a result of Program implementation, but generally, there will be greater water available in Big Bear Lake, which will mean that Big Bear Lake is fuller (about 4 feet fuller on average with the Program in place).*

Scoping Meeting Commenter #3 on 1/5/23 Steve Sayer: The commenter asks if the water that is made into snow returns to Big Bear Lake.

*Response: On average, it is estimated that about one-half of the snow melt (natural or man-made) runs off into Big Bear Lake.*

Scoping Meeting Commenter #3 on 1/10/23 Steve Sayer: The commenter asks for clarity as to whether the residential water service relies on Lake water.

*Response: Big Bear Lake is not a direct source of potable water in the Big Bear Valley.*

Scoping Meeting Commenter #3 on 1/10/23 Steve Sayer: The commenter asks, would the water being discharged to Lucerne continue to occur, or stop under the Program?

*Response: Please refer to the response to comment #8, LVEDA, above. Overall, BBARWA plans to send water flows in excess of the 2.2 MGD treatment capacity. The volume of water sent to the LV Site will depend on hydrologic conditions. In a dry year, no water would be sent to the LV Site. However, in a wet year like in 2011, up to 1,050 AFY could be sent to the LV Site.*

Scoping Meeting Commenter #4 on 1/10/23 Randy Carroll: The commenter asks, how long would it take for Big Bear Lake to fill up when it is wet? When would overflow and spills occur?

*Response: The current Lake Analysis model is not able to predict when Big Bear Lake spills will occur. Big Bear Lake levels depend on rainfall, with the Program implementation, more water will be in Big Bear Lake. Thus, during wet periods, spills are more likely to occur. As shown in **Exhibit 2-1**, found in **Chapter 2**, if the Program had been implemented in 1977, Big Bear Lake would have spilled more often during consecutive wet years, such as in 2004 and 2009.*

## New water source mitigates drought impacts to the Lake

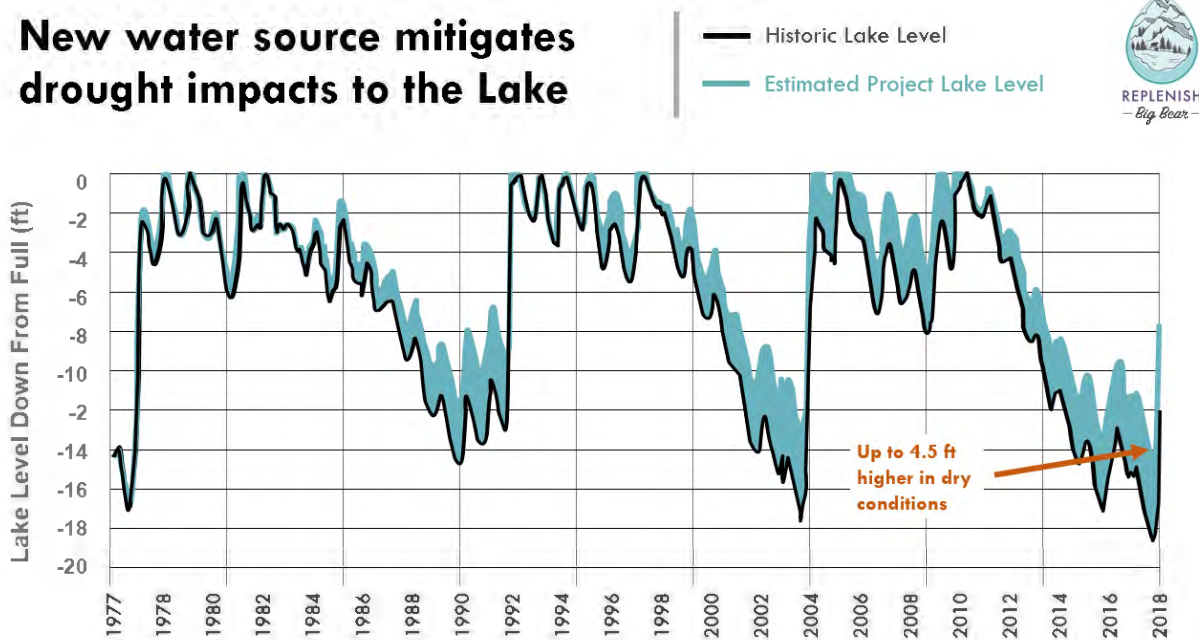


EXHIBIT 2-1: HISTORIC AND PROJECTED LAKE LEVELS

Scoping Meeting Commenter #4 on 1/10/23 Randy Carroll: The commenter asks, will the additional water soak into the ground?

*Response: Big Bear Lake has a clay bottom, as does Stanfield Marsh. There is minimal groundwater recharge from Big Bear Lake. Groundwater recharge is expected to occur laterally, in the shallow shores along Big Bear Lake's edges, but the Program is not being proposed to facilitate additional groundwater recharge via Big Bear Lake. Program Water stored in Big Bear Lake will be pumped from Big Bear Lake to the Resort Storage Pond and then pumped from a new pump station through a new pipeline to the Sand Canyon Recharge Area.*

### **Land Use and Planning**

**Comment Letter #6 SCAG:** The Comment Letter describes the purpose and responsibilities of SCAG, specifically SCAG's role in facilitating consistency between future projects and SCAG's adopted regional plans. The Comment Letter encourages that the DPEIR to discuss consistency with Connect SoCal Goals, Connect SoCal Strategies, and the overall Connect SoCal.

*Response: Refer to **Subchapter 4.12, Land Use and Planning**, where consistency with SCAG goals and policies is discussed in detail.*

**Comment Letter #6 SCAG:** The Comment Letter describes the Water Action Resolution adopted by SCAG's Regional Council that calls on SCAG to take action and support partners to reduce water use; improve water conservation, reuse, and efficiency; enhance water systems' health and resilience; pursue and potentially implement new water supply and storage opportunities; and support investments in water infrastructure and conservation practices that support the region's economic and population growth and fosters planning for the region's housing needs.

*Response: Refer to **Subchapter 4.12, Land Use and Planning**, where consistency with the Water Action Resolution is discussed in detail.*

**Comment Letter #6 SCAG:** The Comment Letter recommends a review of the Connect SoCal Final PEIR MMs, for applicability and feasibility in relation to the Replenish Big Bear Program.

*Response: The comment is noted. The measures were reviewed for applicability, and none would aid in avoiding the significant and unavoidable impacts identified in this DPEIR (Agriculture and Forestry Resources, Biological Resources, Hydrology and Water Quality, and Utilities and Service Systems).*

### **Mineral Resources**

No comments specific to this topic were received.

### **Noise**

No comments specific to this topic were received.

### **Population and Housing**

**Comment Letter #6 SCAG:** The Comment Letter also provides the City of Big Bear Lake growth forecasts in addition to the SCAG region wide growth forecasts.

*Response: The comment is noted and the data provided in the comment has been utilized in **Subchapter 4.15, Population and Housing** to forecast Program impacts.*

### **Public Services**

No comments specific to this topic were received.

### **Recreation**

No comments specific to this topic were received.

### **Transportation and Traffic**

No comments specific to this topic were received.

### **Utilities and Service Systems**

Comment Letter #13 State Water Resources Control Board: The Comment Letter points to Water Code Section 1211(a), which indicates that the Program's proposed wastewater treatment upgrades require approval from the SWRCB through submittal of a wastewater change petition to the Division.

- The Comment Letter notes that Water Code Section 1211(b) states that approval from the SWRCB is not required if the changes in discharge or use of the treated wastewater do not result in decreasing flow in any portion of a watercourse.
- The Comment Letter indicates that the Program appears to involve a reduction in storage in Big Bear Lake and a change in use of the water.
- The Comment letter asks that the EIR include pertinent information regarding the potential wastewater change petition.

*Response: The January 18, 2023, SWRCB NOP comment letter states that the "BBARWA WWTP currently produces up to 1,950 AFY of purified water but has the capacity to produce up to 2,210 AFY." This statement is not true as the Replenish Big Bear itself proposes what the SWRCB presumes is occurring at present, and therefore, the Program is proposing a new discharge to Stanfield Marsh/Big Bear Lake. Under current conditions, BBARWA sends their undisinfected secondary effluent to Lucerne Valley to irrigate crops used for livestock feed. Water that is not used for irrigation is disposed via percolations. This discharge is regulated under Order R7-2021-0023 WDR permit, issued by the Colorado Regional Board (**Appendix 22** of Volume 2 to this DPEIR).*

*Water Code Section 1211 (a) does not apply to changes in the discharge or use of treated wastewater that do not result in decreasing the flow in any portion of a watercourse and because the discharge to percolation ponds is not to a watercourse.<sup>4</sup> The current discharge is to a combination of percolation ponds and as irrigation water for farming operations in Lucerne Valley. Thus, Water Code Section 1211(a) does not apply to the proposed Program.*

Comment Letter #10 Michael Meyer: The Comment Letter requests that the disposal site and method for brine disposal from the brine settlement ponds be identified.

*Response: As part of the Program, between 23 and 57 acres will be used to construct solar evaporation ponds at the BBARWA WWTP site. The general location of the ponds is shown in **Figure 3-26**. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. Typically, solar evaporation ponds are lined shallow basins in which concentrate evaporates naturally as a result of solar radiation. As the brine evaporates, the minerals in the concentrate are precipitated in salt crystals, which are removed periodically and disposed off-site. The precipitated crystal will be hauled off to an appropriately licensed disposal site.*

*The solar evaporation ponds will be constructed with impervious lining for the protection of the underlying basin. In addition, one or more monitoring wells will be installed at the evaporation pond on the WWTP Site to monitor groundwater quality, as required by the future discharge permit.*

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<sup>4</sup> State Water Board, 2023. Wastewater Change Petition Checklist.  
[https://www.waterboards.ca.gov/water\\_issues/programs/recycled\\_water/docs/2021/1211\\_checklist\\_v2\\_accessible\\_3.pdf](https://www.waterboards.ca.gov/water_issues/programs/recycled_water/docs/2021/1211_checklist_v2_accessible_3.pdf) (accessed 10/17/23)



*Based on a review of similar solar evaporations pond operations handling brine, odor does not appear to be an issue with operations of this type. BBARWA will maintain the solar evaporation ponds by periodically removing the salt crystals and hauling the precipitated crystal to an appropriately licensed disposal site. This is anticipated to prevent odors from accumulating at the solar evaporation ponds and migrating to nearby sensitive receptors. Furthermore, given the location proposed for installation of the solar evaporation ponds at a 0.25-mile distance from the nearest sensitive receptor (residents, hospitals, senior living, churches, schools, etc.) any odors generated by the solar evaporation ponds are anticipated to dissipate at the nearest sensitive receptor. Furthermore, the existing operation of the BBARWA WWTP involve a greater potential for odors to travel, and odor nuisance has not been a reported issue in the community as a result of BBARWA operations. Thus, there has been no indication that odor traveling to sensitive receptors will result from operation of the brine ponds, but mitigation has been identified that would require odor observation for the first year of the Program, with an odor response component in the event that odors are observed by nearby sensitive receptors.*

Comment Letter #10 Michael Meyer: The Comment Letter requests that the disposal site and method for brine from the brine settlement ponds be identified.

*Response: Refer to the response to Comment Letter #10, Michael Meyer, above under Air Quality, which responds to this comment entirely.*

**APPENDIX 8.3**  
**NOP DISTRIBUTION LIST**

OFFICE OF PLANNING & RESEARCH  
STATE CLEARINGHOUSE  
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SACRAMENTO CA 95814

(Electronically submitted)

BIG BEAR AIRPORT DISTRICT  
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BIG BEAR CHAMBER OF COMMERCE  
~~PO BOX 1936~~  
PO BOX 2860  
BIG BEAR LAKE CA 92315

CITY OF BIG BEAR LAKE  
CITY MANAGER  
PO BOX 10000  
BIG BEAR LAKE CA 92315

BIG BEAR MOUNTAIN RESORT  
PO BOX 77  
BIG BEAR LAKE CA 92315

BEAR VALLEY MUTUAL WATER COMPANY  
101 E OLIVE AVENUE  
REDLANDS CA 92373

CALIFORNIA DEPT OF FISH & WILDLIFE  
INLAND DESERT REGION (6)  
ENVIRONMENTAL REVIEW  
3602 INLAND EMPIRE BLVD SUITE C-220  
ONTARIO CA 91764

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IGR/LOCAL DEVELOPMENT REVIEW  
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ENVIRONMENTAL REVIEW  
73-720 FRED WARING DRIVE SUITE 100  
PALM DESERT CA 92260

CALIFORNIA RWQCB  
LAHONTAN REGION  
ENVIRONMENTAL REVIEW  
15095 AMARGOSA ROAD  
BLDG 2, SUITE 210  
VICTORVILLE CA 92394

CALIFORNIA RWQCB  
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HIGHLAND CA 92346

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FAWNSKIN CA 92333

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MANAGEMENT DISTRICT  
ENVIRONMENTAL REVIEW  
14306 PARK AVENUE  
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MOJAVE DESERT RESOURCE  
CONSERVATION DISTRICT  
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13846 CONFERENCE CENTER DRIVE  
APPLE VALLEY CA 92307

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SUPERVISOR DAWN ROWE  
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SAN BERNARDINO COUNTY  
DEPT OF PUBLIC WORKS-FLOOD  
CONTROL DISTRICT  
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SAN BERNARDINO CA 92415-0835

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FIRE PROTECTION DISTRICT, HAZARDOUS  
MATERIALS DIVISION  
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SOCIETY  
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WATER DISTRICT  
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