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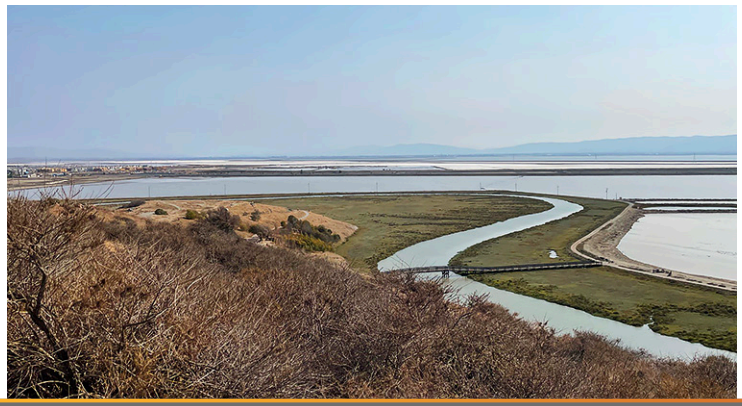

DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE

Cargill Mixed Sea Salts Processing and Brine Discharge Project

SCH No. 2022050436

Prepared for:

EBDA
EAST BAY DISCHARGERS AUTHORITY

January 2023

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Prepared for:

East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580-1841

Contact:

Jackie Zipkin, PE
General Manager

Prepared by:

Ascent Environmental
455 Capitol Mall, Suite 300
Sacramento, CA 95814

Contact:

Andrea L. Shephard, PhD
Senior Project Manager

January 2023

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TABLE OF CONTENTS

Section		Page
LIST OF ABBREVIATIONS		VI
	EXECUTIVE SUMMARY	ES-1
	ES.1 Introduction	ES-1
	ES.2 Summary Description of the Project	ES-1
	ES.3 Summary of Alternatives	ES-5
	ES.4 Areas of Controversy and Issues to be Resolved	ES-6
	ES.5 Summary of Environmental Impacts and Recommended Mitigation Measures	ES-7
1	INTRODUCTION	1-1
	1.1 Project Requiring Environmental Analysis	1-1
	1.2 Purpose and Intended Uses of this Draft EIR	1-4
	1.3 Scope of this Draft EIR	1-4
	1.4 Agency Roles and Responsibilities	1-5
	1.5 Public Review Process	1-6
	1.6 Draft EIR Organization	1-6
	1.7 Standard Terminology	1-7
2	PROJECT DESCRIPTION	2-1
	2.1 Project Background and Need	2-1
	2.2 Project Objectives	2-2
	2.3 Project Location	2-2
	2.4 Site History	2-2
	2.5 Salt Production	2-4
	2.6 Proposed Project	2-6
3	ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES	3.1-1
	3.1 Approach to the Environmental Analysis	3.1-1
	3.2 Air Quality	3.2-1
	3.3 Biological Resources	3.3-1
	3.4 Cultural and Tribal Cultural Resources	3.4-1
	3.5 Geology, Soils, Mineral Resources, and Paleontological Resources	3.5-1
	3.6 Greenhouse Gas Emissions and Climate Change	3.6-1
	3.7 Hazards and Hazardous Materials	3.7-1
	3.8 Hydrology and Water Quality	3.8-1
	3.9 Noise and Vibration	3.9-1
	3.10 Recreation	3.10-1
4	CUMULATIVE IMPACTS	4-1
	4.1 Introduction to the Cumulative Analysis	4-1
	4.2 Geographic Context	4-1
	4.3 Related Projects	4-2
	4.4 Analysis of Cumulative Impacts by Resource Topic	4-8

5 ALTERNATIVES....5-1
5.1 Introduction....5-1
5.2 Considerations for Selection of Alternatives....5-2
5.3 Alternatives Considered but Not Evaluated Further....5-4
5.4 Alternatives Selected for Detailed Analysis....5-6
5.5 Comparison of Alternatives....5-32
5.6 Environmentally Superior Alternative....5-35

6 OTHER CEQA SECTIONS....6-1
6.1 Growth Inducement....6-1
6.2 Significant and Unavoidable Adverse Impacts....6-3

7 REFERENCES....7-1

8 REPORT PREPARERS....8-1

Appendices

Appendix A – Notice of Preparation and Scoping Comments
Appendix B – Air Quality and Greenhouse Gas Modeling Assumptions and Results
Appendix C – Special-Status Species
Appendix D – Noise Measurement Data and Noise Modeling Calculations

Figures

Figure 1-1 EBDA System....1-2
Figure 1-2 Cargill Solar Salt Facility....1-3
Figure 2 1 Project Location....2-3
Figure 2-2 Major On-Site Facilities for Pond 12 and Pond 13 MSS Processing....2-8
Figure 2-3 Plummer Creek Pump Station and Dissolution Water Supply System....2-9
Figure 2-4 Backup Dissolution Water Supply Connection to Multipurpose Ditch....2-11
Figure 2-5 Dissolution Water Distribution and Bittern Recovery System....2-13
Figure 2-6 Pond 12 MSS Brine Pump Station....2-14
Figure 2-7 Pond 13 Rainwater Decanting Weir Structure....2-17
Figure 2-8a MSS Brine Transport Pipeline....2-19
Figure 2-8b MSS Brine Transport Pipeline....2-20
Figure 2-8c MSS Brine Transport Pipeline....2-21
Figure 2-8d MSS Brine Transport Pipeline....2-22
Figure 2-8e MSS Brine Transport Pipeline....2-23
Figure 2-8f MSS Brine Transport Pipeline....2-25
Figure 2-8g MSS Brine Transport Pipeline....2-27
Figure 2-8h MSS Brine Transport Pipeline....2-29
Figure 2-9 MSS Brine Transport Pipeline Connection to the EBDA Combined Effluent Conveyance System....2-31
Figure 3.3-1a Wetland and Aquatic Resources Northern Extent....3.3-16
Figure 3.3-1b Wetland and Aquatic Resources Southern Extent....3.3-17
Figure 3.3-2a Terrestrial Habitats Northern Extent....3.3-18
Figure 3.3-2b Upland Habitats Southern Extent....3.3-19

Figure 3.3-3a Designated Critical Habitat Northern Extent 3.3-33
Figure 3.3-3b Designated Critical Habitat Southern Extent 3.3-34
Figure 3.3-4a Essential Fish Habitat Northern Extent 3.3-40
Figure 3.3-4b Essential Fish Habitat Southern Extent 3.3-41
Figure 3.3-5a Sensitive Natural Communities Northern Extent 3.3-52
Figure 3.3-5b Sensitive Natural Communities Southern Extent 3.3-53
Figure 3.5-1 Soil Types in the Vicinity of the Project Site 3.5-9
Figure 3.7-1 Hazardous Materials Sites in the Vicinity of the Project Site 3.7-9
Figure 3.8-1 FEMA Flood Zones in the Vicinity of the Project Site 3.8-13
Figure 3.8-2 Sea Level Rise in the Vicinity of the Project Site 3.8-15
Figure 3.8-3 Dam Failure Inundation Areas in the Vicinity of the Project Site 3.8-16
Figure 3.8-4 California Aquatic Resources Inventory 3.8-21
Figure 3.9 1 Noise Measurement Locations 3.9-15
Figure 3.10-1 Parks and Recreational Resources within 0.25 Mile of the Project Site 3.10-6
Figure 4-1 Cumulative Projects 4-3
Figure 5-1 Alternatives 5-7

Tables

Table ES-1 Summary of Impacts and Mitigation Measures ES-8
Table 2-1 Estimated Construction Footprint, Total Excavation Quantity, and Maximum Excavation Depth of Proposed Facilities at the Solar Salt Facility 2-33
Table 2-2 Trenchless Crossing Locations Along the MSS Brine Transport Pipeline Alignment 2-34
Table 2-3 Estimated Area of Ground Disturbance, Total Excavation Quantity, and Maximum Excavation Depth for the MSS Brine Transport Pipeline 2-36
Table 3.2-1 National and California Ambient Air Quality Standards 3.2-2
Table 3.2-2 Attainment Status Designations for Alameda County 3.2-8
Table 3.2-3 Sources and Health Effects of Criteria Air Pollutants 3.2-9
Table 3.2-4 Summary of Maximum Emissions of Criteria Air Pollutants and Precursors Associated with the Project (2023–2024) 3.2-13
Table 3.2-5 Summary of Maximum Operational Emissions of Criteria Air Pollutants and Precursors from the Project (2024) 3.2-14
Table 3.3-1 Terrestrial Habitats within 1 Mile of the Project Area 3.3-15
Table 3.3-2 Temporary Impacts to Waters and Wetlands from MSS Brine Transport Pipeline Construction 3.3-78
Table 3.5 1 Soil Types 3.5-8
Table 3.5 2 Mineral Land Classification 3.5-12
Table 3.6-1 Statewide GHG Emissions by Economic Sector 3.6-5
Table 3.6-2 Alameda County GHG Emissions Baseline by Sector 3.6-6
Table 3.6-3 City of Hayward GHG Emissions Baseline by Sector 3.6-6
Table 3.6-4 Union City GHG Emissions Baseline by Sector 3.6-6
Table 3.6-5 City of Fremont GHG Emissions Baseline by Sector 3.6-7
Table 3.6-6 City of Newark GHG Emissions Baseline and Forecast by Sector 3.6-7

Table 3.6-7 Construction-Generated Greenhouse Gas Emissions 3.6-10
Table 3.7-1 Documented Hazardous Materials Sites within One-Quarter Mile of the Solar Salt Facility and MSS Brine Transport Pipeline Alignment 3.7-7
Table 3.7-2 Schools Located within One-Quarter Mile of the MSS Brine Transport Pipeline Alignment 3.7-10
Table 3.8-1 Beneficial Uses of Major Water Bodies in the Project Area 3.8-17
Table 3.8-2 Wetland Water Quality Impacts 3.8-20
Table 3.8-3 Physical Characteristics and Nutrients in Effluent and Brine Blends and Regulatory Requirements 3.8-25
Table 3.9-1 FTA Indoor Ground-Borne Vibration Impact Criteria for General Vibration Assessment 3.9-2
Table 3.9-2 FTA Construction Damage Vibration Criteria 3.9-2
Table 3.9-3 Exterior Noise Standards 3.9-3
Table 3.9-4 Receiving Land Use — Single-or Multiple-Family Residential, School, Hospital, Church or Public Library Properties Noise Level Standards (dBA) 3.9-3
Table 3.9-5 Noise Levels Standards for New Industrial and Commercial Noise Sources 3.9-7
Table 3.9-6 Typical A-Weighted Noise Levels 3.9-10
Table 3.9-7 Vibration Reference Levels for Construction Equipment 3.9-12
Table 3.9-8 Noise Measurement Summary 3.9-14
Table 3.9-9 Noise Emission Levels from Construction Equipment 3.9-17
Table 3.9-10 Estimated Temporary Noise Levels during Construction 3.9-19
Table 3.9-11 Temporary Noise Change in L_{dn} Related to Construction Activity 3.9-19
Table 3.9-12 Temporary Hourly Noise Change Related to Construction Activity 3.9-20
Table 3.9-13 Temporary Noise Change in L_{dn} Related to Construction Activity in Unincorporated Alameda County 3.9-20
Table 3.9-14 Temporary Noise Change in L_{dn} Related to Construction Activity in Hayward 3.9-21
Table 3.9-15 Temporary Noise Change in L_{dn} Related to Construction Activity in Union City 3.9-22
Table 3.9-16 Temporary Noise Change in L_{dn} Related to Construction Activity in Fremont 3.9-22
Table 3.9-17 Temporary Noise Change in L_{dn} Related to Construction Activity in Newark 3.9-23
Table 3.9-18 Vibration Emission Levels from Construction Equipment 3.9-25
Table 3.9-19 Estimated Long-Term Emitted Noise Levels from Stationary Pumps 3.9-26
Table 3.10 1 Parks and Recreation Resources in the Study Area 3.10-4
Table 3.10 2 Project Effects on Parks and Recreation Resources in the Study Area 3.10-9
Table 4-1 Geographic Scope of Cumulative Impacts 4-2
Table 4-2 Present and Reasonably Foreseeable Future Projects 4-4
Table 5-1 Comparison of the Area of Ground Disturbance, Excavation Quantity, and Maximum Excavation Depth Estimates between the Proposed Project and Alternative 1 5-11
Table 5-2 Comparison of the Area of Ground Disturbance, Excavation Quantity, and Maximum Excavation Depth Estimates between the Proposed Project and Alternative 2 5-23
Table 5-3 Summary of Environmental Effects of the Alternatives Relative to the Project 5-32

LIST OF ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACDEH	Alameda County Department of Environmental Health
ACFCWCD	Alameda County Flood Control and Water Conservation District
ACMC	Alameda County Municipal Code
ACWD	Alameda County Water District
af	acre feet
AHF	Above Hayward Fault
aka	also known as
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act of 1972
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
Basin Plan	San Francisco Bay Water Quality Control Plan
Bay Area	San Francisco Bay Area
Bay Plan	San Francisco Bay Plan
Bay	San Francisco Bay
Bay-Delta	San Francisco Bay-Delta
BCDC	San Francisco Bay Conservation and Development Commission
BHF	Below Hayward Fault
BMP	best management practice
CAA	federal Clean Air Act
CAAQS	California ambient air quality standards
CAFE	corporate average fuel economy
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Division of Occupational Safety and Health
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency

Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
Cargill	Cargill, Incorporated
CARI	California Aquatic Resource Inventory
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEC	constituent of emerging concern
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CGS	California Geological Survey
CHP	California Highway Patrol
CI	carbon intensity
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CSLC	California State Lands Commission
CUPA	Certified Unified Program Agencies
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted decibels
Delta	Sacramento-San Joaquin Delta
diesel PM	diesel engines

DPS	Distinct Population Segment
Draft EIR	draft environmental impact report
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EBDA	East Bay Dischargers Authority
EBRPD	East Bay Regional Park District
EFH	Essential Fish Habitat
EO	Executive Order
EPA	US Environmental Protection Agency
ESA	Environmental Site Assessments
ESA	federal Endangered Species Act
ESU	Evolutionarily Significant Unit
EV	electric vehicles
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FR	Federal Register
FTA	Federal Transit Administration
GHG	greenhouse gas
gpm	gallons per minute
HAP	hazardous air pollutants
HARB	Historical Architectural Review Board
HASP	health and safety plan
HDD	horizontal directional drilling
HDPE	high-density polyethylene
HRA	health risk assessments
HSC	Health and Safety Code
Hz	hertz
in/sec	inches per second
JPA	Joint Exercise of Powers Agreement

kV	kilovolt
LAVWMA	Livermore-Amador Valley Water Management Agency
lb/day	pounds per day
LCFS	Low Carbon Fuel Standard
L_{dn}	day-night level
L_{eq}	equivalent continuous sound level
L_{max}	maximum sound level
MBTA	Migratory Bird Treaty Act
mg/L	milligrams per liter
mgd	million gallons per day
MLD	most likely descendant
MMPA	Marine Mammal Protection Act
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
mPa	micro-Pascals
MRZ	mineral resource zone
MS4	municipal separate storm sewer systems
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSS	mixed sea salts
MTC	Metropolitan Transportation Commission
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NEHRP	National Earthquake Hazards Reduction Program
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
OHP	Office of Historic Preservation
OLEPS	Oro Loma Effluent Pump Station
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PG&E	Pacific Gas and Electric Company
PGA	Peak horizontal ground acceleration
PM	particulate matter
PM_{10}	respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
$PM_{2.5}$	fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less
PMMP	Paleontological Mitigation and Monitoring Program
Porter-Cologne Act	Porter-Cologne Water Quality Control Act of 1970
ppm	parts per million
ppt	parts per thousand
PPV	peak particle velocity
PRC	Public Resources Code
RCRA	Resource Conservation and Recovery Act of 1976
Refuge System	National Wildlife Refuge System
Refuge	Don Edwards San Francisco Bay National Wildlife Refuge
RMS	root-mean-square
ROG	reactive organic gas
RPS	Renewable Portfolio Standard
RWQCB	regional water quality control board
SAFE Rule	Safer Affordable Fuel-Efficient Vehicles Rule
SamTrans	San Mateo County Transit District
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SCVWD	Santa Clara Valley Water District
SFBAAB	San Francisco Bay Area Air Basin
SFEI	San Francisco Estuary Institute
SFPUC	San Francisco Public Utilities Commission

SGMA	Sustainable Groundwater Management Act of 2014
SIP	state implementation plan
SMARA	Surface Mining and Reclamation Act of 1975
SO_2	sulfur dioxide
South Bay	South San Francisco Bay
SPCC	Spill Prevention, Control, and Countermeasure
SPL	sound pressure level
SR	State Route
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TDS	total dissolved solids
TMDL	total maximum daily load
tons/year	tons per year
TUc	chronic toxicity value
UPRR	Union Pacific Railroad
USACE	US Army Corps of Engineers
USC	US Code
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
VdB	vibration decibels
VMT	vehicle miles traveled
WQO	Water Quality Objective
ZEV	zero-emission vehicle
ZID	zone of initial dilution

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

This executive summary is provided in accordance with Section 15123 of the California Environmental Quality Act Guidelines (State CEQA Guidelines), which states that "an environmental impact report (EIR) shall contain a brief summary of the proposed action and its consequences. The language of the summary should be as clear and simple as reasonably practical" (Section 15123[a]). As required by the State CEQA Guidelines, this section includes (1) a summary description of the proposed project, (2) a synopsis of environmental impacts and recommended mitigation measures (Table ES-1), (3) identification of the alternatives evaluated and discussion of the environmentally superior alternative, (4) a discussion of the areas of controversy associated with the project, and (5) issues to be resolved.

ES.2 SUMMARY DESCRIPTION OF THE PROJECT

ES.2.1 Project Background and Need

The East Bay Dischargers Authority (EBDA) is a Joint Powers Public Agency (JPA) consisting of five local agencies (City of San Leandro, Oro Loma Sanitary District, Castro Valley Sanitary District, City of Hayward, and Union Sanitary District). EBDA owns and operates three effluent pump stations, a dechlorination facility, and combined effluent pipeline/force main and outfall system to manage treated effluent from its member agencies' wastewater treatment plants and discharge the effluent through its common outfall and diffuser into a deep-water portion of the central San Francisco Bay (Bay) under a National Pollutant Discharge Elimination System (NPDES) permit.

Cargill, Incorporated (Cargill) operates a solar sea salt production facility (Solar Salt Facility) in Newark, California. The Solar Salt Facility produces sodium chloride (NaCl, i.e., table salt) and liquid bittern (concentrated magnesium chloride brine) from Bay water. Bay water is evaporated in a series of salt ponds along the margin of the Bay, thereby concentrating the salts until they become saturated and precipitate from solution. The majority of the NaCl is crystalized and then processed and packaged to individual customer's specifications. The remaining brine is further evaporated through a series of ponds to achieve the concentrated magnesium chloride brine product also known as liquid bittern, which is harvested to produce additional commercial products used for road de-icing, dust suppression, animal feed, and other uses. The additional evaporation of the brine also results in crystallization of other salts in sea water, which are not marketed. These salts are referred to as mixed sea salts (MSS). The MSS are stored in ponds adjacent to the Bay at the Solar Salt Facility. Currently, there are approximately 6 million tons of MSS stored in these ponds.

Facing the potential long-term threat of sea level rise from the Bay, Cargill is proposing to implement innovative technology to enhance extraction of additional commercial salts from the MSS inventory and then dissolve residual MSS in Bay water to produce a brine that could be pumped into EBDA's combined effluent conveyance system. Once in EBDA's conveyance system, the brine would be blended with and further diluted by EBDA Member Agency effluent and then discharged back into the Bay in accordance with EBDA's NPDES permit. Through this process, the volume of brine and precipitated salts stored in ponds closest to the Bay at the Solar Salt Facility in Newark would be reduced. Therefore, with implementation of the proposed project, Cargill would be accelerating and enhancing the recovery of commercial product from MSS and proactively addressing the threat of sea level rise at the same time.

ES.2.2 Project Objectives

The Cargill MSS Processing Project has the following objectives:

- Provide wastewater disposal capacity and services to Cargill in a manner that provides economic advantage to EBDA Member Agencies, with emphasis on offsetting and reducing expenses to EBDA and its ratepayers, and furthers the purpose and goals of EBDA's Joint Powers Agreement.
- Further EBDA's sustainability objectives, including those in support of reclamation and reuse of wastewater, by creating or facilitating the creation of permanent infrastructure available for future regional water recycling efforts by EBDA and/or EBDA Member Agencies.
- Balance any impacts due to disruption to local jurisdictions with impacts to sensitive environments.
- Develop new infrastructure to process MSS brine with minimal exposure to disruptions, including connecting with and optimizing existing EBDA infrastructure to use EBDA's excess capacity for processing and blending MSS brine.
- Utilize strategic connection to an existing deep water outfall to minimize impacts to water quality and aquatic resources in receiving waters associated with the discharge of residual MSS brine.
- Facilitate the timely harvest of liquid bittern from the MSS in Cargill's Solar Salt Facility on-site ponds and ensure that MSS brine is efficiently, sustainably, and responsibly handled at all stages, including collection, transmission, and disposal.
- Prevent operational and environmental impacts of Bay water overtopping the berms surrounding MSS ponds due to sea level rise.

ES.2.3 Project Location

Proposed project features are located in the eastern San Francisco Bay Area, including portions of San Lorenzo, an unincorporated community in Alameda County, and portions of the Cities of Hayward, Union City, Fremont, and Newark. Specifically, project improvements would be constructed at Cargill's Solar Salt Facility, located at 7220 Central Avenue in Newark, California, and primarily within roadway rights-of-way between the Solar Salt Facility and the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. The MSS are primarily situated in Ponds 12 and 13 of Cargill's Solar Salt Facility, which are located within the US Fish and Wildlife Service's (USFWS) Don Edwards San Francisco Bay National Wildlife Refuge. In 1979, Cargill transferred this real property, along with additional acreage, through a condemnation process and retained perpetual rights to continue sea salt operations within 8,000 acres of the refuge, including Ponds 12 and 13 (Figure 2-1 in Chapter 2, "Project Description").

ES.2.4 Proposed Project

The proposed project would enable the enhanced processing and removal of MSS in existing Cargill ponds by harvesting additional liquid bittern from the MSS matrices in these ponds as commercial product, dissolving the residual MSS solids in the ponds using Bay water, and transferring the resulting brine to EBDA's combined effluent pipeline for discharge into the Bay under EBDA's NPDES permit. Harvesting the liquid bittern and final disposition of the residual MSS brine would not require the use of any chemicals. It is anticipated that the MSS brine would be discharged to the EBDA system at a rate of up to 2.0 million gallons per day (mgd). Based on this estimated flow rate, the harvesting and discharge of the current inventory of MSS is projected to require a 10-year timeframe. Discharge of the MSS brine by Cargill to the EBDA system would be subject to an agreement between EBDA and Cargill. The EBDA JPA term expires on June 30, 2040. Therefore, the proposed project would either terminate on or before that date or could continue under a renegotiated agreement.

The proposed project has an onsite component of pipelines and pumping facilities within the existing Solar Salt Facility and an offsite component that would involve construction of approximately 15.6 miles of new underground pipeline primarily within roadway rights-of-way to connect the Solar Salt Facility into EBDA's system just downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo.

The proposed project consists of the following components:

- Dissolution Water Pond and Plummer Creek Pump Station. A new pump station would be installed to pump water indirectly from Plummer Creek to a new dissolution water pond.
- Dissolution Water Pump Station and Distribution System. A new dissolution water pump station would be constructed as a cast-in-place slab-on-grade facility located at the Dissolution Water Pond and connected to an onsite high-density polyethylene piping distribution system installed above grade along the internal slope of the existing berms to deliver dissolution water to micro-trenches excavated in the crystallized salt layer above the Bay mud in Ponds 12 and 13 for MSS processing.
- Two MSS Brine Pump Stations. New MSS brine pump stations would be constructed at Ponds 12 and 13 as cast-in-place slab-on-grade pump stations to pump the resultant brine out of the processing ponds and into the offsite brine discharge pipeline.
- Liquid Bittern Recovery Pumps. During the processing of Pond 12, sections of the pond would be temporarily isolated using vinyl sheet piling to enable liquid bittern recovery. Two new pipelines would be installed along the internal slope of the berm on the northern shore of Pond 12: (1) a 12-inch header pipe to deliver dissolution water to Pond 12; and (2) a 4-inch pipe to transfer liquid bittern from Pond 12 to Pond 13, where it would be further processed and harvested as commercial product. To facilitate Pond 13 processing, two new pipelines similar to the ones described for Pond 12 would be installed along the internal slope of the berm on the southern side of Pond 13 to transfer liquid bittern from Pond 13 to Pond 12.
- Rainwater Decanting. A new weir box structure, which includes a weir plate (barrier) to control the flow of water, and a pipe would be installed at the northeastern corner of Pond 13 to enable decanting of rainwater from the surface of Pond 13 to supplement dissolution water for Pond 12.
- MSS Brine Transport Pipeline. A 14-inch MSS brine transport pipeline would be constructed and extend north primarily along roadway rights-of-way for approximately 15.6 miles from the Solar Salt Facility to the Oro Loma Effluent Pump Station (OLEPS), located at the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. Based on current design, the MSS brine transport pipeline would be located within portions of Thornton Avenue, Paseo Padre Parkway, Ardenwood Boulevard, Union City Boulevard, Hesperian Boulevard, Eden Shores Boulevard, Marina Drive, Industrial Boulevard, Baumberg Avenue, Arden Road, Corporate Avenue, Investment Boulevard, Production Avenue, Clawiter Road, West Winton Avenue, and Corsair Boulevard.
- MSS Brine Discharge to the EBDA System. The MSS brine transport pipeline would tie into EBDA's combined effluent conveyance system immediately downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo by connection to the pump discharge manhole approximately 75 feet north and downstream of the OLEPS. The MSS brine would then be combined with the treated wastewater effluents from the other agencies that discharge into the EBDA system before being discharged back to the Bay.

ES.2.5 Project Permits and Approvals

The following list includes the permits and resource agency approvals potentially required before proposed project implementation.

Federal

- US Army Corps of Engineers (USACE): Clean Water Act Section 404 permit
- USFWS: Endangered Species Act, Section 7 Consultation through the federal lead agency (USACE); notification and location approval pursuant to Cargill's Reserved Rights and related agreements pursuant to the 1979 condemnation action covering Ponds 12 and 13, among other acreage; approval of temporary trail closures within or access interruptions to the Don Edwards National Wildlife Refuge
- National Marine Fisheries Service (NMFS): Endangered Species Act, Section 7 Consultation and Magnuson-Stevens Act Essential Fish Habitat Consultation through the federal lead agency (USACE)

State

- San Francisco Regional Water Quality Control Board (RWQCB): Clean Water Act Section 401 Water Quality Certification; NPDES construction stormwater permit (Notice of Intent to proceed under General Construction Permit), discharge permit for stormwater, general order for dewatering
- California Department of Fish and Wildlife (CDFW): California Fish and Game Code (CFGC) Section 2081 Incidental Take Permit for California Endangered Species Act listed species; CFGC Section 1602, Lake and Streambed Alteration Agreement
- Caltrans: Encroachment permits for activities affecting state highways
- California State Lands Commission (CSLC): Land leases for Public Trust Lands
- Office of Historic Preservation (OHP): National Historic Preservation Act (NHPA) Section 106 Consultation through the federal lead agency (USACE)

Local

- Alameda County: Routine development permits, such as grading and noise permits
- Alameda County Flood Control and Water Conservation District: Easement, license and/or encroachment permits for crossing flood control/engineered channels and storm drains
- Bay Area Air Quality Management District (BAAQMD): Permit to construct and permit to operate
- Cities of Newark, Fremont, Union City, and Hayward, and Alameda County: Routine development permits, such as encroachment, grading, and noise permits, and agreements for private pipeline placement in public rights-of-way under the Franchise Act of 1937 and the Charter of the City of Hayward
- East Bay Dischargers Authority (EBDA): Operations agreement with Cargill
- East Bay Regional Park District: Easement, license and/or encroachment permit for activities on East Bay Regional Park District lands; approval for temporary trail closures or access interruptions
- Hayward Regional Shoreline Planning Agency: approval for temporary trail closures or access interruptions
- San Mateo County Transit District (SamTrans): Easement, license and/or encroachment permit or other limited easement or access agreement for crossing underneath the Dumbarton Rail Corridor owned by SamTrans, to the extent Cargill does not have an existing easement for such a crossing
- Union Pacific Railroad Company (UPRR): Plan approval by Chief Engineer of UPRR for crossing underneath rail lines owned by UPRR
- San Francisco Bay Conservation and Development Commission (BCDC): BCDC Permit and Coastal Zone Management Act Consistency Determination
- San Francisco Public Utilities Commission (SFPUC): Easement, license and/or encroachment permits for crossing Hetch Hetchy Aqueduct and Bay Tunnel, to the extent Cargill does not have an existing easement for such a crossing

ES.3 SUMMARY OF ALTERNATIVES

State CEQA Guidelines Section 15126.6 mandates that all EIRs include a comparative evaluation of the proposed project with alternatives to the plan that are capable of attaining most of the plan's basic objectives but that would avoid or substantially lessen any of the significant effects of the project. CEQA requires an evaluation of a "range of reasonable" alternatives, including the "no project" alternative. The following alternatives to the proposed project were considered:

- No Project–No Development Alternative assumes no changes to existing facilities and operations at Cargill's Solar Salt Facility. The project site would remain in its current condition and Cargill would continue to produce salt products consistent with existing operations. The approximately 6 million tons of existing residual MSS would continue to be stored in Ponds 12 and 13 and more would accumulate. Over the next 20 to 50 years, rising sea levels would increase the risk of Bay water overtopping containment berms and releasing MSS brine into the Bay.
- Alternative 1: In-Pipe Alternative uses a combination of new pipeline and the existing EBDA pipeline. It assumes a shorter route for the MSS brine transport pipeline (7.5 miles) compared to the project (15.6 miles), because the pipeline would connect to EBDA's system just downstream of the Alvarado Treatment Plant in Union City, rather than downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. This alternative would require the installation of 4 miles of liner within EBDA's existing combined effluent pipeline to prevent corrosion in EBDA's system.
- Alternative 2: Bayside Parallel Pipe Alternative assumes an approximately 17-mile route for the MSS brine transport pipeline that travels along the edges of Cargill's salt ponds, instead of the approximately 15.6-mile route along roadway rights-of-way under the project.

State CEQA Guidelines Section 15126.6 states that an EIR should identify the "environmentally superior" alternative. It also states that if the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

As discussed in Section 5, "Alternatives," the No Project–No Development Alternative would avoid all adverse impacts resulting from construction and operation of the project analyzed in Chapter 3 and Alternatives 1 and 2; therefore, it is the environmentally superior alternative. However, the No Project–No Development Alternative would not meet the objectives of the project, as presented above in Section ES.2.2, "Project Objectives."

Consistent with Section 15126.6(e)(2) of the State CEQA Guidelines, because the No Project–No Development Alternative was identified as the environmentally superior alternative, another environmentally superior alternative was identified. Alternative 1 would result in some impacts that are greater than those of the project, including greater potential to disturb known archaeological resources, greater potential to adversely affect special-status species and habitats, greater potential to release pollutants from project site inundation, greater disruptions to parks, and recreational facilities and greater safety hazards to recreationists. However, most of the impacts under Alternative 1 would be reduced compared to those of the project. For example, the reduced degree of construction and excavation would reduce the potential to encounter native soils that could contain cultural resources, reduce the area of ground disturbance resulting in water quality impacts, reduce the potential for the release of hazardous materials to the public and the environment, and reduce the emissions of criteria air pollutants and GHGs generated by the construction and operation of the project. Alternative 1 would also have less construction-related noise impacts than the proposed project, but the impact would remain significant and unavoidable under Alternative 1. Because overall impacts would be less under Alternative 1, Alternative 1 would be the environmentally superior alternative.

Although Alternative 1 is the environmentally superior alternative, this alternative presents several challenges associated with the installation of 4 miles of liner within EBDA's existing combined effluent pipeline to prevent corrosion in EBDA's system. First, Alternative 1 would require greater disruption to EBDA's existing operations during sliplining activities. Extensive bypass pumping would be required during sliplining of each segment to route effluent within the EBDA system around the work area and thereby support continued operations of the EBDA system during construction. Additionally, Alternative 1 would require greater disturbance to environmentally-sensitive areas, including the Eden Landing Ecological Reserve and Oro Loma Marsh in the Hayward Regional Shoreline. Lastly, Alternative 1

would involve sliplining of only the most vulnerable sections of EBDA's existing combined effluent pipeline. Therefore, unlined sections could potentially be susceptible to corrosion risks and could result in the need for additional maintenance over the lifetime of the project. Based on the above discussion, the project would better attain the project objectives of balancing impacts to sensitive environments and minimizing disruptions to EBDA's existing system.

Alternative 2 would not be the environmentally superior alternative because, although some impacts would be reduced compared to the project, this alternative would result in greater impacts than the project overall. Because the pipeline alignment would be located farther away from urban areas under Alternative 2 than under the project, fewer sensitive receptors would be exposed to increases in construction-related noise and vibration levels and the public would be exposed to fewer safety hazards related to potential release of hazardous materials. Even with mitigation, the construction-related noise and vibration impact would remain significant and unavoidable under Alternative 2. Additionally, the higher degree of construction and excavation required under Alternative 2 would increase the potential to encounter native soils that could contain cultural resources, increase the area of ground disturbance resulting in water quality impacts, increase the emissions of criteria air pollutants and GHGs generated by construction and operation of the project, and increase access disruptions and safety hazards to recreationists. Furthermore, the pipeline alignment would be located in more environmentally sensitive areas than the project, including wetland habitat in Oro Loma Marsh and Eden Landing Ecological Reserve. Work within these areas would require extensive coordination with applicable resource agencies and permitting.

ES.4 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

A notice of preparation (NOP) was distributed for the proposed project on May 20, 2022, to responsible agencies, interested parties, and organizations, as well as private organizations and individuals that may have an interest in the project. A revised NOP was distributed on July 8, 2022, due to a change in the location of part of the project (specifically, a portion of the pipeline alignment). A public scoping meeting was held on June 1, 2022. The purpose of the NOP and the scoping meeting was to provide notification that an EIR was being prepared for the project and to solicit input on the scope and content of the environmental document. The NOP and responses to the NOP are included in Appendix A of this Draft EIR. Key concerns and issues that were expressed about the proposed project during the scoping process included the following:

- Potential impacts on protected fish and wildlife and their habitats
- Potential impacts on tribal cultural resources and consultation with Native American tribes
- Potential impacts from geologic hazards, sea level rise, and climate change
- Potential impacts from construction-related traffic and noise
- Potential to encounter or exacerbate existing soil or groundwater contamination
- Potential for utility conflicts
- Potential impacts on water quality and groundwater resources
- Potential impacts on parks and recreational resources and public access
- Consistency with State and local policies, including policies of the California State Lands Commission and San Francisco Bay Conservation and Development Commission.

These issues are addressed throughout this Draft EIR.

ES.5 SUMMARY OF ENVIRONMENTAL IMPACTS AND RECOMMENDED MITIGATION MEASURES

Under State CEQA Guidelines Section 15382, a significant effect on the environment is defined as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." The technical sections in Chapter 3 of this draft EIR describe in detail the significant environmental impacts that would result from implementing the project, and Chapter 4 presents a discussion of the cumulative impacts associated with the project. Section 6.1 provides a discussion of growth-inducing impacts. Table ES-1 presents a summary of environmental impacts, their level of significance without mitigation, the mitigation measures identified to address impacts, and the level of significance following the implementation of mitigation measures. The significant and unavoidable impacts are identified below and summarized in Section 6.2.

Table ES-1 Summary of Impacts and Mitigation Measures

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
NI = No impact LTS = Less than significant PS = Potentially significant S = Significant SU = Significant and unavoidable			
Air Quality			
Impact 3.2-1: Potential to Generate Emissions of Criteria Air Pollutants and Precursors during Project Construction Implementation of the project would generate construction emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ from off-road equipment use, material and equipment delivery trips, worker commute trips, and other, miscellaneous activities. The project would be required to implement BAAQMD's construction best management practices and would use Tier 4 equipment. The project's emissions of ROG and PM_{10}, and $PM_{2.5}$ exhaust would not exceed BAAQMD's mass emissions thresholds for either year of construction; however, emissions of NO_X would exceed thresholds in both years with incorporation of Tier 4 engines. This impact would be significant.	S	**Mitigation Measure 3.2-1: Contribute Funding to an Off-Site Mitigation Program** BAAQMD considers the use of an off-site mitigation program as a feasible mitigation measure (BAAQMD 2012). This mitigation strategy has been implemented by land use projects throughout the state as a means to reduce a project's significant air quality impacts to a less-than-significant level. The project has already incorporated Tier 4 final engines to reduce NO_X emissions, which is a common and feasible measure known to reduce NO_X emissions greatly. However, the project's emissions would continue to exceed BAAQMD's thresholds of significance for NO_X. The project applicant shall provide funding to a program or programs within the SFBAAB that reduce NO_X emissions. BAAQMD oversees several programs and funds to reduce emissions. Examples include the Carl Moyer Memorial Program, which provides grants to upgrade or replace heavy-duty diesel vehicles and equipment, including on- and off-road vehicles and equipment, school buses, agricultural equipment, marine vessels, and locomotives. Other options that the project applicant may consider to reduce NOX emissions include the Mobile Source Incentive Fund, the Transportation Fund for Clean Air, and the Goods Movement Program. The project applicant shall provide funding to at least one, or more, of these programs to reduce construction-generated NO_X emissions in 2023 and 2024 adequately to offset the exceedance of the BAAQMD NOx threshold as verified by BAAQMD. The cost to mitigate shall be determined when the project applicant chooses to engage in any of the aforementioned programs, but that cost shall be sufficient to reduce NO_X emissions sufficiently to meet BAAQMD's thresholds of significance, as verified by BAAQMD.	LTS
Impact 3.2-2: Potential to Generate Long-Term Operational Emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ in Exceedance of Thresholds Implementing the project would not increase operational natural gas combustion beyond what is currently occurring at the project site. However, operation of the project would introduce vehicle trips, but these vehicle trips would not generate emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ in exceedance of BAAQMD's thresholds of significance. Therefore, this impact would be less than significant.	LTS	No mitigation is required for this impact.	LTS

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
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Impact 3.2-3: Potential to Expose Sensitive Receptors to TACs Construction of the project would occur over a 1.5-year period and would not generate substantial exhaust PM10 emissions that could adversely affect sensitive receptors near the project site. Because of the low level of diesel PM emissions that would be generated by construction activity on the project site, the relatively short duration of diesel PM–emitting construction activity at the project site (i.e., 1.5 years), the highly dispersive properties of diesel PM, and the linear nature of construction activity, incremental short-term construction emissions would not generate TAC emissions that could result in a cancer risk greater than 10 in one million or a hazard index greater than 1.0. Furthermore, operation of the project would not introduce any new stationary sources of pollution and would introduce, on average, one new vehicle trip per day associated with maintenance activities. Therefore, operational emissions would also not generate TAC emissions that could result in a cancer risk greater than 10 in one million or a hazard index greater than 1.0. Therefore, the project would not expose sensitive receptors to TACS and this impact would be less than significant.	LTS	No mitigation is required for this impact.	LTS
Biological Resources			
Impact 3.3-1: Potential 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 Potential temporary disturbance of special-status fish, birds, terrestrial mammals, invertebrates, and plants may occur from construction of the project. This may include direct disturbance, injury, or mortality of individuals; or indirect disturbance resulting in adverse effects such as nest abandonment. Additionally, directional drilling to construct the MSS brine transport pipeline could result in accidental frac-out which could directly impact fish or degrade habitat for special-status species. Due to the sensitivity of potentially affected special-status species and that the loss of special-status species could substantially affect the abundance, distribution, and viability of populations of these species, this impact would be potentially significant.	PS	**Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources** ▶ All construction personnel will visually check for wildlife beneath vehicles and construction equipment before moving or operating them. If an animal is discovered and does not leave the site on its own, personnel will contact the project biologist for direction before using equipment. ▶ Confine all heavy equipment, vehicles, and construction activities to existing access roads, road shoulders, and disturbed/developed or designated work areas. Limit work areas to what is necessary for construction. ▶ Minimize grading and vegetation removal along access roads and construction work areas. ▶ Do not allow pets, hunting, open fires, or firearms at the project site. ▶ During project activities, properly contain all trash that may attract predators in covered garbage receptacles and remove the trash from the site daily. Following construction, all trash and construction debris from project sites will be removed.	LTS

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
NI = No impact LTS = Less than significant PS = Potentially significant S = Significant SU = Significant and unavoidable			
		▶ Use only tightly woven netting or similar material for all geo-synthetic erosion control materials such as coir rolls and geo-textiles. No plastic monofilament matting will be used. ▶ If night work is conducted, all nighttime lighting will be focused on construction activities and directional shields will be used to direct lighting away from natural habitats. **Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training** A USFWS- or CDFW-approved biologist (as applicable) will develop an environmental training and will present the training to all crew members before they begin work on the project. The training will include a description of special-status species with potential to occur, life history and habitat associations, general measures that are being implemented to conserve the species as they relate to the project, the terms and conditions of project permits, penalties for noncompliance, the boundaries of the construction areas, and the boundaries of environmentally sensitive areas. A handout will be provided to all participating personnel, and at least one copy will be kept on-site, in the job packet, during construction activities. On completion of the training, crew members will sign a form stating that they attended the training and understand the mitigation measures. **Mitigation Measure 3.3-3: Conduct Focused Surveys for Nesting Special-Status Bird Species, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers** Prior to any planned construction activities occurring during the nesting season (approximately February 1 to August 31, as determined by a qualified biologist), a qualified biologist familiar with birds of California and with experience conducting nesting bird surveys will conduct focused surveys for special-status birds, other nesting raptors, and other native birds and will identify active nests. Preconstruction nesting bird surveys will be conducted within 14 days prior to when construction activities are initiated in each of the areas of suitable nesting habitat for northern harrier, salt-marsh common yellowthroat, California black rail, Alameda song sparrow, tricolored blackbird, burrowing owl, and yellow rail that are within 500 feet of the project footprint. In addition, nesting bird surveys will be conducted for all other common raptor species (within a 500-foot buffer) and passerine species (100-foot buffer) protected by the MBTA. Pre-construction surveys for white-tailed kite will occur within 0.25-mile area of the construction area.	

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
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		Impacts on nesting birds will be avoided by establishing appropriate buffers around active nest sites identified during focused surveys to prevent disturbance to the nest. Project activity will not commence within the buffer areas until a qualified biologist has determined that the young have fledged, the nest is no longer active, or reducing the buffer will not likely result in nest abandonment. An avoidance buffer of 500 feet will be implemented for white-tailed kite, in consultation with CDFW. For other species, a qualified biologist will determine the size of the buffer for nonraptor nests after a site- and nest-specific analysis. Initial work buffers typically will be 150 feet for raptors (other than special-status raptors) and 50 feet for nonraptor species (unless otherwise specified in other mitigation measures). Factors to be considered for determining buffer size will include presence of natural buffers provided by vegetation or topography, nest height above ground, baseline levels of noise and human activity, species sensitivity, and project activities. The size of the buffer may be adjusted if a qualified biologist, determines that such an adjustment would not be likely to adversely affect the nest. Any reduction to the avoidance buffer described herein for white-tailed kite (500 feet) or the typical initial work buffers for raptor and nonraptor species (150 feet and 50 feet respectively) will require consultation with CDFW. Periodic monitoring of the nest by a qualified biologist during project activities will be required if the activity has potential to adversely affect the nest, the buffer has been reduced, or if birds within active nests are showing behavioral signs of agitation (e.g., standing up from a brooding position, flying off the nest) during project activities, as determined by the qualified biologist. **Mitigation Measure 3.3-4: Conduct Protocol-Level Surveys and Implement Protective Buffers for California Ridgway's Rail** Where feasible, project construction activities in suitable nesting habitat for California Ridgway's rail will not occur during the breeding season (February 1 through August 31). If project activities during the breeding season within suitable nesting habitat for the California Ridgway's rail are unavoidable, a qualified permitted biologist will conduct two surveys prior to construction activities. The first survey would be a protocol-level survey in the spring of the year of construction. The second survey would be a preconstruction survey conducted at least 14 days prior to construction in the areas where suitable habitat is present. The surveys will occur in suitable habitats within a 700-foot buffer around the project area. Survey methods would follow USFWS-approved *Site Specific Protocols for Monitoring Marsh Birds: Don*	

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
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		Edwards San Francisco Bay and San Pablo Bay National Wildlife Refuges (USFWS 2017). If California Ridgway's rails are confirmed to be present, additional coordination with CDFW and USFWS will be required. If surveys identify breeding California Ridgway's rails within 700 feet of the project area, no construction activities will occur during the breeding season (February 1 through August 31) unless authorization is obtained from CDFW and USFWS. If the surveys confirm that there are no breeding California Ridgway's rails within 700 feet of the project area, work activities could occur during the breeding season (February 1 through August 31). If construction activities pause for more than 14 days, another preconstruction nesting California Ridgway's rail survey will be conducted before construction can resume in suitable habitat. Use of heavy equipment in suitable habitat will be minimized to the maximum extent practicable. **Mitigation Measure 3.3-5: Avoid and Minimize Impacts to Western Snowy Plover** Nesting locations are to be identified through preconstruction surveys by a qualified biologist within 14 days prior to construction during the Western snowy plover breeding season (March 1 through September 14). No construction activities can be performed within 600 feet of an active Western snowy plover nest during the breeding season without the approval of USFWS. If construction occurs where chicks are present outside the 600-foot no-disturbance buffer and are foraging, then a qualified biologist will be present to ensure that no chicks are located in close proximity (i.e., within 200 feet) to construction activities. If chicks are present, then construction activities will be halted until they move away from the work area on their own volition. **Mitigation Measure 3.3-6: Perform Biological Monitoring** For work that will occur in or adjacent to potential habitat for special-status species, a qualified biologist will be present during initial ground disturbing activities involving use of heavy equipment that could cause noise or vibration disturbance to listed species (species state or federally listed as threatened or endangered, state species of special concern, or species fully protected by the California Fish and Game Code). Biological monitoring thereafter will occur as needed to fulfil the role of the approved biologist in project permits, potentially including permits from USACE and the RWQCB for effects to waters of the United States and state and CDFW for effects to lakes, streams, and associated riparian habitat. The qualified biologist will have stop work authority to stop project activities to minimize	

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
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		disturbance, injury, or mortality of listed species. If the qualified biologist exercises stop work authority, the appropriate resources agencies will be notified by phone and email within 48 hours. **Mitigation Measure 3.3-7: Prevent Special-Status Wildlife Entrapment** To prevent inadvertent entrapment of special-status species in salt marsh and playa habitat during construction, excavated holes or trenches more than 1 foot deep with walls steeper than 30 degrees will be covered at the close of each working day by plywood or similar materials. Alternatively, an additional 4-foot-high vertical barrier, independent of exclusionary fences, will be used to further prevent the inadvertent entrapment of special-status species. If it is not feasible to cover an excavation or provide an additional 4-foot-high vertical barrier independent of exclusionary fences, one or more escape ramps constructed of earth fill or wooden planks will be installed for every 100 feet of trenching with no greater than 3:1 slopes. Before such holes or trenches are filled and when they are covered and uncovered each working day, they will be thoroughly inspected for trapped animals. If at any time a trapped special-status animal is discovered, an USFWS- or CDFW-approved biologist will be contacted (as appropriate), and they or their designee will immediately place escape ramps or other appropriate structures to allow the animal to escape, or USFWS and/or CDFW will be contacted by telephone for guidance. All construction pipes, culverts, or similar structures that are stored at the project site for one or more overnight periods shall be securely capped before storage or inspected by the USFWS- or CDFW-approved biologist before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a special-status species is discovered inside a pipe, the individual shall be allowed to leave on its own volition **Mitigation Measure 3.3-8: Implement Measures to Avoid Impacts to Salt-Marsh Harvest Mouse and Salt-Marsh Wandering Shrew** Because salt-marsh harvest mouse is a fully protected species under the California Fish and Game Code, measures will be implemented to avoid injury or mortality of the species. These measures will also avoid impacts to salt-marsh wandering shrew. A USFWS- and CDFW-approved biologist with previous salt marsh harvest mouse experience will be on-site during construction activities occurring in wetlands. The biologist will document compliance with all project permit conditions and avoidance and conservation measures. The approved biologist or their designee	

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
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		will have the authority to stop project activities if any requirement associated with these measures is not being fulfilled. Prior to the initiation of work each day, the USFWS- and CDFW-approved biologist will thoroughly inspect the work area and adjacent habitat areas to determine if salt-marsh harvest mouse is present. Following confirmation by the USFWS- and CDFW-approved biologist that no salt-marsh harvest mouse is present, tidal wetland vegetation will be removed by hand using only nonmechanized hand tools (i.e., trowel, hoe, rake, and shovel) prior to the initiation of work within these areas. Vegetation will be removed to bare ground or stubble no higher than 1 inch. Vegetation will be removed under the supervision of the USFWS- or CDFW-approved biologist. Unless otherwise instructed by USFWS and CDFW, temporary exclusion fencing will be installed immediately after the hand removal of tidal wetland vegetation (as described above) from the work area. The fence will be made of a heavy plastic sheeting material that does not allow salt-marsh harvest mice to pass through or climb, and the bottom will be buried so that salt-marsh harvest mice cannot crawl under the fence. Fence height will be at least 12 inches higher than the highest adjacent vegetation with a maximum height of 4 feet. A USFWS- and CDFW-approved biologist with previous salt-marsh harvest mouse experience will be on-site during fence installation and will check the fence alignment prior to vegetation clearing and fence installation to ensure no salt-marsh harvest mice are present. Through project permitting (e.g., Clean Water Act 404/401) or CEQA review, if USFWS and CDFW suggest alternative measures that are equally effective (e.g., additional biological monitoring, marsh mats) as vegetation removal and temporary exclusion fencing (described in the previous two paragraphs), the suggested measures would be implemented instead, along with other suggested measures discussed herein. The USFWS- and CDFW- approved biologist will inspect exclusion fencing during daily inspections prior to the initiation of work each day. If exclusion fencing shows signs of damage such that small mammals could enter the work area, work will not continue within 300 feet of the damaged exclusion fencing until the fences are repaired and the site is surveyed by a qualified biologist to ensure that salt-marsh harvest mouse has not entered the work area. Construction access through wetland vegetation will be minimized to avoid the loss of individual harvest mice. If construction access through wetland vegetation is required, construction workers will follow wildlife and plant avoidance measures	

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
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		prescribed in Walking in the Marsh: Methods to Increase Safety and Reduce Impacts to Wildlife/Plants (San Francisco Bay Joint Venture 2017). No work will occur within 50 feet of suitable tidal marsh habitat within 2 hours before and after an extreme high tide event (6.5 feet or higher measured at the Golden Gate Bridge and adjusted to the timing of local high tides) unless salt-marsh harvest mouse-proof exclusion fencing has been installed around the work area. During berm alteration work salt-marsh harvest mouse corridors (i.e., corridors considered to be connected to larger areas of salt-marsh harvest mouse habitat) will be retained on at least one side of berms while construction activities take place. **Mitigation Measure 3.3-9: Conduct Botanical Surveys and Implement Avoidance Measures and Mitigation** Prior to any ground-disturbing activities, a qualified botanist will conduct botanical surveys where there is potential for a special-status plant species to occur and during the appropriate identification period (typically, the blooming period) for plants that have a potential to occur in the project footprint. All habitats potentially suitable for special-status plants will be surveyed following CDFW's Protocols for Surveying and Evaluating Impacts on Special-Status Native Plant Populations and Natural Communities (CDFW 2018b or most recent version). If special-status plants are not found, the botanist would document the findings in a report to the project files, and no further mitigation would be required. If special-status plants are found, the habitat occupied by special-status plants will be avoided completely, if feasible. This may include establishing a no-disturbance buffer around the plants and demarcation of this buffer by a qualified biologist or botanist using flagging or high-visibility construction fencing. The size of the buffer will be determined by the qualified biologist or botanist and will be large enough to avoid direct or indirect impacts on the special-status plants. If special-status plants are found and cannot be avoided, the applicant will, in consultation with CDFW or USFWS as appropriate depending on the species status, develop and implement a site-specific mitigation program to avoid loss of occupied habitat and minimize loss of individuals. Mitigation measures shall include, at a minimum, preserving and enhancing existing populations, establishing populations through seed collection or transplantation from the site that is to be affected, and/or restoring or creating habitat in sufficient quantities to fully offset the loss of occupied habitat or individuals. Potential mitigation sites could include suitable locations within or outside of the project area, with a preference for on-site mitigation. Habitat and	

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
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		individual plants lost would be mitigated at a minimum 1:1 ratio, considering acreage as well as function and value and as approved by CDFW or USFWS. Success criteria for preserved and compensatory populations would include: ▶ The extent of occupied area and plant density (number of plants per unit area) in compensatory populations would be equal to or greater than the affected occupied habitat. ▶ Compensatory and preserved populations would be self-producing. Populations would be considered self-producing when: ▪ plants reestablish annually for a minimum of 5 years with no human intervention such as supplemental seeding; and ▪ reestablished and preserved habitats contain an occupied area and flower density comparable to existing occupied habitat areas in similar habitat types in the project vicinity. If off-site mitigation includes dedication of conservation easements, purchase of mitigation credits, or other off-site conservation measures, the details of these measures will be included in the mitigation plan, including information on responsible parties for long-term management, conservation easement holders, long-term management requirements, success criteria such as those listed above and other details, as appropriate to target the preservation of long-term viable populations. **Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures** Prior to directional drilling activities, containment and cleanup equipment, such as portable pumps, silt fence, and fiber rolls, will be present for use at the staging areas and active construction site. At high-risk boring locations directly adjacent to or under waterbodies or wetlands, damming and flume materials will be pre-staged. During directional drilling activities, construction crews will monitor bentonite flow and returns so that fluid loss can be identified before the material surfaces. Silt fencing or equivalent will be installed between the bore site and any water or wetland. This will prevent the bentonite mixture from entering the water or wetland should a spill occur. If a spill is detected in a water or wetland, drilling will immediately cease, and spill prevention and control measures will immediately be employed. If the mixture flows to the surface of a water, a pump will be used to pump it to a safe location within a BMP. If a release occurs in a water, the water will be immediately dammed and flumed and the bentonite mixture will be contained	

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
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		and removed. The appropriate permitting agencies will be contacted including the San Francisco Bay RWQCB. **Mitigation Measure 3.3-11: Avoid Impacts to Pallid Bat** Measures for avoiding and minimizing impacts to the pallid bat will include the following: ▶ A qualified wildlife biologist will be retained to conduct surveys for roosting bats in potentially suitable roosting habitat (i.e., structures, trees) within the construction area. Surveys will be conducted within 14 days prior to initiation of construction activities. If no active roosts are detected during surveys, then no additional mitigation is required. ▶ If pallid bat roosts are found in any areas that will be directly affected by construction activities during breeding season (April 1 to August 31), a no-disturbance buffer will be established around the roosting location to avoid disturbance or destruction of the roost site until after the breeding season or after a wildlife biologist determines that the pups are fully weaned. The extent of these buffers will be determined by a wildlife biologist in consultation with CDFW and will depend on the level of noise or disturbance, line of site between the roost and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors will be analyzed and used to make an appropriate decision on buffer distances. ▶ Tree removal where active roosts are present will be conducted only outside of the breeding season, between September 1 and March 31, or after a wildlife biologist determines that the pups have been weaned, typically by late August. **Mitigation Measure 3.3-12: Implement Avoidance Measures for Monarch Overwintering Colonies** The project will implement the following measures to avoid and minimize potential impacts on monarch butterfly overwintering colonies: ▶ To minimize the potential for loss of monarch overwintering colonies, project activities that include vegetation removal within suitable overwintering habitat (e.g., eucalyptus or other large trees) will be conducted from April through September to avoid the overwintering season (October through March), if feasible. If project activities are conducted outside of the overwintering season, no further mitigation will be required. ▶ Within 14 days before the onset of project activities that include vegetation removal between October 1 and March 31, a qualified biologist familiar with	

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
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		monarchs and monarch overwintering habitat will conduct focused surveys for monarch colonies within habitat suitable for the species in the project site and will identify any colonies found within the project site. ▶ Monarch overwintering colonies that are identified within a project site will be demarcated with flagging or high-visibility construction fencing to prevent removal of the stand of trees containing the overwintering colony and encroachment by heavy machinery, vehicles, or personnel. Removal of the tree or stand of trees that contains the overwintering colony will not occur until the monarchs have left the area, as determined by a qualified biologist. ▶ If modification or removal of a stand that contains an identified overwintering colony is required for a project and cannot be delayed, a site-specific management plan will be prepared and implemented for the stand with the goal of maintaining habitat function for the monarch overwintering colony, following feasible recommendations from *Protecting California's Butterfly Groves Management Guidelines for Monarch Butterfly Overwintering Habitat* (Xerces Society 2017). Examples of management strategies that could be considered to maintain habitat function include: ▪ remove or trim hazard trees; ▪ selectively remove or trim trees to create a heterogeneous habitat that provides access to sunlight and shade for monarchs; ▪ maintain suitable wind protection in the stand; and ▪ replace removed trees with native trees in strategic locations to provide additional wind protection.	
Impact 3.3-2: Potential Substantial Adverse Effect on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS and **Impact 3.3-3: Potential Substantial Adverse Effect on State or Federally Protected Wetlands (including, but Not Limited to, Marshes, Vernal Pools, Coastal Wetlands, etc.) through Direct Removal, Filling, Hydrological Interruption, or Other Means** Implementing the project may result in temporary loss or disturbance of waters and wetlands from construction of the Solar Salt Facility Improvements and MSS brine transport pipeline. The Solar Salt Facility Improvements are anticipated to result in a small loss of unvegetated pond habitat, and construction of other	PS	**Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources** **Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training** **Mitigation Measure 3.3-6: Perform Biological Monitoring** **Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State** Before initial ground disturbance or vegetation removal activities begin within areas that may contain wetlands and other waters, the following measures, which are intended to avoid and minimize impacts on state or federally protected wetlands, shall be implemented.	LTS

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permanent above-ground improvements could result in additional permanent loss of potentially jurisdictional features. Limited trimming or removal of riparian vegetation may also occur from MSS brine transport pipeline construction. Further, areas affected by the project may qualify as sensitive natural communities, most likely including tidal marsh habitats identified or likely to qualify as northern coastal salt marsh. Directional drilling to construct the MSS brine transport pipeline could result in accidental frac-out which could adversely affect water quality and degrade wetlands. Due to the sensitivity of these habitat types, and their protected statuses, this impact would be potentially significant.		A qualified biologist will delineate the boundaries of state or federally protected wetlands within the project site according to methods established in the USACE wetlands delineation manual (Environmental Laboratory 1987) and the Western Mountains, Valleys, and Coast regional supplement (USACE 2010). The qualified biologist will also delineate the boundaries of wetlands that may not meet the definition of waters of the United States, but would qualify as waters of the state, according to the state wetland definition and procedures (SWRCB 2021). If state or federally protected wetlands are determined to be present within a work area and can be avoided, the qualified biologist will establish a buffer around wetlands and mark the buffer boundary with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway). The buffer will be a minimum width of 25 feet but may be larger if deemed necessary. The appropriate size and shape of the buffer zone will be determined in coordination with the qualified biologist and will depend on the type of wetland present, the timing of project activities (e.g., wet or dry time of year), whether any special-status species may occupy the wetland and the species' vulnerability to the project activities, environmental conditions and terrain, and the project activity being implemented. Project activities (e.g., ground disturbance, vegetation removal, staging) will be prohibited within the established buffer. A qualified biologist will periodically inspect the materials demarcating the buffer to confirm that they are intact and visible, and wetland impacts are being avoided. If it is determined that fill of waters of the United States would result from project implementation, authorization for such fill will be secured from USACE through the Section 404 permitting process. Any waters of the United States that would be affected by the project will be replaced or restored on a no-net-loss basis in accordance with USACE mitigation guidelines. In association with the Section 404 permit (if applicable) and prior to the issuance of any grading permit, Section 401 Water Quality Certification from the San Francisco RWQCB will be obtained. If it is determined that disturbance or fill of state protected wetlands, or any other waters of the state cannot be avoided, the implementing party will notify CDFW and the San Francisco RWQCB before commencing any activity within the bed or, bank, or riparian corridor of any waterway and will notify the RWQCB before commencing any activity within a state wetland. If project activities trigger the need for a Streambed Alteration Agreement, the proponent will obtain an agreement from CDFW before the activity commences. Project construction activities will be	

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		implemented in accordance with the agreement, including implementing reasonable measures in the agreement necessary to protect the fish and wildlife resources, when working within the bed or bank of waterways that function as a fish or wildlife resource or in riparian habitats associated with those waterways. The applicant will apply for a permit from the San Francisco RWQCB for any activity that may result in discharges of dredged or fill material to waters of the state. The application will be completed in accordance with state procedures (SWRCB 2021). State or federally protected waters and wetlands disturbed during project activities will be restored to pre-disturbance conditions or better. Restoration would include restoring pre-disturbance contours, hydrology, and vegetation. Temporary impacts to wetland would require preparation of a restoration plan which details how wetlands would be restored and would require implementation of a monitoring plan to ensure the restoration is successful. Permanent impacts to wetlands and other waters of the United States will be replaced in accordance with USACE regulations to achieve "no net loss" of area or function of waters of the United States, including wetlands. Permanent impacts to waters of the state will be compensated in accordance with the state procedures, such that the project would not result in a net loss of overall abundance, diversity, and condition of aquatic resources within the affected watershed based on a watershed assessment using an assessment method approved by the San Francisco RWQCB or State Water Resources Control Board. To the degree feasible and acceptable to the agencies with jurisdiction, restoration, rehabilitation, and/or replacement of jurisdictional waters for permanent impacts will be mitigated in-kind and completed on-site at a location agreeable to USACE and the RWQCB in accordance with USACE and San Francisco RWQCB mitigation guidelines. Any permanent impacts that cannot be mitigated through on-site restoration, rehabilitation, and/or replacement will be compensated through purchase of mitigation credits at a USACE/San Francisco RWQCB-approved mitigation bank. **Mitigation Measure 3.3-14: Compensate for Unavoidable Loss of Sensitive Natural Communities** The following measures shall be implemented before implementation of project activities: ▶ A qualified botanist will perform a protocol-level survey of the project site for sensitive natural communities and sensitive habitats following CDFW's *Protocols*	

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		for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018b). Sensitive natural communities will be identified using the best available and current data, including keying them out using the most current edition of *A Manual of California Vegetation* (including updated natural communities data at http://vegetation.cnps.org/), or referring to relevant reports (e.g., reports found on the VegCAMP website). ▶ Before implementation of project activities, development setbacks will be established around all sensitive habitats identified during surveys, and these setbacks will be flagged or fenced with brightly visible construction flagging and/or fencing under the direction of the qualified biologist and no project activities (e.g., vegetation removal (including herbicide application), ground disturbance, staging) will occur within these areas. Setback distances will be dependent on various factors (e.g., presence of special-status wildlife or plant species) and determined by a qualified biologist in consultation with the appropriate agency (e.g., CDFW), but will generally be a minimum of 50 feet. Foot traffic by personnel will also be limited in these areas to prevent the introduction of invasive or weedy species or inadvertent trampling of vegetation. Periodic inspections during construction will be conducted by the monitoring biologist to maintain the integrity of exclusion fencing/flagging throughout the period of construction involving ground disturbance. If sensitive natural communities are determined to be present within a work area and these habitats cannot be avoided, the following measures shall be implemented: ▶ Compensate for unavoidable loss of any sensitive natural community habitat function such that no net loss of habitat function occurs by: ▪ restoring sensitive natural community habitat function within the project site (e.g., using locally collected seed or cuttings); ▪ restoring degraded sensitive natural communities outside of the project site at a sufficient ratio to offset the loss of habitat function (at least 1:1); or ▪ preserving existing sensitive natural communities of that provide similar habitat function to the sensitive natural community affected through a conservation easement at a sufficient ratio to offset the loss of habitat function (at least 1:1). ▶ Prepare and implement a Compensatory Mitigation Plan that includes the following:	

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		▪ For preserving existing habitat outside of the project site in perpetuity, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands (e.g., the number and type of credits, location of mitigation bank or easement), parties responsible for the long-term management of the land, and the legal and funding mechanism for long-term conservation (e.g., holder of conservation easement or fee title). ▪ For restoring or enhancing habitat within the project site or outside of the project site, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored or enhanced habitat. ▪ Success criteria required to maintain habitat function for preserved and compensatory populations will include, but not be limited to: • The extent of occupied area and density of plants associated with the sensitive natural community (number of plants per unit area) in compensatory habitats will be equal to or greater than the affected occupied habitat. • Compensatory and preserved sensitive natural communities will be self-producing. Populations will be considered self-producing when: - Plants associated with sensitive natural communities reestablish annually for a minimum of 5 years with no human intervention such as supplemental seeding; and - Reestablished and preserved habitats contain an occupied area and density comparable to existing occupied habitat areas in similar habitat types in the project vicinity. **Mitigation Measure 3.3-15: Mitigate for Unavoidable Riparian Habitat Removal** Prior to implementing any project activity that may result in changes to the natural flow or bed, channel, or bank of any river, stream, or lake supporting fish or wildlife resources, a Lake and Streambed Alteration Notification will be submitted to CDFW, pursuant to Section 1602 of the California Fish and Game Code. If project activities trigger the need for a Streambed Alteration Agreement, the project proponent will obtain such agreement from CDFW and will conduct construction activities in	

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		accordance with the agreement, including implementing reasonable measures in the agreement necessary to protect fish and wildlife resources, including riparian habitat. The project proponent will mitigate any removal of any riparian habitat through on-site, in-kind restoration, rehabilitation, and/or replacement of riparian trees and other riparian vegetation. If the loss of riparian habitat cannot be fully mitigated on-site, additional compensation will be provided through purchase of credits from a CDFW-approved mitigation bank.	
Impact 3.3-4: Potential Substantial Interference with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors, or Impediment to the Use of Native Wildlife Nursery Sites Implementing the project may disturb nesting or rearing wildlife species including special-status birds and terrestrial mammals. Disturbance may occur from direct habitat encroachment or indirect disturbance (e.g., construction noise or habitat degradation). Impacts to fish rearing would be avoided through use of directional drilling techniques. Project construction and improvements are anticipated to result in negligible effects to localized movement and migration. Direct or indirect construction disturbance of special-status bird or mammal nursery sites would be a potentially significant impact.	PS	**Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources** **Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training** **Mitigation Measure 3.3-16: Retain Wildlife Nursery Habitat and Implement Buffers to Avoid Wildlife Nursey Sites** If wildlife nursery sites are discovered within or adjacent to the project site during surveys required under Mitigation Measures 3.3-3, 3.3-4, 3.3-5, 3.3-6, 3.3-8, 3.3-9, 3.3-11, and 3.3-12, the following measures will be implemented before commencement of project activities: ▶ A qualified biologist will identify the important habitat features of the wildlife nursery and, prior to commencement of project activities (e.g., ground disturbance, vegetation removal, staging), will mark these features for avoidance and retention during project implementation to maintain the function of the nursery habitat. ▶ A no-disturbance buffer will be established around the nursery site if project activities are required while the nursery site is active/occupied. The appropriate size and shape of the buffer will be determined by a qualified biologist, based on potential effects of project-related habitat disturbance, noise, visual disturbance, and other factors. No project activity will commence within the buffer area until a qualified biologist confirms that the nursery site is no longer active/occupied. Monitoring of the effectiveness of the no-disturbance buffer around the nursery site by a qualified biologist during and after project activities will be required. If project activities cause agitated behavior of the individual(s), the buffer distance will be increased, or project activities modified until the agitated behavior stops. The qualified biologist will have the authority to stop any project activities that could result in potential adverse effects to wildlife nursery sites.	LTS

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Impact 3.3-5: Potential Conflict with Any Local Policies or Ordinances Protecting Biological Resources, Such as a Tree Preservation Policy or Ordinance Implementing the project may result in adverse impacts to plants, wildlife, and sensitive habitats that would conflict with local biological resource policies and ordinances. This includes conflict with policies within municipal planning documents (e.g., general plans), site specific plans (e.g., Hayward Regional Shoreline Adaptation Master Plan), as well as BCDC plans and policies. The project may also require trimming or removal of municipal trees protected by local ordinances. These effects would be a **potentially significant** impact from conflicts with local biological resource policies and ordinances.	PS	**Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources** **Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training** **Mitigation Measure 3.3-3: Conduct Focused Surveys for Nesting Special-Status Bird Species, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers** **Mitigation Measure 3.3-4: Conduct Protocol-Level Surveys and Implement Protective Buffers for California Ridgway's Rail** **Mitigation Measure 3.3-5: Avoid and Minimize Impacts to Western Snowy Plover** **Mitigation Measure 3.3-6: Perform Biological Monitoring** **Mitigation Measure 3.3-7: Prevent Special-Status Wildlife Entrapment** **Mitigation Measure 3.3-8: Avoid Impacts to Salt-Marsh Harvest Mouse and Salt-Marsh Wandering Shrew** **Mitigation Measure 3.3-9: Conduct Botanical Surveys and Implement Avoidance Measures and Mitigation** **Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures** **Mitigation Measure 3.3-11: Avoid Impacts to Pallid Bat** **Mitigation Measure 3.3-12: Implement Avoidance Measures for Monarch Overwintering Colonies** **Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State** **Mitigation Measure 3.3-14: Compensate for Unavoidable Loss of Sensitive Natural Communities** **Mitigation Measure 3.3-15: Mitigate for Unavoidable Riparian Habitat Removal** **Mitigation Measure 3.3-16: Retain Wildlife Nursery Habitat and Implement Buffers to Avoid Wildlife Nursey Sites** **Mitigation Measure 3.3-17: Comply with City and County Tree Ordinances** If tree removal is required for the project, the project will apply for any permits required by the Cities of Fremont, Union City, Newark, and Hayward, and Alameda County in accordance with applicable tree removal ordinances and comply with all regulations detailed in those permits and ordinances. This may include like-size and like-kind replacement of removed or damaged trees, as specified in the applicable ordinances.	LTS

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Impact 3.3-6: Potential Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan For portions of the project that occur within the Refuge, potential adverse effects to plants, wildlife, and sensitive habitats may conflict with conservation policies in the Don Edwards San Francisco Bay National Wildlife Refuge: Final Comprehensive Conservation Plan and Environmental Assessment. Potential adverse effects include direct and indirect impacts to special-status birds, terrestrial mammals, and plants from project construction, and indirect impacts to fish or other species (e.g., from encroachment in sensitive habitats). Temporary encroachment within waters or wetlands, or disturbance of riparian vegetation, may also occur during construction. Accidental frac-outs from directional drilling to construct the MSS brine transport pipeline could also result in discharge of drilling mud that could be deleterious to special-status species and habitats. These effects would be a potentially significant impact from conflict with provisions in the *Don Edwards San Francisco Bay National Wildlife Refuge: Final Comprehensive Conservation Plan and Environmental Assessment*.	PS	**Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources** **Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training** **Mitigation Measure 3.3-3: Conduct Focused Surveys for Nesting Special-Status Bird Species, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers** **Mitigation Measure 3.3-4: Conduct Protocol-Level Surveys and Implement Protective Buffers for California Ridgway's Rail** **Mitigation Measure 3.3-5: Avoid and Minimize Impacts to Western Snowy Plover** **Mitigation Measure 3.3-6: Perform Biological Monitoring** **Mitigation Measure 3.3-7: Prevent Special-Status Wildlife Entrapment** **Mitigation Measure 3.3-8: Avoid Impacts to Salt-Marsh Harvest Mouse and Salt-Marsh Wandering Shrew** **Mitigation Measure 3.3-9: Conduct Botanical Surveys and Implement Avoidance Measures and Mitigation** **Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures** **Mitigation Measure 3.3-11: Avoid Impacts to Pallid Bat** **Mitigation Measure 3.3-12: Implement Avoidance Measures for Monarch Overwintering Colonies** **Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State** **Mitigation Measure 3.3-14: Compensate for Unavoidable Loss of Sensitive Natural Communities** **Mitigation Measure 3.3-15: Mitigate for Unavoidable Riparian Habitat Removal** **Mitigation Measure 3.3-16: Retain Wildlife Nursery Habitat and Implement Buffers to Avoid Wildlife Nursey Sites**	LTS
Cultural and Tribal Cultural Resources			
Impact 3.4-1: Potential to Cause a Substantial Adverse Change in the Significance of a Historical Resource The results of the NWIC records searches identified three previously recorded historical resources present in the project area. Impacts associated with the proposed project would be less than significant. There would be no impact associated with the Solar Salt Facility improvements.	NI	No mitigation is required for this impact.	LTS

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Impact 3.4-2: Potential to Cause a Substantial Adverse Change in the Significance of Unique Archaeological Resources The NWIC records searches identified two previously recorded archaeological sites present in the project area. Additionally, project-related ground-disturbing activities could result in damage to these or other yet undiscovered archaeological resources as defined in State CEQA Guidelines Section 15064.5. This would be a potentially significant impact.	PS	**Mitigation Measure 3.4-2a: Develop and Implement a Worker Environmental Awareness Program** Before the start of any ground disturbing construction activities, a qualified archaeologist shall develop a construction worker awareness brochure for all construction personnel. The brochure will be developed in coordination with representatives from Native American tribes culturally affiliated with the project area. The topics to be addressed in the Worker Environmental Awareness Program will include, at a minimum: ▶ types of archaeological and tribal cultural resources expected in the project area; ▶ what to do if a worker encounters a possible resource; ▶ what to do if a worker encounters bones or possible bones; and ▶ penalties for removing or intentionally disturbing archaeological and tribal cultural resources, such as those identified in the Archeological Resources Protection Act. **Mitigation Measure 3.4-2b: Halt Ground-Disturbing Activity upon Discovery of Subsurface Archaeological Features** If any precontact or historic-era subsurface archaeological features or deposits (e.g., ceramic shard, trash scatters), including locally darkened soil ("midden"), which may conceal cultural deposits, are discovered during construction, all ground-disturbing activity within 100 feet of the resources shall be halted, and a qualified professional archaeologist (one who meets the Secretary of the Interior's Professional Qualification Standards for archaeology) shall be retained to assess the significance of the find. If the qualified archaeologist determines the archaeological material to be Native American in nature, Cargill shall be required by EBDA to contact the appropriate California Native American tribe. A tribal representative from a California Native American tribe that is traditionally and culturally affiliated with the project area may make recommendations for further evaluation and treatment as necessary and provide input on the preferred treatment of the find. If the find is determined to be significant by the archaeologist or the tribal representative (i.e., because it is determined to constitute a unique archaeological resource or a tribal cultural resource, as appropriate), the archaeologist and tribal representative, as appropriate, shall develop, and Cargill shall be required by EBDA to implement, appropriate procedures to protect the integrity of the resource and ensure that no additional resources are affected. Procedures may include but would not necessarily be limited to preservation in place (which shall be the	LTS

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		preferred manner of mitigating impacts on archaeological and tribal sites), archival research, subsurface testing, or contiguous block unit excavation and data recovery (when it is the only feasible mitigation, and pursuant to a data recovery plan). No work at the discovery location shall resume until all necessary investigation and evaluation of the resource has been satisfied.	
Impact 3.4-3: Potential to Cause a Substantial Adverse Change in the Significance of a Tribal Cultural Resource Tribal consultation under AB 52 has not resulted in the identification of tribal cultural resources on the project site. However, excavation activities associated with project construction may disturb or destroy previously undiscovered significant subsurface tribal cultural resources. This would be a potentially significant impact.	PS	Implement Mitigation Measures 3.4-2a and 3.4-2b.	LTS
Impact 3.4-4: Potential to Disturb Human Remains Based on documentary research, no evidence suggests that any human interments are present within or in the immediate vicinity of the project site. However, ground-disturbing construction activities could uncover previously unknown human remains. Compliance with California Health and Safety Code Section 7050.5 and PRC Section 5097 would make this impact less than significant.	LTS	No mitigation is required for this impact.	LTS
Geology and Soils			
Impact 3.5-1: Potential to Expose People or Structures to Substantial Adverse Impacts from Seismic or Geologic Hazards The project would not be constructed in an area that is susceptible to surface fault rupture and landslides. Additionally, the project would comply with the requirements of the CBC, which include preparing and incorporating the recommendations of a site-specific geotechnical and engineering report. Compliance with the CBC would minimize hazards from seismic ground shaking and seismic-related ground failure. Therefore, the impact related to the potential to expose people or structures to substantial adverse impacts from seismic or geologic hazards would be less than significant.	LTS	No mitigation is required for this impact.	LTS
Impact 3.5-2: Potential to Result in Substantial Soil Erosion or the Loss of Topsoil The project would require earthmoving activities that could result in soil erosion. Because Cargill would be required to implement a storm water pollution prevention plan (SWPPP) and implement best management practices (BMPs) designed to control stormwater runoff and reduce erosion, substantial soil erosion	LTS	No mitigation is required for this impact.	LTS

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would not result during project construction. BMPs consistent with ongoing Cargill maintenance practices and existing permit conditions would be applied to all operation-related activities involving earth moving. Therefore, the impact related to substantial soil erosion or the loss of topsoil would be less than significant.			
Impact 3.5-3: Potential to Result in Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse The project would not be constructed in an area that is susceptible to landslides. Additionally, the project would comply with the requirements of the CBC, which include preparing and incorporating the recommendations of a site-specific geotechnical and engineering report. Compliance with the CBC would minimize hazards related to lateral spreading, subsidence, liquefaction, and collapse. Therefore, the impact related to the potential for landslide, lateral spreading, subsidence, liquefaction, or collapse would be less than significant.	LTS	No mitigation is required for this impact.	LTS
Impact 3.5-4: Potential to Locate Project Facilities on Expansive Soil, Creating Substantial Direct or Indirect Risks to Life or Property The project would comply with the requirements of the CBC, which include preparing and incorporating the recommendations of a site-specific geotechnical and engineering report. Compliance with the CBC would minimize hazards related to expansive soils. Therefore, the potential to create substantial direct or indirect risks to life or property from locating project facilities on expansive soils would be less than significant.	LTS	No mitigation is required for this impact.	LTS
Impact 3.5-5: Potential to Result in the Loss of Availability of Regionally Significant Mineral Resources or a Locally Important Mineral Resource Recovery Site The location of Cargill's Solar Salt Facility is identified as an area of salt production and is not used for mining operations. Implementing the proposed project would enhance MSS processing to assist Cargill with its ongoing salt production operations and therefore would result in a benefit to the harvesting of this resource. Although the proposed MSS brine transport pipeline would pass through an area that contains regionally significant mineral deposits, there are no active mining operations in this area. In addition, the project would not prevent the recovery of aggregate resources from this area in the future. Therefore, the proposed project would not result in the loss of availability of regionally significant mineral resources or a locally important mineral resource recovery site, and this impact would be less than significant.	LTS	No mitigation is required for this impact.	LTS

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Greenhouse Gas Emissions and Climate Change			
Impact 3.6-1: Potential to Generate GHG Emissions during Construction and Operation of the Proposed Project Amortized project-generated construction emissions would total 298 $MTCO_2e$ per year, and project operation would result in 258 $MTCO_2e$ per year, resulting in a combined total of 556 $MTCO_2$ per year. These levels of emissions would not exceed the applicable stationary bright-line threshold of 10,000 $MTCO_2e$ per year. This impact would be less than significant.	LTS	No mitigation is required for this impact.	LTS
Hazards and Hazardous Materials			
Impact 3.7-1: Potential to Create a Significant Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials Implementation of the project would involve the limited transport, use, storage, and disposal of hazardous materials. All project activities would be required to comply with federal, state, and local regulations designed to reduce to an acceptable level the potential for the release of large quantities of hazardous materials and wastes into the environment. Because the existing federal, state, and local regulations and oversight in place would effectively reduce the inherent hazard associated with these activities, this impact would be less than significant.	LTS	No mitigation is required for this impact.	LTS
Impact 3.7-2: Potential to Create a Significant Hazard to the Public or the Environment through Reasonably Foreseeable Upset and/or Accident Conditions Involving the Release of Hazardous Materials into the Environment Construction and operation of the project would entail the use of small amounts of hazardous materials, such as fuel, oils, and solvents. Existing federal, state, and local regulations and oversight would address the potential for upset and accident conditions and would effectively reduce to an acceptable level the inherent hazard to the public and the environment associated with project activities. This impact would be less than significant.	LTS	No mitigation is required for this impact.	LTS
Impact 3.7-3: 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 No schools are located within 0.25 mile of the Solar Salt Facility; however, four schools are located within 0.25 mile of the MSS brine transport pipeline alignment. Project-related construction activities would involve the handling of hazardous materials within 0.25 mile of these schools; however, because only minor amounts of	LTS	No mitigation is required for this impact.	LTS

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hazardous materials would be used during construction and operation, the substances would not be acutely hazardous, they would be managed in accordance with applicable laws and regulations, and the pace of construction would ensure extremely limited exposure of the schools to these substances, implementing the project would not be expected to create a hazard to the health of children and employees at nearby schools. Further, the limited duration of exposure to toxic air contaminants from project-related construction emissions at any single sensitive receptor, including the adjacent school, would not have the potential to result in substantial health risks. Therefore, this impact would be less than significant.			
Impact 3.7-4: Potential to Result in or Create a Significant Hazard to the Public or the Environment Due to Being Located on a Site Which Is Included on a List of Hazardous Materials Sites Compiled Pursuant to Government Code Section 65962.5 Earthmoving activities associated with construction of the project would occur in proximity to known sites of contamination and areas with the potential to contain hazardous materials due to past uses, which could result in hazards to the public or the environment if contamination from these sites is encountered during construction. The potential for encountering hazardous materials or wastes would be dependent on site-specific conditions. This impact would be potentially significant.	PS	**Mitigation Measure 3.7-4a: Prepare a Phase I ESA for the Project** Before the start of earthmoving activities, Cargill will hire a licensed environmental professional to prepare a Phase I ESA in accordance with the ASTM International E-1527-05 standard. All recommendations included in the Phase I ESA shall be implemented. If the Phase I ESA indicates the presence or likely presence of contamination, a Phase II ESA shall be required (see Mitigation Measure 3.7-4b). **Mitigation Measure 3.7-4b: Prepare a Phase II ESA in the Ground Disturbance Areas in Locations Where Contamination May Be Present** If the Phase I ESA indicates the presence or likely presence of contamination in areas proposed for ground disturbance, Cargill will hire a licensed environmental professional to prepare a Phase II ESA for these areas before the start of earthmoving activities. The Phase II study will assess the potential for human health and environmental hazards related to potential contact with existing environmental contamination of the surface and subsurface soil and groundwater in the areas where ground disturbance and excavation associated with the project would occur and soil adjacent to SR 84 and SR 92, where horizontal directional drilling is planned. The Phase II assessment will comply with the ASTM International E1903-19 standard and include soil and groundwater sampling and laboratory analysis sufficient to identify the types of chemicals and their respective concentrations. If the laboratory analysis determines that contaminants are present at concentrations below RWQCB threshold levels, the Phase II assessment will present such results, and no further analysis or mitigation will be necessary. If the laboratory analysis determines that contaminants are found at levels that exceed RWQCB threshold levels, the Phase II assessment will examine and discuss all potential exposure pathways for the locations where project-related excavation could encounter hazardous materials, including:	LTS

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		▶ dermal—physical contact with contaminated soil and groundwater during construction; ▶ inhalation—dust generated by construction activities; ▶ groundwater—potential for groundwater generated by construction dewatering to cause migration of a contaminant plume; and ▶ surface water—potential for overland flow of contaminated groundwater generated during construction dewatering to contaminate surface waters. The Phase II assessment will evaluate potential hazards to both construction workers and the environment and will make recommendations governing project excavation, staging, soil reuse or disposal, and construction dewatering requirements. The results from the Phase II assessment will be provided to project contractors so that recommendations from the Phase II assessment regarding excavation, staging, soil reuse or disposal, and construction dewatering can be incorporated into contractor specifications in accordance with Mitigation Measure 3.7-4d and to inform preparation of a site-specific health and safety plan (HASP), in accordance with Mitigation Measure 3.7-4e. If it is determined through the Phase II assessment that in some areas along the pipeline alignment, groundwater dewatering likely would cause plumes of contaminated water in the vicinity to migrate in the direction of the dewatering activity, contractor specifications will state that shoring rather than dewatering will be used in these areas. **Mitigation Measure 3.7-4c: Coordinate with Regulatory Agencies and Implement Appropriate Remedies** If the results of the Phase II assessment indicate that any contaminants are present at a level that exceeds the associated RWQCB or DTSC threshold level, Cargill will notify the appropriate city, the appropriate CUPA, ACWD, and the RWQCB or DTSC, as appropriate. Coordination will occur with the RWQCB or DTSC, as appropriate, regarding the necessity for and types of protective measures required during project-related excavation activities and to ensure that project activities do not interfere with ongoing remedial actions by other entities. Such protective measures could include marking and avoiding existing groundwater monitoring wells, employing shoring and avoiding dewatering activities, installing temporary soil trench plugs, containing contaminated groundwater in Baker Tanks and treating the water before discharge, monitoring groundwater, and documenting backfill quality. As required by the regulatory agencies, reports documenting the implementation of appropriate protective measures, including any required	

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		groundwater monitoring, will be prepared and submitted during the course of construction activities. **Mitigation Measure 3.7-4d: Incorporate Standards for Proper Excavation and Staging Activities, for Handling, Transport, and Disposal of Excavated Soils, and for Construction-Related Dewatering into the Project's Construction Specifications** Specifications and procedures to be followed by the contractor for proper excavation and staging activities, for the handling, transport, and disposal of excavated soils, and for construction-related dewatering in affected area(s), which will be based on the results of the Phase II assessment completed under Mitigation Measure 3.7-4b, will be incorporated into the construction specifications. These specifications and procedures will be consistent with federal and state requirements, including RCRA, CERCLA, the federal hazardous materials transportation law, the Clean Water Act, the Occupational Safety and Health Act, and Title 22, Division 4.5 of the CCR. The following provisions will be included in the project's construction specifications: ▶ Construction workers in the affected area(s) who will be involved with ground disturbance will be trained in Hazardous Waste Operations and Emergency Response if the types of contaminants and their concentrations warrant this training based on the results of the Phase II ESA completed under Mitigation Measure 3.7-4b. ▶ Soil and materials removal from the affected area(s) will be performed by a licensed engineering contractor with a Class A license and hazardous substance removal certification. A California-licensed engineer will provide field oversight on behalf of Cargill and will document the origin and destination of all removed materials. If necessary, removed materials will be stockpiled temporarily and covered with plastic sheeting, pending relocation, segregation, or off-site hauling. To protect groundwater and surface water quality, contaminated soils will not be stored on-site during the winter rainy season (i.e., November through April). ▶ If excess materials from the affected area(s) are hauled off-site, waste profiling of the material will be completed and documented. Materials classified as nonhazardous waste will be transported under a bill of lading. Materials classified as non-RCRA hazardous waste will be transported under a hazardous waste manifest. All materials will be disposed of at an appropriately licensed landfill or facility.	

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		▶ Trucking operations will comply with Caltrans requirements and any other applicable regulations, and all trucks will be licensed and permitted to carry the appropriate waste classification. The tracking of dirt by trucks leaving the project site will be minimized by cleaning the wheels on exit and by cleaning the loading zone and exit area as needed. ▶ If contaminated materials require dewatering before being hauled off-site, or if excavation would encounter shallow groundwater in the affected area(s), a dewatering plan will be prepared, specifying methods of collecting, transporting, treating, and discharging all water produced by dewatering, and demonstrating compliance with RWQCB requirements and permits. **Mitigation Measure 3.7-4e: Prepare and Implement a Site-Specific Health and Safety Plan** To protect the health of construction workers and the environment, a site-specific HASP will be prepared as follows: ▶ The HASP will be prepared in accordance with state and federal OSHA regulations (29 CFR 1910.120) and approved by a certified industrial hygienist. Copies of the HASP will be made available to construction workers for review during their orientation training and/or during regular health and safety meetings. The HASP will identify potential hazards (including groundwater or stained or odiferous soils at any location where earthmoving activities would occur), chemicals of concern (if any have been determined), personal protective equipment and devices, decontamination procedures, the need for personal or area monitoring, and emergency response procedures. ▶ The HASP will state that if stained or odiferous soil or groundwater is discovered during project-related construction activities, Cargill will retain a licensed environmental professional to conduct a Phase II ESA that includes appropriate soil and/or groundwater analysis. Recommendations contained in the Phase II ESA to address any contamination that is found will be implemented before continuing with ground-disturbing activities in these areas. ▶ The HASP will also require notification of the appropriate federal, state, and local agencies if evidence is found of previously undiscovered soil or groundwater contamination (e.g., stained soil or odorous groundwater) or if previously undiscovered underground storage tanks are encountered during construction activities. Any contaminated areas will be remediated in accordance with recommendations made by the RWQCB, DTSC, the local CUPA, and/or other appropriate federal, state, or local regulatory agencies.	

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		Mitigation Measure 3.7-4f: Locate and Avoid Underground Utilities in Areas Where Excavation Is Proposed, and Prepare a Response Plan to Be Implemented If Accidental Rupture Occurs Cargill will implement the following measures before construction begins, to avoid and minimize potential damage to utilities that could result in hazardous materials incidents: ▶ Before the start of construction activities, verify through field surveys and the services of Underground Service Alert the locations of any utilities that may be buried at the project site in the areas where development is proposed (e.g., high-pressure natural gas, fuel, stormwater, sewer, water, electrical, or communication). Any buried utility lines will be clearly marked in the field. ▶ Inform all construction personnel of the location of the pipelines during safety briefings throughout the period when construction is occurring. The locations of the pipelines will be clearly identified on construction drawings and posted in the construction superintendent's trailer. ▶ Prepare a response plan that identifies chain-of-command rules for notification of authorities and appropriate actions and responsibilities regarding the safety of the public and workers. A component of the response plan will include worker education training in response to such situations. The plan will include telephone numbers for emergency response providers, as well as the location of the nearest hospital. This information also will be posted in the construction superintendent's trailer on the job site during construction. **Mitigation Measure 3.7-4g: Safely Remove, Handle, and Dispose of Pavement Containing Yellow Paint** The construction contractor will follow Caltrans Standard Specifications (Caltrans 2018) for removal of pavement containing yellow pavement markings. Yellow marking residue will be handled, removed, and disposed of in accordance with state and federal regulations related to lead waste.	
Impact 3.7-5: For a Project Located in an Airport Land Use Plan or, Where Such a Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Potential to Result in a Safety Hazard or Excessive Noise for People Residing or Working in the Project Area No aviation facilities are located within 2 miles of the Solar Site Facility; however, implementation of the project would involve the installation of the MSS brine transport pipeline within 2 miles of two aviation facilities: Hayward Executive	LTS	No mitigation is required for this impact.	LTS

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Airport and the St. Rose Hospital Helistop. In addition, the pipeline alignment extends through the airport influence area for the Hayward Executive Airport. Because construction on the project site in the airport influence area involves installation of a pipeline belowground, implementing the project would not involve any new or changed land use in the area. Most important, the project would not involve construction of any structures above ground and thus would not result in the potential exposure of people residing or working in close proximity (i.e., 2 miles) to an existing airport or private airstrip to potential safety hazards or excessive noise from air traffic. Therefore, this impact would be less than significant.			
Impact 3.7-6: Potential to Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan Construction of the project would require temporary lane closures where the MSS brine transport pipeline is installed in roadway rights-of-way, which could affect emergency access and evacuation routes. However, the closures would be confined to one lane and would be short term at any given location; a lane would remain open for traffic to pass; temporary paving would occur to reduce traffic control needs in accordance with local jurisdictional requirements; and a traffic control plan would be implemented in compliance with city and county encroachment permit requirements consistent with the most current California Manual on Uniform Traffic Control Devices and State Standard Plans. Therefore, project-related construction activities would not substantially impair or physically interfere with emergency access or an adopted emergency response plan or emergency evacuation plan and this impact would be less than significant.	LTS	No mitigation is required for this impact.	LTS
Hydrology and Water Quality			
Impact 3.8-1: Potential to Violate Any Water Quality Standards or Waste Discharge Requirements or Otherwise Substantially Degrade Surface Water or Groundwater Quality during Construction Construction of the project would cause soil disturbance during trenching for installation of the MSS brine transport pipeline and during construction of Solar Salt Facility ponds and associated infrastructure improvements. This disturbance has the potential to impact surface water and groundwater quality through increased potential of erosion and sedimentation especially when construction is adjacent to waterways and wetlands or within wetlands. If needed, dewatering would occur during construction using sump pumps. The water would be disposed	PS	Implement Mitigation Measure 3.3-10: "Implement Directional Drilling Fluid Containment Measures" and Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State	LTS

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of in an approved sewer system or settling tank to protect water quality. Additionally, the use of equipment during construction could cause spills or leaks of fuel, oil, and other fluids that could degrade water quality especially when construction is adjacent to or within wetlands. The project would adhere to California Construction General Permit Order 2009-0009-DWQ, as well as city and county codes, which would reduce the water quality impact associated with construction. The pipeline would also include several directional drills under wetlands, waters of the United States, and other infrastructure. Directional drilling has the potential to release drilling fluid (bentonite clay-water mix) to the surface, which could spill into adjacent wetlands and waters. Impacts to water quality from direct work in wetlands and from drilling fluids would be potentially significant.			
Impact 3.8-2: Potential to Violate Any Water Quality Standards or Waste Discharge Requirements or Substantially Degrade Surface Water or Groundwater Quality during Operation Operation of the project would cause soil disturbance during maintenance of the MSS brine transport pipeline and the proposed infrastructure at the Solar Salt Facility, which has the potential to impact surface water and groundwater quality through increased potential for erosion and sedimentation. However, the project would adhere to the current California Industrial General Permit Order 2014-0057-DWQ, which requires the implementation of operational BMPs to reduce impacts to water quality associated with operations. Compliance with this permit would minimize the potential for effects on groundwater and surface water quality resulting from operations and maintenance of project features. The MSS brine transport pipeline would tie into EBDA's existing combined effluent conveyance system on the site of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. The brine would be blended with secondary treated wastewater effluent from the other agencies that discharge into the EBDA system before discharge to the Bay through EBDA's outfall. This could adversely affect water quality of the San Francisco Bay. The constituents in the MSS brine, a concentrate of Bay water that is the source water used in the salt production process, have been closely analyzed to determine if any water quality objectives set for the Bay would be violated when the brine is blended with effluent in the EBDA system and discharged to the Bay. None of the constituents in the blended effluent would violate WQOs (LWA 2022). Additionally, in the event of any system upset or other reasons that may affect EBDA system capacity or water quality, brine discharge operations would be suspended. Thus, operations-related impacts on surface water and groundwater quality would be less than significant.	LTS	No mitigation is required for this impact.	LTS

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Impact 3.8-3: Potential to Substantially Decrease Groundwater Supplies or Interfere Substantially with Groundwater Recharge Such That the Project May Impede Sustainable Groundwater Management of the Basin The project area generally has very high groundwater levels and is located within large groundwater basins. The project would use small amounts of water during construction for dust control. Trenching and directional drilling to install the pipeline could require dewatering where groundwater levels are high enough to infiltrate trenches or access pits. Dewatering would be performed by sump pump and groundwater would be discharged into an approved sewer line or settling tank and then discharged to the sewer or storm drain system. Because the quantity of groundwater that would need to be extracted during trenching or directional drilling to keep trenches and access pits free of water during construction of the pipeline is unknown, the potential need for substantial dewatering exists, and because dewatering water would be discharged to the sewer or storm drain system, groundwater supply or recharge could be adversely affected. Therefore, this impact would be potentially significant.	PS	**Mitigation Measure 3.8-2: Minimize Groundwater Loss Due to Dewatering during Construction of the MSS Brine Transport Pipeline** To minimize the loss of groundwater due to dewatering during construction of the pipeline, compliance with one of the following measures is required: ▶ Where groundwater levels are high and trench or access pit installation would require significant dewatering, pump groundwater to settling tanks and discharge clean water back to a nearby well, if permitted, or use the water for dust control in the vicinity of where the dewatering occurred. ▶ If discharge to a nearby well or using dewatering water for dust control in the vicinity is not feasible, then pay the appropriate replenishment assessment fee to the applicable GSA to compensate for loss of groundwater from the basin.	LTS
Impact 3.8-4: Potential to Substantially Alter the Existing Drainage Pattern of the Area, Including through the Alteration of the Course of a Stream or River, in a Manner That Would Result in Substantial Erosion or Siltation On- or Off-Site, Result in Flooding On- or Off-Site, Create or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Storm Water Drainage Systems or Provide Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows The project would not alter drainage patterns. Aboveground infrastructure proposed at the Solar Salt Facility, which includes surface pipelines, a weir, pump stations, and electrical boxes, would result in a small increase in impervious area, which would not cause runoff that would exceed the capacity of existing or planned stormwater drainage systems. The aboveground components for the extent of the pipeline are minimal and include access vaults. All other project components are below ground and would not alter existing drainages or increase impervious area. The project would comply with the Statewide Construction General Permit (Order No. 2009 0009 DWQ) to minimize erosion or siltation during construction. Although located in the FEMA 100-year floodplain in some locations, the project would not result in flooding or redirect flood flows. The project's impact on existing drainage patterns, erosion or siltation, stormwater runoff, and flooding would be less than significant.	LTS	No mitigation is required for this impact.	LTS

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Impact 3.8-5: Potential to Risk Release of Pollutants Due to Project Inundation from Flood Hazard, Dam Failure, Tsunami, Seiche, or Sea Level Rise The project is located in a flood hazard area, tsunami inundation zone, dam failure inundation zone, and an area potentially subject to sea level rise. The MSS brine transport pipeline would be constructed below ground and therefore would not risk long term release of pollutants due to flooding. The salt ponds are surrounded by berms that would protect against the release of MSS brine in the event of a flood. Cargill's ongoing maintenance of berms and infrastructure minimizes the risk of berm failure and release of pollutants. If a flood were to occur during construction of the project, sediment and other pollutants could be released especially from staging areas located within flood zones. Therefore, this impact would be potentially significant.	PS	**Mitigation Measure 3.8-5: Locate Staging Areas Outside of the Flood Zone or Install a Protective Barrier around Potential Sources of Pollutants Stored within the Staging Area** Prioritize staging of materials outside of the FEMA 100 year flood zone, tsunami inundation zone, or dam failure inundation zones. If construction related stockpiles of soil, oil, fuel, lubricants, or other chemicals must be stored at any staging area that is located in a flood zone, then prior to construction, the construction contractor shall install a temporary protective barrier around the materials sufficient to provide protection from flood inundation and maintain the barrier throughout the construction period.	LTS
Impact 3.8-6: Potential to Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan The project would comply with the San Francisco Bay Basin Plan. However, because the quantity of groundwater that would need to be extracted during trenching or directional drilling over the approximately 16-mile pipeline corridor to keep trenches and access pits free of water during construction of the pipeline is unknown, the potential exists for groundwater supply or recharge in the Niles Cone Groundwater Subbasin or East Bay Plain Subbasin Groundwater to be adversely affected. Therefore, the project could potentially impede the implementation of the Alternative to a Groundwater Sustainability Plan for the Management of the Niles Cone Groundwater Subbasin administered by ACWD, or the East Bay Plain Subbasin Groundwater Sustainability Plan implemented by EBMUD, and this impact would be potentially significant.	PS	Implement Mitigation Measure 3.8-2, "Minimize Groundwater Loss Due to Dewatering during Construction of the MSS Brine Transport Pipeline."	LTS
Noise and Vibration			
Impact 3.9-1: Potential to Expose Existing Receptors to Short-Term Construction Noise Based on the construction activities and associated construction equipment likely to be required, construction noise levels were modeled and could reach up to 93.6 dB L_{eq} and 97.6 dB L_{max}. at 50 feet, and 24-hour CNEL levels could be as high as 84.9 dBA Ldn under worst case conditions (several pieces of equipment operating simultaneously). These noise levels would exceed noise standards in jurisdictions with requirements that construction-related noise levels not exceed 86 dBA L_{eq} at adjacent land uses or not exceed 83 dBA L_{eq} at 25 feet from individual pieces of equipment. Thus, construction activities could result in a substantial temporary and	S	**Mitigation Measure 3.9-1: Implement Construction Noise Reduction Measures** The following construction mitigation measure shall be implemented by the construction contractor for the entire construction phase of the project and within each jurisdiction that construction passes through: ▶ The construction contractor shall use noise-reducing operation measures, techniques, best practices, and equipment to achieve maximum practicable noise reduction (generally considered to be 10 dBA for construction noise) with the goal of achieving noise levels that do not exceed the applicable thresholds for each jurisdiction. This requirement shall be enforced through its inclusion on the construction bid specifications. The bid specifications shall require that the	SU

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periodic increase in noise during daytime hours at existing and future sensitive land uses. This impact would be significant.		construction contractor provide an equipment inventory list for all equipment in the fleet with greater than 50-horsepower engines that identifies (at a minimum) make, model, and horsepower of equipment; operating noise levels at 50 feet; available noise control devices that are installed on each piece of equipment; and associated noise reduction from the installed technology. Control devices shall include high-efficiency mufflers, acoustic dampening, and protected internal noise absorption layers for vibrating components, enclosures, and electric motors. In addition, the contractor shall specify how proposed alternative construction procedures will be employed to reduce noise at sensitive receptors compared to other more traditional methods. Examples include, but are not limited to welding instead of riveting, mixing concrete off-site instead of on-site, and using thermal lances instead of drive motors and bits. In all cases, the requirement is that the best commercially available noise-reducing technology and noise-reducing alternative construction method shall be used, provided there are no safety concerns, engineering limits, or environmental constraints preventing it from being used. If a unique circumstance does exist that prevents an alternative, quieter construction method from being used, the contractor shall provide evidence to support its proposal. The noise reduction elements of construction bid submittals shall be approved by the jurisdiction in which construction will occur, in coordination with a qualified acoustical professional. The ability for a construction contractor to reduce noise from construction shall be among the criteria used for selecting the contractor's bid. In addition to the bid-specific measures described above, the following specific measures shall be implemented to achieve the preceding measure: ▶ During the entire active construction period, equipment and trucks used for project construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds). ▶ The contractor shall be required to use impact tools (e.g., jack hammers and hoe rams) that are hydraulically or electrically powered wherever possible. Where the use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used, along with external noise jackets on the tools. ▶ Stationary equipment, such as generators, air compressors, and stockpiled equipment, shall be located as far away from nearby noise-sensitive uses as allowed by physical (e.g., topography, structures) constraints.	

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		▶ At least 10 days before the start of construction activities, a sign shall be posted at the entrance(s) to the job site, clearly visible to the public, that identifies permitted construction days and hours, as well as the telephone numbers of city and contractor representatives who are assigned to respond in the event of a noise or vibration complaint. If the authorized contractor's representative receives a complaint, the complaint shall be investigated, appropriate corrective action shall be taken, and the action shall be reported to the city. ▶ Signs shall be posted at the job site entrance(s), all staging areas, starting and end points of construction headings, as well as intermittently (at least every 5 miles) between construction start and end points, and in the on-site construction zones, and along queueing lanes (if any) to reinforce the prohibition of unnecessary engine idling. All other equipment shall be turned off if not in use for more than 5 minutes. ▶ During the entire active construction period, noise-producing signals, including horns, whistles, alarms, and bells, shall be used for safety warning purposes only. The construction manager shall use smart backup alarms, which automatically adjust the alarm level based on the background noise level, or switch off backup alarms and replace them with human spotters in compliance with all safety requirements and laws. ▶ Noisy operations (e.g., riveting, cutting, hammering) shall be combined to occur in the same period (e.g., day or construction phase), such that the overall duration of these activities is reduced. The total noise level produced will not be substantially greater than the level produced if the operations were performed separately, and the total duration of sensitive receptor exposure to substantial noise levels will be reduced.	
Impact 3.9-2: Potential to Expose Sensitive Receptors to Construction Vibration Operation of construction equipment, possibly including an impact pile driver, would generate vibration during project construction. However, the resultant vibration level would not have the potential to cause structural damage to nearby structures or human annoyance at nearby residences. Therefore, this impact would be less than significant.	LTS	No mitigation is required for this impact.	LTS
Impact 3.9-3: Potential to Generate Long-Term Substantial Stationary Noise from Pump Station Operations Three new pump stations would be developed within the Solar Salt Facility site boundary. Each station would include two pumps varying in power and size. In	LTS	No mitigation is required for this impact.	LTS

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addition, two backup pumps would be on standby. Based on modeling with all eight proposed pumps active, noise standards would not exceed local standards at nearby sensitive receptors. Therefore, this impact would be less than significant.			
Recreation			
Impact 3.10-1: Potential to Increase the Use of Existing Parks or Other Recreational Facilities during Project Construction Such That Physical Deterioration Would Occur or Be Accelerated Construction activities would result in temporary direct (e.g., loss of access, parking, or use) and indirect (e.g., changes to visual character and quality, and increases in noise, dust, and traffic) effects on recreationists at parks and recreational facilities that intersect with or are in proximity to construction activities. Construction activities would be of a limited duration in any one location (pipeline construction would proceed at a rate of approximately 150 feet per day and most staging areas would be in use for 8 to 12 weeks). Regardless, temporary closures, reduced parking, and other disruptions could displace recreationists to other parks or recreational facilities in the region during the construction period. Therefore, physical deterioration of other parks and recreational facilities could occur or be accelerated and construction-related impacts would be potentially significant.	PS	**Mitigation Measure 3.10-1: Prepare and Implement Detour Plans for Parks, Trails, and Recreational Facilities** EBDA and Cargill shall prepare and implement a detour plan for all recreational facilities that would experience access interruptions during project construction, including Don Edwards National Wildlife Refuge/Newark Slough Trail, Alameda Creek Regional Trail, and segments of the San Francisco Bay Trail that are not within roadway rights-of-way. Detour plans shall be developed in consultation with applicable resource agencies, including USFWS, CDFW, EBRPD, the Metropolitan Transportation Commission (MTC), and the Cities of Hayward and Union City. The plan shall be prepared at least 14 days before the start of construction activities involving disruption to a recreational facility. The detour plan shall include posted signs at major entry points for recreational facilities clearly indicating closed areas, the location of alternative facilities or access points, detour routes, and a contact number to call for questions or concerns. The construction contractor shall be required to maintain and implement the detour plan throughout construction activities affecting access to a recreational facility. The 14-day notice period shall also provide time for these agencies to post notices on their respective websites regarding closures and alternate routes. EBDA and Cargill shall provide public information through the media regarding detours and alternative access routes for recreational facilities affected by project construction. EBDA and Cargill shall coordinate with applicable resource agencies to make available to the public information regarding detours at least 14 days before the start of construction activities where detours or closures are required. EBDA and Cargill shall continue to provide public information regarding detours/closures throughout the project construction period. Although closures are not anticipated at Coyote Hills Regional Park, EBDA and Cargill shall coordinate with EBRPD to ensure that the public is notified of construction activities in proximity to recreational use areas. Although closures are not anticipated at Hayward Regional Shoreline/Oro Loma Marsh, EBDA and Cargill shall coordinate with CDFW, EBRPD, and City of Hayward to ensure that the public is notified of construction activities in proximity to recreational use areas. Additionally, EBDA and Cargill shall coordinate with the members of the	LTS

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		Hayward Area Shoreline Planning Agency (City of Hayward, Hayward Area Recreation and Park District, and EBRPD) to ensure that construction activities do not interfere with implementation of the Hayward Regional Shoreline Adaptation Master Plan (HASPA 2021), which includes goals to protect recreational assets and enhance recreational opportunities in response to the threat of sea level rise.	
Impact 3.10-2: Potential to Increase the Use of Existing Parks or Other Recreational Facilities during Project Operations Such that Physical Deterioration Would Occur or Be Accelerated The project would not involve the construction of new residential housing and therefore would not result in direct population growth in the region. Additionally, the project would not induce unplanned population growth. Furthermore, following construction, full use of and access to all parks and recreational facilities would be restored. Project features would be primarily buried underground and maintenance would consist of limited periodic inspections and repairs. Therefore, project operations would not interfere with use or access to parks or recreational facilities such that substantial deterioration of any parks or recreational facilities would occur. This impact would be less than significant.	LTS	No mitigation is required for this impact.	LTS
Impact 3.10-3: Potential to Substantially Increase Hazards Due to Incompatible Uses with Recreational Activities during Project Construction Construction of the MSS brine transport pipeline would introduce construction activities in areas that are currently used for recreation. The proximity of construction activities to areas used for recreation would increase safety hazards for recreationists due to incompatible uses. Potential hazards to recreationists would include construction vehicle collisions; slips, trips, and falls at open excavations; falling objects; and exposure to hazardous materials, elevated noise levels, and increased dust. As a condition of encroachment permit approval, EBDA and Cargill would be required to implement a traffic control plan to minimize construction-related traffic safety hazards on affected roadways. The traffic control plan would reduce safety hazards on segments of the San Francisco Bay Trail within roadway rights-of-way. However, traffic control plans would not reduce safety hazards at Don Edwards National Wildlife Refuge/Newark Slough Trail, Alameda Creek Regional Trail, and segments of the San Francisco Bay Trail that are not within roadway rights-of-way. Therefore, this impact would be potentially significant.	PS	Implement Mitigation Measure 3.10-1, "Prepare and Implement Detour Plans for Parks, Trails, and Recreational Facilities."	LTS

1 INTRODUCTION

Cargill, Incorporated (Cargill), is a food, agriculture, nutrition, and risk management business. The company operates solar salt evaporation ponds in San Francisco Bay (Bay), including adjacent to the City of Newark. The evaporation process produces sodium chloride salt products, as well as a concentrated magnesium chloride solution, or brine, used for dust suppression, road deicing, animal feed, and other products. In the process, residual salts, referred to as mixed sea salts or "MSS," are produced and stored in salt ponds adjacent to the Bay. The company proposes the Cargill Mixed Sea Salts (MSS) Processing and Brine Discharge Project (proposed project or project) for consideration by the East Bay Dischargers Authority (EBDA), described further below and in Chapter 2. This draft environmental impact report (Draft EIR) evaluates the environmental impacts of this proposed project.

This Draft EIR has been prepared under the direction of EBDA in accordance with the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.) and the State CEQA Guidelines.

This chapter of the Draft EIR provides information on the following:

- project requiring environmental analysis (synopsis);
- type, purpose, and intended uses of the Draft EIR;
- scope of the Draft EIR;
- agency roles and responsibilities; and
- standard terminology.

1.1 PROJECT REQUIRING ENVIRONMENTAL ANALYSIS

The following is a synopsis of the project characteristics. For further information on the proposed project, see Chapter 2, "Project Description."

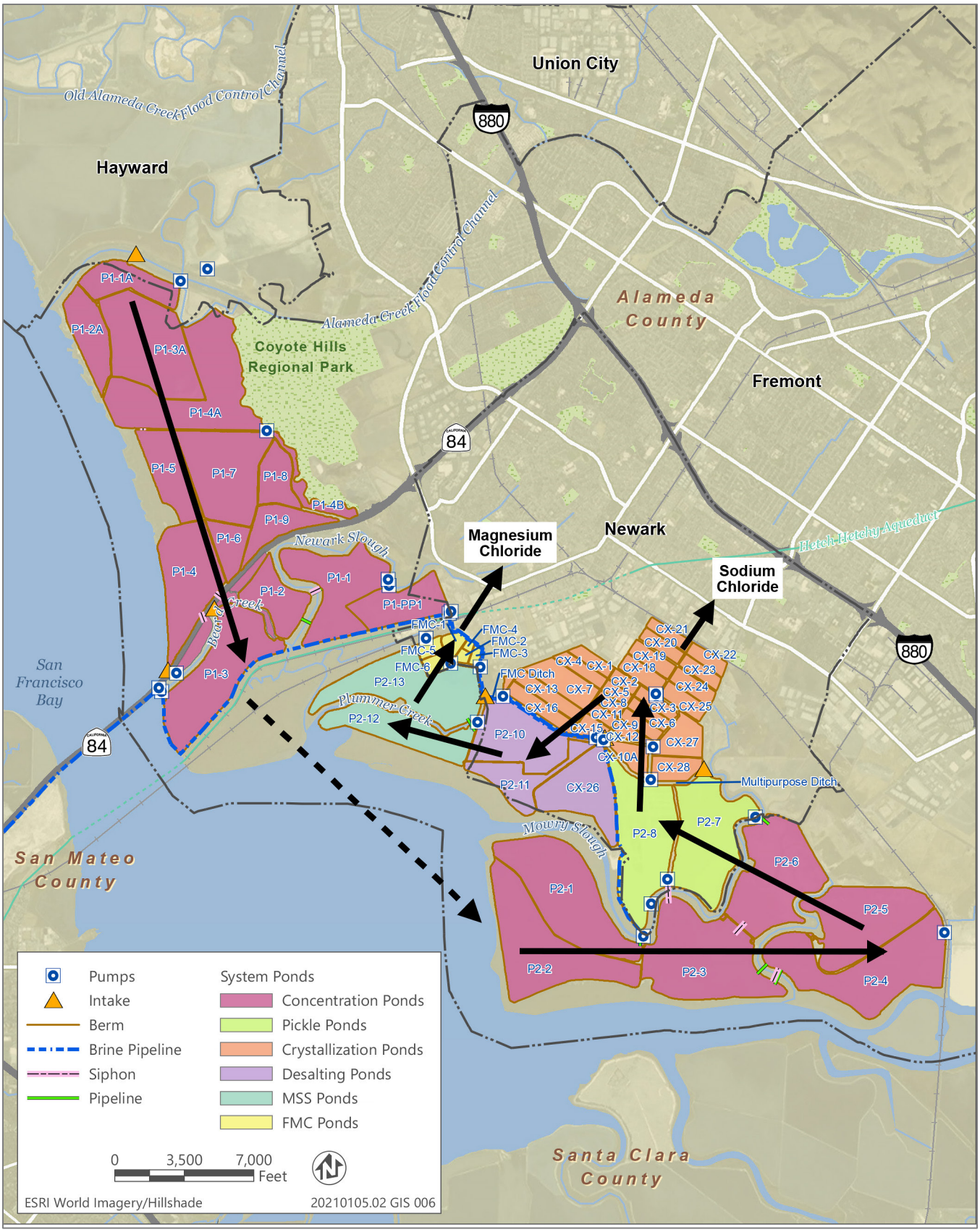
EBDA is a Joint Powers Public Agency (JPPA) consisting of five local agencies (City of San Leandro, Oro Loma Sanitary District, Castro Valley Sanitary District, City of Hayward, and Union Sanitary District). EBDA owns and operates three effluent pump stations, a dechlorination facility, and a combined effluent pipeline/force main and outfall system to manage treated effluent from its member agencies' wastewater treatment plants, along with treated effluent from the Livermore-Amador Valley Water Management Agency, and discharge it through EBDA's common outfall and diffuser into a deep-water portion of the central Bay under a National Pollutant Discharge Elimination System (NPDES) permit (Figure 1-1).

Cargill operates a solar sea salt production facility (Solar Salt Facility) at 7220 Central Avenue in Newark, California, in the South Bay (Figure 1-2). The project proposed by Cargill would enable the enhanced processing and removal of MSS in existing Cargill ponds at its Solar Salt Facility by harvesting additional salts from the MSS in these ponds as commercial product, and transferring the remaining brine to EBDA's combined effluent pipeline for discharge into the Bay under EBDA's NPDES permit. The removal of the MSS stored in these ponds would avoid the potential release of high salinity brine into the Bay in the event of a future berm failure from increased wind and wave action triggered by sea level rise.

The proposed project would involve modifications within Cargill's Solar Salt Facility, including new pipelines and pumping facilities, and construction of approximately 15.6 miles of new underground pipeline, primarily within roadway rights-of-way, to connect the Solar Salt Facility to EBDA's outfall system just downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo, an unincorporated community in Alameda County.

Source: Data provided by East Bay Dischargers Authority in 2022, compiled by Ascent Environmental in 2022.

Figure 1-1 EBDA System



Source: Data provided by Cargill in 2022, adapted by Ascent Environmental in 2022.

Figure 1-2 Cargill Solar Salt Facility

1.2 PURPOSE AND INTENDED USES OF THIS DRAFT EIR

According to CEQA, preparation of an EIR is required when a proposed project may result in a significant environmental impact. An EIR is an informational document used to inform public-agency decision-makers and the general public of the significant environmental impacts of a project, identify possible ways to minimize the significant impacts, and describe reasonable alternatives to the project that could feasibly attain most of the basic objectives of the project while substantially lessening or avoiding any of the significant environmental impacts. Public agencies are required to consider the information presented in the EIR when determining whether to approve a project. This Draft EIR has been prepared to meet the requirements of a project EIR as defined by Section 15161 of the State CEQA Guidelines. A project EIR focuses on the changes in the physical environment that would result from the implementation of a project, including its planning, construction, and operation. The State's intention in preparing a project EIR is that no further environmental analysis would be required for additional regulatory approvals following approval of the project, absent conditions requiring a subsequent EIR, a supplement to the EIR, or an addendum. (See State CEQA Guidelines Sections 15162–15164.)

1.3 SCOPE OF THIS DRAFT EIR

This Draft EIR includes an evaluation of the following environmental issue areas as well as other CEQA-mandated issues (e.g., cumulative impacts, growth-inducing impacts, significant unavoidable impacts, alternatives):

- air quality,
- biological resources,
- cultural and tribal cultural resources,
- geology and soils,
- greenhouse gas emissions and climate change,
- hazards and hazardous materials,
- hydrology and water quality,
- noise and vibration, and
- recreation.

Under the CEQA statutes and the State CEQA Guidelines, a lead agency may limit an EIR's discussion of environmental effects when such effects are not considered potentially significant (PRC Section 21002.1[e]; State CEQA Guidelines Sections 15128, 15143). Information used to determine which impacts would be potentially significant was derived from review of the proposed project; review of applicable planning documents and CEQA documentation; field work; feedback from public and agency consultation; comments received during a public scoping meeting held on June 1, 2022; and comments received on the notice of preparation (NOP) (see Appendix A of this Draft EIR).

The NOP was distributed on May 20, 2022, to responsible agencies, interested parties, and organizations, as well as private organizations and individuals that may have an interest in the proposed project. A revised NOP was distributed on July 8, 2022, due to a change in the location of part of the project (specifically, a portion of the pipeline alignment). The purpose of the NOP and the scoping meeting was to provide notification that an EIR for the project was being prepared and to solicit input on the scope and content of the environmental document. As a result of the review of existing information and the scoping process, it was determined that each of the issue areas listed above should be evaluated fully in this Draft EIR. Further information on the NOP and scoping process is provided below in Section 1.5, "Public Review Process."

1.4 AGENCY ROLES AND RESPONSIBILITIES

1.4.1 Lead Agency

EBDA is the lead agency responsible for approving the project and for ensuring that the requirements of CEQA have been met. Cargill will be responsible for carrying out the proposed project. After the EIR public review process is complete and a Final EIR is prepared, the EBDA Commission will determine whether to certify the EIR and approve the project.

1.4.2 Trustee and Responsible Agencies

A trustee agency is a State agency that has jurisdiction by law over natural resources that are held in trust for the people of the State of California. Trustee agencies that may have jurisdiction over resources potentially affected by the proposed project include the California Department of Fish and Wildlife (CDFW),the California State Lands Commission (CSLC), and the California Department of Parks and Recreation (California State Parks).

Responsible agencies are public agencies, other than the lead agency, that have discretionary-approval responsibility for reviewing, carrying out, or approving elements of a project. Responsible agencies should participate in the lead agency's CEQA process, review the lead agency's CEQA document, and use the document when making a decision on project elements. For example, the Cities of Newark, Fremont, Union City, and Hayward, and the County of Alameda will use this EIR for discretionary actions such as sidewalk or roadway encroachment permits. The following agencies may have responsibility for, or jurisdiction over, the implementation of elements of the project.

STATE AGENCIES

- CDFW (Region 3 – Bay Delta)
- California Department of Transportation
- CSLC
- California State Parks, Office of Historic Preservation
- San Francisco Bay Regional Water Quality Control Board (Region 2)

REGIONAL AND LOCAL AGENCIES

- Bay Area Air Quality Management District
- City of Fremont
- City of Hayward
- City of Newark
- City of Union City
- County of Alameda
- San Francisco Bay Conservation and Development Commission
- San Mateo County Transit District

1.5 PUBLIC REVIEW PROCESS

As identified above in Section 1.3, "Scope of This Draft EIR," in accordance with CEQA regulations, an NOP was distributed on May 20, 2022, and a revised NOP was distributed on July 8, 2022, to responsible agencies, interested parties and organizations, and private organizations and individuals that could have interest in the proposed project. EBDA held an online public scoping meeting on June 1, 2022, to inform interested parties about the proposed project and to provide agencies and the public with an opportunity to provide comments on the scope and content of the EIR. The NOP was available at EBDA's office at 2651 Grant Avenue in San Lorenzo, California, and online at https://ebda.org/projects/cargill-partnership/.

The purpose of the NOP was to provide notification that an EIR for the project was being prepared and to solicit input on the scope and content of the document. The NOP and responses to the NOP are included in Appendix A of this Draft EIR.

This Draft EIR is being circulated for public review and comment for a period of 45 days. During this period, comments from the general public, as well as from organizations and agencies, on environmental issues may be submitted to the lead agency. In addition, EBDA will hold a public meeting to receive oral and written comments on the Draft EIR during the comment period.

Upon completion of the public review and comment period, a Final EIR (Final EIR) will be prepared that will include both written and oral comments on the Draft EIR received during the public review period, responses to those comments, and any revisions to the Draft EIR made in response to public comments. The Draft EIR and Final EIR will comprise the EIR for the proposed project.

Before adopting the project, the lead agency is required to certify that the EIR has been completed in compliance with CEQA, that the decision-making body reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the lead agency.

1.6 DRAFT EIR ORGANIZATION

This Draft EIR is organized into chapters, as identified and briefly described below. Chapters are further divided into sections (e.g., Chapter 3, "Environmental Impacts and Mitigation Measures" and Section 3.3, "Biological Resources"):

The "Executive Summary": This chapter introduces the Project; provides a summary of the environmental review process, effects found not to be significant, and key environmental issues; and lists significant impacts and mitigation measures to reduce significant impacts to less-than-significant levels.

Chapter 1, "Introduction": This chapter provides a description of the lead and responsible agencies, the legal authority and purpose for the document, and the public review process.

Chapter 2, "Project Description": This chapter describes the location, background, and goals and objectives for the project, and describes the proposed project elements in detail.

Chapter 3, "Environmental Impacts and Mitigation Measures": The sections within this chapter evaluate the expected environmental impacts generated by the project, arranged by subject area (e.g., air quality, hydrology and water quality). Within each subsection of Chapter 3, the regulatory background, existing conditions, analysis methodology, and thresholds of significance are described. The anticipated changes to the existing conditions after development of the proposed project are then evaluated for each subject area. For any significant or potentially significant impact that would result from implementation of the proposed project, mitigation measures are presented and the level of impact significance after mitigation is identified. Environmental impacts are numbered sequentially within each section (e.g., Impact 3.2-1, Impact 3.2-2, etc.). Any required mitigation measures are numbered to correspond to the impact numbering; therefore, the mitigation measure for Impact 3.2-2 would be Mitigation Measure 3.2-2.

Chapter 4, "Cumulative Impacts": This chapter provides information required by CEQA regarding cumulative impacts that would result from implementation of the project together with other past, present, and probable future projects.

Chapter 5, "Alternatives": This chapter evaluates alternatives to the project, including alternatives considered but eliminated from further consideration, the No-Project Alternative, and two alternative development options. The environmentally superior alternative is identified.

Chapter 6, "Other CEQA Sections": This chapter evaluates growth-inducing impacts and irreversible and irretrievable commitment of resources, and discloses any significant and unavoidable adverse impacts.

Chapter 7, "References": This chapter identifies the organizations and persons consulted during preparation of this Draft EIR and the documents and individuals used as sources for the analysis.

Chapter 8, "Report Preparers": This chapter identifies the preparers of the document.

1.7 STANDARD TERMINOLOGY

This Draft EIR uses the following standard terminology:

- "No impact" means no change from existing conditions (no mitigation is needed).
- "Less-than-significant impact" means no substantial adverse change in the physical environment (no mitigation is needed).
- "Potentially significant impact" means an impact that might cause a substantial adverse change in the environment (mitigation is recommended because potentially significant impacts are treated as significant).
- "Significant impact" means an impact that would cause a substantial adverse change in the physical environment (mitigation is recommended).
- "Significant and unavoidable impact" means an impact that would cause a substantial adverse change in the physical environment and that cannot be avoided, even with the implementation of all feasible mitigation.

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2 PROJECT DESCRIPTION

2.1 PROJECT BACKGROUND AND NEED

2.1.1 East Bay Dischargers Authority System

EBDA manages the wastewater of approximately one million East Bay residents for the protection of San Francisco Bay. EBDA was formed on February 15, 1974, by a "Joint Exercise of Powers Agreement" (JPA) entered into by the City of Hayward, City of San Leandro, Oro Loma Sanitary District, Union Sanitary District, and Castro Valley Sanitary District (Member Agencies). EBDA operates under a Commission consisting of one representative appointed by each Member Agency. Prior to EBDA's formation, each Member Agency independently discharged wastewater to the shallow areas of San Francisco Bay (Bay). EBDA created an integrated transmission system that delivers treated wastewater to the deepest part of the Bay.

The EBDA system consists of 11.5 miles of combined effluent pipelines and force mains ranging in diameter from 48 inches to 96 inches, three pump stations, a dechlorination facility, and a 7-mile-long outfall and diffuser that discharges treated wastewater into a deep-water portion of the central Bay under a National Pollutant Discharge Elimination System (NPDES) permit (see Figure 1-1). In addition to flows from its Member Agencies, the EBDA system receives flow from the effluent pump station owned by the City of San Leandro, as well as flow from the Livermore-Amador Valley Water Management Agency (LAVWMA), which consolidates effluent from the Cities of Pleasanton and Livermore and the Dublin San Ramon Services District. EBDA discharges an average of 60 million gallons per day (mgd) into the Bay. During winter storms, flows can increase to 189 mgd.

2.1.2 Cargill Solar Salt Facility

Cargill's Solar Salt Facility in Newark, California commercially harvests two salts, sodium chloride (NaCl) and magnesium chloride ($MgCl_2$) through solar evaporation of Bay water in a series of salt ponds along the margin of the Bay (see Figure 1-2). No additives or chemicals are used to produce these salts; evaporation through solar and wind energy drive the process. Water from the Bay is introduced into concentrator ponds (also known as evaporation ponds), where most of the water evaporates, creating a concentrated brine. The concentrated brine is then transferred to "pickle ponds" where evaporation continues. Once the brine achieves saturation, it is transferred into crystallizers, where additional evaporation results in the precipitation of NaCl crystals (table salt). These NaCl crystals are harvested and then moved to Cargill's adjacent salt refinery for further processing and packaging to individual customer's specifications. The remaining brine then exits the NaCl crystallizers and is further evaporated through a series of ponds to achieve a concentrated magnesium chloride brine product, also known as liquid bittern, which is harvested to produce additional commercial products used for road de-icing, dust suppressant, animal feed, and other products. Cargill produces approximately 500,000 tons per year (T/yr) of NaCl and 150,000 T/yr of liquid bittern products.

Bay water also contains other salts that have not yet been harvested as commercial products. These salts, referred to as mixed sea salts (MSS) are precipitated in Ponds 12 and 13 during the processing of liquid bittern. The most prevalent constituents of MSS are magnesium sulfate ($MgSO_4$, also known as Epsom Salts) and residual NaCl and $MgCl_2$. MSS is generated at a rate of approximately 60,000 T/yr in Ponds 12 and 13.

Facing the potential long-term threat of sea level rise from the Bay, Cargill is proposing to implement innovative technology to enhance extraction of additional salts from the MSS inventory in Ponds 12 and 13 and then dissolve the residual MSS in Bay water to produce a brine that could be pumped into EBDA's combined effluent conveyance system. Once in EBDA's conveyance system, the brine would be blended with and further diluted by EBDA Member Agency effluent and then discharged back into the Bay in accordance with EBDA's NPDES permit. Through this process, the volume of brine and precipitated salts stored in ponds closest to the Bay at the Solar Salt Facility in Newark would be

reduced. Therefore, with implementation of the proposed project, Cargill would be accelerating and enhancing the recovery of commercial product from MSS and proactively addressing threats associated with sea level rise by reducing the amount of concentrated salts stored in close proximity to the Bay.

2.2 PROJECT OBJECTIVES

The objectives of the project are to:

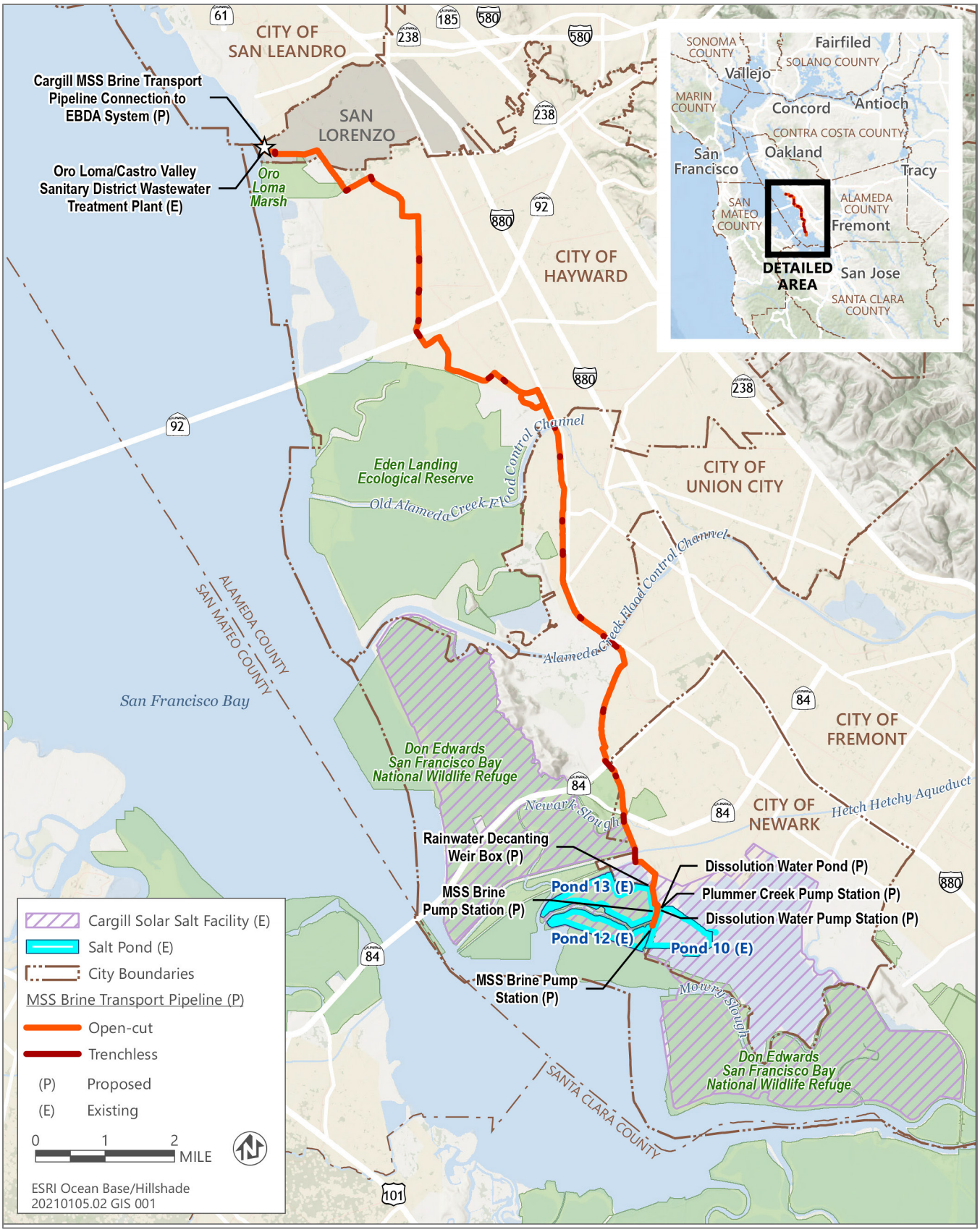
- Provide wastewater disposal capacity and services to Cargill in a manner that provides economic advantage to EBDA Member Agencies, with emphasis on offsetting and reducing expenses to EBDA and its ratepayers, and furthers the purpose and goals of EBDA's Joint Powers Agreement.
- Further EBDA's sustainability objectives, including those in support of reclamation and reuse of wastewater, by creating or facilitating the creation of permanent infrastructure available for future regional water recycling efforts by EBDA and/or EBDA Member Agencies.
- Balance any impacts due to disruption to local jurisdictions with impacts to sensitive environments.
- Develop new infrastructure to process MSS brine with minimal exposure to disruptions, including connecting with and optimizing existing EBDA infrastructure to use EBDA's excess capacity for processing and blending MSS brine.
- Utilize strategic connection to an existing deep-water outfall to minimize impacts to water quality and aquatic resources in receiving waters associated with the discharge of residual MSS brine.
- Facilitate the timely harvest of liquid bittern from the MSS in Cargill's Solar Salt Facility on-site ponds and ensure that MSS brine is efficiently, sustainably, and responsibly handled at all stages, including collection, transmission, and disposal.
- Prevent operational and environmental impacts of Bay water overtopping the berms surrounding MSS ponds due to sea level rise.

2.3 PROJECT LOCATION

Proposed project features are located in the eastern San Francisco Bay Area, including portions of San Lorenzo, an unincorporated community in Alameda County, and portions of the Cities of Hayward, Union City, Fremont, and Newark (Figure 2-1). Specifically, proposed project improvements would be constructed at Cargill's Solar Salt Facility, located at 7220 Central Avenue in Newark, California, and within roadway rights-of-way between the Solar Salt Facility and the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo (Figure 2-1). The MSS are primarily situated in Ponds 12 and 13 of Cargill's Solar Salt Facility, which are located within the US Fish and Wildlife Service's (USFWS's) Don Edwards San Francisco Bay National Wildlife Refuge (Refuge) (see Figures 1-2 and 2-1).

2.4 SITE HISTORY

Natural salt pans (shallow areas isolated from the Bay during at least some tidal stages) occurred along the margins of the Bay before the beginning of human-controlled salt making. During the summer, Bay water within these pans evaporated, leaving various salts, including NaCl, known commonly as table salt or salt. Native Americans collected these salts which were used to preserve food and trade with other Native Americans who did not have a ready source of salt. The pans provided an example of how Bay water could be enclosed and how the natural forces of sun and wind evaporated the enclosed water, eventually allowing salts to drop out in a solid form. Food-quality salt is one of the end products of the solar evaporation of salt water.



Source: Data received from AECOM and Jacobs in 2021 and 2022; adapted by Environmental in 2022.

Figure 2-1 Project Location

The managed solar salt industry began in the Bay during the mid-1850s. The first operations utilized simple earthen berms around naturally occurring salt pans in Alameda County to increase their natural salt production capacity. At this time, solar salt operations in the Bay were small family enterprises that utilized intensive hand labor for production and harvest. Nearly all of the salt produced in the Bay during this era was shipped to Nevada to be used for the processing of silver ore. By the late 1800s, approximately 37 salt production facilities had been established throughout the Bay. Most of these facilities were constructed by diking tidal marshes and installing controlled intake structures that captured Bay waters during extreme high tides to isolate the waters in shallow ponds. Salt operations in the South Bay included construction and maintenance of earthen berms to create and protect ponded areas, siphons, tide gates, pipes, pumps and other facilities for the production of salt.

By the early 1900s, the quality of the salt produced in the Bay had increased significantly and the market expanded to include fine or "table" salt. The industry also consolidated from as many as 30 separate operations at one time to only a few companies by 1924. In 1936, Arden Salt and Leslie-California Salt merged to re-form the Leslie Salt Company (Leslie), which effectively combined the interests of what were as many as 19 separate operations. Following this consolidation, Leslie and the Oliver Salt Company were the primary salt producers. The Oliver Salt Company, located at the foot of the San Mateo Bridge, ceased operations in the 1970s.

By the late 1970s, Leslie had acquired approximately 45,000 acres of land consisting of existing salt ponds and a variety of types of near-Bay lands (agricultural lands used for grazing and hay making, marshlands, salt pans and similar low-lying properties adjacent to the Bay as well as uplands) in support of salt production, and operated in both the North and South Bay. At one time, Leslie was producing over one million tons of salt on an annual basis from its entire operations.

In 1978, Cargill acquired Leslie. In 1979, Cargill (as the owner of Leslie) transferred 15,341 acres of its real property to the United States pursuant to a condemnation process for the incorporation of this land into the Refuge and to be managed by, the US Fish and Wildlife Service (USFWS). As part of the condemnation action, Cargill retained certain "Reserved Rights" in perpetuity to continue to conduct solar salt operations within approximately 8,000 acres of the Refuge, including the right to construct pumps, siphons, pipelines, pump houses and other improvements related to its operations. The improvements that would be placed within the Refuge as part of the proposed project, including the MSS brine transport pipeline and brine pump stations (discussed further in Section 2.6, below), fall within the scope of Cargill's Reserved Rights. Cargill's operations further include, in addition to the 8,000 acres within the Refuge, approximately 4,100 acres of fee-owned land.

In addition to the over 15,000 acres conveyed to the United States for the Refuge in 1979, Cargill donated and conveyed (1) approximately 10,000 acres of former salt pond properties to the State of California in 1994 for the creation of the Napa-Sonoma Marshes Wildlife Area, operated by the California Department of Fish and Wildlife (CDFW), and (2) approximately 15,100 acres of former salt pond properties to the United States and State of California for the South Bay Salt Pond Restoration Project, including land comprising the Eden Landing Ecological Reserve managed by CDFW. Cargill is now the sole producer of Solar Salt within the Bay Area. In general, Cargill operates the solar salt system in the same manner as it has been operated historically.

2.5 SALT PRODUCTION

2.5.1 Overview

The process of harvesting salt from Bay water today, including the movement of increasingly saline brine between ponds, and the crystallization of salt in preparation for harvest, is essentially the same as what has occurred historically for at least the last 100 years.

The process consists of the following basic steps:

- Sea water is taken in from the Bay (once in the salt-harvesting system it is referred to as brine).

- The brine moves through a series of evaporation ponds (referred to as concentrators) until it reaches a salinity close to that required for salt (NaCl) to precipitate.
- The highly concentrated, saturated brine is moved into pickle ponds where it is stored before harvest, and where additional evaporation may occur.
- Saturated brine is moved to the crystallizers, where additional evaporation occurs and NaCl is precipitated and harvested.
- Brine remaining after NaCl is harvested in the crystallizers is moved to post-harvest ponds where additional NaCl may be recovered, liquid bittern is harvested, and MSS is precipitated.

Currently, all salt in Bay water that enters the system is either harvested or retained in the system as MSS. It typically takes about two years from the intake of Bay water to initial salt harvest. The time required is primarily controlled by net evaporation rates. Annual net evaporation rates vary due to rainfall, wind, temperature and hours of sun. Evaporation generally occurs from April or May through October or November, with the highest rates during the summer months. A more detailed description of the salt production process is provided below.

2.5.2 Salt-Production Process

The solar salt production process begins with the intake of Bay water, which enters Cargill's system through pumps or tide gates. Bay water is generally taken into the system during the highest tides in the dry months. Once in the salt production system, the Bay water becomes known as "brine." The brine is moved through a series of sequential concentrators until it reaches a concentration close to the point where NaCl would precipitate. Siphons, pipelines, and brine channels allow brine to be moved through the system and under sloughs and the Bay, as well as under infrastructure such as roadways. The brine is moved through the system by gravity feed and/or pumping. Normal South Bay water salinity ranges from 10 to approximately 30 parts per thousand (ppt), depending on the time of year, whereas the brines at the point of salt precipitation reach approximately 350 ppt (10 or more times that of Bay water). The sequential process resulting in increasing salt concentration over time is essentially the same as the historic practice; however, weather and production conditions may dictate some changes to avoid brine imbalance in the sequential evaporation process. When the brine reaches saturation, it is transferred to crystallizers where its salt concentration is controlled using "pickle"–brine that is saturated with NaCl. Sodium chloride precipitation occurs within the crystallizers. After residual brine is removed, the precipitated NaCl is harvested from the beds. After the majority of the NaCl is precipitated, the remaining brine continues through the salt production process, where further NaCl may be recovered, liquid bittern (concentrated $MgCl_2$ brine) is harvested for production of other commercial products, and MSS is precipitated in Ponds 12 and 13.

As managed historically, and as is the case with all solar salt plants, the goal of salt pond operations is to maintain liquid brines through the ponds on a scale of increasing salinity as the brine moves toward the harvesting facilities, but to avoid the precipitation of mineral salts before the salts can be harvested. Precipitation of mineral salts before the pickle ponds can cause operational problems. In addition, sufficient brine must be continuously contained in each pond so that a hydraulic connection is maintained from pond to pond. (In solar salt making vernacular, ponds must remain "covered.") This allows the brines to be moved toward the plant site either by gravity or pumping.

Controlling brine densities and brine movements throughout the system, while accounting for changing weather conditions, is the essence of solar salt making operations. To prevent salt from precipitating before its desired location, the brine concentration may be lowered, usually by adding less saline brine from concentrators or additional Bay water.

The types of ponds found at the Solar Salt Facility in Newark include concentrators, pickle ponds (these store feedstock brine for the crystallizers), crystallizers (for salt precipitation and harvesting), desalting ponds (where additional NaCl is recovered and recycled), MSS ponds (where liquid bittern is harvested), and wash ponds (these receive high salinity water that has been used to wash impurities from the salt). Typically, ponds later in the sequence have higher salinities.

The key infrastructure required for salt production are as follows:

- Earthen berms - Cargill's solar salt system is separated from the Bay and from local streams and flood control channels by a system of approximately 123 linear miles of earthen berms, of which approximately 62 miles are outboard berms abutting the Bay, sloughs, and tidal marsh habitats. The berms enclose the salt ponds and were built for the exclusive purpose of producing salt in the shallow ponds. In addition to containing the system, outboard and internal berms are used to access the salt ponds.
- Intake structures - Cargill intakes Bay water to start the salt making process and to regulate salinity levels and concentrations within the salt ponds. Intake structures are located at the beginning of the salt pond system where Bay water enters the pond system and begins the concentration process, as well as throughout the system to support the salt production process. Cargill's intake structures consist of tide gates and pumps that are either directly connected to Bay water or connected to Bay water via the tide gates that let water into a pumping area. Bay water is allowed to flow or is pumped into the intake ponds in the summer and early fall when the Bay is usually at its highest salinity. Water is typically taken in during high tides. The main intake is on the Alameda Creek Flood Control Channel. Smaller quantities of Bay water are used to support salt making operations, such as removing precipitated salt from pumps, controlling salinities in the system, and near crystallizers as part of the harvesting effort. Intake periods for these types of uses would typically target lower salinity water. Bay water is currently taken in primarily between April and October.
- Pumps – Pumps are typically located between ponds and salt plants and are used to move brines within the system. The pumps used range in capacity from 2,000 to 30,000 gallons per minute (gpm).
- Siphons - Siphons are used to connect ponds beneath water courses such as sloughs and flood control channels.
- Pipes - Brines are conveyed between some ponds by pipes. Pipes may be located either above or below ground, or underwater.
- Brine channels and internal donuts - Brine channels (also known as brine ditches) are narrow, earthen, unvegetated channels used to convey brines between salt ponds. They serve the same purpose as pipes. The majority of brine flow occurs by gravity feed, although some pumping also occurs to move brine. Brine channels are typically located immediately adjacent to the salt ponds and are connected to the salt ponds via "donuts" (small ponds with berms) that are internal to the salt pond system.
- Borrow channels - Borrow channels are utilized during berm maintenance to provide a source of sediment to maintain or repair or strengthen sections of the berm where needed.

2.6 PROPOSED PROJECT

The proposed project would enable the enhanced processing and removal of the MSS stored in Cargill Ponds 12 and 13, by generating up to an additional 120,000 T/yr of liquid bittern from the MSS matrices in these ponds, dissolving the residual MSS solids in the ponds using Bay water, and transferring the resulting brine to EBDA's combined effluent conveyance system for discharge to the Bay under EBDA's NPDES permit. Harvesting the liquid bittern and final disposition of the residual MSS brine would not require the use of any chemicals.

The MSS brine would be discharged to the EBDA system at up to 2.0 mgd (average 24-hour flow rate of 1,389 gpm). Based on this estimated flow rate, the harvesting and discharge of the current inventory of MSS is projected to require a 10-year timeframe. This time frame could be extended to accommodate intermittent turndown or shutdown of brine discharge. Discharge of the MSS brine by Cargill to the EBDA system would be subject to an agreement between EBDA and Cargill. The EBDA JPA term expires on June 30, 2040. Therefore, the proposed project would either terminate on or before that date or could continue under a renegotiated agreement.

In the event of a future berm failure from increased wind and wave action triggered by sea level rise, the removal of the MSS stored in Ponds 12 and 13 would reduce the potential for release of high salinity brine into the Bay.

The proposed project has an on-site component of pipelines and pumping facilities within the Solar Salt Facility and a MSS brine transport pipeline that would involve construction of approximately 15.6 miles of new underground pipeline primarily within roadway rights-of-way to connect the Solar Salt Facility into EBDA's system just downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo.

The proposed project consists of the following components, discussed in more detail in the following sections:

- dissolution water pond and Plummer Creek Pump Station,
- dissolution water pump station and distribution system,
- two MSS brine pump stations,
- liquid bittern recovery pumps,
- rainwater decanting,
- MSS brine transport pipeline, and
- MSS brine discharge to the EBDA system.

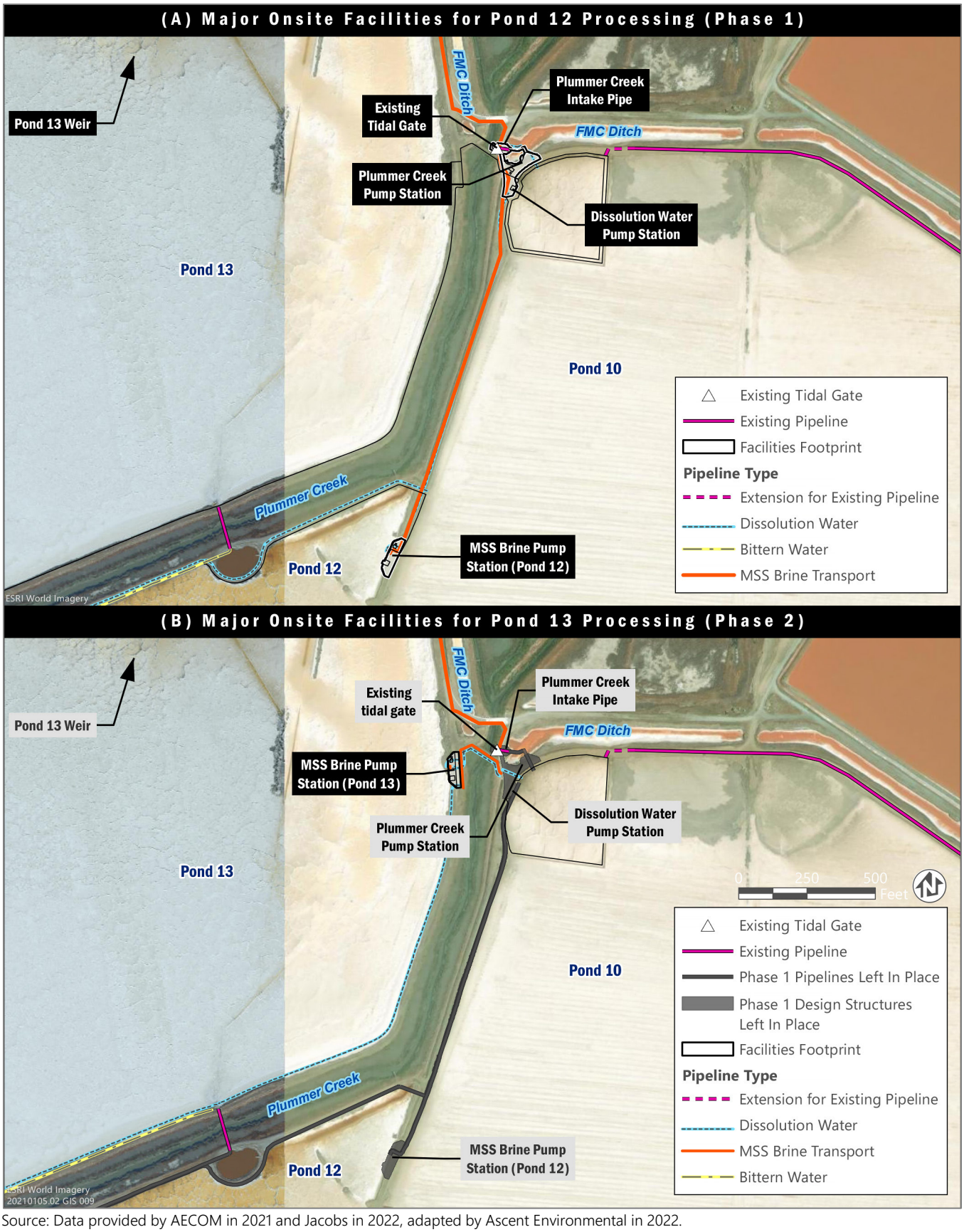
Because MSS is currently in both Ponds 12 and 13, the processing of these two facilities would be phased. It is anticipated that Pond 12 (at 247 acres) would take about 3.6 to 6.5 years to process (Phase 1), and Pond 13 (at 397 acres) would take roughly 6.4 to 11.5 years to process (Phase 2). Major facilities that would be used for Pond 12 and Pond 13 processing are shown in Figure 2-2.

2.6.1 Dissolution Water Pond and Plummer Creek Pump Station

Bay water would be used for dissolution of the residual MSS in Ponds 12 and 13. It would be obtained from the Bay and transferred to a new dissolution water pond created in the northwest corner of Evaporation Pond 10 (Figure 2-2).

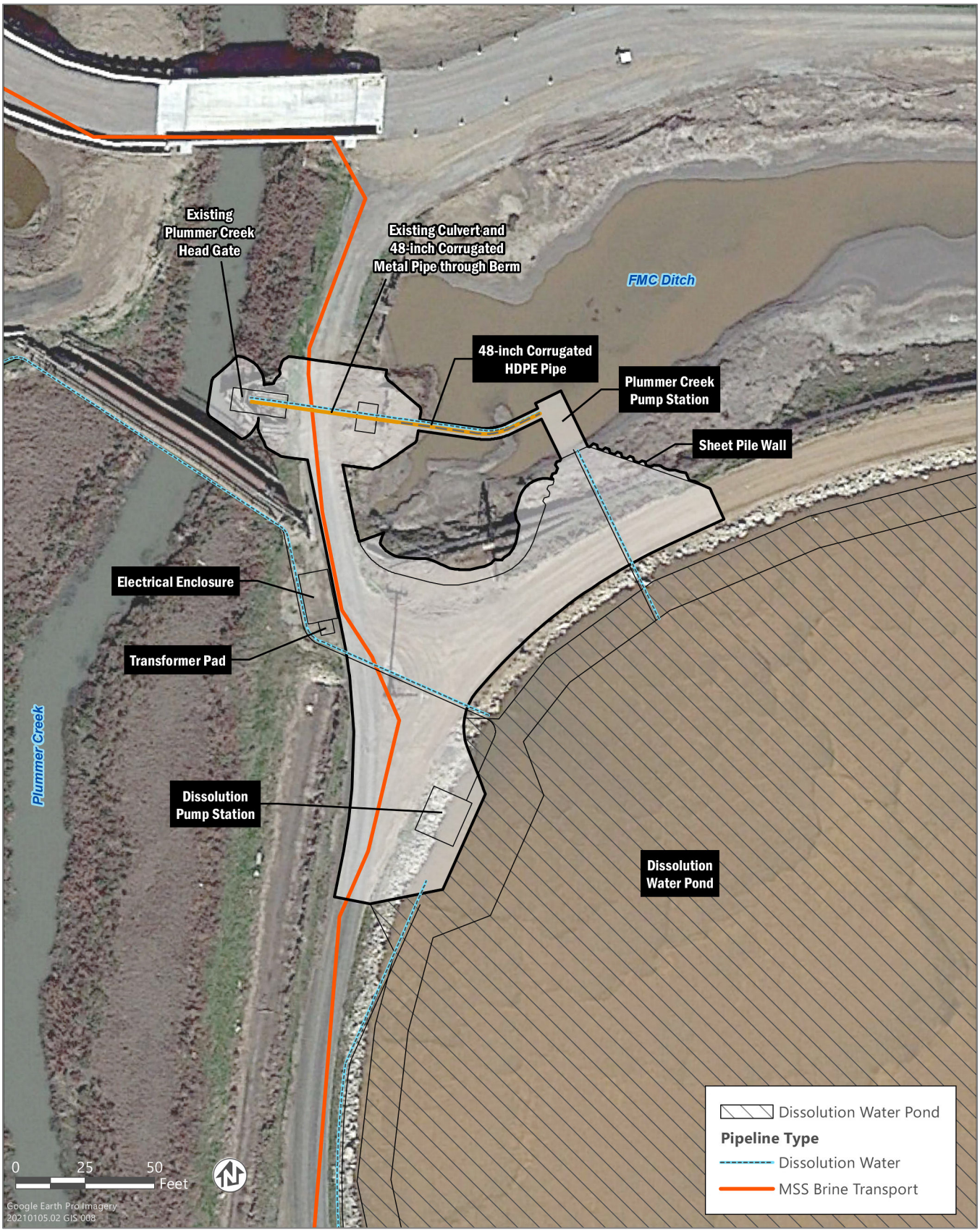
To obtain water for the dissolution water pond, a new pump station (the Plummer Creek Pump Station) would be installed in the FMC ditch that would pump water indirectly from Plummer Creek to the new dissolution water pond (Figure 2-3). This would be achieved by connecting the existing head gate structure on Plummer Creek via an existing 48-inch corrugated high-density polyethylene (HDPE) pipe through the berm to a new 48-inch corrugated HDPE pipe that would connect to the collection chamber, or wet well, of the Plummer Creek Pump Station. The Plummer Creek Pump Station would supply a maximum flow rate of up to 3,400 gpm. Because the FMC ditch is used for periodic brine movements, the Plummer Creek Pump Station would be isolated from the FMC ditch under normal operations; the tidal gate located between the wet well and the FMC ditch would be opened periodically when Bay water is used seasonally for other operations. This gate would also allow rainwater in the FMC ditch to enter the pump station and be pumped into the dissolution water pond. This would occur when decanting rainwater from Pond 13, as discussed below.

The Plummer Creek Pump Station would be a slab-on-grade facility located at the edge of the FMC ditch. At the southern end of the structure, there would be an earth embankment approach, supported by a sheet pile wall. An adjacent 10-foot by 12-foot electrical enclosure constructed of precast concrete would be supported by and anchored to cast-in-place concrete foundations. The electrical enclosure would receive a separate power feed from a 12.7-kilovolt (kV) service drop from the existing nearby Pacific Gas and Electric Company (PG&E) distribution lines. A concrete pad would provide space for the new PG&E utility transformer. PG&E would size the transformer and service entrance conductors based on the expected loads from the Plummer Creek Pump Station and Pond 12 MSS Brine Pump Station. In the future, when the Pond 13 MSS Brine Pump Station is constructed, the transformer would be upsized by PG&E to handle this additional load. (The brine pump stations are discussed in Section 2.6.3, "MSS Brine Pump Stations.") A Supervisory Control and Data Acquisition (SCADA) system would be used at the Plummer Creek Pump Station.



Source: Data provided by AECOM in 2021 and Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-2 Major On-Site Facilities for Pond 12 and Pond 13 MSS Processing



Source: Data provided by AECOM in 2021 and Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-3 Plummer Creek Pump Station and Dissolution Water Supply System

The Bay water that flows into the multipurpose ditch from Mowry Slough is currently distributed to multiple applications across the Solar Salt Facility. A backup supply from Mowry Slough would be used as a secondary supplemental Bay water source to fill the dissolution water pond (Figure 2-4). This supply can provide a maximum continuous flow rate of about 600 gpm through the existing 12-inch pipeline that runs from the multipurpose ditch to the dissolution water pond area. This pipeline would be extended by an additional 100 feet to reach the dissolution water pond.

The dissolution water pond would support the transfer of Bay water at a continuous rate up to 1,400 gpm (6.2 acre-feet per day) for the duration of the Pond 12 and 13 processing It would be sized for about 1.7 days of storage at 1,400 gpm, with a total of 10.6 acre-feet of capacity (2.65 acres of surface area and 4 feet of usable liquid depth). To obtain this capacity, existing crystallized salts at the bottom of the dissolution water pond would be dissolved down to the Bay mud, or the salts would be physically harvested and placed in Pond 10.

2.6.2 Dissolution Water Pump Station and Distribution System

During Pond 12 processing, the dissolution water pump station would be used to pump dissolution water for MSS processing. The water would be pumped from the dissolution water pond to a pipe header and distribution system laid along the internal slope of the existing berms on the northern side of Pond 12, adjacent to Plummer Creek (Figure 2-5[A]). The system would supply dissolution water in isolated sections of the pond, distributing the dissolution water across the surface of the MSS and through the crystallized MSS salt layer above the surface of the Bay mud. The dissolution water would be distributed across the MSS via lateral branch pipes and portable and lightweight hoses. The lateral pipe and flexible hose would be periodically relocated as MSS dissolution progresses down the length of Pond 12.

The dissolution water pump station would be a slab-on-grade facility located at the dissolution water pond (see Figure 2-3). The on-site piping distribution system would be above grade HDPE pipe where practical. The piping would be placed along the internal slope of the existing berms and secured with anchors. The pipes should be accessible from the road. Some short sections of pipe could be buried, for example, for road crossings.

Pond 13 processing would be similar to Pond 12. The dissolution water pump station would connect to a header pipe along Pond 13, and the in-pond piping would be moved and reused at Pond 13 (Figure 2-5[B]).

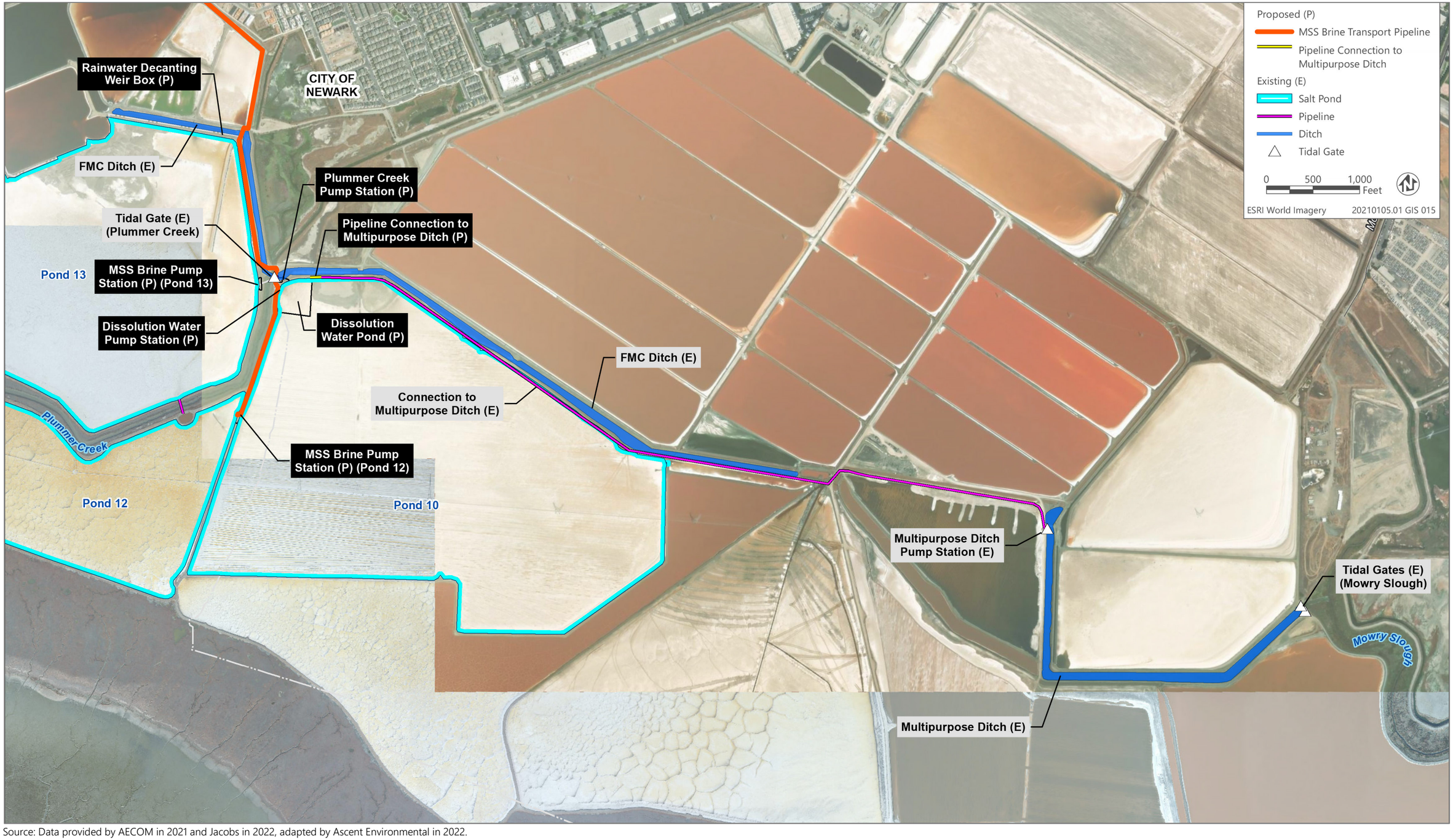
2.6.3 MSS Brine Pump Stations

After the dissolution water dissolves the MSS, the resultant brine would collect in a pool and be continually pumped out of the northeastern corner of Pond 12, at a rate up to 1,400 gpm; it would be pumped by a MSS brine pump station to the MSS brine transport pipeline.

The MSS brine pump station would be a cast-in-place slab-on-grade pump station (Figure 2-6) with a fiberglass-reinforced walkway that would also help support the piping between the wet well and the pumps. An adjacent 10-foot by 12-foot electrical enclosure anchored to concrete foundations.

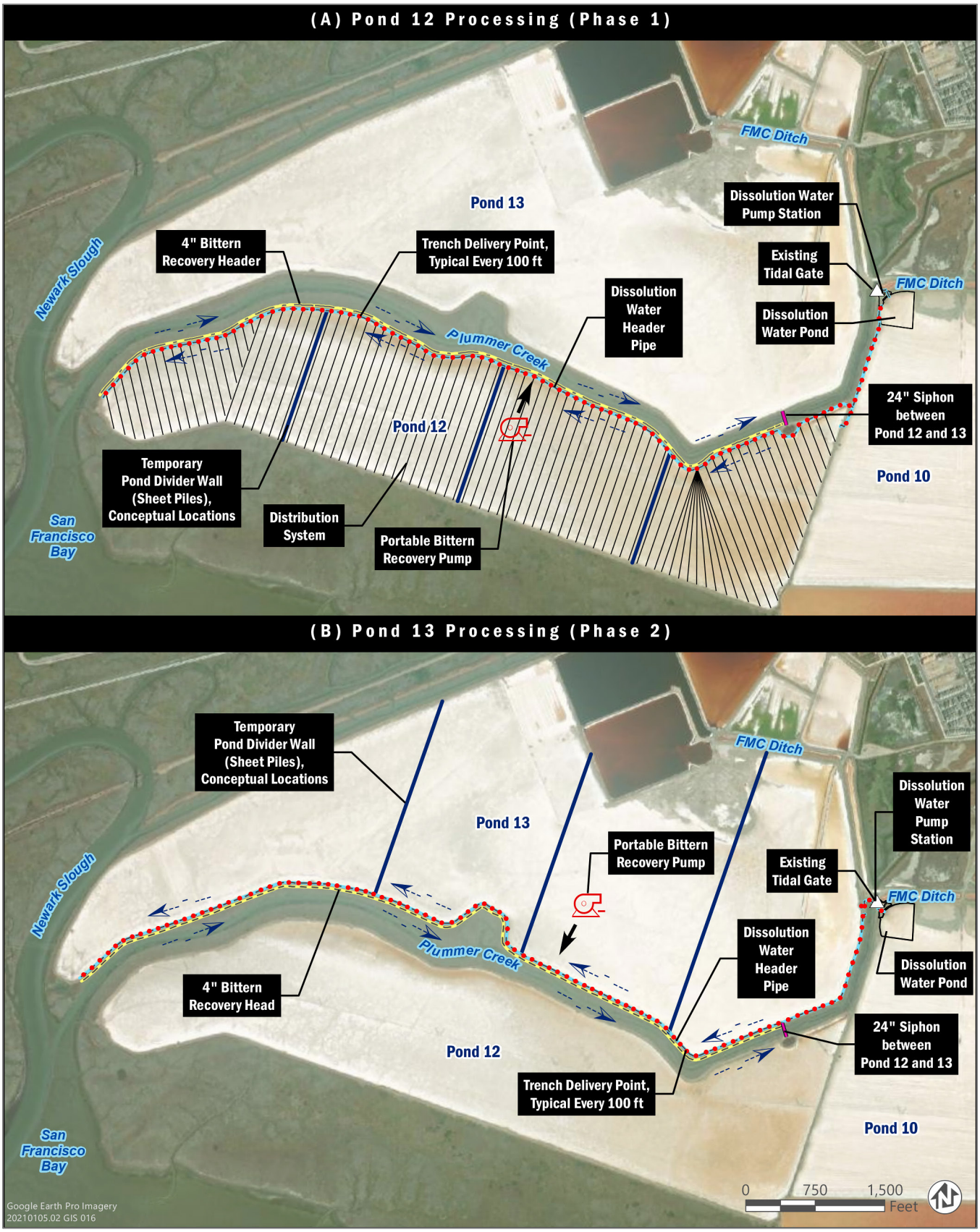
The pump structure would include a baffle and weir that controls flow into the pump wet well. The system would be designed to prevent both floating material and sediment from entering the pump. The salt concentration of the MSS brine would be controlled by blending it with a small fraction of dissolution water to avoid supersaturation and crystallization in the downstream pipeline.

A new MSS brine pump station would also be constructed in Pond 13 near the dissolution water pond before Pond 13 processing. The pump station footprint and features are expected to be similar to those of the pump station shown in Pond 12 (see Figure 2-6). Its discharge pipeline would cross Plummer Creek at the existing pipe bridge and connect to the off-site MSS brine transport pipeline.



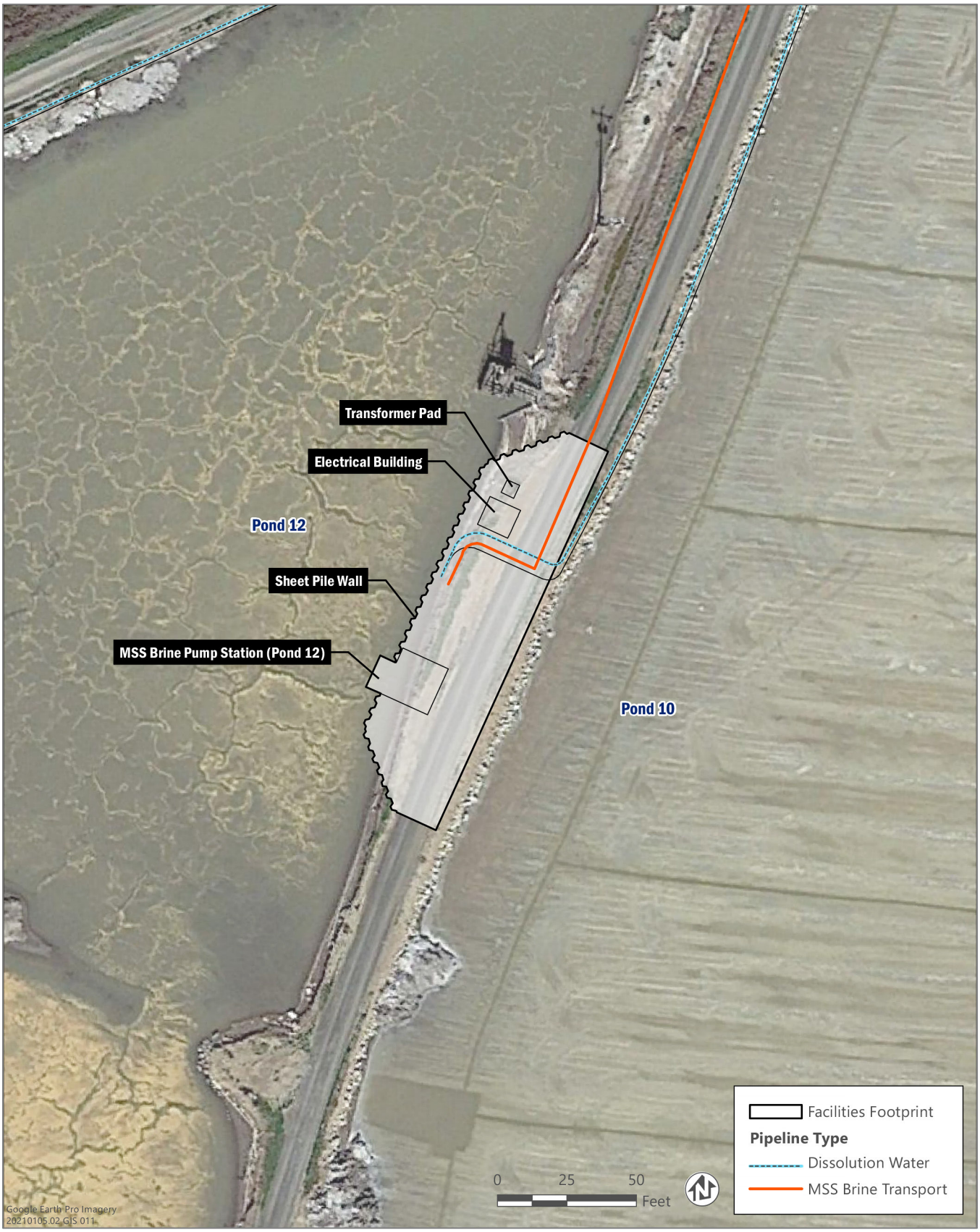
Source: Data provided by AECOM in 2021 and Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-4 Backup Dissolution Water Supply Connection to Multipurpose Ditch



Source: Data provided by AECOM in 2021 and Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-5 Dissolution Water Distribution and Bittern Recovery System



Source: Data provided by AECOM in 2021 and Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-6 Pond 12 MSS Brine Pump Station

2.6.4 Enhanced MSS Processing

Liquid bittern is a concentrated $MgCl_2$ brine, a commercial product that has traditionally been processed and harvested onsite in Ponds 12 and 13. Enhanced MSS processing would enable the recovery of additional liquid bittern. This enhanced processing is described in the following paragraphs.

POND 12 PROCESSING

During the processing of Pond 12, sections of the pond would be temporarily isolated using vinyl sheet piling to enable liquid bittern recovery (see Figure 2-5[A]). It is anticipated that a minimum of four sections of the pond would be progressively isolated for this purpose. After liquid bittern recovery is complete in the first section at the eastern end of the pond, the vinyl sheet pile would be removed and the section would be transitioned to MSS dissolution. The next section to the west would then be isolated to enable liquid bittern harvest. These transitions would continue over approximately 3.6 to 6.5 years, until the entire Pond 12 area has been processed.

Two new pipelines would be installed along the internal slope of the berm on the northern shore of Pond 12: (1) a nominal 12-inch header pipe to deliver dissolution water to Pond 12; and (2) a nominal 4-inch pipe to transfer liquid bittern from Pond 12 directly to product storage or to Pond 13, where it would be further processed and harvested as commercial product (see Figure 2-5[A]). Both the dissolution water pipeline and the liquid bittern recovery pipe would have branch connections approximately every 100 feet. A series of micro-trenches would be cut into the solid MSS matrix in the pond, thereby allowing liquid bittern to be drained from the MSS solid matrix. Dissolution water may also be introduced to select trenches in the matrix to promote additional liquid bittern harvest from adjacent trenches. Liquid bittern that drains from the MSS matrix into the recovery trenches would be recovered by portable pumps that connect to the header pipe and into product storage or Pond 13 through an existing siphon between the ponds (see Figure 2-5). The recovery pipe would also require tie-ins with the adjacent dissolution water supply header for periodic flushing of the liquid bittern piping to clean out crystallized salts.

From the 12-inch dissolution water delivery pipe, a branch pipe would be connected at one of the branch connections; it would then extend south across to the southern side of the pond. This branch pipe would have hose connections approximately every 100 feet to deliver water across the surface of the MSS and into Pond 12 trenches to dissolve the MSS matrix. The maximum length of this branch pipe would be about 1,500 feet. The branch pipe would distribute the entire 1,200 to 1,400 gpm flow over the full width of the pond. This branch pipe would be periodically moved approximately 100 feet to the west to a new header branch connection. To more easily relocate the branch pipe, it would be segregated into smaller sections of pipe. As dissolution water is delivered to the MSS matrix, starting at the area farthest east, a MSS brine would be created, which would flow toward the MSS brine pump station in the northeastern corner of Pond 12.

POND 13 PROCESSING

After Pond 12 processing is complete, MSS processing would be initiated in Pond 13, and Pond 12 would be converted back to liquid bittern harvesting. To facilitate Pond 13 processing, two new pipelines would be installed along the internal slope of the berm on the southern side of Pond 13: (1) a nominal 12-inch pipe to deliver dissolution water to Pond 13; and (2) a nominal 4-inch pipe to pump liquid bittern from the Pond 13 trenches to deliver to Pond 12, where it would be further processed and harvested as commercial product (see Figure 2-5[B]). Both the dissolution water pipeline and the liquid bittern recovery pipeline would have branch connections approximately every 100 feet. A series of micro-channels would be cut into the solid MSS matrix in Pond 13, thereby allowing liquid bittern to be drained from the MSS solid matrix so that it can be pumped from the trench (see Figure 2-5). Dissolution water may also be introduced to select trenches in the matrix to promote additional bittern recovery from adjacent trenches. Portable pumps would recover liquid bittern and transfer it through the header pipe and into Pond 12 through the same existing siphon between the ponds. The recovery pipe would also require tie-ins with the adjacent dissolution water supply header for periodic flushing of the liquid bittern piping to clean out crystallized salts.

From the dissolution water delivery pipe, one or two branch pipes at a time would be connected at these branch connections; they would then extend north across to the northern side of the pond. This branch pipe would have hose connections approximately every 100 feet to deliver water into Pond 13 trenches used to dissolve the MSS matrix. The maximum length of this branch pipe would be about 3,200 feet. The branch pipe would distribute the entire 1,200 to 1,400 gpm flow over the full width of the pond. Branch pipes would be periodically moved approximately 100 feet to the west to new header branch connections. To efficiently relocate the branch pipe, it would be segregated into shorter sections of pipe. As dissolution water is delivered to the MSS matrix starting at the area farthest east, the resulting brine solution would flow toward the MSS brine pump station on the eastern side of Pond 13.

RAINWATER DECANTING DURING POND 12 PROCESSING

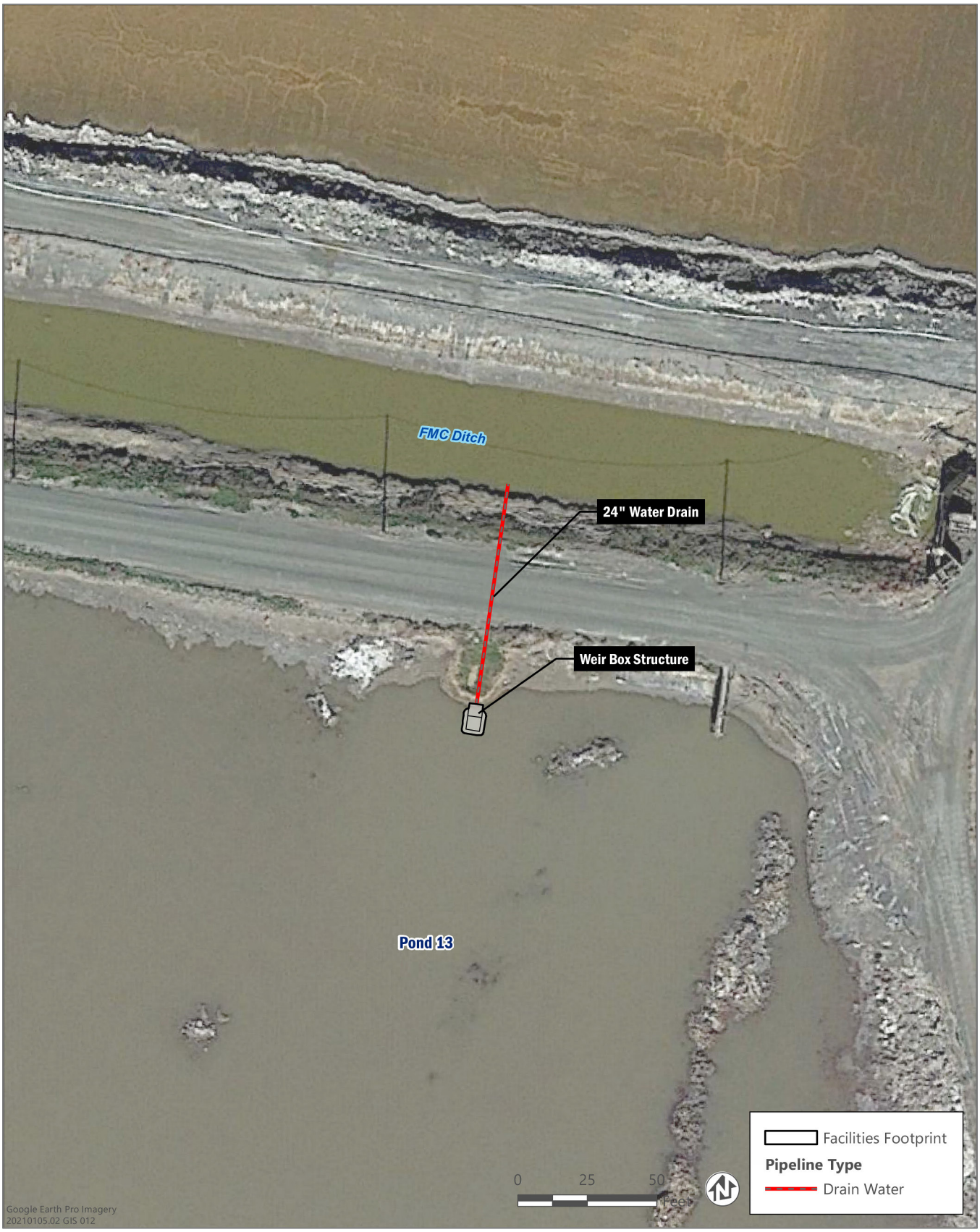
During the rainy months, rainwater would dissolve MSS to create a brine that could be drawn off or decanted from the surface of Pond 13 and used to supplement dissolution water for Pond 12. A new weir box structure, which includes a weir plate (barrier) to control the flow of water, and a pipe would be installed at the northeastern corner of Pond 13 to enable decanting of rainwater into the FMC ditch. The weir box structure is assumed to be a precast concrete box with guides for redwood stoplogs and a 30-foot fiberglass-reinforced walkway between the structure and the top of bank (Figure 2-7).

The recovered rainwater brine would flow through the FMC ditch to the Plummer Creek Pump Station and be pumped into the dissolution water pond. Similarly, during processing of Pond 13, rainwater could be decanted from Pond 12 and routed into the dissolution water pond.

2.6.5 MSS Brine Transport Pipeline

The MSS brine transport pipeline would be installed below ground primarily within road rights-of-way. The 14-inch MSS brine transport pipeline would extend north from the Solar Salt Facility and connect into the EBDA combined effluent conveyance system immediately downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant. A proposed alignment for the MSS brine transport pipeline is shown in Figures 8a through 8h and described in more detail below.

Starting in the south at its connection to the MSS brine pump station, the transport pipeline, originating in Pond 12, would extend north approximately 0.3 mile along the west berm of Pond 10, cross Plummer Creek, extend north approximately 0.5 mile along the east berm of Pond 13 and the FMC Pond then northwest along the north berm of the FMC Ponds for approximately 0.3 mile before turning north/northwest for approximately 0.2 miles and crossing under the former Barge Canal (an engineered channel constructed in the 1930s for a former quicklime facility), the San Mateo County Transit District (SamTrans) rail corridor, and the San Francisco Public Utilities Commission (SFPUC) Hetch Hetchy Aqueduct and Bay Tunnel. It would then continue for approximately 0.5 mile north/northwest along the Newark Slough Trail within the Refuge before turning northeast for approximately 0.1 mile crossing under Newark Slough to Thornton Avenue. From Thornton Avenue, the transport pipeline would continue north/northwest for approximately 0.9 mile until crossing State Route (SR) 84 and transitioning into Paseo Padre Parkway. It would then continue approximately 1.5 miles north along Paseo Padre Parkway to Ardenwood Boulevard, crossing Ardenwood Creek. From Ardenwood Boulevard, the transport pipeline would continue north/northeast for approximately 0.4 mile, where it would cross the Alameda Creek Flood Control Channel, transition into Union City Boulevard, including a crossing over rail lines owned by Union Pacific Railroad Company (UPRR), and continue for approximately 3.5 miles north/northeast until crossing Old Alameda Creek and then transitioning to Hesperian Boulevard.



Source: Data provided by AECOM in 2021 and Jacobs in 2022, adapted by Ascent Environmental in 2022.

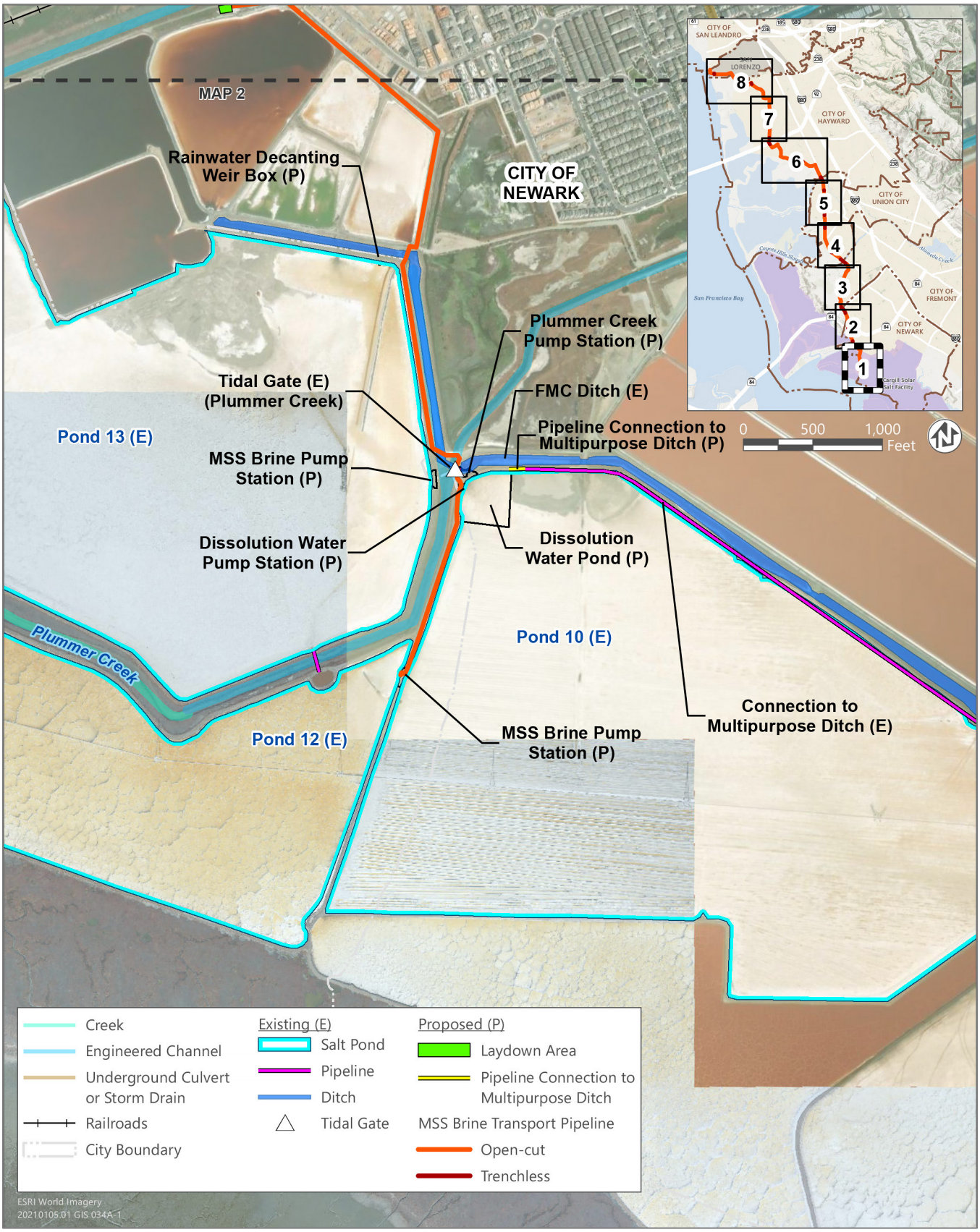
Figure 2-7 Pond 13 Rainwater Decanting Weir Structure

The MSS brine transport pipeline would continue north on Hesperian Boulevard, and would continue toward Industrial Boulevard along one of two route options. Under the first option, the pipeline would continue north on Hesperian Boulevard for approximately 0.5 mile and then turn west on Industrial Boulevard for approximately 0.7 mile until reaching Baumberg Avenue. Under the second option, the pipeline would continue north on Hesperian Boulevard for approximately 0.3 mile and then turn west on Eden Shores Boulevard for approximately 0.2 mile until it reaches the roundabout at Marina Drive. The pipeline would continue north on Marina Drive for 0.3 mile until it reaches Industrial Boulevard. Once on Industrial Boulevard, the pipeline would continue for approximately 0.5 mile until reaching Baumberg Avenue. The pipeline would continue southwest on Baumberg Avenue for approximately 0.2 mile, crossing under UPRR rail lines before transitioning into Arden Road. From here, the pipeline would continue west on Arden Road for 0.6 mile, north on Corporate Avenue for 0.5 mile, west on Investment Boulevard for 0.2 mile, and north on Production Avenue for 0.2 mile before crossing SR 92. After crossing SR 92, the pipeline would continue north on Clawiter Road for 1.6 miles, crossing UPRR rail lines at two locations. The pipeline would continue west on Winton Avenue for 0.2 mile and north/northwest on Corsair Boulevard for 0.8 mile to the former Skywest Golf Course. The pipeline would continue west for 0.4 mile along the edge of the former golf course before crossing UPRR rail lines. The pipeline would then continue northwest/west for 1.3 miles around the perimeter of the Oro Loma Marsh past the existing solar fields and biosolids drying beds, until crossing Bockman Channel attached to a bridge over the channel. The transport pipeline would then continue along the perimeter of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant for approximately 0.3 mile until reaching Oro Loma Effluent Pump Station (OLEPS) where it would connect with the EBDA system in San Lorenzo.

MSS brine transport pipeline appurtenances would include isolation valves, air release/vacuum valves, blowoff valves, tracer wire, and a "pig" delivery system. Pigs, or pipeline inspection gauges, are maintenance projectiles used for cleaning and inspecting pipelines. The pig delivery system would be used to inject pigs into the pipeline to force out buildup and perform inspection or other maintenance operations on the pipeline without stopping the flow of effluent in the pipeline. Isolation valves would be installed upstream and downstream of the SR 84 and SR 92 crossings and at the connection into the EBDA combined effluent conveyance system immediately downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant. Air release/vacuum valves would be installed at high points along the pipeline. The valves would typically be housed in an above-grade structure on a concrete pad in the median or behind the curb and sidewalk. Blowoff valves are used to drain the pipeline for repairs and maintenance, and would be installed at major low points along the pipeline. These valves are typically at grade and would likely be placed in the road pavement near sanitary sewer manholes, to the extent possible. To assist in locating the pipes, tracer wire would be installed along the entire length of the below-grade pipeline, and tracer wire boxes (at-grade cast iron boxes) would be installed approximately every 500 feet along the alignment.

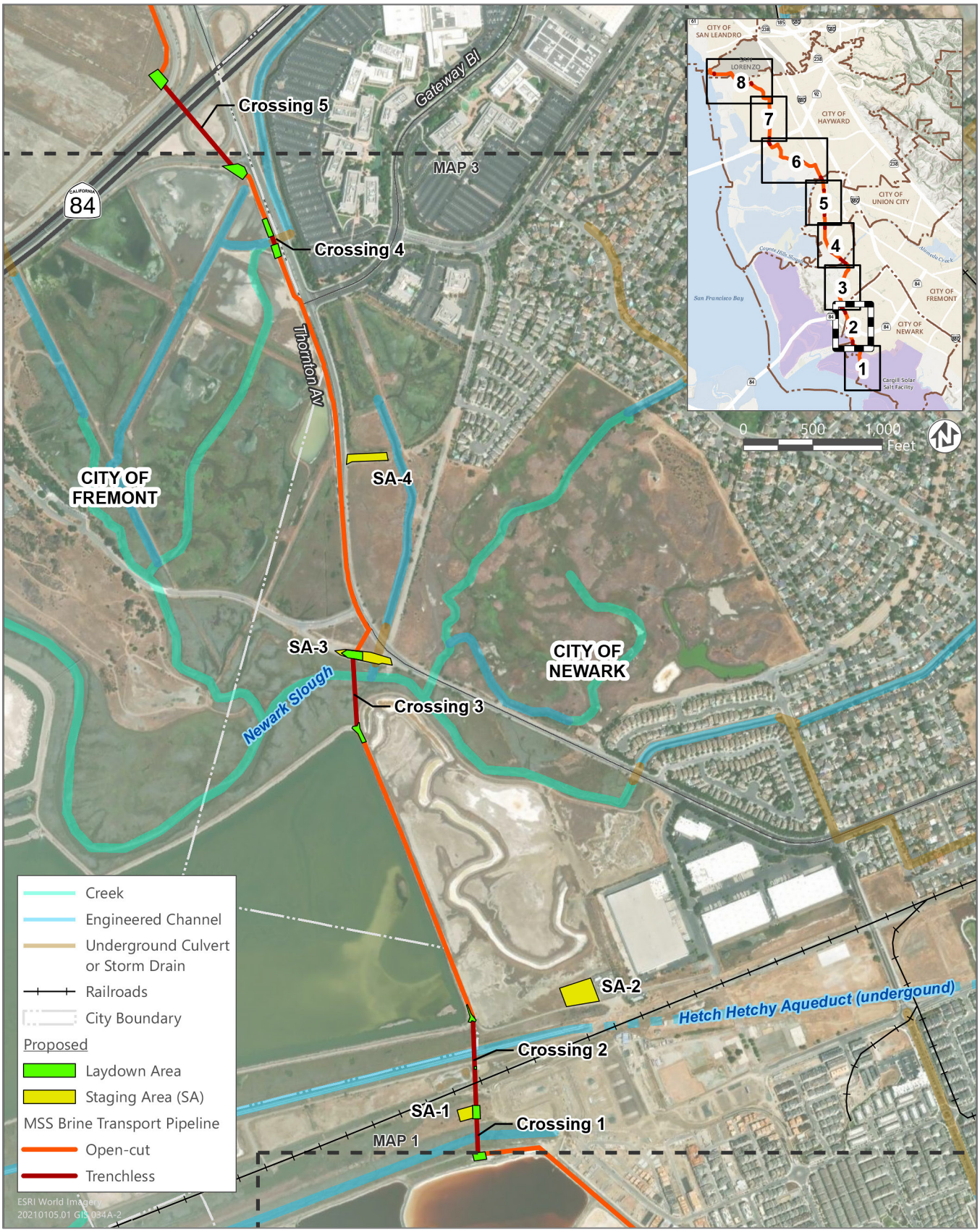
To minimize future disruption to roadways in the City of Hayward, the City of Hayward and Cargill are exploring an agreement to also install 4-inch HDPE fiber optic cable conduit and 12-inch HDPE recycled water pipeline ("purple pipe") within affected roadways in the City of Hayward at the same time trenching for and installation of the underground 14-inch MSS brine transport pipeline would occur.

The segment of the MSS brine transport pipeline along Union City Boulevard also could potentially be constructed at the same time as part of the proposed Union City Boulevard Bike Lanes Project (Bike Lanes Project; see Figures 2-8d and 2-8e), a separate project proposed by Union City. The Bike Lanes Project would entail bike lane reconstruction along Union City Boulevard between the Alameda Creek Flood Control Channel bridge and Alvarado Boulevard to improve bicycle and pedestrian access, and the installation of a 3-inch HDPE fiber optic cable conduit under the roadway for future public utility use. The Bike Lanes Project would result in extensive investment in roadwork along the affected segment of the roadway. Union City and Cargill are therefore exploring the possibility of coordinating construction of the Bike Lanes Project, including laying of the fiber optic cable conduit, and the work including trenching and installation of the underground 14-inch MSS brine transport pipeline between the Alameda Creek Flood Control Channel bridge and Alvarado Boulevard to avoid disruption of the road multiple times over a relatively short period. If construction of the MSS brine transport pipeline along this segment of Union City Boulevard is timed to be constructed at the same time as the Bike Lanes Project, Union City would be responsible for managing the combined construction.



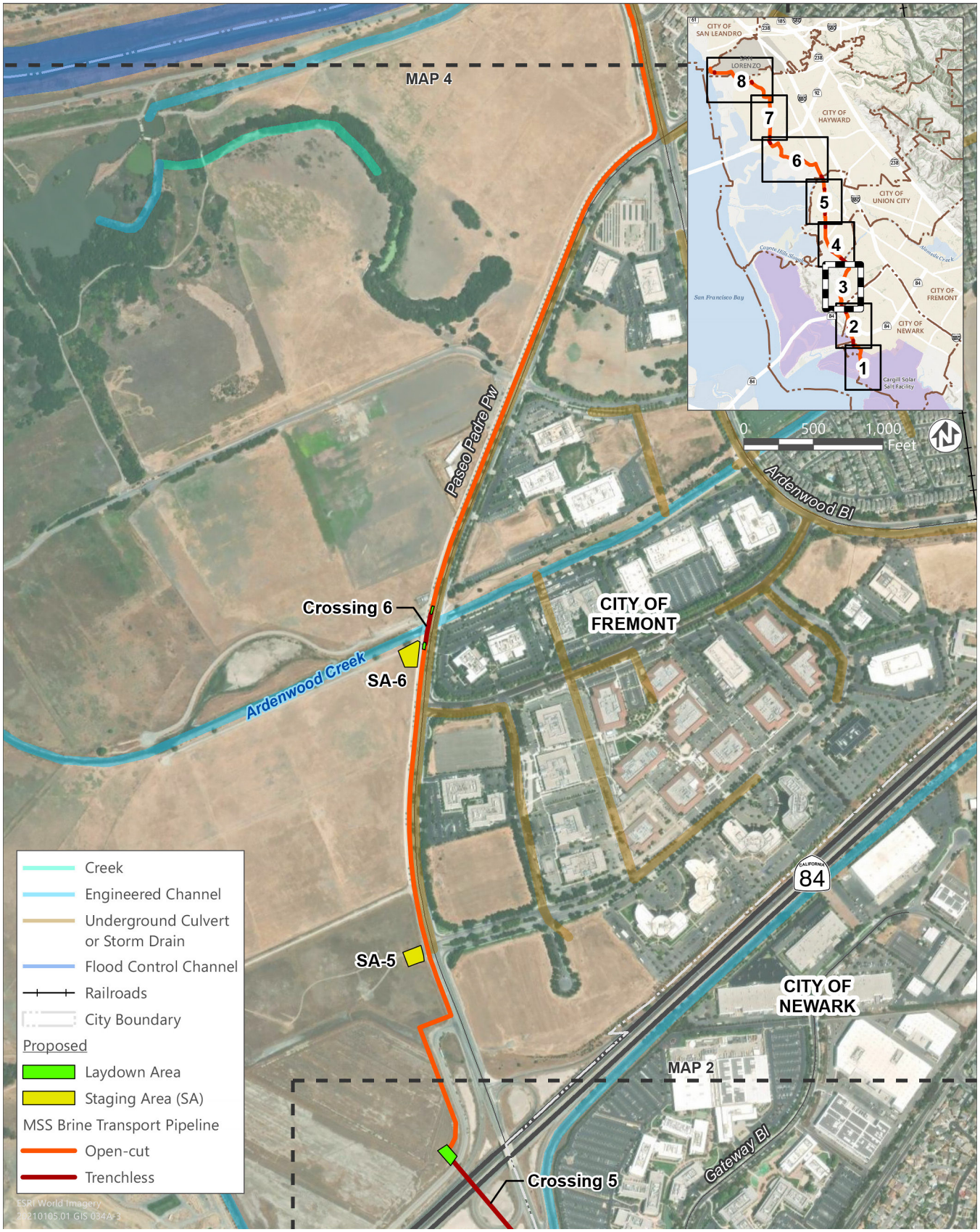
Source: Data received from AECOM and Jacobs in 2021 and 2022; adapted by Ascent Environmental in 2022.

Figure 2-8a MSS Brine Transport Pipeline



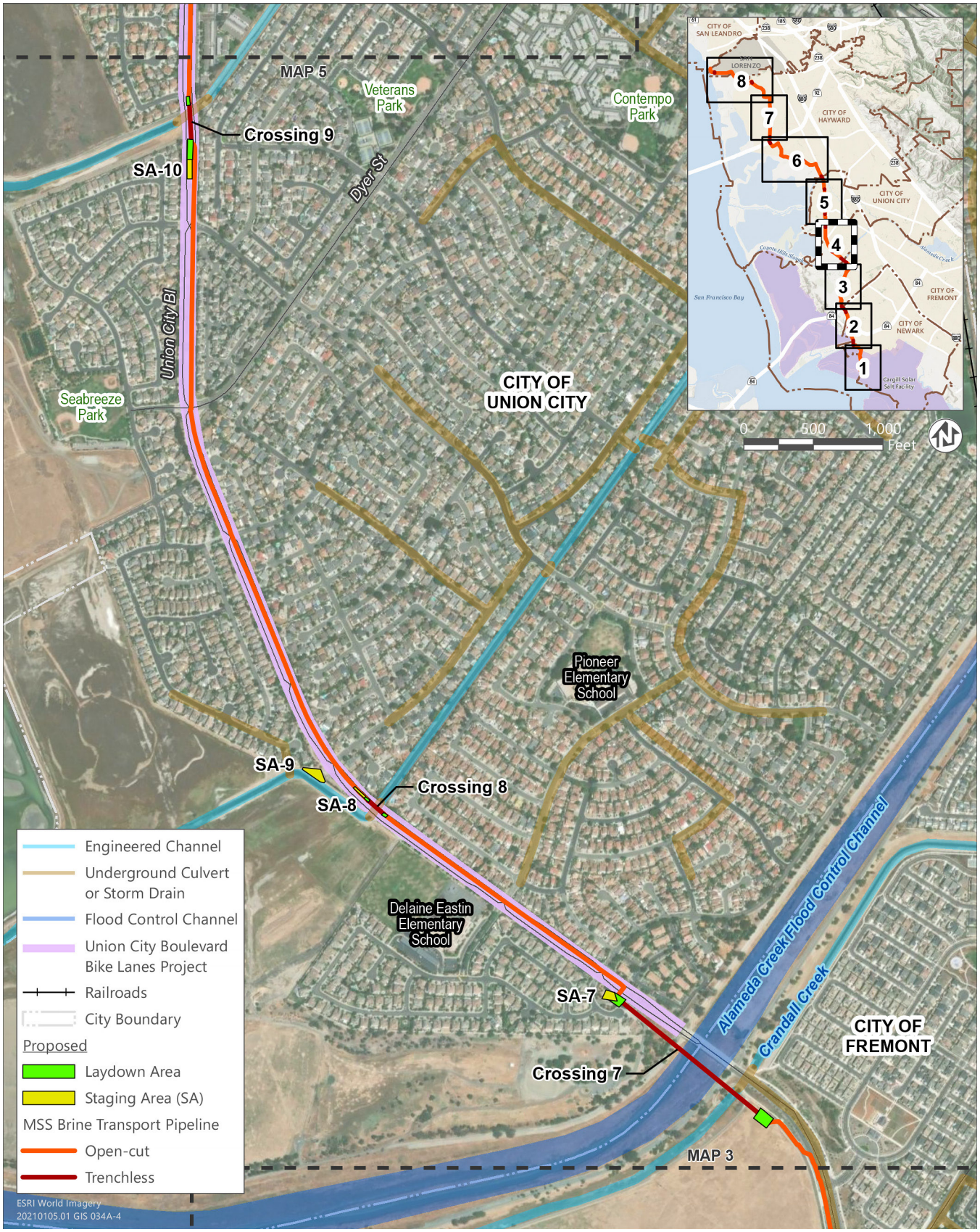
Source: Data provided by Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-8b MSS Brine Transport Pipeline



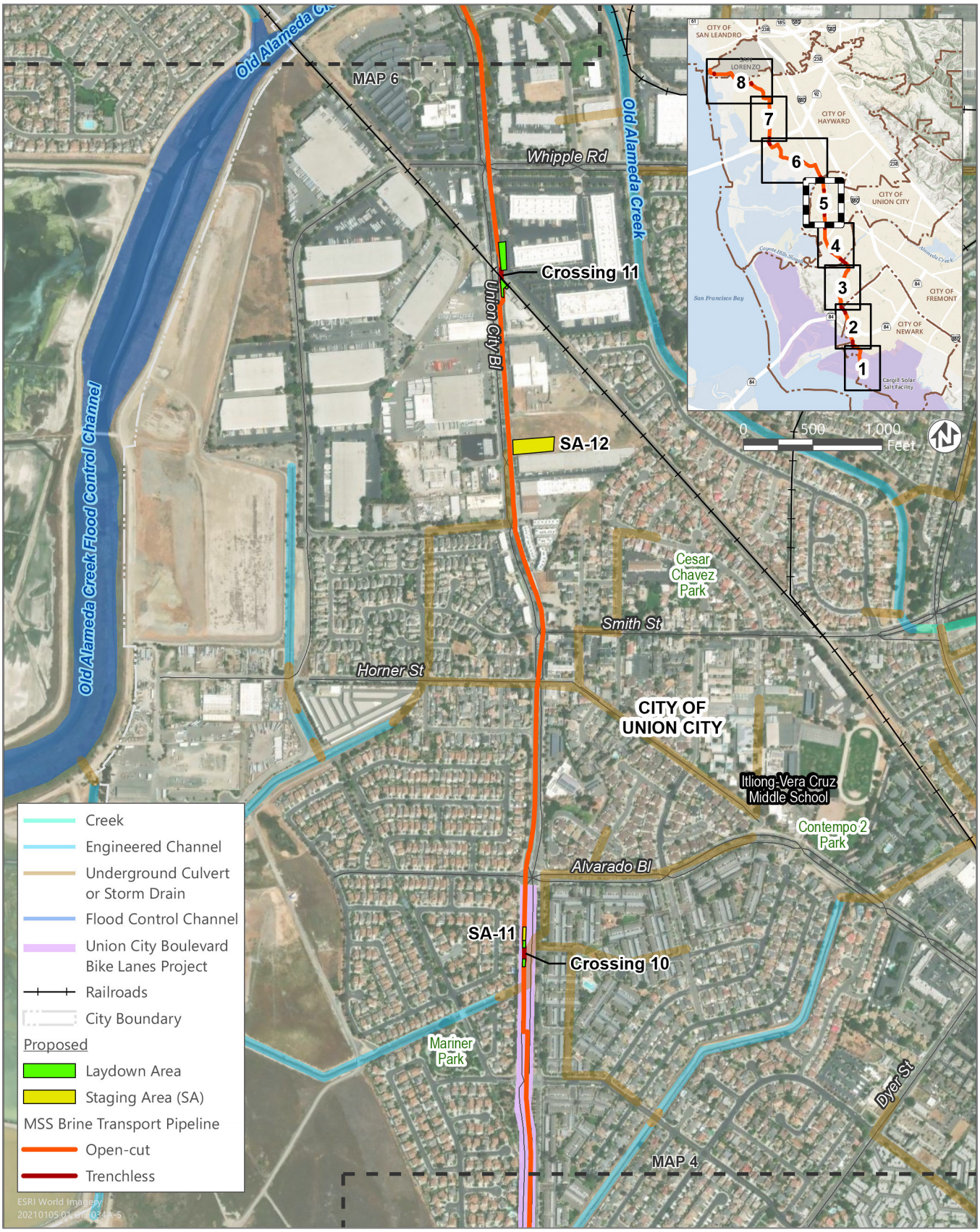
Source: Data provided by Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-8c MSS Brine Transport Pipeline



Source: Data provided by Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-8d MSS Brine Transport Pipeline



Source: Data provided by Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-8e MSS Brine Transport Pipeline

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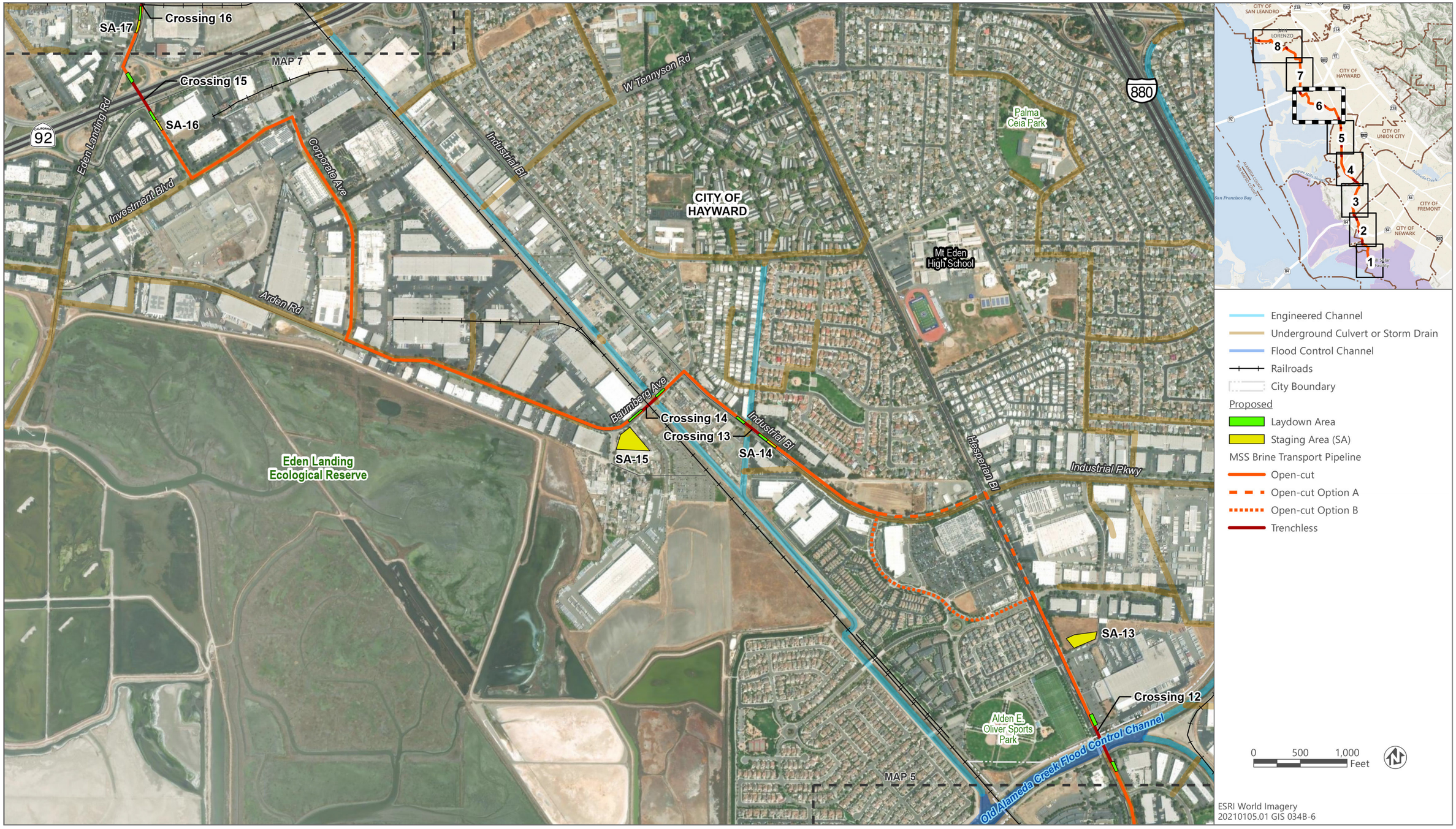
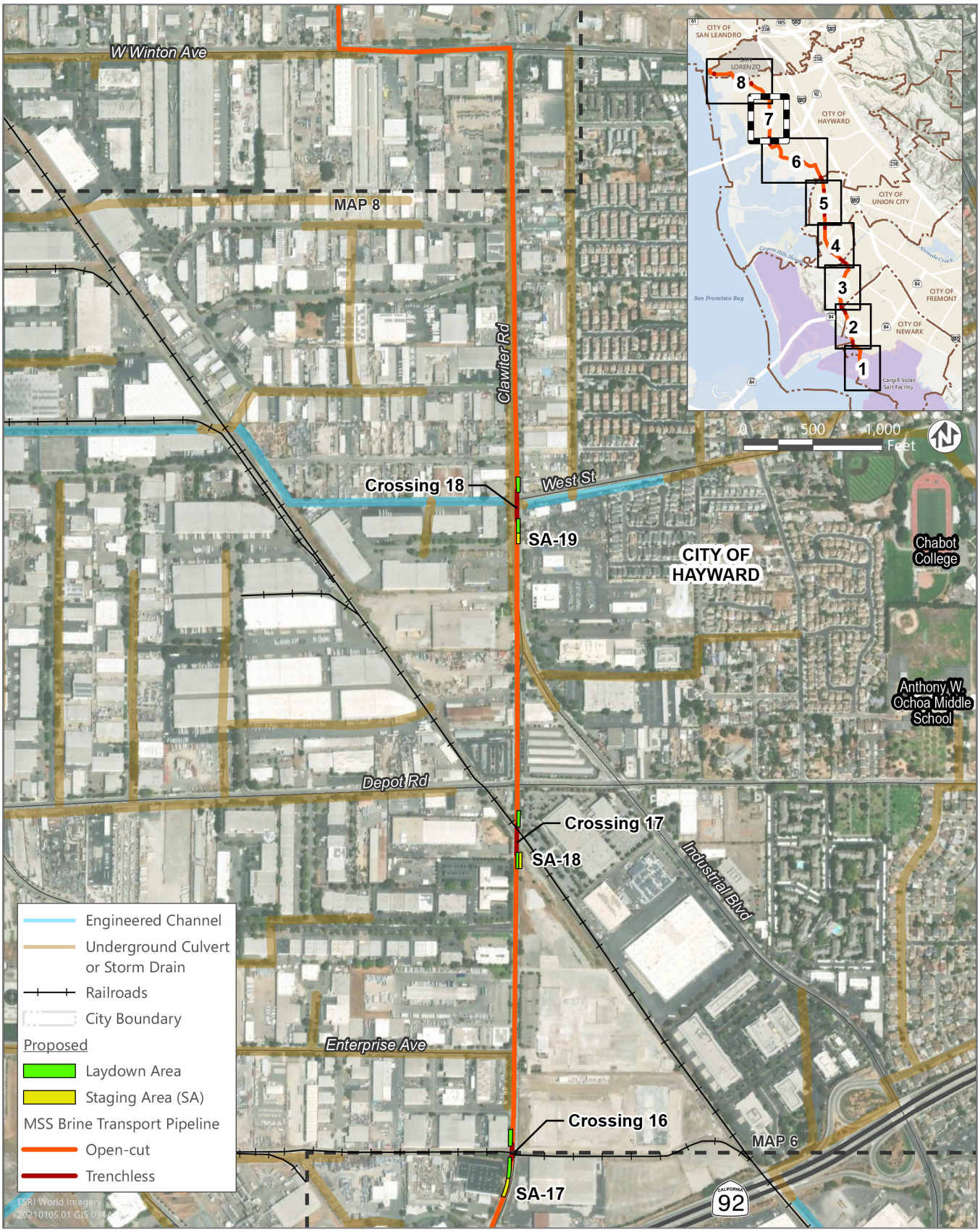


Source: Data provided by Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-8f MSS Brine Transport Pipeline



Source: Data provided by Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-8g MSS Brine Transport Pipeline

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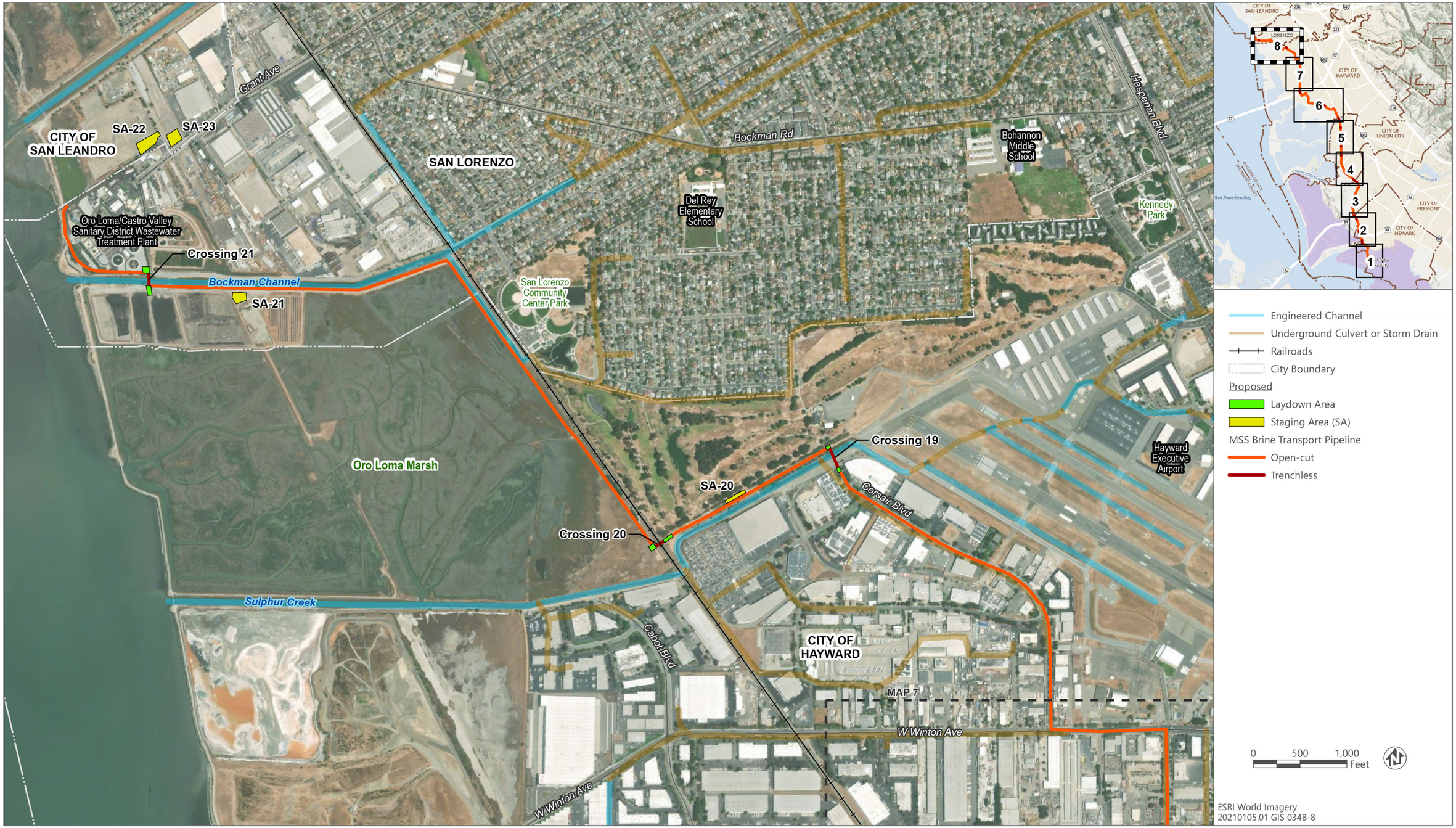

Source: Data provided by Jacobs in 2022, adapted by Ascent Environmental in 2022.

Figure 2-8h MSS Brine Transport Pipeline

2.6.6 Discharge to the EBDA System

The MSS brine transport pipeline would tie into EBDA's existing combined effluent conveyance system on the site of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo (Figure 2-9). This connection would be at the pump discharge manhole approximately 75 feet north and downstream of OLEPS. At this location, the MSS brine would be blended with secondary treated wastewater effluents from the other agencies that discharge into the EBDA system before discharge to the Bay through EBDA's outfall.

EBDA's NPDES permit, effective September 1, 2022, includes a requirement to maintain a minimum initial dilution of 75:1 (S = ratio of receiving water + effluent to effluent) after discharge from the common outfall to the Lower Bay. A dilution credit of 74 (D = ratio of receiving water to effluent) was utilized to calculate EBDA's current ammonia effluent limits.

The added salinity from the MSS brine would incrementally increase the density of the blend, and thus could affect mixing at the outfall. Dilution modeling performed by Larry Walker Associates showed that dilution would be reduced slightly (from 75 to 72 by addition of the MSS brine to the combined EBDA effluent (EOA 2021). Upon notification to the Regional Water Quality Control Board that MSS brine discharge to the EBDA system has commenced, EBDA's permit limits that are calculated using dilution, such as ammonia, would be revised to values calculated using a dilution credit of 71.

During periods of exceptionally high stormwater discharge rates into the EBDA system, the discharge of MSS brine could be interrupted by shutting down the brine discharge pump at the Cargill Solar Salt Facility to ensure EBDA maintains sufficient capacity to accommodate wet weather flows from its Member Agencies. Similarly, in the event of any system upset or other reasons that may affect EBDA system capacity or water quality, brine discharges would be suspended. Suspension of the MSS brine discharge would be implemented immediately by Cargill upon direct notification received from EBDA through a dedicated 24-hour, 7-days-per-week (24/7) communication link established as part of the operations agreement that would be required between the two entities, and would typically last 1–2 days and occur approximately two times a year. The Solar Salt Facility would not be adversely affected by such temporary interruptions of MSS brine export, as Cargill would retain the brine in Ponds 12 and 13, in such instances consistent with its existing operations.

2.6.7 Operations and Maintenance

On-site pump stations would each have one or two pumps of varying size and flow rates that operate on a continuous or near-daily basis. The Plummer Creek Pump Station would have two 15-horsepower pumps/motors each capable of pumping about 1,700 gpm. The dissolution water pump station would have two 20-horsepower pumps each contributing 1,000 gpm of flow. The largest pump station would be the MSS brine pump station, with one or two pumps with a combined capacity of 1,400 gpm. The source of electrical power for all three pump stations would be a new service drop from an adjacent existing 12 kV PG&E powerline. These pump stations would be in the open, but electrical equipment for each pump station would be housed inside an enclosure. One or two portable pumps would also be used for liquid bittern recovery. These portable pumps would be approximately 2-horsepower in size and powered using liquid fuel (diesel or gasoline). The liquid bittern recovery pumps would support an annual average transfer rate of approximately 40 gpm, but could allow for more intermittent transfers of up to nominally 100 gpm. Vinyl sheet piles used during liquid bittern recovery operations would be installed using a vibrating head attached to the arm of an excavator and then extracted in a similar manner. The piping used for distributing dissolution water across the ponds would be connected manually using quick-connect fittings. Operations and maintenance of the on-site and off-site facilities would require up to four new dedicated staff.

Source: Data received from Jacobs in 2021 and 2022; adapted by Ascent Environmental in 2022.

Figure 2-9 MSS Brine Transport Pipeline Connection to the EBDA Combined Effluent Conveyance System

Long-term maintenance activities for the pipelines would include periodic inspections and pipe cleaning as well as as-needed servicing of fittings, valves, and other appurtenances. Maintenance activities for the pump stations would include periodic inspections, maintenance of sumps and pumps, and as-needed repair or replacement of pumps and pump platforms, power distribution facilities, and fencing. Additional activities, such as weed management, may also be needed.

The functional life of the HDPE pipeline used to transport the MSS brine from the Cargill facility to the EBDA system is expected to greatly exceed that of the initial proposed project term. After completing the processing of MSS in both Ponds 12 and 13 and/or termination of the agreement between Cargill and EBDA, it is anticipated that other uses for the on-site infrastructure and the off-site pipeline would emerge. Cargill may consider renegotiating its agreement with EBDA and continuing the existing operations or finding other uses related to ongoing operations of the Solar Salt Facility. EBDA may also find other customers that could benefit from the pipeline. For example, future water recycling projects developed by EBDA, its Member Agencies, and/or partners, may yield reverse osmosis concentrate (ROC) brine streams that could be conveyed to the Bay via the MSS brine pipeline.

Potential future uses of the MSS brine transport pipeline and associated infrastructure are speculative and not studied further in this EIR. Future proposals for the use of the infrastructure after the expiration of the agreement between EBDA and Cargill would be subject to additional CEQA review at the time of any such proposals.

2.6.8 Construction

SCHEDULE AND PHASING

Project construction is estimated to start in summer of 2023 and would take approximately 12–18 months to complete. Pump station construction would occur concurrently with pipeline construction and would require approximately 8 months to complete. Construction of the on-site Pond 12 and Pond 13 processing facilities would be phased, with the facilities required for Pond 12 processing being completed in the first year and facilities for Pond 13 processing being installed approximately 6 years later.

Construction hours would typically be 6:00 a.m. to 4:00 p. m., Monday through Friday, and would otherwise conform to the permitted hours of construction activity provided in the applicable municipal ordinance of the local jurisdiction. If any construction activity is required outside the hours permitted by local ordinance, the applicable process for deviating from established standards would be followed, and all conditions of approval (typically oriented toward controlling noise and light nuisance) would be implemented during the permitted construction activity.

ACCESS AND STAGING AREAS

Access to various facilities would use existing roads at the Solar Salt Facility, as well as public roads for the off-site MSS brine transport pipeline. The construction of new on-site roads is not anticipated; however, it may be necessary to improve roadways within the Solar Salt Facility if it is determined that the existing roadways are not wide enough or strong enough at the new pump stations to support crane loads. The primary access route to the Solar Salt Facility would be via the access road off Willow Street.

Staging areas would be provided on Cargill property and along the MSS brine transport pipeline alignment at locations approved by the local jurisdiction. Staging areas would be open and easily accessed sites (i.e. vacant lots or parking lots), located in previously developed, disturbed, or non-vegetated areas, and would be restored to preconstruction conditions or the equivalent once construction is complete. Staging areas would not be located within identified sensitive areas such as wetlands or drainage channels. A total of 13 potential staging areas have been identified along the MSS brine transport pipeline route (see Figure 2-8a-l). Some or all of these staging areas would be used and additional staging areas could be identified by the construction contractor. The construction contractor would make appropriate arrangements with land holders and coordinate permits and other arrangements with the local jurisdiction for use of any staging areas.

CONSTRUCTION METHODS

Solar Salt Facility

Facilities proposed at the Solar Salt Facility include pipelines, pump stations, a weir box, new dissolution water pond, and electrical enclosures and would involve construction along existing berms and within the existing salt ponds and brine ditches.

Ground/soil disturbance would occur along the interior slopes of the berms around the salt ponds, where excavation would be needed for the foundations of the pump stations. There would also be ground disturbance where the on-site pipelines are buried at road crossings and for the placement of small electrical enclosures. Excavated materials would be stockpiled locally and reused for backfill around the structures. The estimated construction footprint, total excavation quantity, and maximum excavation depth for facilities proposed at the Solar Salt Facility are summarized in Table 2-1.

Table 2-1 Estimated Construction Footprint, Total Excavation Quantity, and Maximum Excavation Depth of Proposed Facilities at the Solar Salt Facility

Construction Footprint (sf)	Excavation Quantity (cy)	Maximum Excavation Depth (ft bgs)
145,988	162,088	35

Notes: sf = square feet; cy = cubic yards; ft bgs = feet below ground surface.

Source: Data provided by Jacobs and Brown and Caldwell in 2022.

Construction of the on-site pipelines would require a roughly five-person crew with equipment that includes a long flatbed truck to haul the pipe sections, a small backhoe, a utility truck with tools, air compressors, and equipment to fuse the HDPE pipes. Importation of backfill material is not anticipated because nearly all of the pipe would be laid above ground.

Sheet pile cofferdams would likely be required around the work areas for the Plummer Creek Pump Station, the dissolution water pump station, the MSS brine pump station, and the Pond 13 Weir to provide a dry working area for construction of the foundations of these structures. Dewatering would be needed initially after the sheet piles are placed, and then a minimal amount of continuous dewatering would be needed to keep the area dry. The liquid from the dewatering would be placed back into the salt pond or brine ditch that was the source of the liquid. Only small sump pumps are anticipated to be used for the removal of the residual seepage in the pump foundation excavation. Likely one duty pump and one standby pump would be needed at each of the three pump station locations, for a total of six pumps. Pumps would be approximately 3.5-horsepower in size and gasoline powered.

It is anticipated that a crew of roughly six to eight persons would be required to construct the pump stations. The equipment to be used includes a utility truck, flatbed truck to haul equipment and supplies, a pile driver, small backhoe, a 25-ton crane, and intermittent concrete trucks and a pumper to place concrete. Imported materials include base rock to create a stable foundation on which to pour the concrete foundation pad. The equipment would be needed each day for 8 hours, with the exception of the concrete trucks/pumper and the pile-driving truck. The pile driver itself would be needed to install piles to support the pump stations and would operate up to 8 hours per day. Only one pile-driving piece of equipment would be required, and it is anticipated to be on the site for approximately 30 days.

In general, on-site construction activities would use an excavator, dump truck, loader, grader, backhoe, small crane to place equipment, and water truck. These pieces of equipment would be used for roughly 8 hours a day for a total period of 250 days (the duration of construction). An average of 10–15 workers are anticipated at the proposed project site for the duration of construction.

The following construction sequencing is anticipated for the on-site facilities:

- Salts would be transferred from the dissolution water pond to provide 10.6 acre-feet of dissolution water storage.
- Sheet piling would be installed around the area for the pump station foundation and dewatering would be performed to make the area suitable for construction activities. A dewatered area within sheet piles would be needed for structure foundations. In some instances, pilings would also be drilled to provide pump station foundation support.

- The pump stations would be constructed in parallel with each other.
- The piping connecting the pump stations would be laid down and connected to the off-site pipeline. Almost all of the piping would be above ground, so stakes would be driven into the ground to keep pipelines in place.

MSS Brine Transport Pipeline

Pipeline Installation Methods

The MSS brine transport pipeline would be situated below ground and would primarily be installed using open-cut methods within roadway rights-of-way. Below-ground appurtenant structures would also be installed via excavation. Crossings along the proposed alignment that would use trenchless methods are identified in Figures 2-8a through 2-8h and listed in Table 2-2, below.

Table 2-2 Trenchless Crossing Locations Along the MSS Brine Transport Pipeline Alignment

Crossing Number	Crossings Proposed Using Trenchless Methods
1	Former Barge Canal south of Hetch Hetchy Aqueduct
2	Sam Trans Rail Line/Hetch Hetchy Aqueduct
3	Newark Slough at Thornton Avenue
4	Thornton Avenue and Gateway Boulevard Drain
5	SR 84 and Thornton Avenue
6	Ardenwood Creek
7	Crandall Creek/Alameda Creek Flood Control Channel
8	Engineered Channel at Delores Drive
9	Silvertide Drive Surface Drain
10	Alvarado Twin Drains
11	Union City Boulevard and UPRR
12	Old Alameda Creek/Ward Creek
13	Industrial Boulevard Canal
14	Baumberg Avenue and Railroad
15	SR 92 and Production Avenue
16	Railroad and Clawiter Road No. 1
17	Railroad and Clawiter Road No. 2
18	West Street Canal
19	Corsair Boulevard Railroad and Sulphur Creek
20	Skywest Golf Course and Railroad
21	Bockman Channel

Source: Data compiled by Ascent Environmental in 2022.

Additional trenchless crossings may be identified during later stages of design based on additional utility investigations, subsurface information, and the selected alignment for the northern segment of the pipeline.

Open Cut Method

Open cut is the traditional and most common method of pipe installation. The pipe is installed into a trench excavated from the ground surface. Activities include saw-cutting any pavement, excavating the trench, staging the pipe, placing the pipe in bedding, backfilling the excavation, compacting to grade, applying temporary surface patching, and then final paving, as appropriate, and would be conducted within a construction corridor of up to 30 feet wide. Generally, a trench approximately 4–5 feet wide and 5–10 feet deep would be needed for the MSS brine transport pipeline. An additional foot on each side of the trench would be saw-cut for final pavement. Where the MSS brine transport pipeline would lie near wetland habitat, including Oro Loma Marsh, near the Skywest Golf

Course and within the Refuge (at the Solar Salt Facility), the pipeline would primarily be constructed within engineered berms at a depth of approximately 5 feet.

Because of the relatively high-water table along much of the pipeline alignment, groundwater dewatering is anticipated. Groundwater would likely be discharged into storm or sewer drains in compliance with applicable discharge permits. Trench backfill would follow local jurisdictional requirements and is expected to include a low-strength concrete, aggregate base rock, and well-sifted native materials. Native materials not being compacted back in the trench would be hauled offsite for disposal at a permitted facility (i.e., Zanker Road Resource Management in San Jose) in accordance with applicable requirements. Temporary paving along the MSS brine transport pipeline alignment would also occur during construction to reduce traffic control needs in accordance with local jurisdictional requirements. Generally, full paving is completed when a large segment of pipeline has been constructed and backfilled. Paving would likely be completed during normal working hours.

A traffic control plan would be implemented in compliance with city and county encroachment permit requirements consistent with the most current California Manual on Uniform Traffic Control Devices and State Standard Plans. Pipeline installation is anticipated to be completed by closing the northbound or southbound lanes, depending on which side the pipeline is on. Traffic would be diverted to the other side of the road, or flaggers would be used to alternate traffic on available lanes.

Trenchless Methods

Horizontal directional drilling (HDD) is a trenchless construction method being considered for most of the potential crossings (e.g., SR 84, SR 92, Old Alameda Creek, Alameda Creek Flood Control Channel, Sulphur Creek, Oro Loma Marsh), except for crossings under railroad tracks, which would use a microtunneling method. The HDD method employs a directional drill that is set up on the ground surface. A pilot bore is begun by pushing a drill rod through the ground at a shallow angle. When the drill head reaches the desired depth, the bore head is steered along a shallow curve. The pilot bore then continues through the ground at the appropriate depth and grade until it is steered upward to exit the ground surface. For small-diameter bores, the pipeline can be pulled back through the pilot hole with minimal enlargement of the hole. In larger-diameter pipes, the diameter of the pilot hole is increased by fluid-assisted back reaming. Once the boring and reaming processes are complete, the pipeline is assembled into one full length, laid out in-line with the bore, and pulled into place. Microtunneling is a trenchless construction method that uses a microtunnel boring machine (MTBM) mounted on a jacking frame which is moved forward using jacks. The MTBM is operated remotely from a control panel, normally located on the surface. Water jetting is used for the cutting head during the boring stage, or an asymmetrical or slanted head is directed using laser guidance. With microtunneling, the borehole is excavated and pipes are laid simultaneously. Steel casing pipes would be used to protect the HDPE carrier pipe during microtunneling.

For HDD, the area of disturbance for construction pits at the entrance and receiving ends would be less than 0.25 acre and less than 0.15 acre, respectively. In addition, the HDPE would need to be strung for half the length of the HDD which would require an approximately 30-feet wide pipe string laydown area. For example, an 800-foot channel crossing would need a minimum area 400 feet in length by 30 feet wide to string and fuse the pipe from the entry point. The contractor would decide which side of the crossing is the entry and receiving point. For microtunneling, the area of disturbance for construction pits at the entrance and receiving ends would be less than 0.06 acre on each side.

The area of disturbance at the connection of the MSS brine transport pipeline to the EBDA combined effluent conveyance system at the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant would be less than 1 acre. This facility would include a booster pump for injection of the brine into the EBDA system, along with a pig receiving station, meter vault, communication tower, and either a mechanical mixer at the wet well or an in-line static mixer on the existing EBDA force main at the pump discharge.

Construction Assumptions

In general, the MSS brine transport pipeline installation would be mainly in highly trafficked rights-of-way that contain many other utilities and structures. It is anticipated that two to three construction crews would work simultaneously at different locations along the pipeline route with each able to install up to approximately 150 feet of pipeline per day. Approximately a dozen workers per crew would be needed each day for a typical workday from

6:00 a.m. to 4:00 p.m. Construction of the off-site pipeline would take approximately 1 year, assuming that the 150 feet per day per crew can be met consistently. Construction equipment for each heading would include up to two excavators and two loaders, as well as material delivery trucks, concrete trucks, semi-trucks, a pothole truck, a HDPE fusing machine, paving equipment, striping equipment, potentially a vibratory compaction roller or jumping jack, and other miscellaneous small equipment and handheld tools. The HDD crossings would require a drilling machine, mixing truck to provide bentonite slurry for drilling, and a series of baker tanks to process and settle solids. The concrete, semi, and other trucks would enter and exit the construction area for deliveries and disposal of materials.

The MSS brine transport pipeline is anticipated to cross multiple drainages throughout the alignment (see Figures 2-8a through 2.8h). The majority of these crossings are at culverts, where open-water excavation is not required. Exceptions include the Old Alameda Creek and Alameda Creek Flood Control Channels, which would be crossed using trenchless technologies. All drainage crossings except for the Flood Control Channels would take 1 day to cross. Trenchless crossing of the Flood Control Channels would take approximately 2 weeks.

The following construction sequencing is anticipated for the off-site pipeline, with total active construction time anticipated to be about 1 year:

- Obtain the traffic control drawings and associated approvals from various governing cities.
- Perform a second subsurface utility investigation to confirm the location of utilities.
- Survey pipe centerline offset stakes with cut/fill lines.
- Saw-cut trench lines in pavement.
- Excavate pavement and haul off for recycling. Excavate the trench, install the pipe, backfill the trench with compaction, and restore the pre-project surface condition.
- Install appurtenances (air valves, blowoffs, and other miscellaneous features) after the pipe is installed, but in delayed parallel.
- Perform HDD crossings in parallel with open-cut pipe installation.
- Test the pipeline for leakage and place it in service.

The estimated area of ground disturbance, total excavation quantity, and maximum excavation depth associated with installation of the MSS brine transport pipeline are summarized in Table 2-3. The area of ground disturbance for the MSS brine transport pipeline is approximately 54.5 acres and conservatively assumes corridor widths of 30 feet along open-cut segments, 12 feet along trenchless crossings segments in the City of Hayward, and 6 feet along the remaining trenchless crossing segments. Outside of these corridors, additional ground disturbance would occur within laydown areas (1.8 acres) and staging areas (7.3 acres).

Table 2-3 Estimated Area of Ground Disturbance, Total Excavation Quantity, and Maximum Excavation Depth for the MSS Brine Transport Pipeline

Area of Ground Disturbance [a, b]	Excavation Quantity [c]	Maximum Excavation Depth
2,374,020 sf (54.5 acres)	62,797 cy	8 ft bgs for open-cut trenching; 40 ft bgs for trenchless crossings

Notes: sf = square feet; cy = cubic yards; ft bgs = feet below the ground surface.

[a] The area of ground disturbance conservatively assumes corridor widths of 30 feet along open-cut segments, 12 feet along trenchless crossings segments in the City of Hayward, and 6 feet along the remaining trenchless crossing segments.

[b] The total acreage does not consider the reduced area of ground disturbance along the trenchless crossings. The intent of trenchless crossings is to avoid ground disturbance in the corridor of trenchless crossings.

[c] Includes excavation of shafts/pits needed for horizontal directional drilling, microtunneling, and auger boring.

Source: Data provided by Jacobs in 2022.

TRAFFIC CONTROL

Construction activities for the MSS brine transport pipeline would occur within roadway rights-of-way in the Cities of Hayward, Union City, Fremont, and Newark. Based on current design, lane closures may be required on Thornton Avenue, Paseo Padre Parkway, Ardenwood Boulevard, Union City Boulevard, Hesperian Boulevard, Industrial Boulevard, Arden Road, Corporate Avenue, Investment Boulevard, Production Avenue, Clawiter Road, West Winton Avenue, and Corsair Boulevard.

Encroachment permits would be required for work in public rights-of-way from agencies with jurisdiction over the affected routes (i.e., the Cities of Hayward, Union City, Fremont, and Newark). As a condition of encroachment permit approval, EBDA and Cargill would be required to prepare and implement a traffic control plan to minimize construction-related traffic safety hazards on affected roadways and ensure adequate access for emergency responders. Therefore, EBDA and Cargill would develop and implement traffic control plans, as appropriate and in coordination with the agencies with jurisdiction over the affected routes. The traffic control plans would be consistent with the most current California Manual on Uniform Traffic Control Devices and State Standard Plans and the California Department of Transportation (Caltrans) requirements, and are expected to include the following:

- Identify work hours and haul routes, delineate work areas, and identify traffic control methods and plans for flagging.
- Determine the need to require workers to park personal vehicles at an approved staging area and take only necessary project vehicles to the worksites.
- Develop and implement a process for communicating with affected residents and landowners about the project before the start of construction. Public noticing would include the posting of notices and installation of appropriate signage regarding construction activities. The written notification would include the construction schedule, the exact location and duration of activities on each roadway (e.g., which roads/lanes and access points/driveways will be blocked on which days and for how long), and contact information for questions and complaints.
- Notify the public regarding alternative routes that may be available to avoid delays.
- Ensure that appropriate warning signs are posted in advance of construction activities, alerting bicyclists and pedestrians to any closures of nonmotorized facilities.
- Notify administrators of police and fire stations, ambulance service providers, and recreational facility managers regarding the timing, location, and duration of construction activities and the locations of detours and lane closures, where applicable. Access for emergency vehicles in and/or adjacent to roadways affected by construction activities would be maintained at all times.
- Require the repair and restoration of affected roadways to their original condition after construction is completed.

2.6.9 Project Permits and Approvals

The proposed project would be subject to various federal, state, and local requirements. This EIR is intended to be used for state and local permit considerations. Information in this EIR may also be used by federal agencies as they consider environmental impacts under the National Environmental Policy Act. The following list includes the permits and resource agency approvals potentially required before proposed project implementation.

Federal

- US Army Corps of Engineers (USACE): Clean Water Act Section 404 permit
- USFWS: Endangered Species Act, Section 7 Consultation through the federal lead agency (USACE); notification and location approval pursuant to Cargill's Reserved Rights and related agreements pursuant to the 1979

condemnation action covering Ponds 12 and 13, among other acreage; approval of temporary trail closures within or access interruptions to the Don Edwards National Wildlife Refuge

- National Marine Fisheries Service (NMFS): Endangered Species Act, Section 7 Consultation and Magnuson-Stevens Act Essential Fish Habitat Consultation through the federal lead agency (USACE)

State

- San Francisco Regional Water Quality Control Board (RWQCB): Clean Water Act Section 401 Water Quality Certification; NPDES construction stormwater permit (Notice of Intent to proceed under General Construction Permit), discharge permit for stormwater, general order for dewatering
- California Department of Fish and Wildlife (CDFW): California Fish and Game Code (CFGC) Section 2081 Incidental Take Permit for California Endangered Species Act listed species; CFGC Section 1602, Lake and Streambed Alteration Agreement
- Caltrans: Encroachment permits for activities affecting state highways
- California State Lands Commission (CSLC): Land leases for Public Trust Lands
- Office of Historic Preservation (OHP): National Historic Preservation Act (NHPA) Section 106 Consultation through the federal lead agency (USACE)

Local

- Alameda County: Routine development permits, such as grading and noise permits
- Alameda County Flood Control and Water Conservation District: Easement, license and/or encroachment permits for crossing flood control/engineered channels and storm drains
- Bay Area Air Quality Management District (BAAQMD): Permit to construct and permit to operate
- Cities of Newark, Fremont, Union City, and Hayward, and Alameda County: Routine development permits, such as encroachment, grading, and noise permits, and agreements for private pipeline placement in public rights-of-way under the Franchise Act of 1937 and the Charter of the City of Hayward
- East Bay Dischargers Authority (EBDA): Operations agreement with Cargill
- East Bay Regional Park District: Easement, license and/or encroachment permit for activities on East Bay Regional Park District lands; approval for temporary trail closures or access interruptions
- Hayward Regional Shoreline Planning Agency: approval for temporary trail closures or access interruptions
- San Mateo County Transit District (SamTrans): Easement, license and/or encroachment permit or other limited easement or access agreement for crossing underneath the Dumbarton Rail Corridor owned by SamTrans, to the extent Cargill does not have an existing easement for such a crossing
- Union Pacific Railroad Company (UPRR): Plan approval by Chief Engineer of UPRR for crossing underneath rail lines owned by UPRR
- San Francisco Bay Conservation and Development Commission (BCDC): BCDC Permit and Coastal Zone Management Act Consistency Determination
- San Francisco Public Utilities Commission (SFPUC): Easement, license and/or encroachment permits for crossing Hetch Hetchy Aqueduct and Bay Tunnel, to the extent Cargill does not have an existing easement for such a crossing

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3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 APPROACH TO THE ENVIRONMENTAL ANALYSIS

This Draft EIR evaluates and discloses the environmental impacts associated with the proposed project, in accordance with CEQA (PRC Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations [CCR], Title 14, Chapter 3, Section 15000 et seq.). Sections 3.2 through 3.10 of this Draft EIR present a discussion of regulatory background, existing conditions, environmental impacts associated with construction and operation of the project, mitigation measures to reduce the level of impact, and the residual level of significance (i.e., after application of mitigation, including impacts that would remain significant and unavoidable after application of all feasible mitigation measures). Issues evaluated in these sections consist of the environmental topics identified for review in the notice of preparation prepared for the proposed project (see Appendix A of this Draft EIR). Chapter 4, "Cumulative Impacts," presents an analysis of the proposed project's impacts considered together with other past, present, and probable future projects producing related impacts, as required by Section 15130 of the State CEQA Guidelines. Chapter 5, "Alternatives," presents a reasonable range of alternatives and evaluates the environmental effects of those alternatives relative to the proposed project, as required by Section 15126.6 of the State CEQA Guidelines. Chapter 6, "Other CEQA Sections," includes an analysis of the proposed project's growth-inducing impacts, as required by Section 21100(b)(5) of CEQA.

Sections 3.2 through 3.10 of this Draft EIR each include the following components:

- Regulatory Setting: This subsection presents information on the laws, regulations, plans, and policies that relate to the issue area being discussed. Regulations originating from the federal, state, and local levels are each discussed as appropriate.
- Environmental Setting: This subsection presents the existing environmental conditions on the project site and in the surrounding area as appropriate, in accordance with State CEQA Guidelines Section 15125. The discussions of the environmental setting focus on information relevant to the issue under evaluation. The extent of the environmental setting area evaluated (the project study area) differs among resources, depending on the locations where impacts would be expected. For example, air quality impacts are typically assessed in the context of the applicable air basin, whereas water quality impacts are typically assessed in the context of the watershed and groundwater basin.
- Environmental Impacts and Mitigation Measures: This subsection presents thresholds of significance and discusses potentially significant effects of the project on the existing environment, including the environment beyond the project boundaries, in accordance with State CEQA Guidelines Section 15126.2. The methodology for impact analysis is described, including technical studies upon which the analyses rely. The thresholds of significance are defined and thresholds for which the project would have no impact are disclosed and dismissed from further evaluation. Project impacts and mitigation measures are numbered sequentially in each subsection (e.g., Impact 3.2-1, Impact 3.2-2, Impact 3.2-3, etc.). A summary impact statement precedes a more detailed discussion of the environmental impact. The discussion includes the analysis, rationale, and substantial evidence upon which conclusions are drawn. The determination of level of significance of the impact is defined in bold text. A "less-than-significant" impact is one that would not result in a substantial adverse change in the physical environment. A "potentially significant" impact or "significant" impact is one that would result in a substantial adverse change in the physical environment; both of these latter impact conclusions are treated the same under CEQA in terms of procedural requirements and the need to identify feasible mitigation. Mitigation measures are identified, as feasible, to avoid, minimize, rectify, reduce, or compensate for significant or potentially significant impacts, in accordance with the State CEQA Guidelines Section 15126.4. Unless otherwise noted, the mitigation measures presented are recommended in this EIR for consideration by EBDA to adopt as conditions of approval.

Where an existing law, regulation, or permit specifies mandatory and prescriptive actions about how to fulfill the regulatory requirement as part of the project definition, leaving little discretion in its implementation, and would avoid an impact or maintain it at a less-than-significant level, the environmental protection afforded by the regulation is considered before determining impact significance. Where existing laws or regulations specify a mandatory permit process for future projects, performance standards without prescriptive actions to accomplish them, or other requirements that allow substantial discretion in how they are accomplished, or have a substantial compensatory component, the level of significance is determined before applying the influence of the regulatory requirements. In this circumstance, the impact would be potentially significant or significant, and the regulatory requirements would be included as a mitigation measure.

This subsection also describes whether mitigation measures would reduce project impacts to less-than-significant levels. Significant-and-unavoidable impacts are identified as appropriate in accordance with State CEQA Guidelines Section 15126.2(b). Significant-and-unavoidable impacts are also summarized in Chapter 6, "Other CEQA Sections."

The full references associated with the resources cited in Sections 3.2 through 3.10 can be found in Chapter 7, "References," organized by section number.

3.1.1 Effects Found Not to Be Significant

The State CEQA Guidelines (Section 15128) allow an EIR to briefly describe the reasons why some environmental effects were determined not to be significant and then to dismiss these effects from detailed review in the EIR. Implementing the proposed project would not result in significant effects related to the issue areas described below. These issue areas are dismissed from detailed review in this EIR. They are organized below based on the order of topics in the State CEQA Guidelines Appendix G Environmental Checklist Form:

- **Aesthetics:** Construction activities along the MSS brine transport pipeline alignment would be of a limited duration in any one location and on-site construction activities at the Solar Salt Facility would have limited visibility due to the distance from public viewpoints. Following construction activities, the MSS brine transport pipeline would be buried underground and would not be visible. Pavement and any displaced vegetation along the MSS brine transport pipeline alignment would be replaced. New above-ground structures would be installed at the existing Solar Salt Facility, including on-site pipelines, a weir, pump stations, and electrical enclosures. These structures would be consistent with the visual appearance of existing facilities and equipment at the Solar Salt Facility. The nearest public viewpoints of the Solar Salt Facility are from a residential neighborhood approximately 0.4 mile northeast of the nearest on-site improvements. Given the distance from public viewpoints and the low profile of new structures, these project components would have limited visibility and would not substantially alter the existing visual environment. Therefore, no significant impacts on aesthetics would occur, and this issue is not discussed further.
- **Agriculture and Forestry Resources:** The project site is not zoned for agricultural uses and does not support any Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Farmland of Local Importance (DOC 2021). Although the Solar Salt Facility is held under a Williamson Act contract (City of Newark 2013), the proposed on-site improvements are intended to facilitate ongoing salt harvesting operations and would not result in a breach of the Williamson Act contract. Additionally, the project site is not zoned for forestland or timberlands and is not forested. Therefore, no significant impacts on agriculture or forestry resources would occur, and this issue is not discussed further.
- **Energy:** Construction of the project would require the consumption of energy resources, including electricity, natural gas, and fossil fuels (e.g., gasoline, diesel fuel). Based on the anticipated phasing of construction activities, the anticipated equipment and construction staffing, the temporary nature of construction, and the project type, the project would not include unusual characteristics that would necessitate the use of construction equipment that is less energy-efficient than the equipment used at comparable construction sites. Following construction, operation of the project would primarily involve energy consumption associated with the electric pumps at the

pump stations, portable pumps, and periodic maintenance and inspection activities. The purpose of the project is to convey existing MSS off-site in an efficient manner. In lieu of implementing the project, potential alternatives to removing the MSS include trucking operations that would likely entail greater energy consumption. Based on the above discussion, fuel and energy consumption associated with construction and operation of the project would not be inefficient, wasteful, or unnecessary. Therefore, no significant impacts related to energy would occur, and this issue is not discussed further.

- **Land Use and Planning:** Project improvements would be constructed at Cargill's Solar Salt Facility and primarily within roadway rights-of-way. The project would not introduce features that would divide existing communities. Additionally, the project would not change the existing land use and zoning designations for the project site. The project would facilitate ongoing salt production operations at the Solar Salt Facility, which would be consistent with existing policies to maintain the integrity of the existing salt production system. Furthermore, where the MSS brine transport pipeline alignment would encroach on public lands and existing facilities (i.e., Hetch Hetchy Aqueduct), EBDA and Cargill would initiate project review with the respective agencies with jurisdiction over these lands and existing facilities. As part of this process, EBDA and Cargill would obtain all necessary permits and resource agency approvals prior to project implementation, as listed under "Project Permits and Approvals" in Section 2, "Project Description." This process would ensure consistency with plans, policies, and regulations adopted for avoiding and mitigating environmental effects. Therefore, no significant impacts related to land use and planning would occur, and this issue is not discussed further.
- **Population and Housing:** The project does not propose development of additional housing or commercial or industrial businesses that could induce population growth, nor would it remove any obstacle to population growth. The project would involve the construction of new utility infrastructure; the proposed MSS brine transport pipeline would be used to transport residual MSS brine and would not provide municipal service. Additionally, the project improvements would be constructed at Cargill's Solar Salt Facility and within roadway rights-of-way and would not result in the displacement of people or housing. Therefore, no significant impacts on population and housing would occur, and this issue is not discussed further.
- **Public Services:** Construction activities could result in a minor increase in the demand for fire and police protection and emergency services associated with construction accidents, if any, and similar concerns; however, construction activities would be temporary and would not place undue demands on fire and police protection services. As discussed above, the project would not contribute to population growth. Therefore, the project would not result in a permanent increase in the demand for fire and police protection, schools, parks, or other public facilities, and no significant impacts on public services would occur. This issue is not discussed further.
- **Transportation:** Construction and maintenance activities for the MSS brine transport pipeline would occur within roadway rights-of-way in the community of San Lorenzo and the Cities of Hayward, Union City, Fremont, and Newark. Based on current design, lane closures may be required on Thornton Avenue, Paseo Padre Parkway, Ardenwood Boulevard, Union City Boulevard, Hesperian Boulevard, Industrial Boulevard, Arden Road, Corporate Avenue, Investment Boulevard, Production Avenue, Clawiter Road, West Winton Avenue, and Corsair Boulevard. EBDA and Cargill would be required to obtain encroachment permits for work in public rights-of-way from agencies with jurisdiction over the affected routes (i.e., Alameda County and the Cities of Hayward, Union City, Fremont, and Newark). As a condition of encroachment permit approval, EBDA and Cargill would prepare and implement a traffic control plan during construction to minimize disruptions and traffic safety hazards on affected roadways and ensure adequate access for emergency responders (refer to Section 2.6.8, "Construction," for additional information). In addition, EBDA and Cargill would implement temporary bicycle and pedestrian detours with applicable resource agencies, including the US Fish and Wildlife Service, California Department of Fish and Wildlife, East Bay Regional Park District, Metropolitan Transportation Commission, and the Cities of Hayward and Union City. Coordination with the agencies with jurisdiction and compliance with encroachment permit requirements would ensure that the project would not conflict with programs, plans, ordinances, or policies addressing the circulation system. Additionally, implementation of the traffic control plan and detour plans would ensure that the project would not increase transportation hazards or impair emergency access. Furthermore, the project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3(b) because

the project would not contribute to a substantial increase in vehicle miles traveled. Specifically, construction-related vehicle trips generated from the project would be temporary, dispersed along multiple roadways, and would not be concentrated in any one particular roadway segment or intersection. Vehicle trips for operations and maintenance activities would be negligible because the project would only require up to four new dedicated staff. Based on the above discussion, no significant impacts on transportation would occur, and this issue is not discussed further.

- Utilities and Service Systems: The project would not include new development that requires new or expanded water, wastewater treatment, storm water drainage, natural gas, or telecommunications facilities. The proposed project includes installation of new on-site infrastructure at the Solar Salt Facility and an off-site MSS brine transport pipeline to facilitate ongoing salt harvesting operations. The MSS brine transport pipeline would be installed within roadway rights-of-way in areas where existing major underground pipelines are located. EBDA and Cargill would select the final MSS brine transport alignment based on coordination with utility owners. Prior to initiating earthmoving activities, EBDA and Cargill would perform subsurface utility investigations to confirm the location of underground pipelines. Additionally, EBDA and Cargill and would obtain all required leases, licenses, permits, and easements for work within utility rights-of-way. Therefore, construction activities would not result in accidental damage to or result in the need to relocate existing utility infrastructure. The environmental impacts of constructing and operating new infrastructure for the project is evaluated in Sections 3.2 through 3.10 of this Draft EIR. There are no additional potentially significant impacts associated with construction of the project beyond those comprehensively considered throughout this EIR. Therefore, no significant impacts on utilities and service systems would occur, and this issue is not discussed further.
- Wildfire: The work areas identified for the project are located in marshland and areas of annual and perennial weeds and scattered urban street trees and ornamental shrubs. The Solar Salt Facility and southern portion of the MSS brine transport pipeline alignment are located primarily along the western fringe of urban development, at the eastern edge of San Francisco Bay. Further north, the alignment travels along roadways through industrial and residential development and areas adjacent to marshland. None of the work areas are located in or near locations designated by the California Department of Forestry and Fire Protection as a Moderate, High, or Very High Fire Hazard Severity Zone (CAL FIRE 2007). Local fire protection services available along the alignment in the Cities of Hayward, Union City, Fremont, and Newark and in unincorporated Alameda County are assumed to be sufficient to address any fires that could occur on the project site. Therefore, implementing the project would not exacerbate wildfire risks and expose people to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire; would not require the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts on the environment; and would not expose people or structures to significant risks as a result of runoff, postfire slope instability, or drainage changes. Therefore, no significant impacts related to wildfire would occur, and this issue is not discussed further.

3.2 AIR QUALITY

This section includes a discussion of existing air quality conditions, a summary of applicable regulations, and an analysis of potential construction- and operations-related air quality impacts caused by development of the project. Mitigation is identified as necessary to reduce significant air quality impacts to the extent feasible.

No comments related to air quality were received in response to the notice of preparation.

3.2.1 Regulatory Setting

Ambient air quality in the project area is regulated through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, planning, policy making, education, and a variety of programs. The agencies responsible for improving air quality in the San Francisco Bay Area Air Basin (SFBAAB) are discussed below.

FEDERAL

US Environmental Protection Agency

The US Environmental Protection Agency (EPA) has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970 (42 US Code Chapter 85). The most recent major amendments were made by Congress in 1990.

Criteria Air Pollutants

The CAA required EPA to establish national ambient air quality standards (NAAQS) for six common air pollutants found all over the United States, referred to as criteria air pollutants. EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}), fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead. The NAAQS are shown in Table 3.2-1. The primary standards protect public health, and the secondary standards protect public welfare. The CAA also required each state to prepare a state implementation plan (SIP) for attaining and maintaining the NAAQS. The federal Clean Air Act Amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. California's SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments and whether implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, it may prepare a federal implementation plan that imposes additional control measures. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary air pollution sources in the air basin.

Table 3.2-1 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California (CAAQS)[a, b]	National (NAAQS)[c]	
			Primary[b, d]	Secondary[b, e]
Ozone	1-hour	0.09 ppm (180 µg/m^3)	—	Same as primary standard
	8-hour	0.070 ppm (137 µg/m^3)	0.07 ppm (147 µg/m^3)	
Carbon monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	Same as primary standard
	8-hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	
Nitrogen dioxide (NO_2)	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	53 ppb (100 µg/m^3)	Same as primary standard
	1-hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	—
Sulfur dioxide (SO_2)	24-hour	0.04 ppm (105 µg/m^3)	—	—
	3-hour	—	—	0.5 ppm (1,300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	—
Respirable particulate matter (PM_{10})	Annual arithmetic mean	20 µg/m^3	—	Same as primary standard
	24-hour	50 µg/m^3	150 µg/m^3	
Fine particulate matter ($PM_{2.5}$)	Annual arithmetic mean	12 µg/m^3	12 µg/m^3	15 µg/m^3
	24-hour	—	35 µg/m^3	Same as primary standard
Lead [f]	Calendar quarter	—	1.5 µg/m^3	Same as primary standard
	30-day average	1.5 µg/m^3	—	—
	Rolling 3-month average	—	0.15 µg/m^3	Same as primary standard
Hydrogen sulfide	1-hour	0.03 ppm (42 µg/m^3)	No national standards	
Sulfates	24-hour	25 µg/m^3		
Vinyl chloride [f]	24-hour	0.01 ppm (26 µg/m^3)		
Visibility-reducing particulate matter	8-hour	Extinction of 0.23 per km		

Notes: µg/m^3 = micrograms per cubic meter; km = kilometers; mg/m^3 = milligrams per cubic meter; ppb = parts per billion; ppm = parts per million.

[a] California standards for ozone, carbon monoxide, SO_2 (1- and 24-hour), NO_2, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled 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.

[b] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[c] National standards (other than for ozone and particulate matter and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. The $PM_{2.5}$ 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 US Environmental Protection Agency for further 0clarification and current federal policies.

[d] National primary standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[e] National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] The California Air Resources Board has identified lead and vinyl chloride as toxic air contaminants with no threshold 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.

Source: CARB 2016.

Hazardous Air Pollutants and Toxic Air Contaminants

Toxic air contaminants (TACs) or, in federal parlance, hazardous air pollutants (HAPs) are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness or that may pose a hazard to human health. A substance that is listed as a HAP pursuant to Subsection (b) of Section 112 of the CAA (42 US Code Section 7412[b]) is considered a TAC. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

A wide range of sources, from industrial plants to motor vehicles, emit TACs. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects, such as cancer, birth defects, neurological damage, asthma, bronchitis, and genetic damage, or short-term acute effects, such as eye watering, respiratory irritation (a cough), runny nose, throat pain, and headaches.

For evaluation purposes, TACs are separated into carcinogens and noncarcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. This contrasts with criteria air pollutants, for which acceptable levels of exposure can be determined and for which ambient standards have been established (Table 3.2-1). Cancer risk from TACs is expressed as excess cancer cases per one million exposed individuals, typically over a lifetime of exposure.

EPA and, in California, the California Air Resources Board (CARB) regulate HAPs and TACs, respectively, through statutes (i.e., 42 US Code Section 7412[b]) and regulations that generally require the use of the maximum achievable control technology or best available control technology (BACT) for toxics to limit emissions.

STATE

CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA) (California Health and Safety Code Section 40910).

Criteria Air Pollutants

The CCAA, which was adopted in 1988, required CARB to establish California ambient air quality standards (CAAQS) (Table 3.2-1). CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants identified by EPA. In most cases, the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to attain and maintain the CAAQS by the earliest date practical. It specifies that local air districts should focus particular attention on reducing the emissions from transportation and areawide emission sources. The CCAA also provides air districts with the authority to regulate indirect sources.

Toxic Air Contaminants

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807, Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (Hot Spots Act) (AB 2588, Chapter 1252, Statutes of 1987). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. Research, public participation, and scientific peer review are required before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. Most recently, particulate matter (PM) exhaust from diesel engines (diesel PM) was added to CARB's list of TACs.

After a TAC is identified, CARB then adopts an airborne toxics control measure for sources that emit that particular TAC. If a threshold exists for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If no safe threshold exists, the measure must incorporate BACT for toxics to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare an inventory of toxic emissions, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than are produced under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced substantially over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of CARB's Risk Reduction Plan and other regulatory programs, it is estimated that emissions of diesel PM will be less than half of those in 2010 by 2035 (CARB 2022). Adopted regulations are also expected to continue to reduce formaldehyde emissions emitted by cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

REGIONAL

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) maintains and manages air quality conditions in the SFBAAB, including Alameda County, through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of BAAQMD includes the preparation of plans and programs for the attainment of the NAAQS and CAAQS, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. BAAQMD also inspects stationary sources, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the CAA and CCAA.

Projects located in the SFBAAB are subject to BAAQMD's rules and regulations. The following rules and regulation are applicable to the project:

- Regulation 2, Rule 1, General Permit Requirements. This rule includes criteria for issuance or denial of permits, exemptions, and appeals against decisions of the Air Pollution Control Officer and BAAQMD actions on applications.
- Regulation 6, Rule 1, General Requirements. This rule limits the quantity of particulate matter in the atmosphere by controlling emission rates, concentration, visible emissions, and opacity.
- Regulation 7, Odorous Substances. Regulation 7 places general limitations on odorous substances and specific emission limitations on certain odorous compounds. A person or facility must meet all limitations of this regulation, but meeting such limitations shall not exempt such person or facility from any other requirements of BAAQMD, state, or national law. The limitations of this regulation are not applicable until BAAQMD receives odor complaints from 10 or more complainants within a 90-day period, alleging that a person or facility has caused odors perceived at or beyond the property line of such person or facility and deemed to be objectionable by the complainants in the normal course of their work, travel, or residence. When the limits of this regulation become effective, as a result of citizen complaints described above, the limits remain effective until such time as no citizen complaints have been received by BAAQMD for 1 year. The limits of this regulation become applicable again if BAAQMD receives odor complaints from five or more complainants within a 90-day period. BAAQMD staff investigate and track all odor complaints it receives, make attempts to visit the site and identify the source of the objectionable odor, and assist the owner or facility in finding a way to reduce the odor.

The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS in their region by the earliest practical date. It specifies that local air districts should focus attention on reducing the emissions from transportation and areawide emission sources and provides districts with the authority to regulate indirect sources. To achieve the CAAQS, BAAQMD prepares and updates air quality plans on a regular basis. The air quality plans

published by BAAQMD and other local air districts in the state are incorporated into California's SIP strategy and meet CAA requirements.

For state air quality planning purposes, the SFBAAB is classified as a serious nonattainment area with respect to the 1-hour ozone standard. The "serious" classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that BAAQMD update its Clean Air Plan every 3 years to reflect progress in meeting the NAAQS and CAAQS and to incorporate new information regarding the feasibility of control measures and new emission inventory data. BAAQMD's record of progress in implementing previous measures must also be reviewed. BAAQMD prepared these plans in cooperation with the Metropolitan Transportation Commission and the Association of Bay Area Governments. On April 19, 2017, BAAQMD adopted the most recent revision to the Clean Air Plan, titled the *2017 Clean Air Plan: Spare the Air, Cool the Climate* (BAAQMD 2017a). This plan serves to:

- define a vision for transitioning the region to a postcarbon economy needed to achieve 2030 and 2050 greenhouse gas reduction targets;
- decrease emissions of air pollutants most harmful to Bay Area residents, such as particulate matter, ozone, and TACs;
- reduce emissions of methane and other potent climate pollutants; and
- decrease emissions of carbon dioxide by reducing fossil fuel combustion.

Although offensive odors rarely cause any physical harm, they can be unpleasant, leading to considerable stress among the public and often generating citizen complaints to local governments and BAAQMD. BAAQMD's Regulation 7 ("Odorous Substances"), discussed above, regulates odors.

LOCAL

Alameda County General Plan

The county's Eden Planning Unit includes the unincorporated community of San Lorenzo. The County's General Plan Conservation Element contains the following goal and objectives related to air quality (Alameda County 1994).

GOAL: To insure and maintain the highest possible air quality in the County.

- Objective 1. In areas of critical air pollution to attempt to restore and prevent further degradation of air quality.
- Objective 2. To achieve coordination of air quality policies and regulations at the federal, state, regional and local level,
- Objective 3. To educate government, business and citizens to assist in reducing poor air quality through alternate means of travel or by reduced use of internal combustion engines.

City of Hayward General Plan

The *Hayward 2040 General Plan* contains the following goal and policies related to air quality (City of Hayward 2014):

GOAL NR-2. Improve the health and sustainability of the community through continued local efforts to improve regional air quality, reduce greenhouse gas emissions, and reduce community exposure to health risks associated with toxic air contaminants and fine particulate matter.

- NR-2.1. Ambient Air Quality Standards. The City shall work with the California Air Resources Board and the Bay Area Air Quality Management District to meet State and Federal ambient air quality standards in order to protect all residents from the health effects of air pollution.
- NR-2.2. New Development. The City shall review proposed development applications to ensure projects incorporate feasible measures that reduce construction and operational emissions for reactive organic gases (ROG), nitrogen oxides (NOX), and particulate matter (PM10 and PM2.5) through project location and design.
- NR-2.3. Emissions Reduction. The City shall require development projects that exceed Bay Area Air Quality Management District reactive organic gas (ROG), nitrogen oxide (NOX) operational thresholds to incorporate

design or operational features that reduce emissions equal to at least 15 percent below the level that would be produced by an unmitigated project.

- **NR-2.7. Coordination with Bay Area Air Quality Management District.** The City shall coordinate with the Bay Area Air Quality Management District to ensure projects incorporate feasible mitigation measures to reduce greenhouse gas emissions and air pollution if not already provided for through project design.
- **NR-2.15. Community Risk Reduction Strategy.** The City shall maintain and implement the General Plan as Hayward's community risk reduction strategy to reduce health risks associated with toxic air contaminants (TACs) and fine particulate matter ($PM_{2.5}$) in both existing and new development.

Union City General Plan

The *Union City General Plan* contains the following goal and policies related to air quality in the Resource Conservation Section (Union City 2019):

GOAL RC-5: To prevent the deterioration of and to improve air quality within Union City.

- **RC-5.1. Air Quality Plan Implementation.** The City shall cooperate with the Bay Area Air Quality Management District to implement the Air Quality Plan and enforce air quality standards.
- **RC-5.2. Air Quality During Construction and Operations.** The City shall require that development projects incorporate the Bay Area Air Quality Management District (BAAQMD) Basic Construction Mitigation Measures to reduce construction and operational emissions for reactive organic gases, nitrogen oxides, and particulate matter (PM10 and PM2.5).
- **RC-5.4. Health Risk Assessments.** The City shall implement Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines and State Office of Environmental Health Hazard Assessment policies and procedures requiring health risk assessments (HRAs) for new residential development and other sensitive receptors, as defined in the BAAQMD CEQA Guidelines, within 1,000 feet of sources of toxic air contaminants, including freeways and roadways with over 10,000 vehicle trips per day. Based on the results of the HRA, the City shall identify and implement measures, such as air filtration systems, to reduce potential exposure to particulate matter, carbon monoxide, diesel fumes, and other potential health hazards. Measures identified in HRAs shall be included into the site development plan as a component of a proposed project.

City of Fremont General Plan

The Conservation Element of the *City of Fremont General Plan* (City of Fremont 2011) addresses air quality:

GOAL 7-7. Air Quality. Air quality improved over current conditions that meets or exceeds State and Regional standards.

- **Policy 7-7.1. Cooperation to Improve Regional Air Quality.** Support and coordinate air quality planning efforts with other local, regional and State agencies to improve regional air quality.
- **Policy 7-7.2. Reduce Air Pollution Levels**. Reduce City of Fremont air contaminant levels and particulate emissions below BAAQMD attainment levels, in particular, ozone and particulate matter levels.
- **Policy 7-7.3. Land Use Planning to Minimize Health Impacts from Toxic Air Contaminants**. Coordinate land use planning with air quality data and local transportation planning to reduce the potential for long-term exposure to toxic air contaminants (TAC) from permanent sources that affect the community.

City of Newark General Plan

The following goal and policies from the Health and Wellness Element in the *Newark General Plan* are relevant to the analysis of air quality effects (City of Newark 2013):

GOAL HW-1: Air quality that meets state and federal standards and provides improved respiratory health for Newark residents.

- Policy HW-1.1. Air Quality Plans. Work with appropriate state, federal, and regional agencies to develop and implement programs that help the San Francisco Air Basin meet state and federal air quality standards.
- Policy HW-1.2. Land Use, Transportation, and Air Quality. Make land use and transportation decisions that reduce tailpipe emissions, including promotion of walking and bicycling, improvements to public transportation, and a jobs-housing balance that reduces vehicle commute miles. Higher density development and mixed commercial and residential uses should be permitted near the proposed Dumbarton Rail Station, and in other areas where high-frequency transit service is proposed.
- Policy HW-1.4. Evaluation of Air Quality Impacts. Evaluate air quality impacts during the local development review process. Development should be located and regulated to minimize significant air quality related health risks.
- Policy HW-1.5. Cleaner Fuels. Encourage the use of cleaner burning fuels and low-emission vehicles

3.2.2 Environmental Setting

The project site is located in the SFBAAB. The SFBAAB includes all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the western portion of Solano County; and the southern portion of Sonoma County. The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by the sources of air pollutants and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

CLIMATE, METEOROLOGY, AND TOPOGRAPHY

Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients, interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The climate of the SFBAAB is determined largely by a high-pressure system that is often present over the eastern Pacific Ocean. High-pressure systems are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, resulting in subsidence inversions. During summer and fall, locally generated emissions can, under the restraining influences of topography and subsidence inversions, cause conditions that are conducive to the formation of photochemical pollutants, such as ozone and secondary particulates (e.g., nitrates and sulfates). In winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the area (BAAQMD 2017b: C-1 to C-4).

The MSS brine transport pipeline alignment extends from south to north through the Cities of Newark, Fremont, Union City, and Hayward, and the unincorporated community of San Lorenzo in Alameda County. Alameda County lies east of San Francisco Bay and is bounded by Contra Costa County to the north, San Joaquin County to the east, and Santa Clara County to the south. Average summer temperatures are mild overnight and moderate during the day. Winter temperatures are cool overnight and mild during the day. The highest temperatures are more common inland. Wind speeds vary throughout the county, with the strongest gusts along the western coast, often aided by dominant westerly winds and a bay-breeze effect. Rainfall totals average about 14–23 inches per year, with the highest totals in the northern end of the county and atop the Oakland-Berkeley hills.

The local meteorology of the project site and surrounding area is represented by measurements recorded at the Western Regional Climate Center Oakland Museum station. The normal annual precipitation is approximately 23 inches. January temperatures range from a normal minimum of 44°F to a normal maximum of 58°F. July temperatures range from a normal minimum of 57°F to a normal maximum of 72°F (WRCC 2016). The prevailing wind direction is from the north (WRCC 2002).

CRITERIA AIR POLLUTANTS

Concentrations of criteria air pollutants are used to indicate the quality of the ambient air. Ozone, PM_{10}, and $PM_{2.5}$ are the criteria air pollutants of primary concern in this analysis because of their nonattainment status with respect to the applicable NAAQS and/or CAAQS in the SFBAAB. Brief descriptions of these key criteria air pollutants in the SFBAAB and their health effects are provided below. The attainment statuses of all criteria air pollutants with respect to the NAAQS and the CAAQS in Alameda County are shown in Table 3.2-2. A brief summary of the various acute and chronic health effects from exposure to concentrations of criteria air pollutants in exceedance of the NAAQS and/or CAAQS is shown in Table 3.2-3.

Table 3.2-2 Attainment Status Designations for Alameda County

Pollutant	National Ambient Air Quality Standard	California Ambient Air Quality Standard
Ozone	Attainment (1-hour)[1]	Nonattainment (1-hour) classification = serious[2]
	Nonattainment (8-hour)[3] classification = serious	Nonattainment (8-hour)
Respirable particulate matter (PM_{10})	Unclassified (24-hour)	Nonattainment (24-hour)
	Unclassified (annual)	Nonattainment (annual)
Fine particulate matter ($PM_{2.5}$)	Nonattainment (24-hour)	(No state standard for 24-Hour)
	Attainment (Annual)	Attainment (annual)
Carbon monoxide (CO)	Attainment (1-hour)	Attainment (1-hour)
	Attainment (8-hour)	Attainment (8-hour)
Nitrogen dioxide (NO_2)	Unclassified/attainment (1-hour)	Attainment (1-hour)
	Unclassified/attainment (Annual)	Attainment (annual)
Sulfur dioxide (SO_2)[4]	(Attainment pending) (1-Hour)	Attainment (1-hour)
	(Attainment pending) (1-Hour)	Attainment (24-hour)
Lead (particulate)	Attainment (3-month rolling average)	Attainment (30-day average)
Hydrogen sulfide	No federal standard	Unclassified (1-hour)
Sulfates		Attainment (24-hour)
Visibility-reducing particles		Unclassified (8-hour)
Vinyl chloride		Unclassified (24-hour)

[1] Air quality meets federal 1-hour ozone standard (77 FR 64036). EPA revoked this standard, but some associated requirements still apply. BAAQMD attained the standard in 2009.

[2] Per Health and Safety Code Section 40921.5(c), the classification is based on 1989–1991 data and therefore does not change.

[3] 2015 standard.

[4] 2010 standard.

Sources: CARB 2020; EPA 2022.

Table 3.2-3 Sources and Health Effects of Criteria Air Pollutants

Pollutant	Sources	Acute[1] Health Effects	Chronic[2] Health Effects
Ozone	Secondary pollutant resulting from reaction of ROG and NO_X in the presence of sunlight; ROG emissions result from incomplete combustion and evaporation of chemical solvents and fuels; NO_X results from the combustion of fuels	Increased respiration and pulmonary resistance; cough, pain, shortness of breath, lung inflammation	Permeability of respiratory epithelia, possibility of permanent lung impairment
Carbon monoxide (CO)	Incomplete combustion of fuels; motor vehicle exhaust	Headache, dizziness, fatigue, nausea, vomiting, death	Permanent heart and brain damage
Nitrogen dioxide (NO_2)	Combustion devices (e.g., boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines)	Coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis or pulmonary edema, breathing abnormalities, cyanosis, chest pain, rapid heartbeat, death	Chronic bronchitis, decreased lung function
Sulfur dioxide (SO_2)	Coal and oil combustion, steel mills, refineries, and pulp and paper mills	Irritation of upper respiratory tract, increased asthma symptoms	Insufficient evidence linking SO_2 exposure to chronic health impacts
Respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$)	Fugitive dust, soot, smoke, mobile and stationary sources, construction, fires and natural windblown dust, and formation in the atmosphere by condensation and/or transformation of SO_2 and ROG	Breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, premature death	Alterations to the immune system, carcinogenesis
Lead	Metal processing	Reproductive/ developmental effects (fetuses and children)	Numerous effects, including neurological, endocrine, and cardiovascular effects

Notes: NO_X = oxides of nitrogen; ROG = reactive organic gases.

[1] "Acute" refers to effects of short-term exposures to criteria air pollutants, usually at fairly high concentrations.

[2] "Chronic" refers to effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations.

Source: EPA 2021.

Ozone

Ground-level ozone is not emitted directly into the air but is created by chemical reactions between ROG and NO_X. This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight. Ozone at ground level is a harmful air pollutant because of its effects on people and the environment, and it is the main ingredient in smog (EPA 2021).

Acute health effects of ozone exposure include increased respiratory and pulmonary resistance, cough, pain, shortness of breath, and lung inflammation. Chronic health effects include permeability of respiratory epithelia and possibility of permanent lung impairment (EPA 2021). Emissions of the ozone precursors ROG and NO_X have decreased over the past two decades because of more stringent motor vehicle standards and cleaner burning fuels (CARB 2013).

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X and are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local sources of NO_X emissions (EPA 2021).

Acute health effects of exposure to NO_X include coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis, pulmonary edema, breathing abnormalities, cyanosis, chest pain, rapid heartbeat, and death. Chronic health effects include chronic bronchitis and decreased lung function (EPA 2021).

Particulate Matter

PM_{10} is emitted directly into the air and includes fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, and fires and natural windblown dust. It also can be secondarily formed in the atmosphere by the reaction of gaseous precursors (CARB 2013). $PM_{2.5}$ includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less. PM_{10} emissions in the SFBAAB are dominated by emissions from area sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, farming operations, construction and demolition, and residential fuel combustion. Direct emissions of PM_{10} are projected to remain relatively constant through 2035. Direct emissions of $PM_{2.5}$ have steadily declined in the SFBAAB between 2000 and 2010 and are projected to increase slightly through 2035. Emissions of $PM_{2.5}$ in the SFBAAB are dominated by the same sources as emissions of PM_{10} (CARB 2013).

Acute health effects of exposure to PM_{10} include breathing and respiratory symptoms; aggravation of existing respiratory and cardiovascular diseases, including asthma and chronic obstructive pulmonary disease; and premature death. Chronic health effects include alterations to the immune system and carcinogenesis (EPA 2021). For $PM_{2.5}$, short-term exposure (up to 24-hour duration) has been associated with premature mortality, increased hospital admissions for heart or lung cases, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days. These adverse health effects have been reported primarily in infants, children, and older adults with preexisting heart or lung diseases. Long-term exposure (months to years) to $PM_{2.5}$ has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children.

TOXIC AIR CONTAMINANTS

According to the 2013 Edition of the *California Almanac of Emissions and Air Quality*, health risks from TACs can largely be attributed to relatively few compounds, the most important being diesel PM (CARB 2013: 5-2 to 5-4). Diesel PM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emissions control system is being used. Unlike the other TACs, no ambient monitoring data are available for diesel PM, because no routine measurement method currently exists. The TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene. Diesel PM poses the greatest health risk among the 10 TACs mentioned. Overall, statewide emissions of diesel PM are forecasted to decline by 71 percent between 2000 and 2035 (CARB 2013: 3-8).

ODORS

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals can smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition occurs only with an alteration in the intensity.

Odor sources of concern include wastewater treatment plants, sanitary landfills, composting facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting operations, coffee roasters, rendering plants, food packaging plants, and cannabis (BAAQMD 2017b).

SENSITIVE RECEPTORS

Sensitive receptors are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children or the elderly. Residential dwellings, schools, hospitals, playgrounds, and similar facilities are of primary concern because of the presence of individuals particularly sensitive to pollutants and/or the potential for increased and prolonged exposure of individuals to pollutants. The Solar Salt Facility is located in a primarily industrial area of Newark but with some residential areas nearby. The MSS brine transport pipeline alignment passes through the Cities of Newark, Fremont, Union City, and Hayward and the unincorporated community of San Lorenzo in Alameda County. Sensitive receptors in the project area include residences, places of worship, and parks east and west of the MSS brine transport pipeline alignment.

3.2.3 Impacts and Mitigation Measures

METHODOLOGY

Regional and local criteria air pollutant emissions and associated impacts, as well as impacts from TACs, CO concentrations, and odors were assessed in accordance with BAAQMD-recommended methodologies. The project's emissions are compared to BAAQMD-adopted thresholds.

Construction- and operations-related emissions of criteria air pollutants were calculated using the California Emissions Estimator Model (CalEEMod) version 2020.4.0 computer program and available project-specific information (e.g., land use type, construction and operation equipment to be used, trip projections) where available; reasonable assumptions based on typical construction activities; and default values in CalEEMod that are based on the project's location and land use type.

Construction emissions were estimated using CalEEMod 2020.4.0. Modeling was based on project-specific information where available. An equipment inventory and usage assumptions and on-road vehicle activity were provided by Cargill, the applicant. Default values in CalEEMod based on the project's location also were used. Cargill assumed that construction of the project would begin on June 3, 2023, and conclude on December 31, 2024.

Levels of ROG, NO_X, PM_{10}, and $PM_{2.5}$ associated with the use of off-road equipment, haul trucks delivering equipment and materials, and worker commute trips were calculated using CalEEMod and estimations provided by the applicant. Exhaust PM_{10} and $PM_{2.5}$ would be generated from the use of off-road equipment, haul trucks, and construction worker vehicles. Emissions of ROG and NO_X would be associated primarily with construction equipment and on-road mobile exhaust. Construction activities associated with the project would likely require the use of equipment such as excavators, loaders, backhoes, generators, welders, dump trucks, pavers, cranes, pumps, tunnel boring equipment, and solids control machinery.

To assess the air quality impacts that would result from operations following implementation of the project, information pertaining to operational emissions provided by Cargill were used in CalEEMod to produce an estimation of criteria pollutant emissions that would result from both off-site and on-site operational trips. The most recent available emissions inventory for Alameda County was derived from EMFAC2021v1.0.2 and applied to CalEEMod to provide the most current vehicle emissions rates for on-road vehicles. These trips included maintenance trips and maintenance equipment pickup trips. No natural gas would be consumed at the project site.

TAC-related impacts were assessed qualitatively.

See Appendix B for a detailed description of modeling assumptions, construction equipment, CalEEMod outputs, and off-model calculations.

THRESHOLDS OF SIGNIFICANCE

The significance criteria used to evaluate project impacts on air quality under CEQA are based on Appendix G of the State CEQA Guidelines and thresholds of significance adopted by BAAQMD. According to State CEQA Guidelines Appendix G, an air quality impact would be significant if implementation of the proposed project would:

- conflict with or obstruct implementation of the applicable air quality plan,
- violate any air quality standard or contribute substantially to an existing or projected air quality violation,
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors),
- expose sensitive receptors to substantial pollutant concentrations, or
- create objectionable odors affecting a substantial number of people.

BAAQMD's air quality thresholds of significance are tied to achieving or maintaining attainment designations with the NAAQS and CAAQS, which are scientifically substantiated, numerical concentrations of criteria air pollutants considered to be protective of human health. Implementing the project would have a significant impact related to air quality such that human health would be adversely affected if it would (BAAQMD 2017b):

- cause construction-generated criteria air pollutant or precursor emissions to exceed 54 pounds per day (lb/day) of ROG and NO_X, 82 lb/day for PM_{10} exhaust, and 54 lb/day for $PM_{2.5}$ exhaust, or substantially contribute to emissions concentrations (e.g., PM_{10}, $PM_{2.5}$) that exceed the applicable NAAQS or CAAQS;
- result in a net increase in long-term operational criteria air pollutant or precursor emissions that exceed 54 lb/day or 10 tons per year (tons/year) of ROG and NO_X, 82 lb/day or 15 tons/year for PM_{10} exhaust, and 54 lb/day or 10 tons/year for $PM_{2.5}$ exhaust, or substantially contribute to emissions concentrations (e.g., PM_{10}, $PM_{2.5}$) that exceed the applicable NAAQS or CAAQS;
- not implement BAAQMD's Basic Construction Mitigation Measures for dust emissions (e.g., PM_{10} and $PM_{2.5}$);
- result in long-term operational local mobile-source CO emissions that would violate or contribute substantially to concentrations that exceed the 1-hour CAAQS of 20 parts per million (ppm) or the 8-hour CAAQS of 9 ppm;
- result in an incremental increase in cancer risk (i.e., the risk of contracting cancer) greater than 10 in one million at any off-site receptor and/or a noncarcinogenic hazard index of 1.0 or greater; or
- result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

ISSUES NOT DISCUSSED FURTHER

The project would generate an average of approximately one new daily truck trip for maintenance of the proposed facilities. BAAQMD has developed screening criteria for assessing CO impacts. Using that guidance, a CO hotspot could result if a project increased vehicle trips at an affected intersection to 44,000 vehicle trips per hour. The increased number of new daily trips would be substantially lower than 44,000 vehicles; thus, localized CO impacts from long-term maintenance would not occur, and CO hotspot emissions are not discussed further.

The project would be constructed over a 1.5-year period. Construction of the project would be short term and would produce typical odors associated with the operation of heavy-duty equipment. Operation of the project would entail minor new daily trips related to maintenance of the facility. Because construction would be short term and the project would not introduce any new sources of operational odor, odor impacts would not occur from project implementation. For these reasons, odors are not discussed further.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.2-1: Potential to Generate Emissions of Criteria Air Pollutants and Precursors during Project Construction

Implementation of the project would generate construction emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ from off-road equipment use, material and equipment delivery trips, worker commute trips, and other, miscellaneous activities. The project would be required to implement BAAQMD's construction best management practices and would use Tier 4 equipment. The project's emissions of ROG and PM_{10} and $PM_{2.5}$ exhaust would not exceed BAAQMD's mass emissions thresholds for either year of construction; however, emissions of NO_X would exceed thresholds in both years with incorporation of Tier 4 engines. This impact would be **significant**.

Construction-related activities would generate emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ associated with off-road equipment use, material and equipment delivery trips, worker commute trips, and other, miscellaneous activities. Fugitive dust emissions of PM_{10} and $PM_{2.5}$ would be associated primarily with site preparation and would vary as a function of soil silt content, soil moisture, wind speed, and acreage of disturbance. PM_{10} and $PM_{2.5}$ are also contained in exhaust from off-road equipment and on-road vehicles. Emissions of ozone precursors, ROG and NO_X, would be associated primarily with construction equipment and on-road mobile exhaust. The application of architectural coatings would result in off-gas emissions of ROG.

Construction activities were assumed to begin in June 2023 and extend through December 2024. For specific construction assumptions and modeling inputs, refer to Appendix B. Table 3.2-4 summarizes the modeled maximum daily (ROG, NO_x, PM) and annual (PM) emissions from construction activities over an assumed 1.5-year construction period and presents BAAQMD's daily mass emissions thresholds for comparison. BAAQMD's project thresholds are intended to maintain or achieve attainment designations in the SFBAAB with respect to the CAAQS and NAAQS. If a project does not exceed BAAQMD's thresholds, its contribution of air pollutants would not affect an air basin's maintenance or attainment of the NAAQS and CAAQS and thus would not exacerbate or interfere with the region's ability to attain the health-based standards (BAAQMD 2017b).

Table 3.2-4 Summary of Maximum Emissions of Criteria Air Pollutants and Precursors Associated with the Project (2023–2024)

Construction Year	ROG (lb/day)	NO_X (lb/day)[1]	PM_{10} Exhaust (lb/day)	$PM_{2.5}$ Exhaust (lb/day)
2023	12	95	4	4
2024	10	63	2	2
BAAQMD threshold of significance	54	54	82	54

Notes: ROG = reactive organic gases; lb/day = pounds per day; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with aerodynamic diameter of 2.5 micrometers or less; BAAQMD = Bay Area Air Quality Management District.

[1] The project would incorporate the use of Tier 4 Final engines.

Source: Modeling performed by Ascent Environmental in 2022.

As shown in Table 3.2-4, emissions of ROG, and exhaust PM_{10} and $PM_{2.5}$ would not exceed BAAQMD's thresholds of significance. NO_X emissions, however, would exceed BAAQMD's thresholds of significance even following the incorporation of Final Tier 4 engines, which are the lowest emitting engines available, into the construction fleet. Because emissions of NO_X during construction would be above BAAQMD's thresholds of significance, which are developed in consideration of long-term regional air quality planning, project construction would result in a conflict with the *2017 Clean Air Plan: Spare the Air, Cool the Climate* (BAAQMD 2017a). Therefore, this impact would be **significant**.

Mitigation Measures

Mitigation Measure 3.2-1: Contribute Funding to an Off-Site Mitigation Program

BAAQMD considers the use of an off-site mitigation program as a feasible mitigation measure (BAAQMD 2012). This mitigation strategy has been implemented by land use projects throughout the state as a means to reduce a project's significant air quality impacts to a less-than-significant level. The project has already incorporated Tier 4 final engines to reduce NO_X emissions, which is a common and feasible measure known to reduce NO_X emissions greatly. However, the project's emissions would continue to exceed BAAQMD's thresholds of significance for NO_X.

The project applicant shall provide funding to a program or programs within the SFBAAB that reduce NO_X emissions. BAAQMD oversees several programs and funds to reduce emissions. Examples include the Carl Moyer Memorial Program, which provides grants to upgrade or replace heavy-duty diesel vehicles and equipment, including on- and off-road vehicles and equipment, school buses, agricultural equipment, marine vessels, and locomotives. Other options that the project applicant may consider to reduce NO_X emissions include the Mobile Source Incentive Fund, the Transportation Fund for Clean Air, and the Goods Movement Program. The project applicant shall provide funding to at least one, or more, of these programs to reduce construction-generated NO_X emissions in 2023 and 2024 adequately to offset the exceedance of the BAAQMD NO_x threshold as verified by BAAQMD. The cost to mitigate shall be determined when the project applicant chooses to engage in any of the aforementioned programs, but that cost shall be sufficient to reduce NO_X emissions sufficiently to meet BAAQMD's thresholds of significance, as verified by BAAQMD.

Significance after Mitigation

Implementation of Mitigation Measure 3.2-1 would reduce emissions of NO_X during project construction through contribution of funding to support SFBAAB-based pollution reductions programs, avoiding the potential for individuals to be exposed to unhealthy concentrations of criteria air pollutants that could result in adverse health outcomes. Therefore, this impact would be reduced to **less than significant**.

Impact 3.2-2: Potential to Generate Long-Term Operational Emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ in Exceedance of Thresholds

Implementing the project would not increase operational natural gas combustion beyond what is currently occurring at the project site. However, operation of the project would introduce vehicle trips, but these vehicle trips would not generate emissions of ROG, NO_X, PM_{10}, or $PM_{2.5}$ in exceedance of BAAQMD's thresholds of significance. Therefore, this impact would be **less than significant**.

Implementing the project would not result in any natural gas combustion beyond baseline conditions at the existing project site. However, there would be an increase in the number of vehicle trips to the project site associated with maintenance of the facility, which would be the only source of operational emissions of criteria air pollutants and ozone precursors. Table 3.2-5 summarizes the maximum emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ from operations during the first year of operation (2024).

Table 3.2-5 Summary of Maximum Operational Emissions of Criteria Air Pollutants and Precursors from the Project (2024)

Emissions Source	ROG (lb/day)	NO_X (lb/day)	PM_{10} (lb/day)	PM_{10} (tpy)	$PM_{2.5}$ (lb/day)	$PM_{2.5}$ (tpy)
Area	3	0	0	0	0	0
Energy	0	0	0	0	0	0
Mobile	<1	<1	<1	<1	<1	<1
Total emissions	3	<1	<1	<1	<1	<1
BAAQMD threshold of significance	54	54	82	15	54	10

Notes: ROG = reactive organic gases; lb/day = pounds per day; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; tpy = tons per year; BAAQMD = Bay Area Are Quality Management District.

Total values may not sum exactly because of rounding. See Appendix B for detailed input parameters and modeling results.

Source: Modeling performed by Ascent Environmental in 2022.

As shown above in Table 3.4-5, the project's operational emissions would not exceed BAAQMD's thresholds of significance. BAAQMD's project thresholds are intended to maintain or achieve attainment designations in the SFBAAB with respect to the CAAQS and NAAQS. Projects that do not exceed BAAQMD's thresholds would therefore not contribute to nonattainment designations, because these levels of emissions would have been accounted for the BAAQMD's long-term air quality planning (i.e., *2017 Clean Air Plan: Spare the Air, Cool the Climate*).

Because implementation of the project would not result in operational emissions above BAAQMD's recommended thresholds for ROG, NO_X, PM_{10} and $PM_{2.5}$, it would not contribute to a violation of any air quality standard or contribute substantially to an existing or projected air quality violation. Because the ambient air quality standards are established to be protective of public health, adverse health impacts related to exposure to ozone and PM would likely not be caused by the project's operational emissions. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.2-3: Potential to Expose Sensitive Receptors to TACs

Construction of the project would occur over a 1.5-year period and would not generate substantial exhaust PM_{10} emissions that could adversely affect sensitive receptors near the project site. Because of the low level of diesel PM emissions that would be generated by construction activity on the project site, the relatively short duration of diesel PM–emitting construction activity at the project site (i.e., 1.5 years), the highly dispersive properties of diesel PM, and the linear nature of construction activity, incremental short-term construction emissions would not generate TAC emissions that could result in a cancer risk greater than 10 in one million or a hazard index greater than 1.0. Furthermore, operation of the project would not introduce any new stationary sources of pollution and would introduce, on average, one new vehicle trip per day associated with maintenance activities. Therefore, operational emissions would also not generate TAC emissions that could result in a cancer risk greater than 10 in one million or a hazard index greater than 1.0. Therefore, the project would not expose sensitive receptors to TACS and this impact would be **less than significant**.

Construction

Particulate exhaust emissions from diesel-fueled engines (i.e., diesel PM) were identified as a TAC by CARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed above in Section 3.2.2, "Environmental Setting," outweighs the potential for all other health impacts (i.e., noncancer chronic risk, short-term acute risk) and health impacts from other TACs (CARB 2003: K-1). Regarding exposure to diesel PM, the dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. It is positively correlated with time, meaning that a longer exposure period would result in a higher level of health risk for any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period. According to the Office of Environmental Health Hazard Assessment, when an HRA is prepared to project the results of exposure of sensitive receptors to selected compounds, exposure of sensitive receptors to TAC emissions should be based on a 70- or 30-year exposure period; however, such assessments should be limited to the duration of activities associated with a project if emissions would occur for shorter periods (OEHHA 2015: 5-23, 5-24).

Nevertheless, it is becoming more common for HRAs to be conducted for construction projects with durations shorter than 70 and 30 years if certain conditions are met. For construction projects that occur close to sensitive receptors or construction projects that require the use of overlapping, high-emitting heavy-duty equipment, an HRA may be conducted to assess incremental increases in cancer risk. However, project-related construction activities that would be in close proximity to sensitive receptors are associated with construction of the approximately 16-mile MSS brine transport pipeline, and construction would proceed linearly along this alignment at a rate of approximately 150 feet per day. Thus, no one location would experience high levels of construction activity for a prolonged period.

The TAC that is the focus of this analysis is diesel PM because it is known that diesel PM would be emitted during project construction and operation. Although other TACs exist (e.g., benzene, 1,3-butadiene, hexavalent chromium, formaldehyde, methylene chloride), they are associated primarily with industrial operations, and the project would not include any industrial sources of other TACs.

Construction-related activities would result in temporary, intermittent emissions of diesel PM from the exhaust of off-road equipment and on-road heavy-duty trucks. The project would incorporate the use of Tier 4 Final engines to reduce exhaust emissions. Construction-related emissions modeling was conducted to estimate the maximum daily emissions of exhaust PM_{10} as a surrogate for diesel PM. While a portion of these emissions would be related to haul trucks, on-road diesel-powered haul trucks traveling to and from the construction area to deliver materials and equipment are less of a concern because they would not operate at any one location for an extended period such that they would expose a single receptor to excessive diesel PM emissions. Nevertheless, based on the construction-related emissions modeling conducted (see Appendix B), maximum daily emissions of exhaust PM_{10} would be less than 2 pounds during peak construction.

This total is below the BAAQMD-recommended threshold of 82 lb/day for exhaust emissions.

Because construction activity on the project site would generate a relatively low mass of diesel PM emissions (i.e., 2 lb/day of exhaust PM_{10}); diesel PM–emitting construction activity at the project site would occur for a relatively short duration —(i.e., 1.5 years); diesel PM is highly dispersive; the majority of construction is linear and no single area would be exposed to emissions for more than a day or two; and heavy-duty construction equipment would use Tier 4 Final engines which emit reduced levels of exhaust, construction-related TAC emissions would not expose sensitive receptors to an incremental increase in cancer risk greater than 10 in one million or a hazard index greater than 1.0.

Operation

Operation of the project would not require any stationary equipment that would emit TACs beyond what is currently used at the project site. The project would, however, introduce, on average, one new vehicle trip per day to the project site associated with maintenance activities. This level of new vehicle trips would not generate TAC emissions that could result in a cancer risk greater than 10 in one million or a hazard index greater than 1.0.

Summary

Because TAC emissions from construction and operation of the project would not expose sensitive receptors to an incremental increase in cancer risk greater than 10 in one million or a hazard index greater than 1.0, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

3.3 BIOLOGICAL RESOURCES

This section addresses common and sensitive biological resources that could be affected by implementation of the project. This evaluation is based on data collected during focused reconnaissance-level surveys of representative portions of the project site and from publicly available databases, including the following:

- Reconnaissance-level surveys conducted on June 4, 2020, June 2, 2021, June 4, 2021, June 6, 2021, and August 6, 2021. The reconnaissance-level surveys focused on the Solar Salt Facility improvement area (Ponds 12, 13, and portions of Pond 10 and the Don Edwards San Francisco Bay National Wildlife Refuge [Refuge]); a representative ecologically sensitive southern portion of the proposed MSS brine transport pipeline alignment (along Thornton Avenue from approximately Marshlands Road to SR 84); and a representative upland and urban portion of the MSS brine transport pipeline alignment (from SR 84 to the intersection of Union City Boulevard and Horner Street).
- California Aquatic Resource Inventory (SFEI 2017) dataset (CARI) which is a compilation of best available data sources, including but not limited to the National Wetlands Inventory (USFWS 2022a); Natural Hydrography Dataset (USGS 1999); and the San Francisco Bay Area Aquatic Resource Inventory (SFEI 2011).
- California Department of Forestry and Fire Protection (CAL FIRE) FVEG raster representation of statewide vegetation (CAL FIRE 2015) which provides the "best available" land cover data available for California into a single comprehensive statewide data set compiled by the Fire and Resource Assessment Program (FRAP) in cooperation with the California Department of Fish and Wildlife (CDFW) VegCamp program.
- US Fish and Wildlife Service (USFWS) Environmental Conservation Online System Information on Planning and Consultation Resource Species List, which was used to identify federally listed species with potential to be affected by activities implemented in the project area (USFWS 2022b).
- National Marine Fisheries Service (NMFS) California Species List, for Newark, San Leandro, and Hayward US Geological Survey (USGS) topographic quadrangle maps (NMFS 2022).
- California Natural Diversity Database (CNDDB), as maintained by CDFW, including observations of special-status plant and wildlife species within the project and surrounding topographic quadrangle maps (Newark, San Leandro, Hayward, Redwood Point, Palo Alto, Mountain View, Milpitas, Niles, Dublin, Diablo, Las Trampas Ridge, Oakland East, Oakland West, Hunters Point, and San Mateo quadrangles) (CDFW 2022a); and within a 1-mile radius of the project, Alternative 2, and Alternative 3 alignments (CDFW 2022b).
- CDFW's comment letter in response to the project's notice of preparation (CDFW 2022c).
- The California Native Plant Society (CNPS) database on rare, threatened, or endangered plant species for the project and surrounding topographic quadrangle maps (15 total) (CNPS 2022a); and for the three project quadrangles within and surrounding the project footprint (Newark, Hayward, and San Leandro quadrangles) (CNPS 2022b).
- NMFS and USFWS Critical Habitats (NMFS 2021; USFWS 2022c); and
- Aerial photography and USGS topographic quadrangle maps.

The study area includes the project footprint and a 1-mile buffer. Data from the publicly accessible databases and other sources listed above were used to identify potential resources that may be present in the study area and project vicinity.

3.3.1 Regulatory Setting

FEDERAL

Federal Endangered Species Act

Pursuant to the federal Endangered Species Act (ESA) (16 US Code Section 1531 et seq.), USFWS regulates the taking of species listed in the ESA as threatened or endangered. In general, persons subject to the ESA (including private parties) are prohibited from "taking" endangered or threatened fish and wildlife species on private property, and from "taking" endangered or threatened plants in areas under federal jurisdiction or in violation of state law. Under Section 9 of the ESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." USFWS has also interpreted the definition of "harm" to include significant habitat modification that could result in take.

Section 10 of the ESA applies if a nonfederal agency is the lead agency for an action that results in take and no federal agencies are involved in permitting the action. Section 7 of the ESA applies if a federal discretionary action is required (e.g., a federal agency must issue a permit), in which case the involved federal agency consults with USFWS.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, provides for protection of international migratory birds and authorizes the Secretary of the Interior to regulate the taking of migratory birds. The MBTA provides that it will be unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. Under the MBTA, "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities." A take does not include habitat destruction or alteration, as long as there is not a direct taking of birds, nests, eggs, or parts thereof. The current list of species protected by the MBTA can be found in Title 50 of the Code of Federal Regulations (CFR), Section 10.13 (50 CFR 10.13). The list includes nearly all birds native to the United States.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the primary law governing marine fisheries management in federal waters. The MSA was first enacted in 1976 and amended in 1996. Amendments to the 1996 MSA require the identification of Essential Fish Habitat (EFH) for federally managed marine fisheries and the implementation of measures to conserve and enhance this habitat.

The MSA requires federal agencies to consult with NMFS regarding actions that may adversely affect EFH. The MSA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." EFH is the marine habitat (waters and substrate) required to support a sustainable fishery and a managed species' contribution to a healthy ecosystem. Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish. Substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities.

Any project action within a federally managed marine fishery requiring federal authorization, such as a US Army Corps of Engineers (USACE) permit, is required to complete and submit an EFH assessment with the application and either show that no adverse effects to the essential habitat of managed species are expected or identify measures to reduce those impacts. Federal agencies will consult with the NMFS regarding any action they authorize, fund, or undertake that might adversely affect EFH.

Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) was enacted on October 21, 1972, and was reauthorized by the MMPA amendments of 1994 (Public Law 103-238). Under the MMPA, all species of marine mammals are protected. The MMPA prohibits, with certain exceptions, the "take" of marine mammals. Under the MMPA, take is defined as the means, "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill." Harassment is defined as "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the

wild; or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to migration, breathing, nursing, breeding, feeding, [and] sheltering." Sections 101(a)(5)(A) and (D) of the MMPA (16 US Code 1361 et seq.) allow incidental take of marine mammals during specified activities under authorization of the Secretary of the Interior or the Secretary of the Department of Commerce, National Oceanic and Atmospheric Administration's Office of Protected Resources, and if the total take would have a negligible impact on the species.

Refuge Recreation Act of 1962, the 1997 National Wildlife Refuge System Improvement Act, and Selected Portions of the Code of Federal Regulations and the US Fish and Wildlife Service Manual

The Solar Salt Facility is partially located within the Refuge. Federal refuges are guided by the mission and goals of the National Wildlife Refuge System (Refuge System), USFWS policy, laws, and international treaties. Relevant guidance includes the Refuge Recreation Act of 1962, the 1997 Refuge System Improvement Act, and selected portions of the CFR and the USFWS Manual. Refuges are also governed by a variety of other federal laws, executive orders, treaties, interstate compacts, regulations, and policies pertaining to the conservation and protection of natural and cultural resources. The 1997 Refuge System Improvement Act's main components include:

- A strong and singular wildlife conservation mission for the Refuge System.
- Recognition of six priority public uses of the Refuge System (hunting, fishing, wildlife observation and photography, and environmental education and interpretation).
- A requirement that the Secretary of the Interior maintain the biological integrity, diversity, and environmental health of Refuge System lands.
- A new process for determining compatible uses on refuges.
- A requirement for preparing a comprehensive conservation plan for each refuge by 2012.

A *Final Comprehensive Conservation Plan and Environmental Assessment for the Don Edwards San Francisco Bay National Wildlife Refuge* was adopted by USFWS in 2013 (USFWS 2013a). The plan goals and policies are detailed in the "Local" section, below.

Federal Clean Water Act, Section 404

The Clean Water Act is the primary federal law that protects the quality of the nation's waters, including wetlands, lakes, rivers, and coastal areas. Section 404 of the Clean Water Act regulates the discharge of dredged or fill material into the waters of the United States, including wetlands. The Clean Water Act holds that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; issuance of such permits constitutes its principal regulatory tool. USACE is authorized to issue Section 404 permits, which allow the placement of dredged or fill materials into jurisdictional waters of the United States under certain circumstances. USACE issues two types of permits under Section 404: general permits, which are either nationwide permits or regional permits, and standard permits, which are either letters of permission or individual permits. General permits are issued by USACE to streamline the Section 404 permitting process for nationwide, statewide, or regional activities that have minimal direct or cumulative environmental impacts on the aquatic environment. Standard permits are issued for activities that do not qualify for a general permit because they may have more than a minimal adverse environmental impact.

Federal Clean Water Act, Section 401

Under the Clean Water Act Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality, including projects that require federal agency approval, such as issuance of a Section 404 permit, must also comply with Clean Water Act Section 401 and California's Porter-Cologne Water Quality Control Act.

STATE

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA), a permit from CDFW is required for projects that could result in the "take" of a plant or animal species that is listed by the state as threatened or endangered. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but does not include "harm" or "harass," as does the federal definition. As a result, the threshold for take is higher under CESA than under the federal ESA. Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2081 incidental take permit.

California Fish and Game Code Sections 3503, 3503.5, 3511, 4700, 5050, and 5515

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 of the California Fish and Game Code states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders *Falconiformes* and *Strigiformes*), including their nests or eggs. Typical violations include destruction of active nests as a result of tree removal or disturbance caused by project construction or other activities that cause the adults to abandon the nest, resulting in loss of eggs and/or young.

Protection of other fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species and do not provide for authorization of incidental take.

California Fish and Game Code Sections 1600–1616

CDFW has jurisdictional authority over streams and lakes, as well as wetland resources associated with these aquatic systems, under California Fish and Game Code Section 1600 et seq. CDFW has the authority to regulate work that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from, the bed, channel, or bank of any river, stream, or lake or deposit or dispose of debris waste or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake" (California Fish and Game Code Section 1602). An entity that proposes to carry out such an activity must first inform CDFW. Where CDFW concludes that the activity will "substantially adversely affect an existing fish or wildlife resource," the entity proposing the activity must negotiate an agreement with CDFW that specifies terms under which the activity may be carried out in a way that protects the affected wildlife resource.

California Native Plant Protection Act

The California Native Plant Protection Act (California Fish and Game Code 1900–1913), Natural Communities Conservation Planning Act, and CESA provide guidance on the preservation of plant resources. Vascular plants listed as rare or endangered by CNPS, but which may have no designated status or protection under federal or state endangered species legislation, are defined as follows:

- Rank 1A: Plants presumed to be extirpated in California and either rare or extinct elsewhere.
- Rank 1B: Plants rare, threatened, or endangered in California and elsewhere.
- Rank 2A: Plants presumed to be extirpated in California, but more common elsewhere.
- Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.
- Rank 3: Plants about which more information is needed—a review list.
- Rank 4: Plants of limited distribution—a watch list.

In general, plants listed as CNPS Ranks 1A, 1B, 2A, or 2B also meet the definition of endangered or rare native plants of California under California Fish and Game Code 1901, Chapter 10 of the Native Plant Protection Act, and California Fish and Game Code 2062 and 2067. Under the Native Plant Protection Act, CDFW may adopt regulations governing the taking, possession, propagation, transportation, exportation, importation, or sale of any endangered or rare native plants. Such regulations can include requiring CDFW permits for such activities.

Porter-Cologne Water Quality Control Act

California Water Code Section 13260 requires "any person discharging waste, or proposing to discharge waste, in any region that could affect the waters of the state to file a report of discharge (an application for waste discharge requirements [WDRs])." Under the Porter-Cologne Water Quality Control Act definition, waters of the state are "any surface water or groundwater, including saline waters, within the boundaries of the state." Although all waters of the United States that are within the borders of California are also waters of the state, the reverse is not true. Accordingly, California retains authority to regulate discharges of waste into any waters of the state, regardless of whether USACE has concurrent jurisdiction under Clean Water Act Section 404. If USACE determines that a wetland is not subject to regulation under Section 404, a Clean Water Act Section 401 water quality certification is not required. However, the Regional Water Quality Control Board (RWQCB) may impose WDRs if fill material is placed into waters of the state.

McAteer-Petris Act and the San Francisco Bay Plan

Administered by the San Francisco Bay Conservation and Development Commission (BCDC), the McAteer-Petris Act and the San Francisco Bay Plan (Bay Plan) (BCDC 2020) contain sections and policies that are relevant to biological resources within BCDC's Bay and shoreline jurisdiction. This includes (but is not necessarily limited to) the following:

McAteer-Petris Act

- **Section 66602.1. Salt Ponds.** The [California] Legislature further finds and declares that areas diked off from the bay and used as salt ponds and managed wetlands are important to the Bay Area in that, among other things, such areas provide a wildlife habitat and a large water surface which, together with the surface of the bay, moderate the climate of the Bay Area and alleviate air pollution;

    i. That it is in the public interest to encourage continued maintenance and operation of the salt ponds and managed wetlands;

    ii. That, if development is proposed for these areas, dedication or public purchase of some of these lands should be encouraged in order to preserve water areas; and

    iii. That, if any such areas are authorized to be developed and used for other purposes, the development should provide the maximum public access to the bay consistent with the proposed project and should retain the maximum amount of water surface area consistent with the proposed project.

- **Section 66605. Fill.** The Legislature further finds and declares…[t]hat the nature, location, and extent of any fill should be such that it will minimize harmful effects to the Bay Area, such as, the reduction or impairment of the volume surface area or circulation of water, water quality, fertility of marshes or fish or wildlife resources, or other conditions impacting the environment, as defined in Section 21060.5 of the Public Resources Code.

Bay Plan Part III. The Bay as a Resource: Fish, Other Aquatic Organisms and Wildlife Policies

- **Policy 1.** To assure the benefits of fish, other aquatic organisms and wildlife for future generations, to the greatest extent feasible, the bay's tidal marshes, tidal flats, and subtidal habitat should be conserved, restored and increased.

- **Policy 2.** Native species, including candidate, threatened, and endangered species that CDFW, NMFS, and/or USFWS have listed under the CESA or federal ESA; and any species that provides substantial public benefits, as well as specific habitats that are needed to conserve, increase, or prevent the extinction of these species, should be protected, whether in the bay or behind dikes. Protection of fish, other aquatic organisms, and wildlife and their habitats may entail placement of fill to enhance the bay's ecological function in the near-term and to ensure that they persist into the future with sea level rise.

- **Policy 4.** BCDC should:

Consult with CDFW, and USFWS or NMFS, whenever a proposed project may adversely affect an endangered or threatened plant, fish, other aquatic organism or wildlife species;

Not authorize projects that would result in the "taking" of any plant, fish, other aquatic organism or wildlife species listed as endangered or threatened pursuant to CESA or the federal ESA, or the federal MMPA, or species that are

candidates for listing under these acts, unless the project applicant has obtained the appropriate "take" authorization from USFWS, NMFS or CDFW; and

Give appropriate consideration to the recommendations of CDFW, NMFS or USFWS in order to avoid possible adverse effects of a proposed project on fish, other aquatic organisms and wildlife habitat.

Bay Plan Part III. The Bay as a Resource: Tidal Marshes and Tidal Flats Policies

- **Policy 1.** Tidal marshes and tidal flats should be conserved to the fullest possible extent. Filling, diking, and dredging projects that would substantially harm tidal marshes or tidal flats should be allowed only for purposes that provide substantial public benefits and only if there is no feasible alternative.
- **Policy 2.** Any proposed fill, diking, or dredging project should be thoroughly evaluated to determine the effect of the project on tidal marshes and tidal flats, and designed to minimize, and if feasible, avoid any harmful effects.
- **Policy 3.** Projects should be sited and designed to avoid, or if avoidance is infeasible, minimize adverse impacts on any transition zone present between tidal and upland habitats. Where a transition zone does not exist and it is feasible and ecologically appropriate, shoreline projects should be designed to provide a transition zone between tidal and upland habitats.
- **Policy 10.** Based on scientific ecological analysis, project need, and consultation with the relevant federal and state resource agencies, fill may be authorized for habitat enhancement, restoration, or sea level rise adaptation of habitat.

Bay Plan Part III. The Bay as a Resource: Subtidal Areas Policies

- **Policy 1.** Any proposed filling or dredging project in a subtidal area should be thoroughly evaluated to determine the local and bay-wide effects of the project on: (a) the possible introduction or spread of invasive species; (b) tidal hydrology and sediment movement; (c) fish, other aquatic organisms and wildlife; (d) aquatic plants; and (e) the bay's bathymetry. Projects in subtidal areas should be designed to minimize and, if feasible, avoid any harmful effects.

Bay Plan Part IV. Development of the Bay and Shoreline Mitigation Policies

- **Policy 1.** Projects should be designed to avoid adverse environmental impacts to bay natural resources such as to water surface area, volume, or circulation and to plants, fish, other aquatic organisms and wildlife habitat, subtidal areas, or tidal marshes or tidal flats. Whenever adverse impacts cannot be avoided, they should be minimized to the greatest extent practicable. Finally, measures to compensate for unavoidable adverse impacts to the natural resources of the bay should be required. Mitigation is not a substitute for meeting the other requirements of the McAteer-Petris Act.

Bay Plan Part V. The Plan Maps (Plan Map 6 – Central Bay South Map): Policies

- **Policy 4.** Hayward Shoreline – Preserve interpretive center. Continue to manage for wildlife habitats and wildlife, and provide wildlife compatible recreation activities. Maintain trails and continue to provide environmental education.
- **Policy 5.** If not needed for salt production, ponds west of Coyote Hills should be restored consistent with management objectives for the Don Edwards San Francisco Bay National Wildlife Refuge.

Bay Plan Part V. The Plan Maps (Plan Map 7 – Central Bay South Map): Policies

- **Policy 1.** If not needed for salt production, ponds west of Coyote Hills should be restored consistent with management objectives for the Don Edwards San Francisco Bay National Wildlife Refuge.
- **Policy 2.** Coyote Hills Regional Park: Preserve multi-use public access along Alameda Creek Trail to Don Edwards San Francisco Bay National Wildlife Refuge and to SR 84 toll plaza crossing. Preserve visitor's center, picnic areas, camping, multi-use trails, and naturalist programs. Protect tidal wetlands and provide opportunities for wildlife observation and non-motorized small boat access.

- **Policy 4.** Newark Slough to Coyote Creek: Protect harbor seal haul-out and pupping sites where harbor seals rest, give birth and nurse their young. Projects allowed only if protective of harbor seals and other sensitive wildlife.

California Department of Transportation

The California Department of Transportation (Caltrans) requires any project seeking an encroachment permit to work within their right of way to be in compliance with all state and federal environmental laws and regulations. Caltrans's encroachment permit process requires applicants to provide an approved environmental document, as well as other supporting plans and documents, to accompany an encroachment permit application. Caltrans environmental review is required for projects or project components affecting Caltrans's right-of-way, such as state route crossings. (Caltrans n.d.).

LOCAL

Alameda County General Plan

The Alameda County General Plan Open Space Element (Alameda County 1994) includes the biological resource policies listed below. While the Alameda County General Plan includes several more recent specific plans, none apply to the project.

- **Include Existing, Potential, and Depleted Wildlife Habitats.** Existing and potential marine and wildlife habitats should be preserved in a natural, undeveloped state as part of the open space plan, as a means of preserving and attracting wildlife. Depleted habitats adaptable to restoration should also be included as open space. Habitats established as sanctuaries or refuges should be closed to the public, except for ecological study in selected areas. "Limit Development Within Open Space Areas - Development within open space areas should be permitted in selected areas and should be limited to facilities allowed by the applicable land use designation.
- **Preserve Large, Continuous Areas of Open Space.** Large, continuous areas of open space, protected from intrusion by development should be preserved. Examples would be San Francisco Bay, the East Bay hills, and the hills surrounding the Livermore-Amador Valley.
- **Protect Open Space from Intrusion by Public Projects.** Planned open space should be protected from intrusion by massive public works projects, such as freeways and airports, wherever possible. Proposed projects, such as reservoirs and aqueducts, should be designed to permit compatible recreation development.
- **Utility Lines to Be Consolidated and Located to Avoid Scenic Areas.** Wherever feasible, power and pipe utility lines, should be consolidated to prevent further severance of open space lands. Utility lines and aqueducts in open space areas should be located so as to avoid areas of outstanding beauty.
- **Natural Resources Within Open Space Areas Should Be Permanently Protected.** Within open space areas, either publicly or privately owned, removal of mature trees should not be permitted without the permission of the local authority. Alteration of streambeds or bodies of water and adjacent vegetation should be permitted only as a means of erosion or flood control, as permitted by the adopted plans of regional or local jurisdictions, and in such a manner to enhance water courses, scenic shoreline and marshlands within the county.
- **Preserve Natural Ecological Habitats in Shoreline Areas.** Outstanding natural ecological habitats in shoreline areas of the County should be designated for protection and maintenance as wildlife preserves as a means of protecting marine and wildlife and to permit ecological studies.
- **Provide Continuity in Shoreline Open Space.** Wherever possible, continuous shoreline open space, both public and private, should be provided; all public shoreline open space should be connected by continuous systems of trails and scenic routes to provide public access to San Francisco Bay.
- **Bay or Marsh Filling and Development Should Not Be Permitted Except in Selected Areas for Recreational Use.** Even though demand for public and private uses of the Bay and shoreline will intensify, filling of bay or marshland or development of major shoreline uses, other than public park and recreation in selected areas, should not be permitted.

- **Provide for Orderly Transition of Phased Out Salt Extraction Areas to Uses Compatible with the Open Space Plan.** Salt extraction areas, which will be operative through the plan period, should be designated as permanent open space. Areas that will not be active through the plan period should be phased out according to a planned program in such a manner as to maintain salt production cycles. Phased out areas should be converted co uses permitted within waterfront open spaces such as wildlife refuges or recreation areas. No filling of salt extraction areas should be permitted except for recreation purposes in selected areas as indicated on adopted local or regional plans.

Hayward General Plan

The Hayward General Plan includes the following biological resource goals and policies (City of Hayward 2014):

GOAL NR-1: Protect, enhance, and restore sensitive biological resources, native habitat, and vegetation communities that support wildlife species so they can be sustained and remain viable.

- **Policy NR-1.1: Native Wildlife Habitat Protection.** The City shall limit or avoid new development that encroaches into important native wildlife habitats; limits the range of listed or protected species; or creates barriers that cut off access to food, water, or shelter of listed or protected species.
- **Policy NR-1.2: Sensitive Habitat Protection.** The City shall protect sensitive biological resources, including State and Federally designated sensitive, rare, threatened, and endangered plant, fish, and wildlife species and their habitats from urban development and incompatible land uses.
- **Policy NR-1.3: Sensitive Species Identification, Mapping, and Avoidance.** The City shall require qualified biologists to identify, map, and make recommendations for avoiding all sensitive biological resources on the project site, including State and Federally sensitive, rare, threatened, and endangered plant, fish, and wildlife species and their habitats using methods and protocols in accordance with the US Fish and Wildlife Service, California Department of Fish and Wildlife, and California Native Plant Society for all development applications proposed within sensitive biological resource areas.
- **Policy NR-1.4: Shoreline Protection and Enhancement.** The City shall coordinate with the Hayward Area Shoreline Planning Agency, Bay Conservation and Development Commission, and California Coastal Commission to conserve, protect, and enhance natural and cultural resources along the San Francisco Bay shoreline by balancing uses that support multiple community needs, such as recreation, tourism, cultural resource preservation, and natural resource protection.
- **Policy NR-1.5: Large-Scale Natural Area Access.** The City shall support efforts to improve access to publicly owned large-scale natural areas located within the Planning Area, including the shoreline, creeks, regional parks, riparian corridors, and hillside open space areas, by allowing them to be open for controlled access to improve public enjoyment and education, while also limiting access to extremely sensitive natural habitat and minimizing human-related environmental impacts.
- **Policy NR-1.6: Migratory Bird Habitat Protection.** The City shall support the efforts of the Hayward Area Shoreline Planning Agency and other agencies to preserve and protect tidal flats and salt ponds with low salinity for migratory waterfowl that depend on these areas.
- **Policy NR-1.9: Native Plant Species Protection and Promotion.** The City shall protect and promote native plant species in natural areas as well as in public landscaping.
- **Policy NR-1.12: Riparian Corridor Habitat Protection.** The City shall protect creek riparian corridor habitats by:
  - Requiring sufficient setbacks for new development adjacent to creek slopes,
  - Requiring sensitive flood control designs to minimize habitat disturbance,
  - Maintaining natural and continuous creek corridor vegetation,
  - Protecting/replanting native trees, and

- Protecting riparian plant communities from the adverse effects of increased stormwater runoff, sedimentation, erosion, and pollution that may occur from improper development in adjacent areas.

Union City General Plan

The Union City General Plan includes the following biological resource goals and policies (City of Union City 2019):

GOAL RC-1: To provide for a continuous system of open spaces for the preservation, enhancement and protection of open space land.

- Policy RC-1.8: Protection of Significant Open Space Resources. All significant open space resources (i.e., identified habitat for wildlife and rare, threatened, or endangered plant species, etc.) shall, to the extent feasible be protected or avoided through project design and appropriate mitigation. Removal of vegetation should be minimized, and replanting required to maintain soil stability, prevent erosion, and maximize regeneration. Existing wildlife habitats should be protected in a natural and undeveloped state as part of open space areas and as a means of preserving and attracting wildlife. Depleted habitats adaptable to restoration should also be included as open space where appropriate.
- Policy RC-1.9: Limit Development in Open Space Areas. Development within a designated open space area will be permitted only in select areas and will be limited to facilities needed in conjunction with low density recreational areas or select public facilities. Manmade structures shall be subordinate to and not conflict with the quality of the open space. The City shall prohibit inappropriate uses of open space, such as off-road motorized vehicles, to prevent environmental damage and preserve the quality of the open space. Grading, tree removal, or other disturbance within designated open space areas shall only be permitted when plans for such activities have been approved by the City and found necessary for protection or enhancement of the open space or to provide for safe and enjoyable public use of the open space resource.

GOAL RC-2: To protect, restore, and enhance important biological habitats and their associated plant, wildlife, and fish species throughout Union City and educate people as to this need.

- Policy RC-2.1: Preserve Significant Natural Resources. The City shall commit to preservation of significant natural resources, including wetlands, bay shores, hillside areas, and significant plant, animal, and fish habitats.
- Policy RC-2.2: Require Biological Surveys. The City shall require a site survey by a qualified biologist for sites that have the potential to contain critical or sensitive habitat or special-status species or sites within 100 feet of such areas. Appropriate mitigation measures shall be incorporated into the project as necessary to protect the resources.
- Policy RC-2.10: Nesting Bird Protection. The City shall require project applicants to retain the services of a qualified biologist(s) to conduct a pre-construction nesting bird survey during the nesting season (February 1 through August 31) prior to all new development that may remove any trees or vegetation that may provide suitable nesting habitat for migratory birds or other special-status bird species. If nests are found, the qualified biologist(s) shall identify appropriate avoidance measures, and these measures shall be incorporated into the project and implemented accordingly.

Fremont General Plan

The Fremont General Plan (City of Fremont 2011) identifies several biological resource policies for projects within the City, as listed below. The Fremont General Plan also notes that salt harvesting operations in this area are regulated to ensure that they are consistent with habitat protection and restoration goals.

- Policy 7-1.1: Preservation of Natural Habitat. Preserve and protect fish, wildlife, and plant species and their habitats including wetlands, creeks, lakes, ponds, saltwater bodies and other riparian areas. Maintain these areas for their critical biological values and to help improve water quality.
  - Implementation 7-1.1.A: Protect Riparian and Wetland Areas. Preserve and minimize impacts to natural and semi-natural wetland areas, including riparian corridors, vernal pools and their wildlife habitat through the development and environmental review process. Riparian areas and wetlands should be protected and/or

restored as project amenities. Require mitigation for potential significant environmental impacts on riparian areas from development.

- **Implementation 7-1.1.B: Evaluate Development near Bodies of Water.** Evaluate development within 100 feet of the top of bank of riparian areas and water bodies, including creeks, lakes, ponds, marshes, and vernal pools. This distance shall be increased to 200 feet in areas above the toe of the hill. Carefully assess the extent and characteristics of riparian corridors and creeks to a minimum distance of 100 feet from the top of bank below the toe of the hill and 200 feet from the top of bank above the toe of the hill. Consider the full spectrum of habitat needs for vegetation and wildlife in environmental assessments of these areas.
- **Implementation 7-1.1.C: Control Measures to Limit Soil Erosion.** Implement control measures in riparian areas to prevent soil erosion and minimize runoff of excess nutrients, sediments and pesticides. Provide for maximum retention of natural vegetation and topographic features adjacent to the buffer described in Implementation 7-1.1.B.
- **Implementation 7-1.1.D: Conservation of Habitat and Natural Areas.** Require conservation, protection and/or revegetation of habitat and natural areas for nesting, foraging and retreat for projects that impact such areas.

- **Policy 7-1.2: Protection of Species.** Preserve and protect rare, threatened, endangered and candidate species and their habitats consistent with state and federal law.
  - **Implementation 7-1.2.A: Creation of Habitat Protection Areas.** Work with public and private entities to establish habitat protection areas to provide habitat for rare, threatened, endangered or candidate species. Designate these areas as open space and regulate development within these areas.
  - **Implementation 7-1.2.B: Weed Abatement.** Develop regulations that address the habitat impacts from weed abatement and the draining and disking of fields, grasslands, wetlands and other potential wildlife habitat areas.
  - **Implementation 7-1.2.C: Limit Development in Habitat Protection Areas.** Evaluate and limit development near designated habitat protection areas unless sufficient mitigation can be provided to reduce impacts to insignificant levels.
  - **Implementation 7-1.2.D: Mitigation of Special Status Species.** When off-site mitigation is required for special-status species, require that mitigation be provided within the City of Fremont to the maximum extent practical. If not practical in the City of Fremont require mitigation in Alameda County, followed by the nine-county Bay Area.
- **Policy 7-1.4: Open Space Frame.** Maintain and expand the Open Space Frame.
  - **Implementation 7-1.4.A: Limit Development of Open Space.** In lands outside of the urban growth boundary regulate the type and amount of development to preserve open space characteristics and values while considering the needs of private property owners and public or quasi-public agencies.
- **Policy 7-1.7: Mitigate Development Impacts.** Mitigate the impacts of development on the natural environment to the extent possible through sound planning, design, and management of development projects.
  - **Implementation 7-1.7.A: Evaluate Projects with CEQA.** Evaluate development projects for impacts to the natural environment per the California Environmental Quality Act (CEQA) and require measures to mitigate potential impacts to less than significant levels.
- **Policy 7-1.8: Urban Forest**. Promote and protect the City's urban forest and maintain healthy tree resources within the City.
  - **Implementation 7-1.8.D: Tree Preservation Ordinance.** Enforce the City's Tree Preservation ordinance and continue to make information regarding the ordinance easily available to the public and development community.
  - **Implementation 7-1.8.E: Tree Removal Requests.** Continue to carefully review tree removal permit requests for conformance with City removal criteria (i.e., fire or safety risk, state of disease).

- **Policy 7-2.1: Preservation of Water Resources.** Water resources such as the Niles Cone Groundwater Basin, wetlands, flood plains, recharge zones, riparian areas, open space and native habitats should be identified, preserved and restored as valued assets for flood protection, water quality improvement, groundwater recharge, habitat, and overall long term water resource sustainability.
  - **Implementation 7-2.1.A: Development Near Riparian Areas.** Require proposed projects near riparian areas to protect the aesthetic, recreational and biological benefits consistent with flood control and recharge objectives.
  - **Implementation 7-2.1.B: Creek Master Plans.** Where funding is available, develop master plans for creek watersheds. Where such plans already exist, such as for Laguna Creek, continue to implement the plan.

Newark General Plan

Project activities in Newark would be subject to the biological resource policies in the Newark General Plan (City of Newark 2013), as listed below. The Newark General Plan also recognizes that Cargill has the perpetual right to use salt evaporator ponds within the Don Edwards San Francisco Bay National Wildlife Refuge for its solar salt production system.

Environmental Protection

- **Policy CS-1.1: Environmental Impacts of Development.** Ensure that development minimizes its impacts on Newark's environment and natural resources through sound planning, design, and management.
- **Policy CS-1.2: Conservation of Sensitive Areas.** Support the conservation of environmentally sensitive areas and unique natural resources in the city.
- **Policy CS-1.4: Soil Erosion.** Identify and eliminate erosion problems on public and private lands. The potential for erosion should be considered as a design and engineering factor in new development.

Wetland Conservation

- **Policy CS-2.1: Wildlife and Habitat Protection.** Preserve and protect Newark's plant and animal species and habitats, including wetlands, salt marshes, creeks, and lakes. Ensure that land use decisions avoid and mitigate potential impacts on wildlife habitat to the extent feasible.
- **Policy CS-2.2: Special-Status Species.** Ensure that adverse impacts on special-status species, including those deemed rare, threatened, endangered, or candidate species for protection, are avoided and mitigated to the greatest extent feasible as development takes place.
- **Policy CS-2.3: National Wildlife Refuge.** Encourage the preservation and maintenance of the Don Edwards San Francisco Bay National Wildlife Refuge by the USFWS, including the management of salt ponds to enhance their value for wildlife habitat.
- **Policy CS-2. 5: Development Near Wetlands.** Manage land use and development on upland sites in a manner that minimizes off-site impacts to nearby wetlands.
- **Policy CS-2. 6: Salt Pond Management.** Encourage the management of salt ponds within the Don Edwards San Francisco Bay National Wildlife Refuge by the USFWS to enhance to enhance their value for wildlife habitat and recreation. Such activities should be consistent with Cargill's perpetual rights to utilize the salt ponds as part of its solar salt production system.
- **Policy CS-2. 8: Location of Mitigation.** When off-site mitigation to address wetland impacts is necessary, encourage mitigation to be provided as close as possible to the affected site.

Local Tree Ordinances

The project would be located in portions of San Lorenzo, an unincorporated community in Alameda County, and portions of the Cities of Hayward, Union City, Fremont, and Newark. Each of these municipalities have municipal codes or ordinances related to tree trimming or removal, as listed below.

- **Fremont Municipal Code – Maintenance of Street Trees and Sidewalks.** This article regulates the planting, pruning and removal of street trees by persons or entities other than the city of Fremont. A person may not remove a street tree except when authorized by a street tree permit; by an approved development plan; or when authorized by the city manager in an emergency
- **Newark Municipal Code – Trimming or removing trees.** Newark permits tree trimming only when and in the manner authorized by a permit issued pursuant to this the municipal code. Tree removals permits can only be issued when a necessity for removal exists, and adjacent property owners concur, or when deemed necessary by the Newark city engineer.
- **Union City Municipal Code – Trees, Shrubs, and Plants.** It is unlawful for any person to cut, trim, remove, mutilate, injure, or in any way impair the growth of any tree being or growing in or on any street, park, or public place in the City of Union City, or to cause or permit the same to be done. If tree trimming or removal is needed, an application shall first be made to the Public Works Director of the City of Union City for a permit. Upon receipt of such application, the Director may cause an inspection to be made and may thereafter issue or refuse to issue a permit for such work.
- **Hayward Tree Preservation Ordinance.** The Hayward Tree Preservation Ordinance requires obtaining a perming to trim or remove protected trees including street trees. Like-size and like-kind replacement of removed or disfigured trees is also required.
- **Alameda County Tree Ordinance.** Tree removal in the right-of-way requires authorization by the County Director through an encroachment permit. The Director has the authority to require tree replacement.

Don Edwards San Francisco Bay National Wildlife Refuge: Final Comprehensive Conservation Plan and Environmental Assessment

The Solar Salt Facility is partially located within the Refuge. USFWS prepared the Refuge's Final Comprehensive Conservation Plan and Environmental Assessment to guide refuge management for 15 years (USFWS 2013a). Refuge goals identified in the plan include the following:

GOAL 1. Protect and contribute to the recovery of endangered, threatened, and other special status species on the Refuge by conservation and management of the habitats on which these species depend.

GOAL 2. Conserve, restore, enhance, create, and acquire habitats to support the diversity and abundance of migratory birds and other native flora and fauna that depend on Refuge lands.

GOAL 3. Provide the local community and other visitors with compatible wildlife-oriented outdoor recreation opportunities to enjoy, understand, and appreciate the resources of the Refuge.

GOAL 4. Through diverse environmental education, interpretation, and outreach opportunities, increase public awareness of the Refuge's purpose and the ecosystem of San Francisco Bay Estuary and promote environmental stewardship and conservation.

GOAL 5. Instill community stewardship through volunteerism to support the Refuge's diverse purposes.

Hayward Regional Shoreline Adaptation Master Plan

The Hayward Regional Shoreline Adaptation Master Plan (Hayward Area Shoreline Planning Agency 2021) was commissioned in 2019 by the Hayward Area Shoreline Planning Agency, a joint powers agency consisting of representatives from the City of Hayward, East Bay Regional Park District, and Hayward Area Recreation and Park District. It creates a framework for resilience to prepare for sea level rise, groundwater intrusion, and storm surge. The Hayward Regional Shoreline Adaptation Master Plan project area is bounded on the north by Bockman Channel and extends approximately 3.25 miles south to the SR 92 San Mateo Bridge approach. This coverage area includes Oro Loma Marsh, which is adjacent to the northern segment of the MSS brine transport pipeline alignment.

While the plan primarily focuses on shoreline resiliency, the following plan goals relate to biological resources:

- Enhance the shoreline's ecological value and adapt to sea level rise.

- Provide refuge to help endangered shoreline species to adapt to climate change.
- Foster stewardship of the shoreline's cultural and ecological resources.

3.3.2 Environmental Setting

The study area for this assessment includes on-site components within the Solar Salt Facility and the MSS brine transport pipeline, and a 1-mile buffer from these features. Project features are located in the East Bay, including portions of San Lorenzo, an unincorporated community in Alameda County, and portions of the Cities of Hayward, Union City, Fremont, and Newark. Specifically, project improvements would be constructed at Cargill's Solar Salt Facility, located at 7220 Central Avenue in Newark, California, and generally within roadway rights-of-way between the Solar Salt Facility and the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. The MSS are primarily situated in Ponds 12 and 13 of Cargill's Solar Salt Facility, which are located within the Refuge.

The MSS brine transport pipeline alignment is described in detail in Section 2.6.5, "MSS Brine Transport Pipeline," of Chapter 2, "Project Description." From the Solar Salt Facility to SR 84, the project would be situated within or adjacent to a mosaic of natural habitats (e.g., Plummer Creek), engineered hydrologic features (i.e., channels), salt pond facilities, adjoining berms, and the Refuge, before continuing along Thornton Avenue to SR 84. Several channel crossings would occur along this segment, which lies partially within the Cities of Newark and Fremont.

The pipeline alignment would then continue under SR 84 and along Quarry Road, Paseo Padre Parkway, and Ardenwood Boulevard within the City of Fremont. This area includes undeveloped uplands to the west and urban developments to the east. After crossing the Alameda Creek Flood Control Channel, the alignment would continue along Union City Boulevard, within a developed urban environment within the City of Union City, to the Old Alameda Creek Flood Control Channel (aka Old Alameda Creek).

Past Old Alameda Creek, the alignment would continue along Hesperian Boulevard within a developed urban environment within the City of Hayward toward Industrial Boulevard along one of two route options. Under the first option, the pipeline would continue north on Hesperian Boulevard for approximately 0.5 mile and then turn west on Industrial Boulevard for approximately 0.7 mile until reaching Baumberg Avenue. Under the second option, the pipeline would continue north on Hesperian Boulevard for approximately 0.3 mile and then turn west on Eden Shores Boulevard for approximately 0.2 mile until it reaches the roundabout at Marina Drive. The pipeline would continue north on Marina Drive for 0.3 mile until it reaches Industrial Boulevard.

From Industrial Boulevard, the alignment would then continue northwesterly along developed roadways within urban areas of Hayward before arriving at the former Skywest Golf Course. The pipeline alignment would then extend southwest along the former Skywest Golf course upland berm before crossing the railroad west of the former Skywest Golf Course and arriving at the Oro Loma Marsh western berm. At this location, the project would continue along the Oro Loma Marsh's eastern and northern berms before crossing Bockman Channel at an existing bridge and terminating at the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant, which lies within the unincorporated portion of Alameda County in the community of San Lorenzo.

The pipeline alignment crosses channels (natural and engineered), culverts, roadways, and railways at several locations. Horizontal directional drilling (HDD) and microtunneling are trenchless construction methods being considered for most of the potential crossings. Crossings under railroad tracks would likely use a microtunneling method.

In general, staging areas for the project would be located in open and easily accessed sites (i.e., vacant lots or parking lots), in previously developed, disturbed, or largely nonvegetated areas. Based on CARI and FVEG mapping and aerial photo review, the proposed staging areas do not contain any jurisdictional waters or wetlands and contain only limited ornamental, annual grassland and cropland, or ruderal vegetation (if any). Two staging areas are situated in FVEG mapped freshwater emergent wetland and saline emergent wetland habitat (east of Thornton Avenue and near the proposed Newark Slough at Thornton Avenue crossing, respectively); however, per review of CARI mapping and aerial photos, the Thornton Avenue staging area is located on an existing roadway turnout and the Newark Slough at

Thornton Avenue crossing staging area is located on an elevated berm between adjacent wetlands associated with tidal channels.

HABITAT COMMUNITIES

This discussion of habitat communities is based on focused site visits within the Solar Salt Facility, and at portions of the MSS brine transport pipeline and staging areas that occur in representative habitats. Representative areas include the proposed pipeline area from the Cargill Solar Salt Facility to the intersection of Smith Street and Union City Boulevard in Union City. Supplemental habitat information for the MSS brine transport pipeline alignment, staging areas, Bayside Alignment, and In-Pipe Alignment were obtained from publicly accessible databases previously listed (predominantly through CARI and FRAP databases and aerial photo review), and from literature review as cited herein.

The lists below identify habitat types present along the alignments or within the 1-mile buffer study area for the project. The CARI classification system is used for waters and wetland habitats, while CAL FIRE FVEG classifications are used for upland habitats. Specific to the project, an upland berm habitat classification is also included and described.

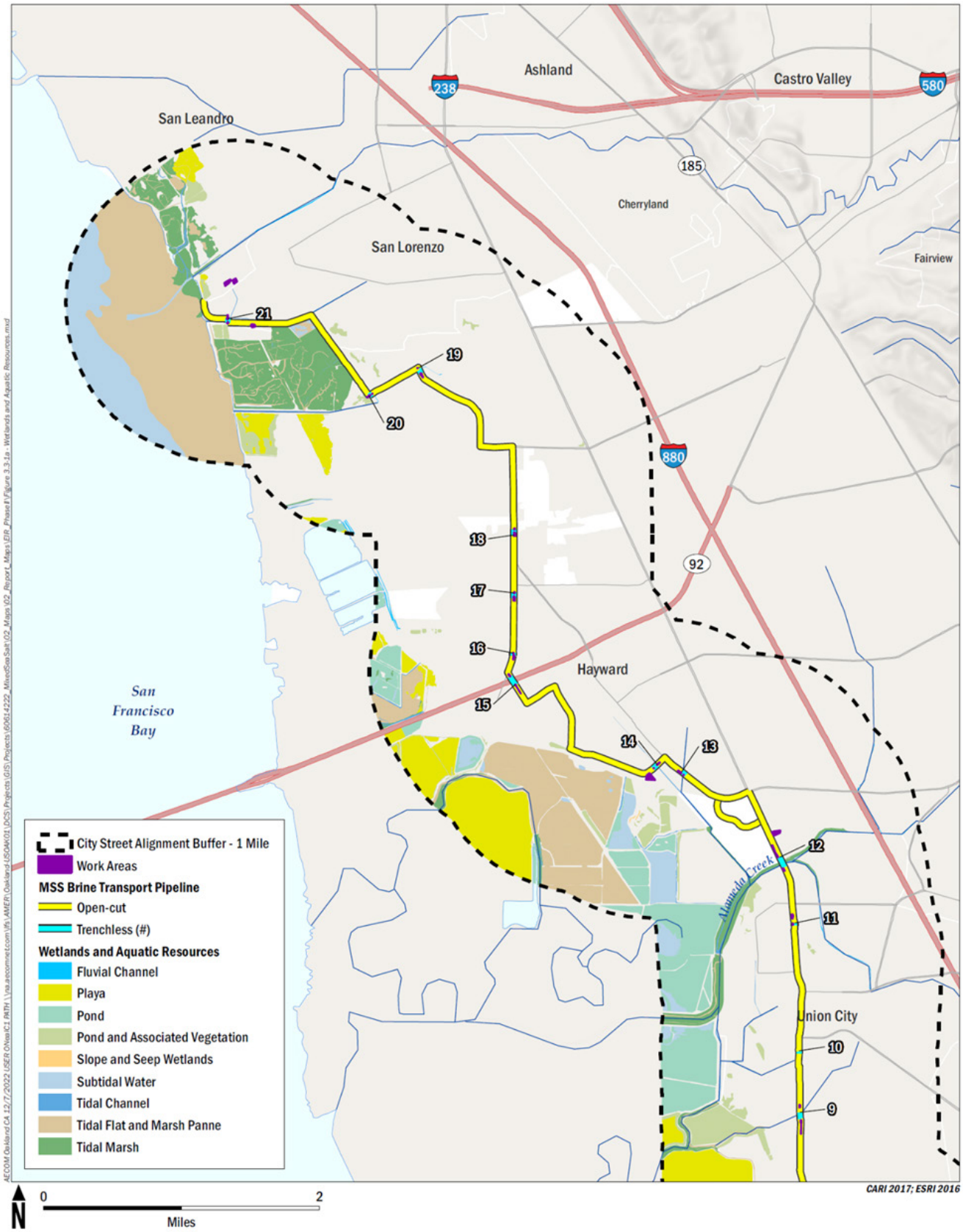
- Upland Habitats
  - Urban
  - Annual grassland, cropland, dryland grain crops, and other agricultural habitats
  - Valley oak woodland
  - Upland berms
- Waters and Wetlands Habitats
  - Tidal Flat and Marsh Panne
  - Tidal Marsh
  - Playa
  - Pond (Unvegetated and Vegetated)
  - Slope and Seep Wetlands
  - Tidal and Fluvial Channels
  - Subtidal Water

Table 3.3-1 identifies the quantities of each habitat type within the study area per CARI and FVEG mapping. Each of these habitat types and their occurrence within the 1-mile buffer of the project are described below. Water and wetland habitats within the 1-mile buffer are shown in Figures 3.3-1a and 3.3-1b, and terrestrial habitats within the 1-mile buffer are shown in Figures 3.3-2a and 3.3-2b. Upland berm habitats, which include varying habitat conditions and vegetation (e.g., barren, active maintenance roadways, ruderal vegetation), are not an FVEG or CARI mapped habitat classification and are therefore not listed in Table 3.3.-1. A narrative of upland berm conditions and locations is provided in the following "Upland Habitats" section.

Table 3.3-1 Terrestrial Habitats within 1 Mile of the Project Area

Habitat Type	Total Acres in Study Area
Upland Habitats	
Urban	12,307.1
Annual Grassland	1,262.9
Cropland	452.3
Dryland Grain Crops	73.4
Other Agricultural Habitats	6.4
Valley Oak Woodland	29.8
Total Upland Habitats	**14,131.9**
Waters and Wetlands Habitats	
Tidal Flat and Marsh Panne	1,464.7
Tidal Marsh	1,158.3
Playa	885.8
Pond (Unvegetated and Vegetated)	2,946.0
Slope and Seep Wetlands	1.9
Tidal and Fluvial Channels	153.5
Subtidal Water	510.3
Total Waters and Wetlands Habitats	**7,120.5**

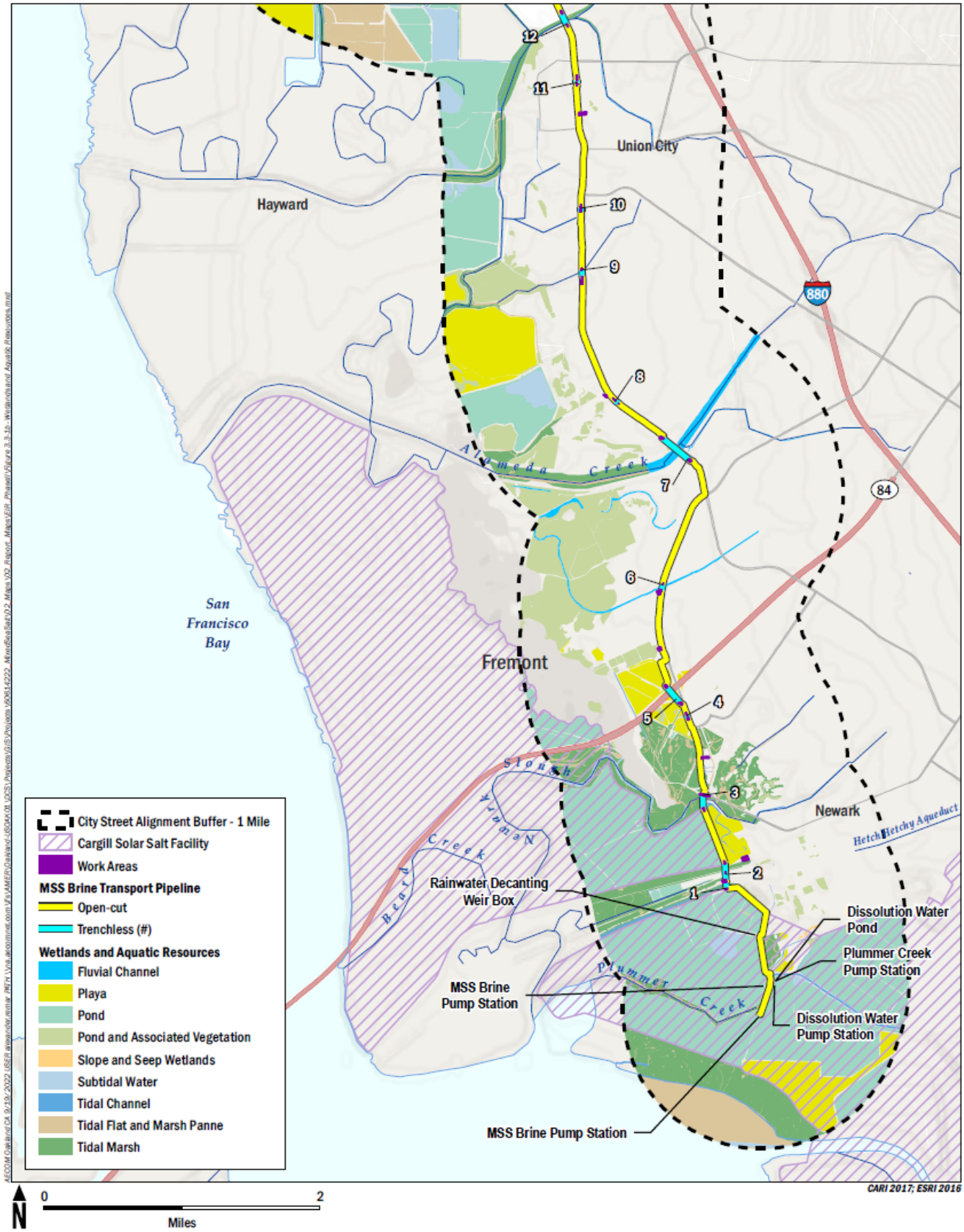
Notes:
Upland habitat areas calculated using FVEG mapping for study area (CAL FIRE 2015).
Waters and wetlands habitat areas calculated using CARI mapping for study area (SFEI 2017).
Other agricultural habitats include irrigated deciduous orchard (0.4 acre) hayfield (1.8 acres), rice (0.9 acre), and vineyard (3.3 acres).
Source: Data from CAL FIRE 2015 and SFEI 2017, compiled by AECOM in 2022.



Note: Numbers in figure refer to proposed trenchless crossings along the MSS brine transport pipeline alignment. (Refer to Table 2-2 in Section 2.6.8, "Construction," for crossing names.)

Source: Data from SFEI 2017, compiled by AECOM in 2022.

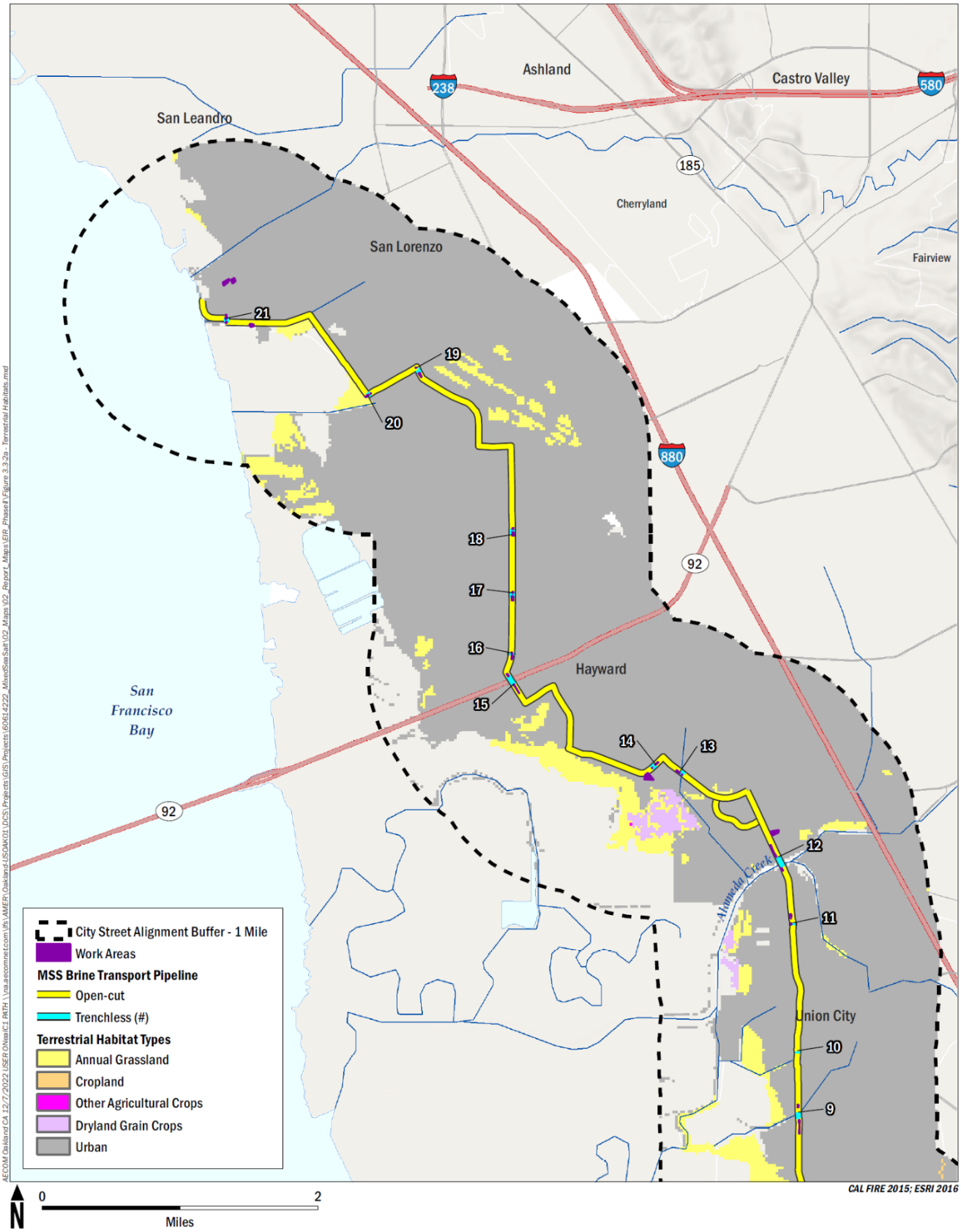
Figure 3.3-1a Wetland and Aquatic Resources Northern Extent



Note: Numbers in figure refer to proposed trenchless crossings along the MSS brine transport pipeline alignment. (Refer to Table 2-2 in Section 2.6.8, "Construction," for crossing names.)

Source: Data from SFEI 2017, compiled by AECOM in 2022.

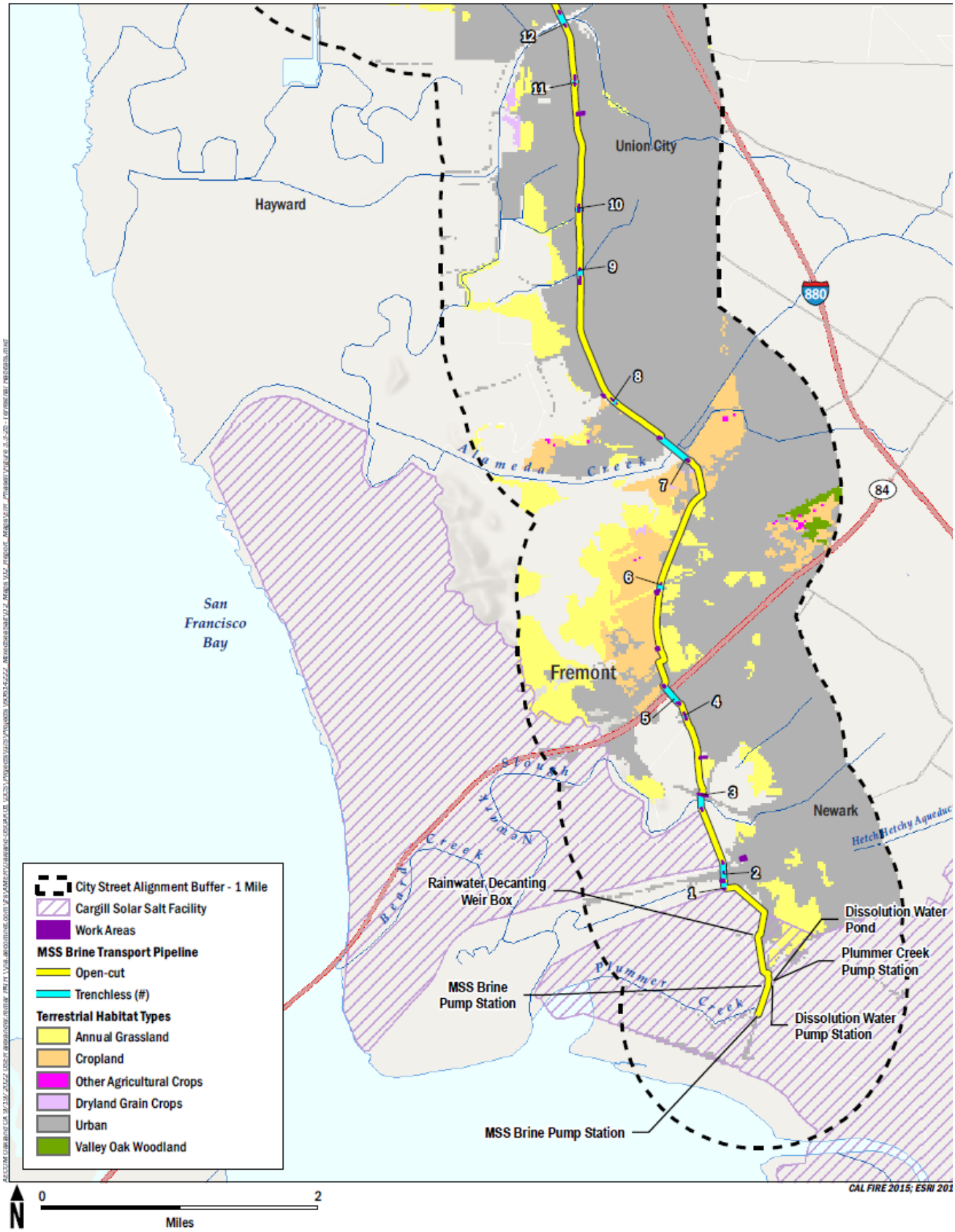
Figure 3.3-1b Wetland and Aquatic Resources Southern Extent



Note: Numbers in figure refer to proposed trenchless crossings along the MSS brine transport pipeline alignment. (Refer to Table 2-2 in Section 2.6.8, "Construction," for crossing names.)

Source: Data from CAL FIRE 2015, compiled by AECOM in 2022.

Figure 3.3-2a Terrestrial Habitats Northern Extent



Note: Numbers in figure refer to proposed trenchless crossings along the MSS brine transport pipeline alignment. (Refer to Table 2-2 in Section 2.6.8, "Construction," for crossing names.)

Source: Data from CAL FIRE 2015, compiled by AECOM in 2022.

Figure 3.3-2b Upland Habitats Southern Extent

Upland Habitats

Urban Developed

Most of the project between the Newark Slough at Thornton Avenue crossing and the former Skywest Golf Course would occur in urban developed uplands. These areas are characterized by asphalt roadways; urban, residential, and industrial developments; barren but disturbed parcels; public parks and appurtenances; and paved parking lots. Nearly all of the MSS brine transport pipeline alignment between the Refuge and the former Skywest Golf Course would be constructed on or adjacent to existing roadways, with the exception of select channel, road, and railway crossings and approaches including a short roadway crossing approach through annual grassland adjacent to Quarry Road in Fremont.

Urban developed habitats are interspersed with scattered ornamental and ruderal vegetation. Much of the urban developed habitat within the study area includes commercial office parks and residential areas, where sidewalks and street medians have been landscaped to include popular horticultural and ornamental plant varieties. Species observed during representative surveys include common trees such as ginkgo (*Gingko biloba*), London planetrees (*Platanus* x *hispanica*), ornamental plum (*Prunus domestica*), magnolia (*Magnolia* sp.), and pine trees (*Pinus* sp.). Understory vegetation includes African iris (*Dietes iridiodes*), New Zealand flax (*Phormium tenax*), and blue oat grass (*Avena sempervirens*). Some ruderal species such as fennel (*Foeniculum vulgare*), wild oats (*Avena* sp.), and wild radish (*Raphanus sativus*) are also frequently seen in these landscaped areas.

These landscaped/ornamental areas are found intermittently within urban developed areas throughout the pipeline alignment, within transition areas between urban developed areas and natural habitats, and likely throughout the alignment in developed or disturbed areas where ornamental planting or dispersion of nonnative ornamental species has occurred. The pipeline alignment notably includes a segment along the former Skywest Golf Course berm which contains a continuous corridor of ornamental vegetation likely associated with golf course landscaping.

Urban developed areas in the project vicinity have the potential to provide habitat for wildlife species accustomed to disturbed areas, especially introduced species such as the European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), rock pigeon (*Columba livia*), house mouse (*Mus musculus*), black rat (*Rattus rattus*), and Norway rat (*Rattus norvegicus*) (City of Newark 2009). Common native bird species such as mourning doves (*Zenaida macroura*), northern mockingbirds (*Mimus polyglottos*), American crows (*Corvus brachyrhynchos*), house finches (*Haemorhous mexicanus*), lesser goldfinches (*Spinus psaltria*), bushtits (*Psaltriparus minimus*), California towhees (*Melozone crissalis*), and Brewer's blackbirds (*Euphagus cyanocephalus*) may also forage and breed in landscaped and ornamental vegetation in urban developed habitats. Native mammals occurring in developed portions of the site are primarily common, widespread species such as Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Otospermophilus beecheyi*), and raccoon (*Procyon lotor*). Several species of bats may also roost in trees, buildings, bridges, or other structures in urban developed habitats.

Annual Grassland, Cropland, Dryland Grain Crops, and Other Agricultural Habitats

Roadside vegetation and open fields, possibly including unused cropland (i.e., fallow fields), are present along the MSS brine transport pipeline alignment. These habitats occur at the margins of urban developments, in undeveloped parcels, and at the upland margins of wetland habitats. Representative observations were made on the roadside at Thornton Avenue along the upland edges of the salt marshes and north of the SR 84 interchange on the western side of Paseo Padre Parkway, where annual grassland vegetation dominates the roadside.

During the reconnaissance surveys, annual grassland species were observed in the CAL FIRE FVEG mapped cropland habitat areas west of Thornton Avenue, and CAL FIRE FVEG mapped cropland areas typically occur adjacent or in proximity to mapped annual grassland areas. Aerial photograph review does not reveal distinct visual differences between these mapped habitat types. Interspersed within the mapped cropland areas are several small areas of FVEG mapped dryland grain crop vegetation. Dryland grain crop habitat includes seed producing grasses, primarily barley, cereal rye, oats, and wheat (CDFG n.d.). This species composition and habitat value is similar to annual grassland and cropland habitats. FVEG identifies other agricultural crop types in small quantities interspersed with annual grassland and croplands in the study area, including deciduous orchard (0.4 acre), irrigated hayfield (1.8 acres), rice (0.9 acre) and vineyard (3.3 acres). These habitat types occur in small quantities away from the pipeline alignment, and based

on aerial imagery, do not contain distinct visual indicators suggesting substantial habitat differences from annual grassland and cropland. Therefore, annual grassland, cropland, dryland grain crop, and other agricultural habitats are discussed together in this section.

As evidenced by aerial photo review, representative observations, and CAL FIRE FVEG mapping, the largest areas of continuous annual grassland and possible former cropland habitat close to the pipeline alignment occurs west of Paseo Padre Boulevard between the SR 84 and Thornton Avenue and the Alameda Creek Flood Control Channel (Coyote Hills Slough) proposed crossings. These roadsides and open fields are dominated mainly by nonnative grasses, with some scattered trees and shrubs that represent less than 10 percent of the vegetation cover. Tree species observed include common olive (*Olea europaea*), Mexican fan palm (*Washingtonia robusta*), and coast live oak (*Quercus agrifolia*). Dominant herbaceous species observed include nonnative fennel, common mustard (*Brassica rapa*), wild oats, wild radish, ripgut brome (*Bromus diandrus*), and native California poppy (*Eschscholzia californica*). It is anticipated that similar species assemblages occur in FVEG mapped annual grassland, cropland, dryland crop, and other agricultural habitats throughout the study area.

Per CAL FIRE FVEG mapping, the study area includes additional annual grassland, cropland, dryland grain crop, or other agricultural habitats, which are separated from the pipeline alignment by roadways, buildings, and other urban developments. This includes large, open areas of annual grassland in undeveloped areas at the margins of aquatic habitats associated with the bay; a cropland area that appears to be actively managed east of Paseo Padro Parkway; annual grassland habitat within Hayward Executive Airport; deciduous orchard, irrigated hayfield, rice, and vineyard in small areas among other croplands; and within other small, undeveloped parcels throughout the study area. Annual grassland or agricultural species are likely the dominant habitat type in undeveloped uplands throughout the study area, including within areas that are not mapped in the CAL FIRE FVEG layer (e.g., barren parcels in mapped urban areas).

CAL FIRE FVEG mapping identifies a small annual grassland within the project footprint at Industrial Boulevard and on a portion of the Oro Loma Marsh berm. However, based on aerial photo review, the pipeline alignment at Industrial Boulevard would occur entirely within the developed roadway. At Oro Loma Marsh, the berm is surfaced with gravel in an active access road, with only limited vegetation.

Many wildlife species use annual grasslands for foraging, but some require special habitat features such as cliffs, caves, ponds, or habitats with woody plants for breeding, resting, and escape cover (CDFG n.d.). Characteristic reptiles that breed in California annual grassland habitats include the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), and western rattlesnake (*Crotalus oreganus*). Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus californicus*), California ground squirrel, Botta's pocket gopher, western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), badger, and coyote (Canis latrans). Common birds known to breed in annual grasslands include the burrowing owl (*Athene cunicularia*), short-eared owl (*Asio flammeus*), horned lark (*Eremophila alpestris*), and western meadowlark (*Sturnella neglecta*). This habitat also provides important foraging habitat for the turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), black-shouldered kite (*Elanus axillaris*), and prairie falcon *(Falco mexicanus*). These species may also occur in FVEG mapped croplands within the study area, particularly those adjacent to annual grasslands.

Valley Oak Woodland

CAL FIRE FVEG mapping identifies an area of valley oak woodland habitat approximately 0.6 mile east of the MSS brine transport pipeline alignment along Thornton Avenue. This valley oak woodland habitat occurs adjacent to FVEG mapped cropland and other agricultural habitats. This mapping is consistent with visual indicators visible in aerial imagery review.

Valley oak woodland habitat varies from savanna-like to forest-like stands with partially closed canopies, comprised mostly of winter-deciduous, broad-leaved species (CDFG n.d.). Canopies of these woodlands are dominated almost exclusively by valley oaks (*Quercus lobata*). The shrub understory often consists of poison-oak (*Toxicodendron diversilobum*), blue elderberry (*Sambucus nigra* ssp. *Cerulea*), California wild grape (*Vitis californica*), toyon (*Heteromeles arbutifolia*), California coffeeberry (*Frangula californica*), and California blackberry (*Rubus ursinus*).

Various sorts of wild oats (*Avena* spp.), brome, barley (*Hordeum* spp.), ryegrass (*Lolium* spp.), and needlegrass (*Stipa* spp.) dominate the herb layer.

Valley oak woodland provides food and cover for many species of wildlife (CDFG n.d.). Oaks have long been considered important to some birds and mammals as a food resource. In decreasing order, species commonly associated with California valley oak woodland include European starling, California quail (Callipepla californica), plain titmouse (*Baeolophus inornatus*), scrub jay (*Aphelocoma californica*), rufous-sided towhee (*Pipilo erythrophthalmus*), Bewick's wren (*Thryomanes bewickii*), bushtit, and acorn woodpecker (*Melanerpes formicivorus*). There is evidence that the ranges of about 80 species of mammals in California show substantial overlap with the distribution of valley oaks, and several, such as fox (*Vulpes* spp.), western gray squirrel (*Sciurus griseus*), and mule deer (*Odocoileus hemionus*), have been documented using valley oaks for food and shelter.

Upland Berms

Where the MSS brine transport pipeline would lie near wetland habitat, including Oro Loma Marsh, near the Skywest Golf Course and within the Refuge, the pipeline would primarily be constructed within engineered berms at a depth of approximately 5 feet. Due to the high salinity of these soils and their inherent disturbed nature, many berms feature areas of bare soil or are otherwise populated by nonnative halophytic plant species (particularly in the vicinity of the salt ponds). Ruderal vegetation may also be present in areas with more favorable soil conditions. Although berm topography generally precludes the presence of wetlands, rutting or depressions may create conditions allowing for establishment of wetland vegetation. Most of the upland berms where the MSS brine transport pipeline would be constructed are composed of drivable surfaces (e.g., aggregate, barren compacted dirt, asphalt).

The quality of habitat on the earthen berms varies throughout the study area. Barren areas may provide roosting or nesting habitat for birds that require an open area devoid of vegetation, including Western snowy plover (*Charadrius nivosus nivosus*), American avocet (*Recurvirostra americana*), California gull (*Larus californicus*), black-necked stilt (*Himantopus mexicanus*), Caspian tern (*Sterna caspia*), and Forster's tern (*Sterna forsteri)* (GAIA Consulting 2021). Nonnative mammalian predators including red fox (*Vulpes vulpes*) and Norway rat (*Rattus norvegicus*), which are the primary invasive wildlife species of concern in the South San Francisco Bay (South Bay), have been observed in the vicinity of the Solar Salt Pond Facility (Goals Project 2015).

Improvements to enable the enhanced processing and removal of MSS within existing Solar Salt Facility salt ponds would be placed on the interior slopes of salt pond berms (Plummer Creek Pump Station, dissolution water pump station, two MSS brine pump stations, and the rainwater decanting weir box structure). The dissolution water system distribution system pipelines would be positioned on upland berms for the pipeline alignment within the Cargill facility (on Ponds 10, 12, and 13). Within the Solar Salt Facility, the MSS brine transport pipeline would be placed within berms at a depth of approximately 5 feet.

Waters and Wetlands

Tidal Flat and Marsh Panne

Tidal flat and marsh panne habitat (or mudflats) includes tidally influenced areas devoid of vegetation or sparsely vegetated. They form the large majority of intertidal habitat in the South Bay, except for narrow and deep channels and the fringe marshes. Covered by shallow water during high tide, tidal flats are exposed during low tide. Mudflats are dynamic depositional features, changing in extent and location depending on the nature of erosion and deposition of sediments. This habitat typically supports less than 10 percent cover of vascular emergent vegetation, typically in the form of cordgrass (*Spartina* spp.) and annual pickleweed (*Salicornia europaea*) that is too sparse to map as distinct salt marsh habitat (USFWS 2013a).

Tidal flat and marsh panne provide habitat for three major groups of invertebrates: organisms that live primarily in the muds (benthic infauna); those that live on the surface of the mudflats or attached to other objects, animals, or plants (epifauna); and those living in the water column (pelagic fauna) (GAIA Consulting 2021). These mudflats are a key reason for the importance of the Bay Area west coast shorebird populations, including piscivorous species, with an average of 67 percent of all the shorebirds on the west coast of the United States using Bay wetlands (Page et al.

1999). When the tides are in, however, tidal flats are suitable habitat for passage, forage, or other use by anadromous fish species.

Within the study area, most CARI mapped tidal flat and marsh panne habitat occurs in the basins of former salt ponds, likely in areas with tidal connectivity provided by berm breaches or controlled inundation (SFEI 2017). CARI mapping also identifies several tidal channels as containing tidal flat and marsh panne habitat, including tributaries to Old Alameda Creek Flood Control Channel near its Bay outlet. The project would generally avoid CARI mapped tidal flat and marsh panne habitat within its immediate footprint. The nearest CARI mapped tidal flat and marsh panne habitat to the project occurs in the northeastern corner of Oro Loma Marsh, adjacent to the MSS brine transport pipeline alignment, which would lie within a berm adjacent to the marsh, and also approximately 150 feet west of the pipeline alignment next to Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant.

Tidal Marsh

CARI mapped tidal marsh habitat is present throughout the study area, and broadly includes vegetated areas regularly flooded by the tides. In the Solar Salt Facility portion of the study area, tidal marsh habitat occurs at the margins of tidal canals, including Plummer Creek, the former "Barge Canal" south of the Hetch Hetchy Aqueduct, and Newark Slough (SFEI 2017). North of this area, in or near the relatively natural Refuge, tidal marsh habitat encompasses a larger estuarine area where smaller sloughs and tidal inlets are less confined by channelization, berms, and other developments. For the remainder of the study area between approximately SR 84 and the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant, tidal marsh habit is generally confined to areas adjoining tidal channels, and large expanses on the Bay shoreline. The Oro Loma Marsh area is almost entirely mapped as tidal marsh. Tidal marsh habitat occurs near or adjacent to the MSS brine transport pipeline alignment within the Solar Salt Facility (tidal marsh present in Plummer Creek and east of Pond 13); in the former Barge Canal; at the proposed SamTrans Rail Line/Hetch Hetchy Aqueduct crossing; in the Newark Slough floodplain; along Thornton Avenue; at the margins of the Old Alameda Creek Flood Control Channel; and in Oro Loma Marsh.

Tidal marsh communities are often identified in terms of "zones" based on elevation in relation to the tides or based on other parameters such as salinity. Low marshes are generally regularly flooded by daily tides. Low marsh vegetation is almost always dominated by grass-like plants, such as Pacific cordgrass (*Spartina foliosa*) (GAIA Consulting 2021). Within the middle marsh zone at slightly higher elevations flooded only by the high tides, pickleweed (*Salicornia pacifica*), saltgrass (*Distichlis spicata*), salt marsh dodder (*Cuscuta salina*), fleshy jaumea (*Jaumea carnosa*), alkali heath (*Frankenia salina*), and spearscale (*Atriplex triangularis*) occur. High marsh occurs where tidal waters infrequently flood, mostly during spring tides (tides that occur twice a month) during summer and winter, and dominant plants are pickleweed, saltgrass, and marsh gumplant (*Grindelia stricta* var. *angustifolia*).

Site specific tidal marsh conditions were observed and recorded during representative site surveys within the study area (from approximately the Solar Salt Facility to the intersection of Smith Street and Union City Boulevard in Union City). Tidal marsh was identified and categorized into two subgroups described below: salt marsh and brackish marsh. CARI mapped tidal marsh habitats outside of the focused survey area likely contain a similar assemblage of species as those observed during site surveys and known to commonly occur in low- to high-marsh habitat associated with the Bay and its tributaries.

The most prominent wetland vegetation community in the focused survey area is emergent salt marsh. Emergent salt marsh is characterized by the tidal influence of saltwater from the Bay. Seasonally variable inputs of fresh water from streams and drainages can produce more brackish water at times. The areas with the greatest concentration of emergent salt marsh are along the southern boundaries of the focused survey area, along berm edges at the Solar Salt Facility, and on either side of Thornton Avenue before the SR 84 Interchange. In the lower salt marsh zone, vegetation consists strictly of species adapted to daily saltwater inundation, including the dominant pickleweed, Pacific cordgrass (*Spartina foliosa*), fleshy jaumea, alkali heath, and saltgrass. In the mid- to upper salt marsh zone, many of the above-listed species are still present, but less dominant. Other species inhabiting the mid-upper salt marsh zone include marsh gumplant, sea lavender species (*Limonium californicum* and *L. ramosissimum*), and Mediterranean saltwort (*Salsola soda*). In the highest reaches of the upper salt marsh, some upland ruderal species

(such as fennel, cutleaf plantain [*Plantago coronopus*], slenderleaf iceplant [*Mesembryanthemum nodiflorum*], and slender wild oats [*Avena barbata*]) intergrade with the typical upper salt-marsh species.

Emergent brackish marsh was observed in the proposed Old Alameda Creek crossing. The fringe brackish marsh consists of a very narrow band on either side of tidal flat areas of Old Alameda Creek. The brackish wetland is at and just below the high tide line and subject to tidal inundation during higher tide and storm surge events. The habitat includes plant species adapted to perennially moist conditions but without a strong affinity for saline environments. The brackish marsh is dominated by broadleaf pepperweed (*Lepidium latifolium*) and Harding grass (*Phalaris aquatica*). Less dominant is fat hen (*Atriplex prostrata*). Grasses that had already senesced (likely wild oat and bromes), together with broadleaf pepperweed, common mustard, and common sow thistle (*Sonchus oleraceus*), dominate the upland floodplain zone.

Mature tidal salt marshes are productive ecological systems that contribute to a more complex and complete food web. The channels in these marshes are good forage and/or nursery habitat for native fish species, including green sturgeon and steelhead. Tidal marshes and adjoining upland areas such as berms provide habitat to associated birds such as salt marsh common yellowthroat (*Geothlypis trichas sinuosa*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), and Canada goose (*Branta canadensis*). Salt marsh and more densely vegetated adjoining uplands also provide potential nesting habitat for salt-marsh harvest mouse (GAIA Consulting 2021).

Playa

Within the study area, playa habitat occurs in relatively undisturbed areas, typically adjacent to salt marsh habitat or tidal channels in higher elevations. Playa habitat is largely devoid of vegetation, though is seasonally inundated as sometimes indicated by observable salt and algal crusts.

CARI mapping identifies playa habitat within or adjacent to the southern portion of the MSS brine transport pipeline alignment, including northeast of the proposed Plummer Creek crossing; east of the proposed alignment on the Refuge berm between the SamTrans Rail Line/Hetch Hetchy Aqueduct crossing and the Newark Slough at Thornton Avenue crossing; and surrounding SR 84 and Quarry Road (SFEI 2017). Other large areas of playa habitat are mapped within the study area, but away from the pipeline alignment.

During the focused site surveys (from approximately the Solar Salt Facility to the intersection of Smith Street and Union City Boulevard in Union City) playa habitat was observed west of Thornton Avenue near SR 84, which is consistent with CARI mapping. Portions of the CARI mapped playa habitats near SR 84 were identified as alkali marsh or seasonal alkali wetlands during the focused site surveys. These habitat types are similar to playa habitat, though contain sparse vegetation. Dominant observed species were pickleweed, alkali heath, and saltgrass.

Though they provide limited wildlife habitat when dry, inundated playas can provide nesting, migration, and wintering habitats for wetland birds, including shore and wading species.

Pond (Unvegetated and Vegetated)

Former salt ponds, active salt ponds, and other nontidal open water habitats within the study area (such as artificial ponds and lakes, water treatment plant settling and oxidation ponds, and managed ponds) are mapped by CARI as ponds. CARI mapping identifies both unvegetated and vegetated ponds within the study area (SFEI 2017). Based on aerial review, vegetation coverage in pond areas appears to be sparse and likely confined to higher elevations.

Unvegetated pond features are present within the study area, typically within containment berms constructed for various managed purposes. The pipeline alignment would occur on unvegetated salt pond berms adjacent to or near unvegetated pond features within the Solar Salt Facility and north of the proposed SamTrans Rail Line/Hetch Hetchy Aqueduct crossing in the Refuge. Unvegetated salt pond berms also occur adjacent to CARI mapped vegetated pond features present in the northwest corner of Oro Loma Marsh. Several other unvegetated pond features have been mapped within the study area, occurring between the proposed alignment and the Bay.

Unvegetated ponds include the active salt production ponds at the Solar Salt Facility, where focused site visits were completed. This includes the Pond 10, 12, and 13 areas where the improvements would be constructed to enable the enhanced processing and removal of MSS within Ponds 12 and 13. Salt production ponds are where industrial

processes are undertaken to store, harvest, and process commercial salt product. The salt ponds include several adjacent channels that are used to circulate water or brines for salt production. These areas are largely devoid of vegetation and are hypersaline. At the outer edge of the salt pond berms and canals, narrow bands of fringe marsh with salt marsh vegetation (primarily pickleweed) do occur. Salt pond water levels are managed and controlled through operation of various water control structures present in the study area. Depending on production, the base elevation of the salt pond fluctuates as salt is accumulated and is lowered when harvested. Based on the LiDAR data available, the mean high-water elevation appears to be at or near the surface of the various salt ponds.

The Refuge owns a variety of coastal-marine ecosystems over 46 square miles, including existing and former salt ponds. These habitats are managed to improve wildlife habitat and tidal water quality and wildlife viewing opportunities. Aerial photo review of the Refuge's pond areas adjacent to the proposed alignment (north of the proposed crossing at the former Barge Canal) show seasonal variance in water levels, visible salt crusting, and possible algal blooms. Some limited vegetation is visible in pond high spots and berm slopes, likely consisting of tidal marsh vegetation.

The CARI dataset identifies several vegetated ponds which appear to correspond to undeveloped but disturbed areas confined by constructed improvements (e.g., berms) or natural topography (SFEI 2017). Several mapped vegetated pond features occur within or adjacent to the proposed alignment. This includes the area immediately northeast of the MSS brine transport pipeline alignment along the Pond 13 berm, which appears to consist of an unvegetated stockpile area; the proposed HDD crossing area below the SR 84 cloverleaf, in an apparent depression confined by the roadway; just north of Alameda Creek Flood Control Channel in the area below the proposed HDD crossing, within a possible swale area containing mature trees (likely ornamental); and approximately 50 to 100 feet southwest of the alignment on the Oro Loma Marsh berm, just southwest of the former Skywest Golf course. Based on review of aerial photos taken during various seasons, these areas appear to exhibit seasonal or controlled inundation, salt crusting, and apparent sparse seasonal vegetative cover likely at high spots, with the exception of the possible swale area north of Alameda Creek Flood Control Channel.

Two of the CARI mapped vegetated pond areas that would be avoided via HDD methods were observed during the focused site surveys, including the SR 84 cloverleaf area and the area just north of the proposed Alameda Creek Flood Control Channel crossing. The SR 84 cloverleaf area was identified as containing seasonal alkali wetland habitat, exhibiting 5 percent cover of pickleweed, bare ground salt panne with small-scale cracks in the soil surface, an indication of seasonal inundation during the wet season. These findings are consistent with the CARI database vegetated pond mapping. The Alameda Creek Flood Control Channel crossing area was mapped as containing ornamental vegetation, though hydrologic and soil conditions were not recorded.

Pond habitats provide important habitat for waterbirds in the South Bay (Stralberg et al. 2003; Takekawa et al. 2000; Takekawa et al. 2001). Salt ponds (former and active) provide roosting habitat for waterbirds, particularly during higher tides when tidally influenced habitats are not available for foraging. California gull nests were documented within Cargill properties in 2019 (GAIA Consulting 2021). Dry portions of ponds also provide nesting habitat for Western snowy plover, American avocet, and California gull. Additionally, some ponds concentrate invertebrates and fish resulting in suitable foraging conditions for a variety of waterbirds. For some species, such as the Wilson's phalarope (*Phalaropus tricolor*), red-necked phalarope (*Phalaropus lobatus*), black-necked stilt, American avocet, Western snowy plover, Bonaparte's gull (*Larus philadelphia*), American white pelican, and breeding gulls and terns, these ponds provide higher-quality nesting and/or foraging habitat than the existing tidal marshes or intertidal habitats.

Slope and Seep Wetlands

Slope and seep wetlands are wetlands supported by ground water that surfaces along topographic transition zones (Stein et al. 2010). There is a very small area of CARI mapped slope and seep wetlands in the study area (1.9 acres) that occurs approximately 0.25 mile east of Pond 13. As evidenced by aerial photograph review, this slope and seep wetland consists of a narrow, vegetated depression. This area likely has similar vegetation and wildlife species associations as tidal marsh, given its proximity to CARI mapped tidal marsh and similar visual indicators visible on aerials.

Tidal and Fluvial Channels

Several tidal and fluvial channels occur throughout the study area (SFEI 2017). The alignment of these riverine features historically have been affected by urban development, pond construction, and shoreline or urban management. Tidal portions of riverine features are subject to daily tidal action and may have exposed mudflats during low tides, and full inundation of channels and or banks during high tides or major storm events. Several tidal and fluvial channels in the study area are engineered waterways, largely linear features; such named features include Bockman Channel, Sulphur Creek, Crandall Creek, Ardenwood Creek, and Plummer Creek. Engineered linear channels are also present on the margins of managed pond systems, typically confined by adjoining berm systems, with portions often confined by culverts. While all the tidal and fluvial channels within the study area have been affected by urbanization and development, some maintain relatively natural meanders or adjoining undeveloped floodplains and marsh habitat such as Newark Slough. Relatively natural, meandering channels also occur within the mosaic of ponds and wetlands on the Bay shoreline. Portions of Alameda Creek Flood Control Channel and Old Alameda Creek Flood Control Channel also contain fringe tidal marsh habitat, particularly near the Bay shoreline. The proposed Alameda Creek Flood Control Channel crossing is approximately 1,200 feet upstream from CARI mapped tidal marsh habitat, whereas the proposed Old Alameda Creek Flood Control Channel crossing area contains fringe tidal marsh habitat within the immediate alignment area.

The MSS brine transport pipeline alignment includes trenchless channel crossings, such as microtunneling, HDD and auger borings, or bridge attachment at waterways including Plummer Creek, the former Barge Canal, the SamTrans Rail Line/Hetch Hetchy Aqueduct crossing, the Newark Slough at Thornton Avenue crossing, Ardenwood Creek, Alameda Creek Flood Control Channel, Alameda Creek Tributary at Delores Drive, Silvertide Drive-Surface Drain Culvert, Old Alameda Creek Flood Control Channel, Industrial Boulevard Canal, an engineered channel at the Baumberg Ave/railroad crossing, Corsair Boulevard and Sulphur Creek crossing, and Bockman Channel. Trenchless crossing methods may also be needed at additional culverts along the alignment. While each of these crossings would occur at channel locations, some are mapped by CARI as subtidal areas, or as uplands where existing bridges or culverts are present.

In the study area, Plummer Creek is an engineered channel that was constructed over former tidal marshes and is near the former alignment of Plummer Creek. Newark Slough connects to the Bay just south of the Dumbarton Narrows. It receives limited freshwater runoff from drainage canals from developed upland areas of Newark (USFWS 2013a). The Alameda Creek Flood Control Channel has been engineered to prevent flooding of the surrounding communities of Fremont and Newark. It is about 330 feet wide and contains steep banks to contain flood flows from upstream areas. This channel was constructed in the early 1970s, replacing the natural creek.

Other named channel features in the study area serve various functions. The former Barge Canalsouth of the Hetch Hetchy Aqueduct was historically used by barges servicing a former quicklime facility. Ardenwood Creek was initially constructed in the 1980s as part of a residential development. It was designed to drain water from the urban and suburban areas of Fremont to a complex of marshes at the foot of the Coyote Hills Regional Park before flowing through a one-way tide gate structure through Alameda Creek south levee (Alameda County Public Works Agency 2022). Old Alameda Creek (which includes the Old Alameda Creek Flood Control Channel crossing) drains the alluvial plain area through an earthen trapezoidal flood control channel which is constrained by maintained levees (SFEI n.d.). The Bockman Channel-Sulphur Creek watersheds flow entirely through underground culverts and engineered channels to drain the low-lying areas of San Lorenzo and the northwest section of Hayward (Alameda County Flood Control and Water Conservation District 2022). The 2.8-square-mile Bockman Channel watershed drains the flatlands in western San Lorenzo between Sulphur Creek watershed and San Lorenzo Creek. It enters the Bay in the northern extent of Hayward Regional Shoreline Park. In the flatlands south of Bockman Channel is the 2.7-square-mile Sulphur Creek watershed. The drainage runs through culverts under Hayward City Hall and drains the Hayward Executive Airport on its way to the Bay.

Tidal open waters support a diversity of benthic invertebrates, pelagic invertebrates, and fish species. CDFW has conducted fishery surveys since 1980 for the San Francisco Bay Study (CDFW 2020). These surveys include data from multiple stations in the South Bay. Data between 1980 and 2006 reported that 71 native fish species were collected in the South Bay region (Swanson 2007). The most common fish species of the South Bay include bay pipefish

(*Syngnathus leptorhynchus*), three-spined stickleback (*Gasterosteus aculeatus*), northern anchovy (*Engraulis mordax*), topsmelt silverside (*Atherinops affinis*), Pacific staghorn sculpin (*Leptocottus armatus*), starry flounder (*Platichthys stellatus*), and yellowfin goby (*Acanthogobius flavimanus*). The tidal sloughs and channels also serve as important nurseries and feeding areas for estuarine resident fish (GAIA Consulting 2021). While not all species reported in the South Bay may occur in the study area, there is potential for occurrence of many of these species in varying distributions and abundance.

Subtidal Water

Subtidal water includes areas that are perpetually inundated regardless of tidal conditions. Within the study area, CARI mapped subtidal waters largely occur within the mosaic of managed or formerly managed pond habitats between the MSS brine transport pipeline alignment and the bay (SFEI 2017). Portions of some tidal channels within the study area are also mapped by CARI as subtidal waters, including the Bockman Channel west of the railroad crossing near Keller Avenue in San Lorenzo, Sulphur Creek southwest of the railroad crossing near the former Skywest Golf course in Hayward, a portion of Alameda Creek Flood Control Channel from the Bay to approximately 1.4 miles downstream of the project crossing, and a portion of Newark Slough from the Bay to approximately 850 feet downstream of the project crossing. A small area of subtidal bay habitat also occurs within the study area west of Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant. The project would traverse the subtidal portion of Bockman Channel. The project footprint is otherwise away from subtidal waters, although a portion of the alignment would occur on berms near ponded subtidal areas within Oro Loma Marsh and the subtidal portion of Bockman Channel. Consistent with this mapping, the focused site surveys did not identify any subtidal habitat in the survey area between the Solar Salt Facility and the Smith Street and Union City Boulevard intersection in Union City.

Deep bays and channels are important for aquatic invertebrates, fishes, waterbirds, and harbor seals. The open waters of the South Bay support a high diversity of benthic and pelagic macroinvertebrates. Though most of the dominant invertebrates are nonnative species, they nonetheless support native oyster populations and large fish populations representing several different trophic levels, including Pacific herring (*Clupea pallasi*), northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax caeruleus*), staghorn sculpin (*Leptocottus armatus*), several species of perch (*Embiotocidae family*), English sole (*Parophrys vetulus*), and California halibut (*Paralichthys californicus*). Green sturgeon and steelhead use these open water and subtidal habitats for foraging and migration between freshwater habitats and the ocean. Deep water does not support emergent vegetation.

DESIGNATED REFUGE AND PLAN AREAS

Don Edwards San Francisco Bay National Wildlife Refuge

The Refuge is located at the southern end of the South Bay and extends into Alameda, Santa Clara, and San Mateo counties. The lands and waters included within the Refuge consist of portions of the urbanized communities of San Lorenzo, Hayward, Union City, Fremont, Newark, Milpitas, San Jose, Sunnyvale, Mountain View, East Palo Alto, Menlo Park, and Redwood City. The Refuge is located in a highly urbanized area with access from Interstate 880, US Highway 101, SR 237, and SR 84. The Refuge is in mudflat and tidal marsh that formed between 2,000 and 3,000 years ago (Atwater et al. 1979). Portions of the project would occur within the Refuge's Newark and Mowry units.

Roughly half of the Refuge's Newark Unit is occupied by approximately 4,000 acres of commercial salt evaporation ponds (Siegel and Bachand 2002) converted from high-elevation tidal marsh in the early 20th century (EDAW 2005, cited in USFWS 2013a). These ponds are managed for solar salt production today by Cargill pursuant to certain, perpetual "Reserved Rights" set forth in a 1979 condemnation order conveying fee title to these lands to the United States. The Refuge's Newark Unit also includes small areas of restored marsh along the shoreline of San Lorenzo Creek. These areas include portions of the San Leandro Shoreline marshes, Oro Loma Marsh, and Citation Marsh. The East Bay Regional Park District currently manages these parcels for the Refuge.

The Mowry Unit is dominated by approximately 6,000 acres of commercial salt ponds, most of which were converted from old high-elevation tidal marsh during the 1920s (EDAW 2005). Cargill became the sole operator of the

commercial salt ponds in the Mowry Unit in 1978 and they are functioning today as evaporation, crystallizer, and bittern ponds (Siegel and Bachand 2002, cited in USFWS 2013a). Cargill retains the salt making rights in the Mowry ponds in perpetuity under the same 1979 condemnation order that conveyed fee title of the Newark ponds to the United States for inclusion within the Refuge. The Mowry Unit includes relatively large areas of fringing marsh and mudflat along Coyote Creek and Mowry Slough. Dumbarton Marsh and Audubon Marsh are located adjacent to outer Newark Slough (USFWS 2013a).

The Refuge's primary ecological purpose is the preservation of the natural resources of the South Bay, which include among others, the habitat of migratory birds and threatened and endangered species. Other ecological benefits provided by the Refuge and promoted through Refuge management include conserving a diversity of fish, wildlife, and plants and their habitats; maintaining a network of habitats for migratory birds, anadromous and interjurisdictional fish, and marine mammal populations; and conserving unique, rare, declining, or underrepresented ecosystems, plant communities, and wetlands. Detailed descriptions of habitats occurring within the study area, including within the Newark and Mowry units of the Refuge, are provided in the preceding "Habitat Communities" section.

Hayward Regional Shoreline

The Hayward Regional Shoreline consists of 1,841 acres of salt, fresh, and brackish water marshes, seasonal wetlands, and public trails. It formally includes an area bounded on the north by Bockman Channel and extending approximately 3.25 miles south to the SR 92 San Mateo Bridge approach. This area includes Oro Loma Marsh adjacent to the northern segment of the MSS brine transport pipeline alignment. Oro Loma Marsh was constructed in 1997 and consists of a 364-acre tidal marsh with seasonal wetlands and transitional uplands. As detailed in the previous habitat descriptions, CARI mapping identifies Oro Loma Marsh as including tidal marsh, tidal flat and marsh panne, vegetated ponds, subtidal waters, and tidal channels.

WILDLIFE MOVEMENT AND MIGRATION CORRIDORS

Wildlife movement corridors are described as pathways or habitat linkages that connect discrete areas of natural open space otherwise fragmented by topography, changes in vegetation, and other natural or human induced factors such as urbanization. The San Francisco Bay is an important stopover for migratory shorebirds along the Pacific Flyway (Stenzel et al. 2002). Open water within the Bay and the salt ponds provides congregation and foraging habitat for shorebirds, while larger stands of wetland vegetation such as that within the study area and adjacent to the Refuge provide habitat for many species (GAIA Consulting 2021). The San Francisco Bay serves as a migration corridor for anadromous fish between the Pacific Ocean and spawning habitat, which occurs primarily within the Sacramento and San Joaquin River watersheds, but also in a handful of smaller tributaries to the South Bay including Alameda Creek. Fish species have potential to use the open water habitat in and around the study area for migration, foraging, or rearing (GAIA Consulting 2021). Salt marsh and adjoining berms additionally provide local movement corridors for salt marsh harvest mouse and wandering shrew. Marine mammals protected by the MMPA including Pacific harbor seal (*Phoca vitulina richardsi*) and California sea lion (*Zalophus californianus*) could occur within the study area as infrequent transient visitors within larger tidal channels such as Alameda Creek and Old Alameda Creek flood control channel.

The California Habitat Connectivity Project identifies the study area as containing the following three terrestrial connectivity ranks (Spencer et al. 2010), as defined by CDFW (CDFW 2019):

- Connections with Implementation Flexibility: Areas "that have been identified as having connectivity importance, but have not been identified as channelized areas, species corridors, or habitat linkages at this time."
- Large Natural Habitat Areas. "Areas of intact natural habitat greater than 2000 acres in size, defined by ecological condition (e.g., areas with low fragmentation and high ecological integrity) and independent of ownership. Areas defined as [Natural Habitat Areas] are expected to have high connectivity value because they are large, unfragmented, natural areas." These areas are considered to have high terrestrial connectivity value.
- Limited Connectivity Opportunity. "Areas where land use may limit options for providing connectivity (e.g., agriculture, urban) or no connectivity importance has been identified in models."

Most of the study area is identified as containing limited connectivity opportunity, which is primarily mapped to inland urban developed areas including the entirety of the MSS brine transport pipeline alignment from approximately the intersection of Paseo Padre Parkway and Ardenwood Boulevard to the northern terminus at the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant. Areas between the Bay and urban developed areas are mapped as containing either large habitat areas or connections with implementation flexibility, including undeveloped areas within the Refuge, Hayward Regional Shoreline, Cargill and other salt ponds, and transition zones such as upland annual grassland habitats. The project segment from approximately the intersection of Paseo Padre Parkway and Ardenwood Boulevard to the southern terminus at the Cargill Solar Salt Facility overlaps with these areas.

SPECIAL-STATUS SPECIES AND HABITATS

Special-Status Species

Special-status species are defined as species that are legally protected or that are otherwise considered sensitive by federal, state, or local resource agencies. Special-status species are species, subspecies, or varieties that fall into one or more of the following categories, regardless of their legal or protection status:

- officially listed by California or the federal government as endangered, threatened, or rare;
- a candidate for state or federal listing as endangered or threatened;
- taxa (i.e., taxonomic category or group) that meet the criteria for listing, even if not currently included on any list, as described in CCR Section 15380 of the State CEQA Guidelines;
- species or assemblages afforded special federal protection under the MSA, MBTA, or MMPA;
- species identified by CDFW as Species of Special Concern;
- species listed as Fully Protected under the California Fish and Game Code;
- species afforded protection under local planning documents; and
- taxa considered by CDFW to be "rare, threatened, or endangered in California" and assigned a California Rare Plant Rank (CRPR). The CDFW system includes the following three rarity and endangerment ranks for categorizing plant species of concern, summarized as follows:
  - CRPR 1A – Plants presumed to be extinct in California;
  - CRPR 1B – Plants that are rare, threatened, or endangered in California and elsewhere;
  - CRPR 2A – Plants presumed extirpated in California, but more common elsewhere; and
  - CRPR 2B – Plants that are rare, threatened, or endangered in California but more common elsewhere.

The term "California species of special concern" is applied by CDFW to animals not listed under the ESA or CESA but that are considered to be declining at a rate that could result in listing, or that historically occurred in low numbers and known threats to their persistence currently exist. CDFW's fully protected status was California's first attempt to identify and protect animals that were rare or facing extinction. Most species listed as fully protected were eventually listed as threatened or endangered under CESA; however, some species remain listed as fully protected but do not have simultaneous listing under CESA. Fully protected species may not be taken or possessed at any time and no state take permits can be issued for these species except for scientific research purposes or for relocation to protect livestock.

Appendix C (Special-Status Species) provides a list of special-status species potentially occurring in the study area or project vicinity. The list was compiled from the USFWS Information for Planning and Conservation Official Species List (USFWS 2022b), NMFS California Species List (NMFS 2022), CDFW's CNDDB 1-mile radius search of the project, Alternative 2, and Alternative 3 alignments (CDFW 2022b); CNPS's inventory of rare and endangered plants for the Newark, Hayward, and San Leandro quadrangles (CNPS 2022b); and CDFW's comment letter in response to the

project's notice of preparation (CDFW 2022b). The CNDDB is based on actual recorded occurrences. The CNDDB and reviewed sources do not constitute an exhaustive inventory of every special-status species potentially present.

CNDDB and CNPS query summaries were completed for the project and surrounding quadrangles (Newark, San Leandro, Hayward, Redwood Point, Palo Alto, Mountain View, Milpitas, Niles, Dublin, Diablo, Las Trampas Ridge, Oakland East, Oakland West, Hunters Point, and San Mateo) (CDFW 2022a; CNPS 2022a). Species lacking recorded occurrences within the 1-mile CNDDB radius search, CNPS three project quadrangles search, or not included in the USFWS and NMFS species lists were dismissed as not expected to be present based on the distance from the project area or habitat conditions, and are not analyzed further.

The species list in Appendix C (Special-Status Species) includes a determination of the potential for identified species to occur in affected portions of the study area. Potential occurrence was based on findings from the above cited sources, observations made during the focused reconnaissance surveys, and through review of pertinent literature (as cited throughout). Of the special-status species considered for evaluation in the study area, species that depend on habitats that are not present in the affected portions of the study area or have a range restricted to areas outside of the study area are not expected to occur. The following special-status species that may occur on or adjacent to the project site are evaluated in this DEIR and discussed in further detail below:

Fish and Essential Fish Habitat

- Southern Distinct Population Segment (DPS) of North American green sturgeon (*Acipenser medirostris*) – federally listed as threatened
- White sturgeon (*Acipenser transmontanus*) – state species of special concern
- Central California Coast DPS steelhead (*Oncorhynchus mykiss*) – federally listed as threatened
- San Francisco Bay-Delta DPS of longfin smelt (*Spirinchus thaleichthys*) – federal candidate, state listed as threatened
- Central Valley Fall-Run Chinook salmon Evolutionarily Significant Unit (ESU) (*Oncorhynchus tshawytscha*) – state species of special concern
- Pacific lamprey (*Entosphenus tridentatus*) – state species of special concern
- Essential Fish Habitat (Coastal Pelagic, Pacific Groundfish, Pacific Coast Salmon species)

Birds

- California Ridgway's rail (*Rallus obsoletus obsoletus*) – federally and state listed as endangered, and fully protected under California Fish and Game Code
- Western snowy plover (*Charadrius nivosusnivosus*) – federally listed as threatened and state species of special concern
- California black rail (*Laterallus jamaicensis coturniculus*) – state listed as threatened and fully protected under California Fish and Game Code
- Alameda song sparrow (*Melospiza melodia pusillula*) – state species of special concern
- Salt-marsh common yellowthroat (*Geothylpis trichas sinuosa*) – state species of special concern
- Northern harrier (*Circus hudsonius*) – state species of special concern
- Tricolored blackbird (*Agelaius tricolor*) – state listed as threatened and species of special concern
- Burrowing owl (*Athene cunicularia)* – state species of special concern
- White-tailed kite (*Elanus leucurus*) – fully protected under California Fish and Game Code
- California brown pelican (*Pelecanus occidentalis californicus*) – fully protected under California Fish and Game Code

- Yellow rail (*Coturnicops noveboracensis*) – state species of special concern
- MBTA protected birds

Terrestrial Mammals

- Pallid bat (*Antrozous pallidus*) – state species of special concern
- Salt-marsh harvest mouse (*Reithrodontomys raviventris*) – federally listed as endangered, fully protected under California Fish and Game Code
- Salt marsh wandering shrew (*Sorex vagrans halicoetes*) – state species of special concern

Invertebrates

- Monarch butterfly (*Danaus plexippus*) – federal candidate

Plants

- Adobe sanicle (*Sanicula maritima*) – CRPR 1B.2
- Alkali milk-vetch (*Astragalus tener* var. *tener*) – CRPR 1B.2
- Bent-flowered fiddleneck (*Amsinckia lunarisI*) – CRPR 1B.2
- Big-scale balsamroot (*Balsamorhiza macrolepisI*) – CRPR 1B.2
- California seablite (*Suaeda californica*) – federally listed as endangered, CRPR 1B.1
- Chaparral ragwort (*Senecio aphanactis*) – CRPR 2.B.2
- Congdon's tarplant (*Centromadia parryi* ssp. *Congdonii*) – CRPR 1B.1
- Contra Costa goldfields (*Lasthenia conjugens*) – federally listed as endangered, CRPR 1B.1
- Diablo helianthella (*Helianthella castanea*) – CRPR 1B.2
- Fragrant fritillary (*Fritillaria liliacea*) – CRPR 1B.2
- Hoover's button-celery (*Eryngium aristulatum* var. *hooveri*) – CRPR 1B.1
- Jepson's coyote-thistle (*Eryngium jepsonii*) – CRPR 1B.2
- Long-styled sand-spurrey (*Spergularia macrotheca* var. *longistyla*) – CRPR 1B.2
- Most beautiful jewelflower (*Streptanthus albidus* ssp. *peramoenusI*) – CRPR 1B.2
- Saline clover (*Trifolium hydrophilum*) – CRPR 1B.2
- Point Reyes salty bird's-beak (*Chloropyron maritimum* ssp. *Palustre*) – CRPR 1B.2
- San Joaquin spearscale (*Extriplex joaquinana*) – CRPR 1B.2
- Woodland woollythreads (*Monolopia gracilens*) – federally listed as endangered, CRPR 1B.2

Fish

Southern DPS of North American Green Sturgeon

The Southern DPS of North American Green Sturgeon was listed as threatened by NMFS on April 7, 2006 (71 *Federal Register* [FR] 17757). Critical habitat for the species was designated on October 9, 2009 (74 FR 52300), and encompasses the entire Bay. A 5-year status review of green sturgeon, completed on October 24, 2012, affirmed the need to retain the Southern DPS of North American Green Sturgeon as a threatened species.

North American Green Sturgeon are anadromous (i.e., migrates up rivers from the sea to spawn), long-lived, and a slow-growing species (Adams et al. 2002). Along the Pacific Coast, North American Green Sturgeon have been documented offshore from Ensenada, Mexico to the Bering Sea, Alaska, and found in freshwater rivers from the Sacramento River to British Columbia (Moyle 2002). Two DPSs of green sturgeon have been identified along the

western coast of North America and are commonly observed in coastal bays, estuaries, and coastal marine waters from southern California to Alaska (Lindley et al. 2008). Of the two DPSs, only the southern DPS is listed as a threatened species under the ESA. The southern DPS includes populations originating from coastal watersheds south of the Eel River (California), where the only known spawning population is in the Sacramento River watershed, including the Sacramento, Feather, and Yuba Rivers (50 CFR part 226) (Seesholtz et al. 2015; CDFW 2018a).

The life cycle of the Southern DPS of North American Green Sturgeon can be broken into four distinct phases, based on developmental stage and habitat use: (1) larvae and post-larvae less than 10 months of age; (2) juveniles less than or equal to 3 or 4 years of age; (3) coastal migrant females between 3 or 4 and 13 years of age, and males between 3 or 4 and 9 years of age; and (4) adult females greater than or equal to 13 years of age and males greater than or equal to 9 years of age (Nakamoto et al. 1995).

Southern DPS North American Green Sturgeon adults typically begin their upstream spawning migrations into the Bay by late February to early March, reach Knights Landing in the upper Sacramento area by April, and spawn between March and July (Heublein 2006).

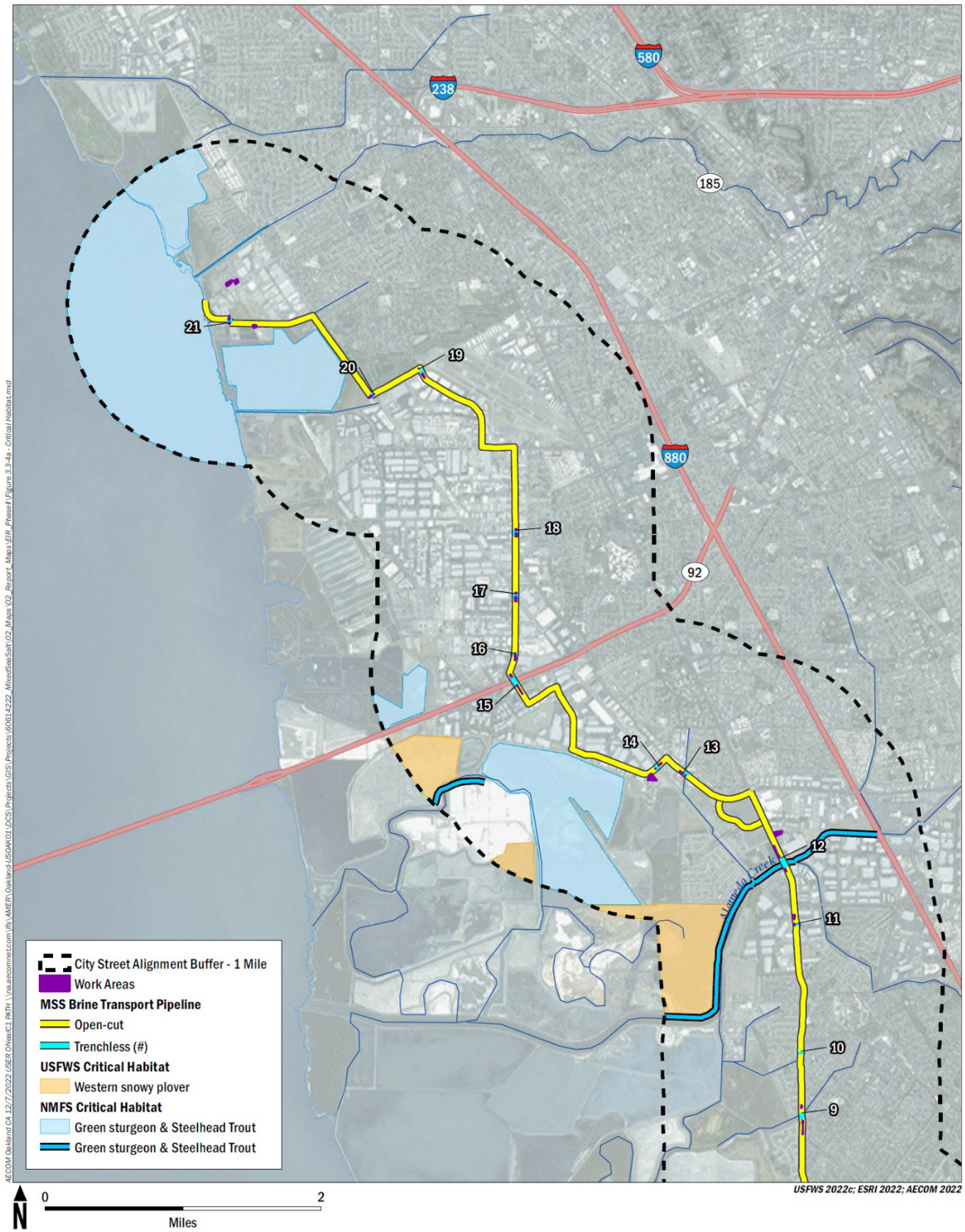
Green sturgeon are demersal (bottom-oriented) and primarily feed on benthic invertebrates. Adults captured in the Sacramento-San Joaquin Delta (Delta) are known to feed on invertebrates such as shrimp, mollusks, amphipods, and additionally upon small fish (Adams et al. 2002). Juvenile green sturgeon in the San Francisco Estuary have been shown to feed on opossum shrimp (*Neomysis mercedie*) and amphipods (*Corophium* spp.) (Moyle 2002). Larvae prefer open aquatic habitats for foraging but use structure habitat during the day.

On October 9, 2009, the NMFS issued a final designation of critical habitat for Green Sturgeon (74 CFR 52300-52351). This includes the designation of specific rivers, estuaries, and coastal areas as critical habitat for this species. The designated critical habitat for green sturgeon includes specific physical and biological features depending on the life stage, including freshwater riverine systems, estuarine areas, and nearshore marine waters (74 FR 52299). The specific physical and biological features associated with estuarine areas include:

- food resources,
- water flow,
- water quality,
- migratory corridor,
- water depth, and
- sediment quality (74 FR 52299).

Designated critical habitat for this species in the Bay includes in tidal areas and open water areas below mean higher high water. This includes several tidal channels and tidal ponds within the study area. Because the NMFS background layers mapping critical habitat are from 2009, an additional analysis was conducted utilizing more recent data and aerial photography to identify baylands that have been restored to tidal action (AECOM 2022). More specifically, critical habitat for steelhead is located within or adjacent to the following general areas, see Figures 3.3-3a and 3.3-b:

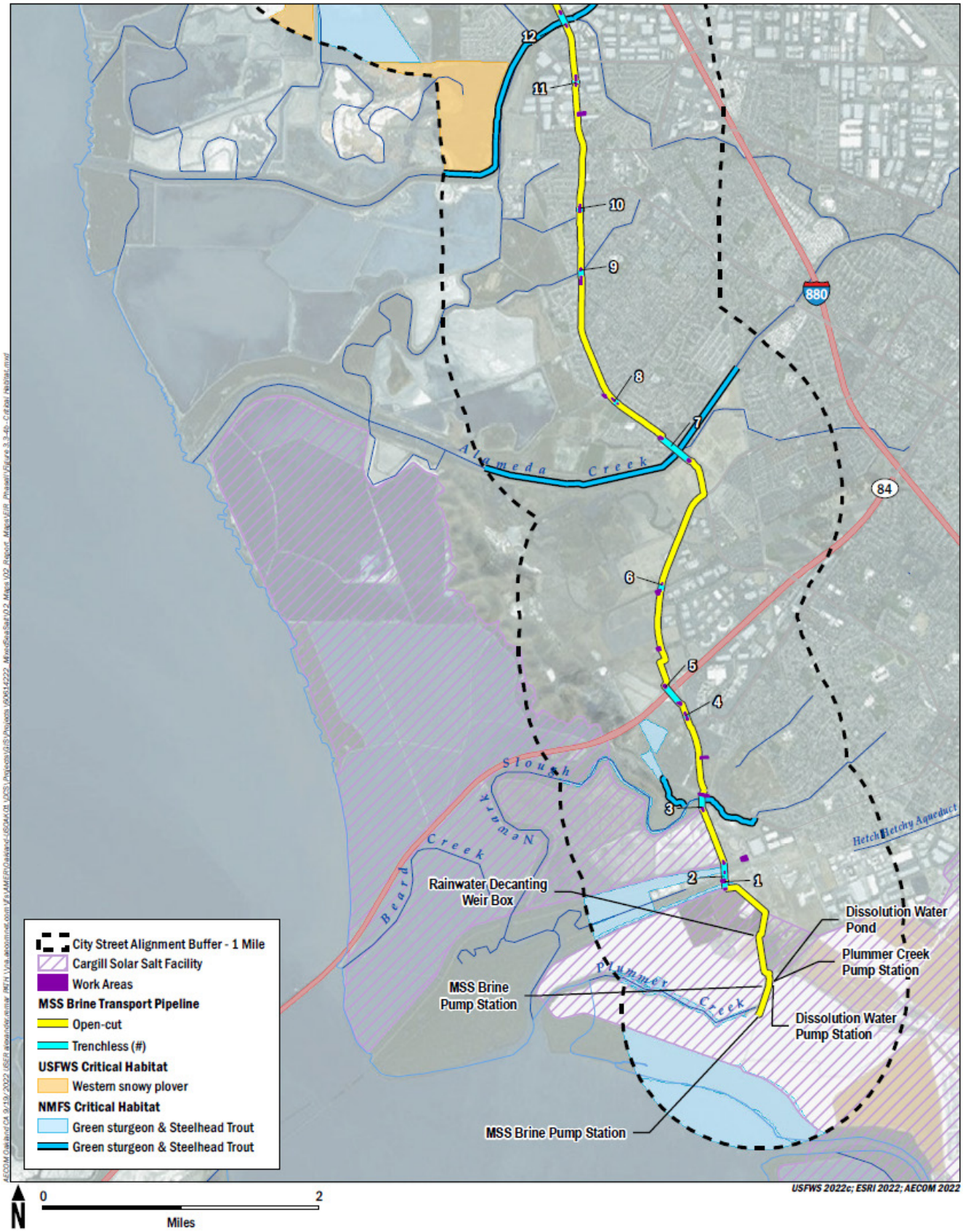
- Newark Slough tributary south of Hetch Hetchy Aqueduct (aka Barge Canal),
- Newark Slough at Thornton Avenue,
- Alameda Creek Flood Control Channel,
- Old Alameda Creek Flood Control Channel,
- adjacent to Northern Eden Landing berms,
- adjacent to Hayward Shoreline marshes north of SR 92,
- Sulphur Creek and Oro Loma Marsh, and
- San Francisco Bay.



Note: Numbers in figure refer to proposed trenchless crossings along the MSS brine transport pipeline alignment. (Refer to Table 2-2 in Section 2.6.8, "Construction," for crossing names.)

Source: Prepared by AECOM in 2022.

Figure 3.3-3a Designated Critical Habitat Northern Extent



Note: Numbers in figure refer to proposed trenchless crossings along the MSS brine transport pipeline alignment. (Refer to Table 2-2 in Section 2.6.8, "Construction," for crossing names.)

Source: Prepared by AECOM in 2022.

Figure 3.3-3b Designated Critical Habitat Southern Extent

Adult and juvenile green sturgeon are encountered regularly in the Bay during scientific surveys in the estuary (Heublein et al. 2017). Juvenile distribution and habitat use are still largely unknown, and juveniles were thought to be present year-round in all parts of the San Francisco Bay Estuary (Israel and Klimley 2008). However, many surveys have been conducted in the South Bay since 2000 and have not detected green surgeon in the region. Specifically, 2,307 combined midwater and otter trawl tows conducted at three stations in the South Bay between 2000 and 2018 did not detect green sturgeon. Additionally, sampling performed by the Hobbs Biogeochemistry and Fish Ecology Laboratory within the Alviso Marsh Complex near the Solar Salt Facility has been conducted continuously each month of the year since 2010 (Lewis 2018) and over the course of 1,669 sampling tows, during which 78,863 individual fish were captured; no green sturgeon were detected.

While there is a lack of recorded occurrences, critical habitat for this species occurs in the study area, and green sturgeon are therefore considered potentially present in tidal channels and ponds. There is no spawning habitat in the study area.

White Sturgeon

White sturgeon is a state species of special concern. Along with green sturgeon, they are one of two sturgeon species in California. White sturgeon are the oldest living and largest freshwater fish in North America reaching lengths up to 20 feet. Their habitat range and life cycle characteristics are similar to green sturgeon. They may be found in coastal waters from Ensenada, Mexico, to Alaska. Although occasionally found in the ocean, they primarily reside in large rivers and their associated estuaries, including the Sacramento-San Joaquin system in California, the Fraser River (British Columbia), and the Columbia River and its tributaries (Washington and Oregon). White Sturgeon in the Sacramento-San Joaquin system represent the southernmost spawning population of the species. White sturgeon are anadromous; adults migrate from the estuary into the river in winter, spawn from February to June, and return to the Delta after spawning (CDFW 2022d). Per CDFW mapping, the white sturgeon's extant range in California includes all of the San Francisco Bay and its tidal tributaries (CDFW 2016).

While there is a lack of recorded occurrences, CDFW mapping identifies white sturgeon's extant range as including the San Francisco Bay and its tidal tributaries (CDFW 2016), and they are therefore considered potentially present in tidal channels and ponds. There is no spawning habitat in the study area.

Central California Coast DPS Steelhead

The Central California Coast DPS steelhead includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo Bays eastward to the Napa River (inclusive), excluding the Sacramento-San Joaquin River basin. Two artificial propagation programs are considered to be part of the Central California Coast DPS: the Kingfisher Flat Hatchery in the Scott Creek watershed and the Don Clausen Fish Hatchery on Dry Creek (NMFS 2016).

The Central California Coast DPS steelhead was originally designated as threatened by NMFS on August 18, 1997 (63 FR 13347) and was reaffirmed on January 5, 2006 (71 FR 834) and April 26, 2016 (81 FR 33468). Critical habitat for the species was designated on September 2, 2005 (70 FR 52488).

Steelhead are an anadromous form of *Oncorhynchus mykiss*, spending time in both freshwater and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults migrate into freshwater streams to spawn. Unlike Pacific Salmon, steelhead are iteroparous, or capable of spawning more than once before death (Busby et al. 1996). Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles remain in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults. General reviews for steelhead in California document much variation in life history (Barnhart 1986; Busby et al. 1996; McEwan 2001). Although variation occurs, steelhead usually live in freshwater for 2 years, then spend 1 or 2 years in the ocean before returning to their natal stream to spawn.

Steelhead along the Central California Coast enter freshwater to spawn when winter rains have been sufficient to raise streamflows, typically between November and April, peaking in January and February. Increased streamflow during runoff events appears to provide cues that stimulate migration and allows for better conditions for fish to pass obstructions and shallow areas on their way upstream (Moyle 2002). Upstream migrating steelhead may be observed

in the Bay and Suisun Marsh/Bay between August and March. Spawning typically occurs between December and April, with most spawning occurring from January through March (Moyle 2002). Adults select spawning sites with gravel substrate and sufficient velocity to maintain circulation through the gravel, providing a clean, well-oxygenated environment for incubating eggs. Eggs typically hatch within 4 weeks and alevins remain in the gravel for another 4 to 6 weeks (CDFG 1996).

In Central California streams, steelhead typically rear for 1 or 2 years. Juvenile steelhead emigrate episodically from natal streams during fall, winter, and spring high flows, with the peak period of emigration occurring in the spring. Emigrating steelhead use the lower reaches of rivers and estuaries for rearing and as a migration corridor to the ocean. Barnhart (1986) reported that steelhead smolts in California range in size from 140 to 210 millimeter in fork length. Juveniles migrate to the ocean from March through June, with peak migration occurring in April and May (Fukushima and Lesh 1998).

Critical habitat was established for the Central California Coast DPS steelhead on September 2, 2005 (70 CFR 52488-52626). The designation includes natal spawning and rearing waters, migration corridors, and estuarine areas that serve as rearing areas. Designated critical habitat for steelhead includes a number of specific physical and biological features that are applicable to various life stages of the species. The physical and biological features associated with habitats in the study area include estuarine areas that are:

- Free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater,
- Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels, and
- Juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation (70 FR 52487).

Steelhead critical habitat in the Bay includes tidal areas and open water areas up to the extreme high tide line. Within the study area, this includes the waterbodies noted for green sturgeon.

Adult Central California Coast steelhead have the potential to be present in the South Bay more generally from November to April, and juveniles could occur between March and June (NMFS 2016). Outside of these migratory periods, the likelihood of Central California Coast steelhead occurring in the South Bay is low. There is little to no available data on fish assemblages in the tidal channels and ponds in the study area. However, many surveys have been conducted in the South Bay since 2000 and have not detected steelhead in the region. An analysis of data collected in trawl surveys conducted since 2000 showed zero detections of steelhead in the region of the Solar Salt Facility (CDFW 2020). Additionally, sampling within the Alviso Marsh Complex near the Solar Salt Facility since 2010 detected no steelhead in the complex. Nonetheless, Central California Coast steelhead may spawn in Alameda Creek and are known to spawn in Coyote Creek and the Guadalupe River watersheds, and the CNDDB includes a single extant occurrence from 1999 in the study area that overlaps with the proposed Alameda Creek Flood Control Channel crossing.

Based on the above analysis, steelhead have the potential to occur seasonally within tidal portions of the study area. Suitable spawning habitat is not present in the study area, but adults move through the area to spawn upstream (USFWS 2013a).

San Francisco Bay-Delta DPS of Longfin Smelt

Longfin smelt (*Spirinchus thaleichthys*) were listed as threatened under CESA in 2009, and the San Francisco Bay-Delta (Bay-Delta) DPS of Longfin Smelt was designated as a federal candidate species by USFWS in 2012. In 2012, USFWS also determined that listing the Bay-Delta DPS of Longfin Smelt was warranted, but the listing was precluded by higher-priority actions to amend the List of Endangered and Threatened Wildlife and Plants and USFWS only added the Bay-Delta DPS of Longfin Smelt to the USFWS candidate species list. Recently, however, USFWS revisited the matter, accepting comments from October 7 until December 6, 2022, on a new proposal to list the Bay-Delta DPS of Longfin Smelt.

Longfin smelt range from Monterey Bay northward to Hinchinbrook Island, Prince William Sound, Alaska. The southernmost known spawning population of longfin smelt is the Bay-Delta DPS. Longfin smelt occupy different habitats of the Bay-Delta estuary at various stages in their life cycle. The species uses both fresh and brackish water during its lifecycle and has also been found in pure seawater. Generally, spawning occurs in freshwater and rearing in brackish water. In the San Francisco Estuary, longfin smelt use the entire estuary from the coastal marine waters to the Delta. Longfin smelt are primarily an open water fish species, except for the larval stage, and inhabit the middle to lower water column. The remainder of their life is spent in San Francisco Bay or the Gulf of Farallones (USFWS 2012). The typical lifespan of longfin smelt is 2 years (Moyle 2002).

Generally, spawning occurs in freshwater over sandy-gravel substrates, rocks, and aquatic plants; and rearing in brackish water. Evidence from Grimaldo et al. (2017) suggests spawning habitats include open shallow water and tidal marshes. Longfin smelt spawn from November to May (Grimaldo et al. 2017; Lewis et al. 2020). Spawning occurs at temperatures that range from 5 degrees Celsius (°C) to 15°C (Grimaldo et al. 2017).

After hatching, larval longfin smelt occupy the upper one-third of the water column (USFWS 2012) until an air bladder develops when larvae reach 12 to 15 millimeters, which allows them to begin living in the bottom two-thirds of the water column (CDFG 2009; USFWS 2012). Early juvenile longfin smelt (20- to 40-millimeter standard length) are found in salinities up to 30 practical salinity units, but most are found in salinities between 2 and 18 practical salinity units (MacWilliams et al. 2016). By late summer, late juveniles can tolerate full seawater. They can be found farther downstream when freshwater flows are higher. It takes about 3 months for larval longfin smelt (less than 20 millimeters in length) to reach juvenile stage.

When waters are warm in the summer, longfin smelt move downstream toward the estuary and deeper waters where water temperatures are cooler. Furthermore, it has been suggested that temperatures above 22°C may limit longfin smelt (Rosenfield and Baxter 2007; CDFG 2009). After longfin smelt mature in the fall, the adults throughout San Francisco Bay migrate to brackish or freshwater areas in Suisun Bay, Montezuma Slough, the lower reaches of the Sacramento and San Joaquin rivers, and estuarine areas in the South Bay to spawn (Merz and Bergman 2013; Grimaldo et al. 2017; Lewis et al. 2020).

During late summer and early fall, juvenile and adult longfin smelt are more common throughout San Francisco Bay than in other areas (Rosenfield and Baxter 2007; MacWilliams et al. 2016). During the spawning period in late fall and early winter, adults are more commonly found in San Francisco Bay tributaries and marshes (Lewis et al. 2020), Suisun Bay, and the Delta (Rosenfield and Baxter 2007). Larval longfin smelt are broadly distributed throughout San Francisco Bay and its associated tributaries during wet years (MacWilliams et al. 2016; Lewis et al. 2020; Parker et al. 2017). Merz and Bergman (2013) found that larvae were more frequently detected in the Delta in drier years than in wet years, but overall, more than 50 percent of the measured larval abundance in any given year occurred in Suisun Bay and Suisun Marsh (Grimaldo et al. 2017). Some juveniles and adults are believed to move to the coastal ocean during the summer and fall (Rosenfield and Baxter 2007; MacWilliams et al. 2016).

For the Bay-Delta population, it appears that most longfin smelt spend the first year in Suisun Bay and Marsh and migrate in the second year to the Bay or Gulf of Farallones (Rosenfield and Baxter 2007; USFWS 2012). During the first year, this species tends to be abundant near freshwater outflow, where higher quality nursery habitat occurs, and potential feeding opportunities are greater. Juveniles tend to inhabit the middle and lower portions of the water column and tend to be associated with deeper water where prey items are found (Rosenfield and Baxter 2007; USFWS 2012).

One CNDDB occurrence that covers the entire South Bay was recorded approximately 0.25 mile south of Pond 13. This species is known to occur in the Bay, but likely occurs only in low numbers in the South Bay, such as within the study area.

Central Valley Fall-Run Chinook Salmon ESU

Central Valley Fall-Run and Late Fall-Run Chinook salmon are considered by NMFS to be the same ESU (64 FR 50394). NMFS determined that listing this ESU as threatened was not warranted (64 FR 50394) but subsequently classified it as a federal species of concern because of specific risk factors, including population size and hatchery

influence (69 FR 19975). The Central Valley Fall-Run and Late Fall-Run Chinook Salmon ESU is also listed as a state species of special concern (CDFW 2022a). The ESU includes all naturally spawned populations of Fall-Run Chinook salmon in the Sacramento and San Joaquin river basins and their tributaries east of Carquinez Strait, California. The Central Valley Fall-Run and Late Fall-Run Chinook Salmon ESU is not listed as threatened or endangered, so critical habitat has not been designated. For purposes of this biological resources analysis, the ESU is referred to as Fall-Run Chinook salmon.

In the Central Valley, Fall-Run Chinook salmon are the most numerous of the four salmon runs and continue to support commercial and recreational fisheries of significant economic importance. Fall-Run Chinook salmon is currently the largest run of Chinook salmon in the Sacramento River system.

The generalized life history of Fall-Run Chinook salmon involves spawning, incubation, hatching, emergence, freshwater rearing, migration to the ocean, and the return to freshwater to spawn after maturation (Myers et al. 1998).

Fall-Run Chinook salmon are not native to the tributaries of the South Bay. Adult Fall-Run Chinook salmon enter the Sacramento and San Joaquin Rivers from July through December. They stage for a relatively short period of time prior to spawning, which occurs from late September to December, with peak spawning taking place during late October and November when water temperatures decrease (Moyle 2002). Chinook salmon are dependent upon suitable water temperature and substrate for successful spawning and incubation.

Fall-Run Chinook salmon spawn over gravel and construct redds soon after arriving at their spawning grounds. The quality of spawning habitat is correlated to clean, well oxygenated gravel substrates providing a suitable environment for incubation. In the Central Valley, fry emergence generally occurs from late December through March (Moyle 2002). Juveniles typically remain in redds from about 32 to 159 days, depending on water temperature (Healey 1991). In spring, juveniles emerge from the gravel and begin to move downstream, rearing in mainstem rivers and estuaries for a few months before migrating to the ocean (Moyle 2002). Rearing habitat quality for Fall-Run Chinook salmon is defined by the environmental conditions, such as water temperature, dissolved oxygen, turbidity, substrate, area, water velocity, water depth, and cover (Bjornn and Reiser 1991; Healey 1991; Jackson 1992). Environmental conditions and interactions among individuals, predators, competitors, and food sources determine habitat quantity and quality and the productivity of the stream (Bjornn and Reiser 1991). Rearing habitat for juvenile Chinook salmon includes riffles, runs, pools, and inundated floodplains.

Adult Fall-Run Chinook salmon typically spend 2 to 4 years maturing in the ocean before returning to their natal streams to spawn. The life history strategy of Fall-Run Chinook salmon leads to a high rate of "straying," which allows individuals to take advantage of favorable conditions in streams not normally used for spawning or to colonize new watersheds that develop as a result of fluvial processes (Moyle 2002). In recent years, Fall-Run Chinook salmon have established spawning populations in the Guadalupe River and Coyote Creek, tributaries to the South Bay (Moyle 2002). Although these spawning populations are not native to these watersheds, the ESU is considered special-status.

Central Valley Fall-Run Chinook salmon are known to be present in several South Bay creeks (including Coyote Creek, Alameda Creek, and the Guadalupe River) and associated marshes and small channels within the Refuge, especially as habitat for smolts as they transition to life in a marine environment. Suitable spawning habitat is not present within the study area, but this species moves through the area to spawn upstream (USFWS 2013a).

Pacific Lamprey

Pacific Lamprey is not listed under the federal ESA or CESA, although it is identified as a species of special concern by CDFW (CDFW 2022a). Pacific Lamprey was petitioned for protection under the ESA in 2003, but USFWS determined that insufficient population information existed to warrant its listing.

Pacific Lamprey are the most widely distributed lamprey species on the west coast of the United States. Their distribution includes major river systems such as the Fraser, Columbia, Klamath-Trinity, Eel, and Sacramento and San Joaquin rivers. Adult Pacific lampreys typically migrate into freshwater streams between March and June, but upstream migrations have been observed during January and February (Moyle 2002). Most upstream movement is reported to occur at night (USFWS 2010a; Moyle 2002).

Spawning reportedly generally occurs between March and July (USFWS 2010a). The spawning habitat requirements of Pacific lampreys have not been well studied, but it is believed that adults need clean, gravelly riffles in permanent streams to spawn successfully and that these requirements are similar to those of salmonids (Moyle 2002; USFWS 2010a). Typically, spawning habitat is located near suitable ammocoete (larvae) habitat, and low-to-moderate-gradient stream reaches with a mix of silt and cobble substrate are reported to potentially offer optimal spawning and rearing habitat (USFWS 2010a). Pacific Lamprey reportedly may spawn more than once in their lifetime (Moyle 2002).

Moyle (2002) reported that Pacific Lamprey embryos hatch in about 19 days at 15°C (59 degrees Fahrenheit [°F]). Eggs hatch into ammocoetes, spend a short time in the nest, and then drift downstream to suitable areas that contain sand, silt, or mud substrates (Moyle 2002; USFWS 2010a). Typical lamprey larva (ammocoete) habitat includes areas of low velocity with muddy or sandy substrate into which they burrow and remain in freshwater for about 3 to 7 years. Although mostly sedentary during their freshwater residence, lamprey larva are reported to have the ability to move downstream when disturbed or during high-flow events (USFWS 2010a).

Lamprey larvae begin metamorphosis into juveniles (macropthalmia) when they reach 14 to 16 centimeters total length. Juveniles reportedly drift and swim downstream between late fall and spring (USFWS 2010a), but others report that downstream migration is associated with increased streamflows during the winter and spring (USFWS 2010a). Juvenile life stages of lamprey (ammocoetes and macropthalmia), as well as adult Lampreys, are reported to stay close to the stream bottom during their migration periods.

Adult and larval Pacific Lamprey have been documented in freshwater habitats north and south of the Solar Salt Facility, occurring in Alameda Creek, Coyote Creek, and the Guadalupe River (Leidy 2007). Little is known about their presence in the study area, but they may be present in tidal channels and ponds. There is no suitable spawning habitat in the study area.

Essential Fish Habitat

In the study area, all tidally influenced portions of the Bay are classified as EFH for three Fisheries Management Plans (FMPs), see Figures 3.3-4a and 3.3-4b:

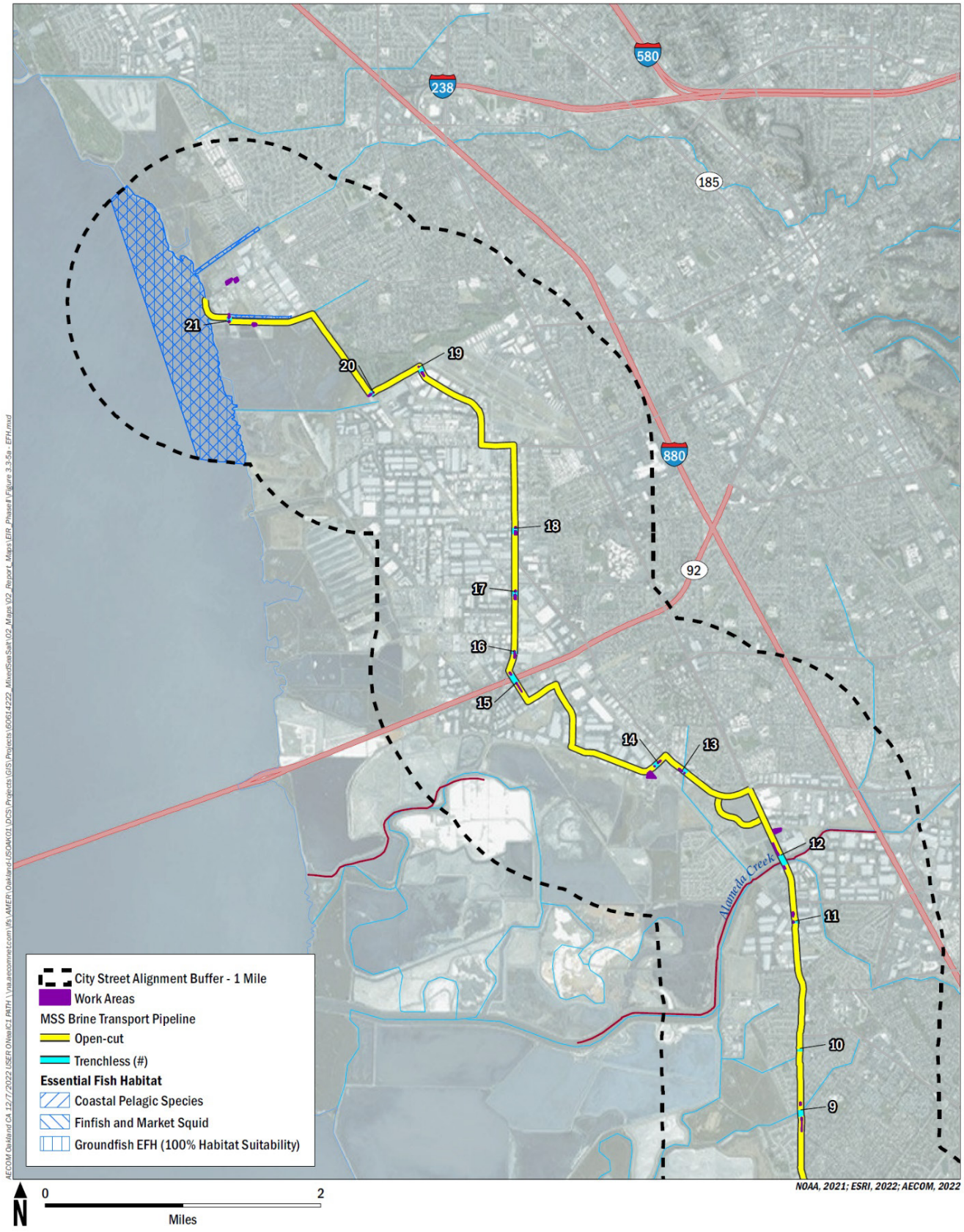
- Coastal Pelagic
- Pacific Groundfish
- Pacific Coast Salmon

A complete list of the species covered by each FMP can be found online at https://www.fisheries.noaa.gov/rules-and-announcements/plans-and-agreements. In addition to EFH designations, the Bay is designated as a Habitat Area of Particular Concern for various fish species in the Pacific Groundfish and Coastal Pelagic FMPs because this estuarine system serves as breeding and rearing grounds important to these fish stocks. The lateral extent of EFH in the study area is the mean higher high-water line.

The Coastal Pelagic FMP is designed to protect habitat for a variety of fish species that are associated with open coastal waters. A total of seven stocks are managed under this plan and include planktivores and their predators. All Bay waters in the study area occur in EFH for fish managed under the Coastal Pelagic FMP.

The Pacific Groundfish FMP is designed to protect habitat for more than 90 species of fish, including rockfish, flatfish, groundfish, some sharks and skates, and other species that associate with the underwater substrate. This includes both rocky and muddy substrates. All Bay waters in the study area occur in EFH for fish managed under the Pacific Groundfish FMP.

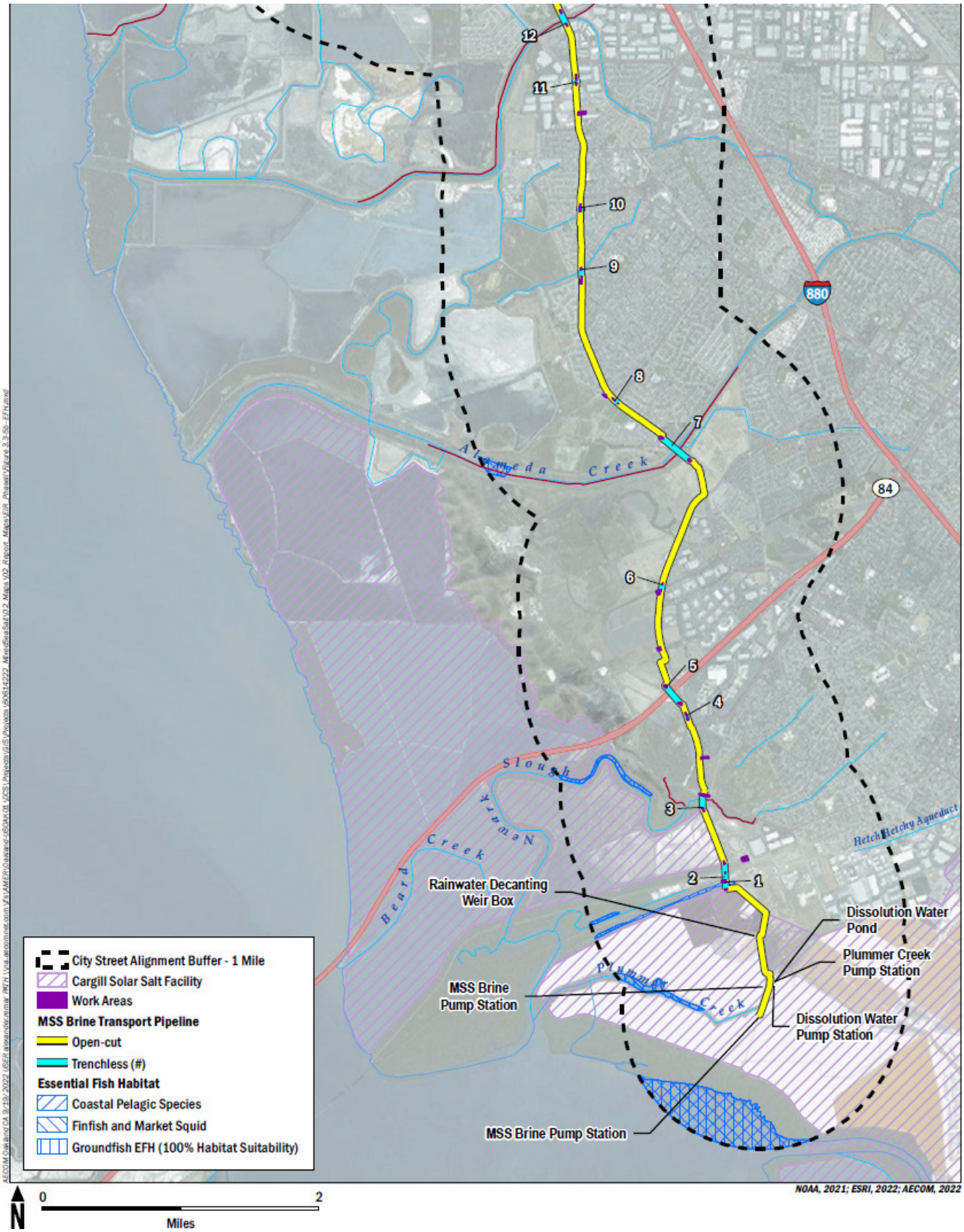
The Pacific Salmon FMP is designed to protect habitat for commercially important salmonid species. Chinook and Coho salmon are the salmonid species managed under the Pacific Salmon FMP that could be seasonally present in the study area. All anadromous waters in the study area occur in Chinook and Coho Salmon EFH.



Note: Numbers in figure refer to proposed trenchless crossings along the MSS brine transport pipeline alignment. (Refer to Table 2-2 in Section 2.6.8, "Construction," for crossing names.)

Source: Prepared by AECOM in 2022.

Figure 3.3-4a Essential Fish Habitat Northern Extent



Note: Numbers in figure refer to proposed trenchless crossings along the MSS brine transport pipeline alignment. (Refer to Table 2-2 in Section 2.6.8, "Construction," for crossing names.)

Source: Prepared by AECOM in 2022.

Figure 3.3-4b Essential Fish Habitat Southern Extent

Birds

California Ridgway's Rail

The California Ridgway's rail was federally listed as endangered in 1970 (35 FR 16047). The California Ridgway's rail is also state listed as endangered and a fully protected species under California law (California Fish and Game Code Section 3511). No critical habitat has been designated for this species.

Throughout their distribution, California Ridgway's rails occur in a range of tidally influenced salt and brackish marshes. The only known breeding population resides in the marshes of the San Francisco estuary. In the South Bay, there are populations in all large tidal marshes. Distribution in the North Bay is patchy and discontinuous, primarily in small, isolated habitat fragments. Small populations are also widely distributed throughout San Pablo Bay. Populations are present sporadically and in low numbers at various locations throughout the Suisun Marsh area (i.e., Carquinez Strait to Browns Island, including tidal marshes adjacent to Suisun, Honker, and Grizzly bays). In south and central San Francisco Bay and along the perimeter of San Pablo Bay, rails typically inhabit tidal salt marshes dominated by pickleweed and Pacific cordgrass (*Spartina foliosa*). Pacific cordgrass dominates the middle marsh zone throughout south and central San Francisco Bay. Use of brackish marshes by California Ridgway's rails is largely restricted to major sloughs and rivers of San Pablo Bay and Suisun Marsh, and along Coyote Creek in the South Bay. California Ridgway's rails occur almost exclusively in marshes with unrestricted daily tidal flows; they have rarely been recorded in nontidal marsh areas. They require habitat blocks with adequate invertebrate prey food, well-developed tidal channel networks, and suitable nesting and escape cover.

The breeding season of California Ridgway's rails begins by February. Nesting starts in mid-March and extends into August. Nests are typically loosely constructed from available vegetation and elevated to prevent inundation. The end of the breeding season is typically defined as the end of August, which corresponds with the time when eggs laid during nesting attempts have hatched and young are mobile. Clutch sizes range from five to 14 eggs. Both parents share in incubation and rearing.

California Ridgway's rails are most active in early morning and late evening, when they forage in marsh vegetation in and along creeks and mudflat edges. They often roost at high tide during the day, spending most of the day roosting and preening during the nonbreeding season (USFWS 2013b).

There are seven CNDDB recorded occurrences of this species within the study area. The project includes an HDD crossing of Newark Slough at Thornton Avenue which overlaps with Ridgway's rail CNDDB mapped occurrence range in adjoining tidal marsh habitat. Another CNDDB mapped occurrence and habitat range occurs in the western portion of Oro Loma Marsh, west of the MSS brine transport pipeline alignment along the marsh's eastern berm. Other notable CNDDB records near the pipeline alignment occur in tidal marsh associated with the Newark Slough tributary south of Hetch Hetchy Aqueduct and SamTrans Rail Line/Hetch Hetchy Aqueduct area (approximately 0.6 mile west of the project); and in tidal marsh immediately northwest of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant. Within the study area, there is potential Ridgway's rail nesting habitat in the form of stands of tall wetland emergent vegetation, and foraging habitat in the form of salt marsh habitat.

Western Snowy Plover

The Pacific Coast population of the Western snowy plover was federally listed as threatened on March 5, 1993 (58 FR 12864). It is also a state species of special concern. A final recovery plan for the species was issued in 2017 (USFWS 2007).

The Western snowy plover breeds on the Pacific Coast from southern Washington to southern Baja California, Mexico, and in interior areas of Oregon, California, Nevada, New Mexico, Colorado, Kansas, Oklahoma, and north-central Texas (USFWS 1993). The Pacific coast population of the Western snowy plover is genetically isolated from Western snowy plovers breeding in the interior; the Pacific coast population is defined as those individuals that nest adjacent to or near tidal waters, and includes all nesting colonies on the mainland coast, peninsulas, offshore islands, adjacent bays, and estuaries (USFWS 1993). The current Pacific coast breeding population extends from Midway Beach, Washington, to Bahia Magdalena, Baja California Sur, Mexico; most breeding Western snowy plovers continue to nest in California (USFWS 2019).

Snowy plovers breed in loose colonies, with many snowy plovers returning to the same breeding site in subsequent breeding seasons (USFWS 1993). The nesting season for the coast population of the Western snowy plover extends from mid-March through mid-September (USFWS 1993). Nest placement is in a natural or scraped depression on dry ground, usually lined with pebbles, shell fragments, fish bones, mud chips, vegetation fragments, or invertebrate skeletons. The typical clutch size is usually three eggs, with incubation by both parents for about 27 days; fledging requires an average of 31 days. Double brooding after loss of a clutch or brood or successful hatching of a nest is common in coastal California (USFWS 1993).

Salt ponds of San Francisco Bay provide breeding and wintering habitat for Western snowy plovers. Dry salt ponds and unvegetated salt pond berms are used as Western snowy plover nesting habitat. Ponds with shallow water provide important foraging habitat for Western snowy plovers, with ponds of low and medium salinity providing the highest invertebrate densities. Ponds of high salinity have reduced invertebrate densities and therefore provide lower quality foraging habitat (USFWS 2007).

Wintering habitat is similar to habitat used during the nesting season. Snowy plovers are known to forage on invertebrates in the wet sand and amongst surf-cast kelp in the intertidal zone; in dry, sandy areas above the high tide; on salt pans; on spoil sites; and along the edges of salt marshes and salt ponds (USFWS 2007).

Designated critical habitat for the Western snowy plover includes salt flats, mud flats, seasonally exposed gravel bars, artificial salt ponds and adjoining berms, and dredge spoil sites with the following physical and biological features:

- areas that are below heavily vegetated areas and above the daily high tides;
- shoreline habitat areas for feeding, with no or very sparse vegetation, that are between the annual low tide or low water flow and annual high tide or highwater flow, subject to inundation but not constantly under water, that support small invertebrates;
- surf- or water-deposited organic debris; and
- minimal disturbance from the presence of humans, pets, vehicles, or human-attracted predators (77 FR 36728).

Critical habitat for Western snowy plover does not include manmade structures (such as buildings, roads, paved areas, boat ramps, and other developed areas) and the land on which such structures are directly located and existing (77 FR 36728).

Within the study area, critical habitat for Western snowy plover occurs within the Eden Landing Ecological Reserve. There are two CNDDB recorded extant occurrences of Western snowy plover in the study area, one of which is historical (dating to 1971). The remaining occurrence was mapped to Eden Landing Ecological Reserve as recently as 2017. Suitable nesting habitat for this species is present in study area pond habitats, and foraging habitat is present in tidal marsh, playa, and other wetland habitats.

California Black Rail

California black rail is state listed as threatened (CDFW 2022a) and is a California fully protected species. This species most commonly inhabits tidal emergent wetlands dominated by pickleweed, or in brackish marshes supporting bulrushes in association with pickleweed. They are occasionally found in freshwater among bulrushes, cattails, and saltgrass. They are most abundant in the high wetland zones near upper limit of tidal flooding. California black rail nesting occurs in dense vegetation, often pickleweed, near upper limits of tidal flooding (California Wildlife Habitat Relationships System 1999).

California black rail has been observed near the MSS brine transport pipeline alignment both in Old Alameda Creek (approximately 1 mile downstream from the proposed Old Alameda Creek Flood Control Channel HDD crossing) and the Alameda Creek Flood Control Channel (approximately 500 feet upstream and 0.5 mile downstream from the proposed HDD crossing). The remaining observations were recorded in wetland habitats on the Bay shoreline, greater than 0.5 mile away from the pipeline alignment. Within the study area, California black rail may forage or nest in vegetated wetlands, predominantly in emergent tidal marshes.

Alameda Song Sparrow

The Alameda song sparrow is considered a species of special concern by CDFW (CDFW 2022a). This species is a resident of salt marshes bordering the South Bay. Alameda song sparrows inhabit pickleweed marshes and nest low in gumplant bushes and pickleweed (though high enough to escape high tides).

There are four CNDDB recorded occurrences within the study area, including two historical occurrences (dating to 1919 and 1939). The closest recent (2004) occurrence is from tidal marsh and pond habitat approximately 0.25 mile southwest of the project's Newark Slough at Thornton Avenue HDD crossing. Alameda song sparrows may forage or nest in wetland habitats throughout the study area.

Salt-Marsh Common Yellowthroat

Salt marsh common yellowthroat) is considered a species of special concern by CDFW (CDFW 2022a). The salt marsh common yellowthroat is a resident of the San Francisco Bay region, in fresh and saltwater marshes. This species requires thick, continuous cover down to the water surface for foraging and tall grasses, tule patches, and willows for nesting.

There are six CNDDB recorded extant occurrences in the study area including within a nonspecific area of Alameda Creek that overlaps with the proposed Old Alameda Creek Flood Control Channel crossing dating to 1976. Two additional observations are within 400 to 600 feet of the MSS brine transport pipeline alignment near Union City Boulevard. Salt-marsh common yellowthroat may forage or nest in wetland habitats throughout the study area.

Northern Harrier

Northern harrier is considered a species of special concern by CDFW (CDFW 2022a). They are known to forage in coastal salt and freshwater marshes and adjacent habitats and are also known to nest in high marsh on the ground or in low-growing vegetation.

There are two CNDDB recorded extant occurrences of this species, including a mapped occurrence range within Coyote Hills Regional Park that overlaps with the MSS brine transport pipeline alignment between approximately SR 84 and the Alameda Creek Flood Control Channel (dating to 1971). The second occurrence was mapped approximately 0.7 mile southwest of the project's southern terminus at the Solar Salt Facility. The study area includes suitable foraging habitat for this species in wetlands and adjacent areas, and nesting may occur in high marsh and other marsh areas that are not tidally inundated.

Tricolored Blackbird

Tricolored blackbird is state listed as threatened and as a species of special concern (CDFW 2022a). Individuals of the species nest in wetlands and triticale (a type of grain) fields, near stock ponds, and in irrigated pastures. Foraging habitats include cultivated fields, feedlots associated with dairy farms, and wetlands. They now nest almost exclusively in triticale fields, especially those with invasive mustard or mallow plants. Females select the nesting site within a male's territory, typically close to freshwater, with plenty of concealing vegetation. Females build nests in vegetation from just above ground level up to about 8 feet. Tricolored blackbirds typically have one to two broods each breeding season. They form dense breeding colonies and defend only their nesting patch (Cornell University 2019).

There are two CNDDB recorded occurrences of this species within the study area, one of which is extirpated from the region. The extant occurrence was last observed in 1974 within Coyote Hills Regional Park, with a mapped habitat range that includes a portion of the MSS brine transport pipeline alignment between approximately SR 84 and the Alameda Creek Flood Control Channel.

Marginally suitable foraging habitat is present within study area wetlands and grasslands. There is little if any nesting habitat for this species, likely confined to grassland areas adjoining freshwater features.

Burrowing Owl

Burrowing owl is considered a species of special concern by CDFW (CDFW 2022a). This species inhabits open, treeless areas with low, sparse vegetation, usually on gently sloping terrain. Burrowing owls nest in burrows dug by other animals, often in areas that have loose soil, a bit of elevation to avoid flooding, and nearby lookouts such as dirt mounds, bushes, fence posts, or road signs. Burrowing owls eat invertebrates and small vertebrates, including lizards,

birds, and mammals, and hunt at all hours of the day and night. While hunting, they often stay close to the ground seizing prey in their talons. Between forays for food, they sleep on dirt mounds at their burrow entrances or on depressions in the ground.

There are five CNDDB recorded occurrences of this species in the study area, two of which are possibly extirpated. One extant occurrences habitat range is mapped in the area of the MSS brine transport pipeline alignment northwest of the former Skywest Golf Course in Oro Loma Marsh. Another extant occurrence habitat range is mapped within the optional alignment on Eden Shores Boulevard and Marina Drive; however, the CNDDB identifies this occurrence as within grassland habitat, and the project alignment would occur within the developed roadway. The remaining mapped extant occurrence range occurs in pasture habitat approximately 600 feet west of the pipeline alignment on Paseo Padre Parkway. Within the study area, suitable foraging, roosting, and nesting habitat for burrowing owl is present predominantly including berms and open grassland areas.

White-Tailed Kite

White-tailed kite is a state fully protected species (CDFW 2022a). This species forages in open grasslands, meadows, or marshes. They nest and perch in dense-topped trees.

There are three CNDDB recorded extant occurrences of this species in the study area. This includes an occurrence that overlaps with the MSS brine transport pipeline alignment along Paseo Padre Parkway. The remaining two occurrences were recorded 900 feet and 0.3 mile west of the pipeline alignment along Union City Boulevard and Paseo Parkway (respectively). Each of these occurrences dates to 1971 and were made in willow or sycamore trees. The study area includes foraging habitat for this species, primarily within grassland and wetland habitats. The study area does not include dense woodland near the pipeline alignment, and marginal nesting habitat would be limited to within areas containing sparse ornamental or native trees, such as within the former Skywest Golf Course.

California Brown Pelican

The California brown pelican is fully protected under California Fish and Game Code (CDFW 2022a). Brown pelicans feed close to shore, primarily in shallow waters of estuaries. Nest sites generally occur on the ground or low shrubbery of steep coastal slopes on small islands, isolated from ground predators and human disturbance.

There are no CNDDB recorded occurrences of this species in the study area. The study area contains only marginal foraging habitat for this species, confined to waters near the Bay shore. There is no suitable nesting habitat for this species in the study area.

Yellow Rail

The yellow rail is considered a species of special concern by CDFW (CDFW 2022a). The Yellow Rail occurs year-round in California, but in two primary seasonal roles: currently as a very local breeder in the northeastern interior and as a winter visitor (early October to mid-April) on the coast and in the Suisun Marsh region. The yellow rail inhabits densely vegetated marshes, and for breeding requires sedge marshes/meadows with moist soil or shallow standing water.

There is a single CNDDB recorded extant and historical occurrence (1883) in the study area that overlaps with the MSS brine transport pipeline alignment in the Eden Landing Ecological Reserve and Alameda Creek region along Union City Boulevard. Tidal marsh or other wetland habitats with dense vegetation may provide habitat for this species.

MBTA Birds

Migratory birds and their occupied nests are protected by the MBTA and under California Fish and Game Code Sections 3503 and 3503.5. This applies to all migratory birds except the house sparrow *(Passer domesticus*), European starling (*Sturnus vulgaris*), rock dove (*Columba livia*), and some game species. Suitable foraging and nesting habitat for a wide variety of MBTA birds occurs throughout the study area, though are likely precluded from roadways and other hardscaped urban areas with frequent disturbance.

Terrestrial Mammals

Pallid Bat

The pallid bat is considered a species of special concern by CDFW. Pallid bats occur in a number of habitats, including coniferous forests, nonconiferous woodlands, brushy terrain, rocky canyons, open farmland, and desert. Common roost sites are rock crevices, old buildings, bridges, caves, mines, and hollow trees. Pallid bats forage primarily on large arthropods caught on the ground or gleaned off vegetation (Pierson and Rainey 1998).

There is a single CNDDB recorded extant occurrence of this species in the study area, mapped in 1932 nearby Mount Eden overlapping with a short segment of the MSS brine transport pipeline alignment. Pallid bats may roost in annual grassland or cropland habitat in the study area and may nest in buildings or bridges within urban developed areas.

Salt-Marsh Harvest Mouse

The salt-marsh harvest mouse was federally listed as endangered in 1970 (35 FR 16047). The listing at the species level includes two subspecies: the northern salt marsh harvest mouse (*R. r. halicoetes*), found in San Pablo and Suisun Bays; and the salt-marsh harvest mouse (*R. r. raviventris*), found in the marshes of Corte Madera, Richmond, and the South Bay. The salt-marsh harvest mouse is also state listed as endangered and a fully protected species under California law (California Fish and Game Code Section 4700). No critical habitat has been designated for this species.

Previously, it was thought that salt-marsh harvest mouse primarily used tall, dense pickleweed-dominated vegetation that remained unsubmerged in saline soil, with taller, denser stands supporting the most harvest mice (USFWS n.d.). Although this is still important habitat, newer studies have shown that the salt-marsh harvest mouse can also be found in high numbers in brackish, diked marshes in Suisun Bay, primarily in mature stands of bulrush (*Schoenoplectus americanus*) (USFWS 2010b; Smith et al. 2018). Other research indicates that the mice may also be able to use other habitats and feed on rabbit's foot grass (*Polypogon*) and fat hen rather than pickleweed (Smith 2017). In addition, some studies have shown salt-marsh harvest mouse to occasionally use terrestrial grassland habitat adjacent to tidal marshes, with cover acting as a limiting factor in its use (USFWS n.d.), as well as diked managed wetlands (Smith et al. 2018). In general, habitat must provide vegetation with a minimum height of around 15 centimeters to provide year-round cover from predators, as well as food and escape from flooding.

The average home range of salt-marsh harvest mouse is approximately 0.5 acre; most activity occurs at night, with a mean linear distance moved of 11.9 meters in 2 hours (USFWS 2010b). Some (i.e., approximately 15 to 20 percent) of the activity may occur during the day (USFWS 2010b). Female reproductive activity ranges from March to November, and sexual activity runs from May through November; females typically produce one to two litters of four per year (Smith et al. 2018). Nests are minimal and usually built over abandoned birds' nests (USFWS n.d.; 2010b).

There are 13 CNNDB recorded presumed extant occurrences of this species within the study area. The MSS brine transport pipeline alignment overlaps with salt-marsh harvest mouse mapped occurrence ranges at the proposed Newark Slough at Thornton Avenue HDD crossing and in playa habitat west of Quarry Road. This species has also been recorded in dense pickleweed within Oro Loma Marsh. Several other occurrences have been recorded within 1,000 feet or less of pipeline alignment. There is potential foraging and nesting habitat within tidal marsh throughout the study area, and salt-marsh harvest mouse may traverse berms to move between tidal marsh habitats.

Salt-Marsh Wandering Shrew

The salt-marsh wandering shrew is considered a species of special concern by CDFW. Similar to salt-marsh harvest mouse, salt-marsh wandering shrew inhabit salt marshes of the South Bay that consist of dense pickleweed and require upland or tidal refuge habitat.

There are three CNDDB recorded extant occurrences in the study area. This includes one within tidal marsh that overlaps with the project's Newark Slough at Thornton Avenue HDD crossing, and another in Newark Slough approximately 0.6 mile west of the project's Newark Slough tributary south of Hetch Hetchy Aqueduct and SamTrans Rail Line/Hetch Hetchy Aqueduct crossings. The third is mapped near the shoreline more than 0.5 mile from the MSS brine transport pipeline alignment. There is potential foraging and nesting habitat within tidal marsh throughout the study area, and salt-marsh wandering shrew may traverse berms to move between tidal marsh habitats.

Invertebrates

Monarch Butterfly

In 2020, USFWS determined that listing the monarch butterfly as threatened or endangered was warranted, but the listing was precluded by higher-priority actions to amend the List of Endangered and Threatened Wildlife and Plants. Therefore, the monarch butterfly was identified as a USFWS candidate species on December 17, 2020 (USFWS 2022d). The monarch butterfly is not listed under CESA, and is not identified as a Species of Special Concern by CDFW (CNDDB 2022); however, it is included on CDFW's California Terrestrial and Vernal Pool Invertebrates of Conservation Priority list, and was identified as a Species of Greatest Conservation Need in California's State Wildlife Action Plan (CDFW 2017; CDFW 2015). CDFW monitors overwintering colonies of this species because monarch populations in California have severely declined since the 1980s (Xerces Society 2017). The cause of this decline is thought to be loss of milkweed (*Asclepias* spp.) and nectar plants; loss and degradation of overwintering groves; and other stressors like disease, insecticides, and impacts of climate change (Xerces Society 2017).

Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. During the breeding season, monarchs lay their eggs on their obligate milkweed host plant, and larvae emerge after 2–5 days. In many regions where monarchs are present, monarchs breed year-round. Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, and live for an extended period of time. In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. This migration can take monarchs distances of over 3,000 kilometers and last for over 2 months. In early spring (February to March), surviving monarchs break diapause and mate at the overwintering sites before dispersing (USFWS 2022d). The monarch overwintering season is typically October to March.

There are three CNDDB recorded occurrences of monarch butterfly (California overwintering population) in the study area, including an occurrence mapped in 2013 within an unspecified area of the former Skywest Golf Course. The occurrence includes roosting populations in blue gum eucalyptus trees (*Eucalyptus globulus*). As reported by the Xerces Society for Invertebrate Conservation in 2016, there are four monarch butterfly priority overwintering sites in Alameda County (at San Leandro Golf Course, Ardenwood Historic Farm, Chuck Corica Golf Course, and Albany Hill) (Xerces Society 2016). The nearest priority site, Ardenwood Historic Farm, occurs approximately 1 mile east of the MSS brine transport pipeline alignment. The Western Monarch Milkweed Mapper also identifies multiple occurrences of monarchs, monarch breeding, and milkweed occurrences within the study area (Xerces Society et al. 2022).

Plants

Adobe Sanicle

Adobe sanicle is a CNPS list 1B.2 plant that blooms from February to May and occurs in chaparral, coastal prairie, meadows and seeps, valley and foothill grassland. There are no CNDDB documented occurrences of this species in the study area; however, species specific surveys have not occurred, and annual grassland or cropland habitat within the study area may be suitable for this species.

Alkali Milk-Vetch

Alkali milk-vetch is a CNPS list 1B.2 plant that blooms from March to June and occurs in alkali playa, valley and foothill grassland, vernal pools, low ground, alkali flats, flooded lands, annual grasslands, and vernal pools. There are two extirpated and two possibly extirpated CNDDB recorded occurrences of this species in the study area. The mapped occurrence ranges of the possibly extirpated occurrences are located just east of the southern portion of the MSS brine transport pipeline alignment, dating to 1895; and in an urban developed area overlapping with the Alternative 2 and 3 alignments near Depot Road in Hayward, last observed in 1959. Alkali wetlands, annual grasslands, and croplands within the study area may be suitable for this species.

Bent-Flowered Fiddleneck

Bent-flowered fiddleneck is a CNPS list 1B.2 plant that blooms from March to June and occurs in coastal bluff scrub, cismontane woodland, valley and foothill grassland. There are no CNDDB documented occurrences of this species in

the study area; however, species specific surveys have not occurred, and annual grassland or cropland habitat within the study area may be suitable for this species.

Big-Scale Balsamroot

Big-scale balsamroot is a CNPS list 1B.2 plant that blooms from March to June and occurs in chaparral, cismontane woodland, and valley and foothill grassland. There are no CNDDB documented occurrences of this species in the study area; however, species specific surveys have not occurred, and annual grassland or cropland habitat within the study area may be suitable for this species.

California Seablite

California seablite is federally listed as endangered and is a CNPS list 1B.1 plant that blooms from May to October and occurs in the margins of coastal salt marshes. There is a single CNDDB recorded extant occurrence of California seablite from a transplant population in 2008 that overlaps the study area near Roberts Landing and San Lorenzo Creek. Wetlands in the study area including tidal marsh, playa, and vegetated ponds may be suitable for this species.

Chaparral Ragwort

Chaparral ragwort is a CNPS list 2B.2 plant that blooms from January to April and occurs in chaparral, cismontane woodland, coastal scrub, drying alkaline flats. There is a single CNDDB recorded extant occurrence of Chaparral ragwort in the study area mapped in 1892 near Coyote Hills Regional Park between Alameda Creek and the Newark Slough. Sparsely vegetated alkali wetlands in the study area, particularly playa habitat, may be suitable for this species.

Congdon's Tarplant

Congdon's tarplant is a CNPS list 1B.1 plant that blooms from May through November and occurs in valley and foothill grasslands in alkaline soils. There are four CNDDB recorded extant occurrences of this species within the study area. This includes a population mapped approximately 0.5 mile west of the project Newark Slough at Thornton Avenue HDD crossing; a population along railroad tracks approximately 0.4 mile east of the project SamTrans Rail Line/Hetch Hetchy Aqueduct crossing; a population within an undeveloped urban field approximately 0.6 mile west of the MSS brine transport pipeline alignment on Clawiter Road; and in disturbed ruderal habitat near Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant approximately 700 feet north of the pipeline alignment. Potentially suitable conditions for this species are present in the study area, principally including upland areas along berms.

Contra Costa Goldfields

Contra Costa goldfields is federally listed as endangered and is a CNPS list 1B.1 plant that blooms from March to June and occurs in valley and foothill grassland, vernal pools, and cismontane woodland. There are two CNDDB recorded occurrences in the study area, one of which is assumed extirpated from the region. The extant population was mapped in 1959 and is located in the general vicinity of the Hayward Regional Shoreline near Cabot Boulevard and Depot Road, within existing urban developed habitat more than 0.5 mile west of the MSS brine transport pipeline alignment. Annual grassland or cropland within the study area may be suitable for this species.

Diablo Helianthella

Diablo helianthella is a CNPS list 1B.2 species that blooms from March to June and occurs in broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. There are no CNDDB documented occurrences of this species in the study area; however, species specific surveys have not occurred, and annual grassland or cropland habitat within the study area may be suitable for this species.

Fragrant Fritillary

Fragrant fritillary is a CNPS list 1B.2 plant that blooms from February to April and occurs in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland. There are no CNDDB documented occurrences of this species in the study area; however, species specific surveys have not occurred, and annual grassland or cropland habitat within the study area may be suitable for this species.

Hoover's Button-Celery

Hoover's button-celery is a CNPS list 1B.1 plant that blooms from April through October and occurs in chenopod scrub (shrublands that are dominated by plants in the goosefoot family), meadows and seeps, playas, and valley and foothill grassland in alkaline soils. There is a single CNDDB recorded extant occurrence of this species in the study area, recorded near Thornton Avenue and Willow Street approximately 0.6 mile east of the project SamTrans Rail Line/Hetch Hetchy Aqueduct crossing. Potentially suitable conditions for this species are present in the study area, principally including upland areas along berms, playa, and grassland habitats.

Jepson's Coyote-Thistle

Jepson's coyote-thistle is a CNPS list 1B.1 plant that blooms from April to August and occurs in valley and foothill grassland and vernal pools. There are no CNDDB documented occurrences of this species in the study area; however, species specific surveys have not occurred, and annual grassland or cropland habitat within the study area may be suitable for this species.

Long-Styled Sand-Spurrey

Long-styled sand-spurrey is a CNPS list 1B.2 plant that blooms from February to May and occurs in alkaline marshes, swamps, meadows, and seeps. There is a single CNDDB mapped extant occurrence of this species in the study area from 1987 in the general vicinity south of SR 84 and east of the MSS brine transport pipeline alignment. Potentially suitable conditions for this species are present in the study area, principally including tidal marsh and adjoining berms.

Most Beautiful Jewelflower

Most beautiful jewelflower is a CNPS list 1B.2 plant that blooms from April to September and occurs in chaparral, cismontane woodland, and valley and foothill grassland. There are no CNDDB documented occurrences of this species in the study area; however, species specific surveys have not occurred, and annual grassland or cropland habitat within the study area may be suitable for this species.

Saline Clover

Saline clover is a CNPS list 1B.2 plant that blooms from April to June and occurs in marshes and swamps, valley and foothill grassland, vernal pools, mesic alkaline sites, and salt marshes. There is a single CNDDB recorded extant occurrence of this species which was recorded in an undefined but assumed location at Thornton Avenue and Willow Street, approximately 0.6 mile east of the project Newark Slough at Thornton Avenue HDD crossing. Potentially suitable conditions for this species are present in the study area, principally including tidal marsh, grassland, and wetland adjoining berms.

Point Reyes Salty Bird's-Beak

Point Reyes salty bird's-beak is a CNPS list 1B.2 plant that blooms from June to October and occurs in coastal salt marsh. There is a single CNDDB recorded extant occurrence of this species which was recorded near Lariviere Marsh approximately 0.4 mile west of the MSS brine transport pipeline alignment along Thornton Avenue. Potentially suitable conditions for this species are present in the study area, principally including tidal marsh habitat.

San Joaquin Spearscale

San Joaquin spearscale is a CNPS List 1B.2 plant that blooms from April through October and occurs in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland in alkaline soils. There is a single CNDDB recorded extant occurrence of this species immediately east of the project Newark Slough at Thornton Avenue HDD crossing (dating to 1928). Potentially suitable conditions for this species are present in the study area, principally including playa, grassland, and barren berm habitats.

Woodland Woollythreads

Woodland woollythreads is federally listed as endangered and is a CNPS list 1B.2 plant that blooms from March to July and occurs in broadleafed upland forest (openings), chaparral (openings), cismontane woodland, North Coast coniferous forest (openings), and valley and foothill grassland. There are no CNDDB documented occurrences of this

species in the study area; however, species specific surveys have not occurred, and annual grassland and cropland habitat within the study area may be suitable for this species.

Sensitive Natural Communities and Habitats

Sensitive Natural Communities are those native plant communities defined by CDFW as having limited distribution statewide or within a county or region and that are often vulnerable to environmental effects of projects (CDFW 2018b). CDFW designates sensitive natural communities based on their state rarity and threat ranking using NatureServe's Heritage Methodology. Natural communities with rarity ranks of S1 to S3, where S1 is critically imperiled, S2 is imperiled, and S3 is vulnerable, are considered sensitive natural communities to be addressed in the environmental review processes of CEQA and its equivalents (CDFW 2018b).

According to a CNDDB search of the project footprint and 1-mile radius, the sensitive natural community of northern coastal salt marsh has been previously mapped in several locations that overlap the MSS brine transport pipeline alignment including the marshes associated with the trenchless crossing of the SamTrans Rail Line/Hetch Hetchy Aqueduct, Newark Slough tributary south of Hetch Hetchy Aqueduct, and the Old Alameda Creek Flood Control Channel. Designated northern coastal salt marsh within the 1-mile buffer is shown in Figures 3.3-5a and 3.3-5b. The CNDDB appears to broadly map these features in select areas, and in many places the mapping of these resources extends into higher elevations of the berm where marsh vegetation is not likely present. Thus, the actual extent of the northern coastal salt marsh may be smaller than what is identified in the CNDDB.

Other S1 to S3 rank sensitive natural communities within the larger project and surrounding quadrangles CNDDB search area include:

- northern maritime chaparral,
- valley needlegrass grassland, and
- valley oak woodland.

Northern maritime chaparral and valley needlegrass grassland natural communities have not been documented or observed in the study area based on review of the CNDDB, FVEG mapping, focused site surveys, and aerial photo review. Valley oak woodland is present approximately 0.6 mile east of the MSS brine transport pipeline alignment along Thornton Avenue. Comprehensive vegetation surveys throughout the study area have not occurred, and other plant communities in the study area may qualify as sensitive natural communities (e.g., arroyo willow thickets, black cottonwood forest and woodland) if the species assemblage, percent cover, and patch size are sufficient to meet membership rules and sensitive natural community requirements.

Wildlife Nursery Sites

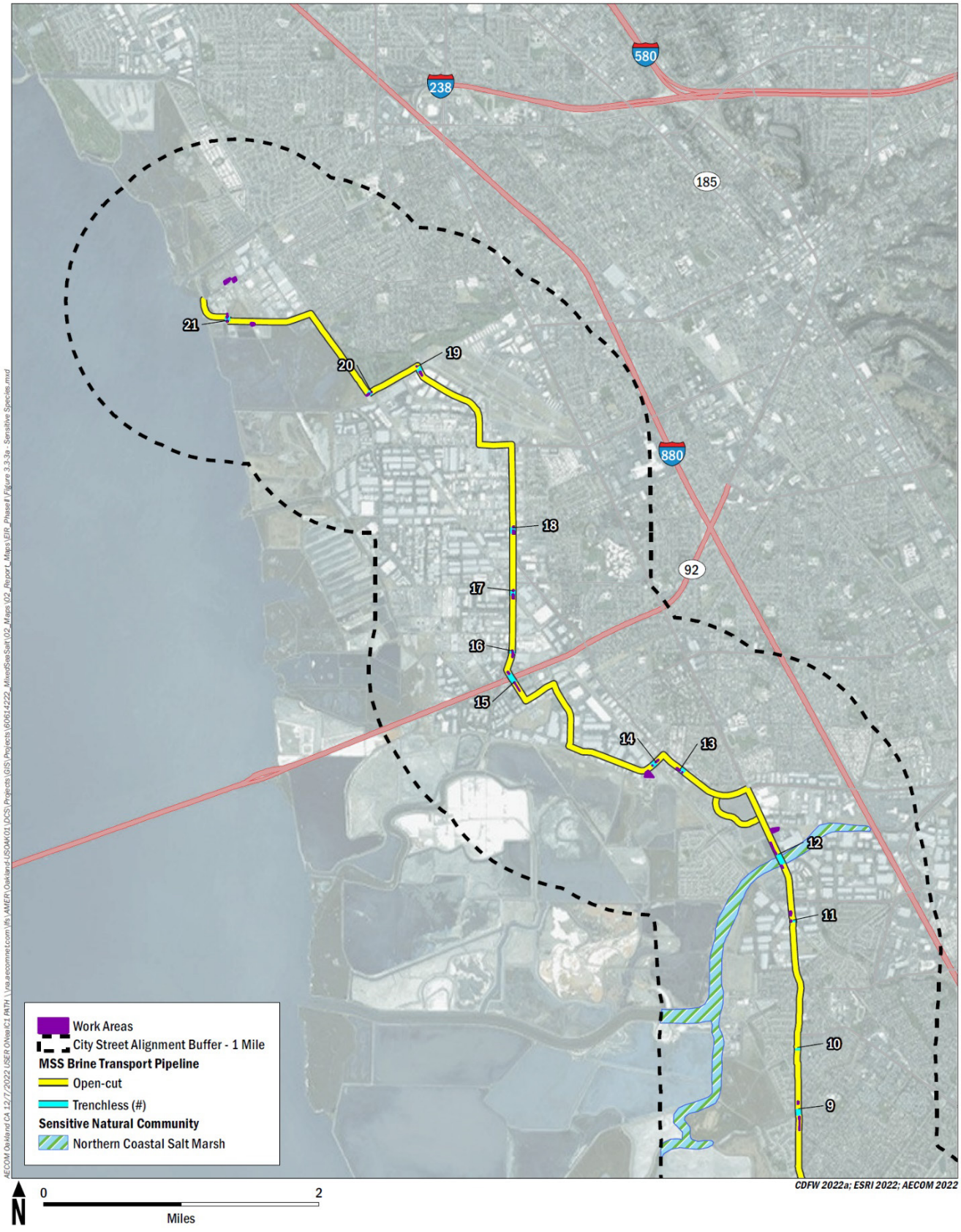
Nursery sites are locations where fish or wildlife concentrate for hatching and raising young, such as nesting rookeries for birds (e.g., herons, cormorants), spawning areas for native fish, and maternal roosts for bats. The study area includes a mosaic of terrestrial, wetland, and aquatic habitats with varying value as nursery sites to wildlife species. Habitat communities in the study area, along with associated breeding wildlife species associations, are described in the preceding "Habitat Communities" section. Generally, urban developed habitats that compose most of the study area have limited value as wildlife nursery sites, whereas undeveloped areas such as annual grasslands and wetland habitats provide breeding habitat to a wider range of reptiles, mammals, and common birds.

Heron rookeries are frequently located in areas isolated from human disturbance, such as riparian corridors, marshes, and groves of trees next to water or on islands (Golden Gate Audubon Society 2022). Some herons have adapted minimally to human activity and may nest in trees near apartment and condo complexes, ports, and harbors that have large trees. The double-crested cormorant (*Phalacrocorax auratus*), another colonial nesting species, occupies similar habitat and nesting areas as herons. However, there are no known double crested cormorant colonies in the project area (Rauzon et al. 2019). Tidal marsh and other wetland habitats are present within the study area, largely occurring west of the MSS brine transport pipeline alignment on the Bay's shoreline, as depicted in Figures 3.3-1a and 3.3-1b. Marsh areas may provide rookery or colonial nesting habitat to herons. Notably, the study area includes Oro Loma Marsh, which includes a sizable marsh area close to the proposed MSS brine transport pipeline alignment.

Bats roost in a variety of habitats, such as within trees, tucked under bark, in mines and caves, inside rock crevices, under bridges, in constructed bat boxes, and in buildings (Pai 2018). Bats are sensitive to disturbance, and some species may abandon roosts if disturbed by humans (Price 2020). Within the study area, roosting bat populations could be present at the proposed MSS brine transport pipeline crossing locations (bridges) or in buildings within urban developed area. Trees in the study area may also provide roosting habitat, although study area trees mostly consist of ornamental, scattered, or isolated trees within upland habitat such as annual grasslands or urban areas.

The most common marine mammal within the study area is the Pacific harbor seal (*Phoca vitulina richardsi*). Pacific harbor seals favor nearshore coastal waters and are often seen on rocky islands, sandy beaches, mudflats, bays and estuaries. Mowry Slough contains a harbor seal rookery, located more than 5 miles southeast of the study area. While the study area includes limited shoreline areas that may provide haul out habitat to Pacific harbor seals, the project footprint is inland from such shoreline areas.

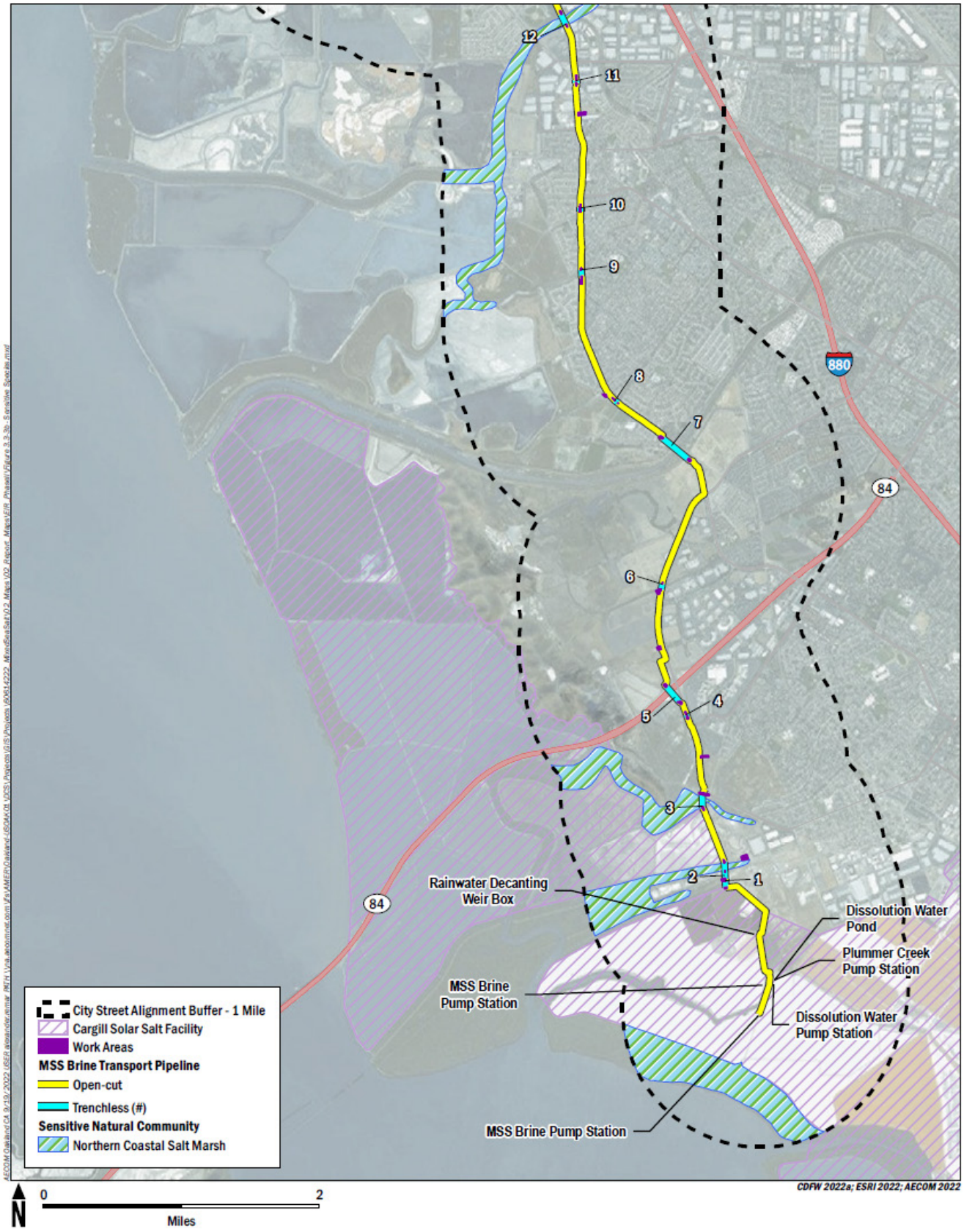
Fish species have potential to use the open water and tidal channel habitats in the study area for migration, foraging, or rearing. Tidal channel habitats are present at several of the proposed MSS brine transport pipeline crossing locations, and surrounding the Solar Salt Facility pond complex. Tidal channels in the study area are depicted in Figures 3.3-1a and 3.3-1b.



Note: Numbers in figure refer to proposed trenchless crossings along the MSS brine transport pipeline alignment. (Refer to Table 2-2 in Section 2.6.8, "Construction," for crossing names.)

Source: Prepared by AECOM in 2022.

Figure 3.3-5a Sensitive Natural Communities Northern Extent



Note: Numbers in figure refer to proposed trenchless crossings along the MSS brine transport pipeline alignment. (refer to Table 2-2 in Section 2.6.8, "Construction," for crossing names.)

Source: Prepared by AECOM in 2022.

Figure 3.3-5b Sensitive Natural Communities Southern Extent

3.3.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

This impact evaluation is based on data collected during reconnaissance-level field surveys conducted in 2020 and 2021, review of sensitive habitat and species databases detailed in the "Regulatory Setting" section, review of aerial photographs, and information from several previously completed documents that address biological resources in the project vicinity.

THRESHOLDS OF SIGNIFICANCE

An impact on biological resources would be significant if implementation of the project would:

- 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;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS;
- have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- 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;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.3-1: Potential 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

Potential temporary disturbance of special-status fish, birds, terrestrial mammals, invertebrates, and plants may occur from construction of the project. This may include direct disturbance, injury, or mortality of individuals; or indirect disturbance resulting in adverse effects such as nest abandonment. Additionally, directional drilling to construct the MSS brine transport pipeline could result in accidental frac-out which could directly impact fish or degrade habitat for special-status species. Due to the sensitivity of potentially affected special-status species and that the loss of special-status species could substantially affect the abundance, distribution, and viability of populations of these species, this impact would be **potentially significant**.

Solar Salt Facility Improvements – Fish

The proposed Solar Salt Facility improvements would not entail placement of fill in tidal channels where special-status fish species may be present, and temporary impacts would be minimal and limited to the brief duration of construction (estimated at 0.1 acre of impact based on preliminary project design and CARI mapping). Potential long-term impacts to fish would be limited to operational changes in water diversions from Plummer Creek and Mowry Slough. This includes use of the Plummer Creek Pump Station, a new pump station installed in the FMC ditch that would pump water indirectly from Plummer Creek to the new dissolution water pond, which would be used to

support a continuous rate of 600 to 1,200 gallons per minute (gpm) for the duration of the Pond 12 and 13 processing; use of backup water supply from the Multipurpose Ditch pumped at a maximum continuous flow rate of about 600 gpm; and the associated tide gate operations at Plummer Creek and Mowry Slough. All proposed structures, pipelines, and appurtenances would be constructed in uplands or within ponds and ditches at the Solar Salt Facility. No construction would occur directly within Plummer Creek, Mowry Slough, or other tidal channels. Maintenance of proposed improvements would be similar to existing Solar Salt Facility conditions and would be unlikely to introduce impacts to fish or fish habitats.

Construction of the project would include vegetation removal, soil disturbance, excavation, cutting and filling, directional drilling, stockpiling, dewatering, and grading and filling, which could result in impacts to aquatic habitats and special-status fish species through increased erosion and sedimentation, or accidental spills of fuel, oil, lubricants, other fluids, or concrete. However, project dewatering operations would be conducted in accordance with National Pollutant Discharge Elimination System (NPDES) and/or waste discharge permits obtained for the project; and a Storm Water Pollution Prevention Plan would be developed and implemented during construction in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) which would include best management practices (BMPs) including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent wetlands. In consideration of these project measures, impacts to special-status fish from construction erosion, sedimentation, and spills would be minimized or avoided.

Increased diversions from Plummer Creek and Mowry Slough would likely be detectable by special-status fish species in the sloughs (if present), but because the total diversion is expected to be a relatively small proportion of the daily tidal inflow to either Plummer Creek or Mowry Slough, the increased diversion would not likely result in hydraulic conditions, including depth and velocity, that would cause lethal or sub-lethal effects (e.g., adverse physiological effects). This conclusion is based on a conservative assumption that an increase in diversion of up to 5.3 acre-feet per day would be required at Plummer Creek and supplemental flows of up to 2.7 acre-feet per day could be obtained from Mowry Slough.

An increase in daily diversions of 2.7 acre-feet from Mowry Slough or 5.3 acre-feet from Plummer Creek would not be considered a substantial hydrologic change in the region relative to the existing condition, because the volume of water moving into and out of South Bay sloughs is orders of magnitude larger than 5.3 acre-feet per day. Specifically, the increase in diversion would not be considered a substantial hydrologic change to either Mowry Slough or Plummer Creek because the project-related diversion from Mowry Slough represents a diversion of about 2 percent of the daily estimated tidal inflow into the upper Mowry Slough area and the project-related diversion from Plummer Creek represents a diversion of about 4 percent of the daily estimated tidal inflow into Plummer Creek (Nielsen, pers. comm., 2022). In addition, no return flows would occur from the Solar Salt Facility to Mowry Slough or Plummer Creek. Therefore, hydrodynamic conditions associated with cues to initiate volitional egress in Mowry Slough and Plummer Creek would remain the same as the existing condition.

If an adult or larger juvenile green or white sturgeon were present at the tide gates, a closing gate could cause direct injury via impingement (entrapment of fish on the outer part of an intake structure). If individual green or white sturgeon were present in Plummer Creek or Mowry Slough, only adult and larger juvenile sturgeon could be present because green sturgeon spawning and early rearing is confined to the Sacramento River watershed and white sturgeon spawning does not occur south of the Sacramento-San Joaquin system. Sturgeon are demersal (live close to the sea/Bay floor) and swim almost exclusively along the bottom. A closing gate could fall onto an individual resting at the exact location of the gate. However, an individual sturgeon resting at the specific location of the gate as it closes is highly unlikely, given the large amount of resting habitat available on the Bay floor.

Entrainment of individual green or white sturgeon is also not likely to occur. Specifically, the overall project-related diversion from Mowry Slough represents a diversion of about 2 percent of the daily estimated tidal inflow into the upper Mowry Slough area and the project-related diversion from Plummer Creek represents a diversion of about 4 percent of the daily estimated tidal inflow into Plummer Creek (Nielsen, pers. comm., 2022). These small diversions

are not likely to create hydraulic or hydrologic conditions that would cause sturgeon to volitionally enter or be entrained into the slough from the Bay or into the intake gates from the slough. In addition, because larger juveniles and adult sturgeon are relatively strong swimmers, they could avoid the intakes.

The potential for direct harm to Central California Coast DPS steelhead from impingement is also low. Adult Central California Coast DPS steelhead have the potential to be present in the South Bay more generally from November to April, and juveniles could occur between March and June. Outside of these migratory periods, the likelihood of Central California Coast DPS steelhead occurring near the Solar Salt Facility is low. If individuals were to stray into either Mowry Slough or Plummer Creek, they would likely be either stray adults that were migrating to spawning locations or juveniles emigrating to the ocean. The risk of direct harm through impingement of either of these two life stages of Central California Coast DPS steelhead is very low due to the operation of the intake structures, which are closed only twice daily when the direction of the tide changes and closure takes just a few seconds to less than a minute, and the swimming capabilities of the fish. In addition, juvenile steelhead are not demersal and would likely be displaced by a closing intake gate rather than be impinged on the substrate or directly harmed by the gate.

Similar to the risk of impingement, the risk of Central California Coast DPS steelhead entrainment is also low. As noted, only seasonal presence of adult and juvenile steelhead is anticipated. Entrainment of individuals is not likely to occur because juvenile and adult Central California Coast DPS steelhead are relatively strong swimmers and the project-related diversion from Mowry Slough represent a diversion of 2 percent of the daily estimated tidal inflow into the upper Mowry Slough area and the project-related diversion from Plummer Creek represents a diversion of about 4 percent of the daily estimated tidal inflow into Plummer Creek (Nielsen, pers. comm., 2022); these diversions are not likely to result in velocities that would cause nonvolitional movement into the Solar Salt Facility. In addition, steelhead's strong swimming abilities would allow them to avoid the intakes. Further, changes to Bay water inflow rates and volumes into the intake gates would not alter straying potential for adult Central California Coast DPS steelhead because freshwater inflow is limited and would not be affected by the project.

The potential for direct harm to longfin smelt from intake gate impingement is low because, as described in Section 3.3.2, "Environmental Setting," longfin smelt are not likely to be present in the sloughs near the intake gates, which close only twice daily when the direction of the tide changes. In addition, the site-specific monitoring data collected to date in Mowry Slough and Plummer Creek exhibit water temperatures that are likely to limit longfin smelt presence in the vicinity of the intake gates (Cargill 2018). Further, the intake gates where Bay water would be diverted in Plummer Creek and Mowry Slough are located relatively far from open water; as described in the "Environmental Setting" section, longfin smelt are primarily an open water fish species. If longfin smelt were to be present, the potential for a closing gate to directly harm an individual is low because longfin smelt are pelagic fish (inhabit the upper layers of waters) and are not demersal (bottom-oriented). Therefore, if a gate was in the process of closing, an individual in the water column would likely be displaced rather than impinged on the substrate by the gate.

Diversion of a small percentage of the daily tidal inflow into the slough is not likely to result in substantial increases in velocity or result in attraction flows that would cause nonvolitional movement and entrainment of longfin smelt into the Plummer Creek and Mowry Slough intake gates. As noted above, the increase in intake volume at Plummer Creek and Mowry Slough would not be considered substantial relative to existing diversions. The larval life stage is the most sensitive life stage to entrainment because larvae have limited swimming abilities and are the most subject to hydraulic influences and this life stage is captured in small numbers in the South Bay from January through May (CDFW 2020). During the June through November period when diversions would be occurring, juvenile and adult longfin smelt likely would not occur in the region and would likely be migrating to the Central Bay and Pacific Ocean. Nonetheless, if present, any potential entrainment would affect a very small fraction of the population of longfin smelt and the increased diversions would not be considered substantial relative to existing diversions.

Potential impingement and entrainment effects to Central Valley Fall-Run Chinook salmon are expected to be similar to those described for Central California Coast DPS steelhead because both salmonid species share many of the same life history characteristics including distribution in the South Bay, estuarine habitat preferences, and behavioral traits. Further, Central Valley Fall-Run Chinook salmon are not expected to occur in areas near the Solar Salt Facility in substantial numbers because their historical and current distribution occurs predominately in Central Valley river systems, such as the Sacramento and San Joaquin Rivers and their associated tributaries. This low-occurrence

potential is further substantiated by the low number of Chinook salmon observed in Bay Study trawls combined with the relatively few freshwater streams in proximity to the Solar Salt Facility (CDFW 2020).

Potential impingement and entrainment effects to Pacific lamprey are expected to be similar to those described for Central California Coast DPS steelhead based on the similarity of anadromous life history traits. Although Pacific lamprey exhibit different life history characteristics as freshwater juveniles and adults feeding in the ocean, the potential occurrence of life stages in the vicinity of the Cargill Facility remains similar to salmonids (juvenile and adult migration). Trawl and monitoring data suggest a low likelihood of Pacific lamprey occurrence near the Solar Salt Facility improvements. Specifically, data collected from 2,307 trawls conducted by the Bay Study (midwater and otter trawls) between 2000 and 2018 showed zero detections of Pacific lamprey at the nearest observation stations (stations 101, 102, and 140) (CDFW 2020). Further, Santa Clara Valley Water District reported that very few Pacific lamprey were observed during monitoring efforts for another project on Coyote Creek in 2007 and 2008 (SCVWD 2007, 2008). The low number of Pacific lamprey observed in the Bay Study trawls, as well as freshwater streams relatively near the Solar Salt Facility, suggest that very low numbers of emigrating juvenile or immigrating adult Pacific lamprey could potentially enter Plummer Creek or Mowry Slough.

In consideration of the relatively low likelihood for special-status fish species presence, the potential life stages present, and the magnitude of diversions, there is minimal potential during operations for impingement under gates or entrainment during diversions. Therefore, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Solar Salt Facility Improvements – Birds

At least 10 special-status bird species, as well as MBTA protected species, have the potential to occur in the study area. These species are predominantly associated with salt marsh habitat, but some species may also use unvegetated salt ponds, berms, playa, and tidal channels for foraging or nesting. Specifically, salt marsh habitat may provide nesting and foraging habitat for California Ridgway's rail, California black rail, Alameda song sparrow, northern harrier, and salt marsh common yellowthroat. Barren habitats at the margins of salt ponds or emergent tidal marsh may provide nesting habitat for Western snowy plover, or burrowing owl (in burrows). Ponds with shallow water provide important foraging habitat for Western snowy plovers. Annual grasslands and marshes may provide foraging habitat for white-tailed kites, and white-tailed kites may nest or perch in dense-topped trees.

Construction activities could result in accidental spills or erosion that could enter and degrade aquatic, wetland, or other sensitive habitats. This could be deleterious to special-status birds. However, project dewatering operations would be conducted in accordance with NPDES and/or waste discharge permits obtained for the project; and a Storm Water Pollution Prevention Plan would be developed and implemented during construction in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) that would include BMPs to avoid or minimize impacts to biological resources from construction, including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent wetlands. In consideration of these project measures, impacts to special-status birds from construction erosion, sedimentation, and spills would be minimized or avoided.

Permanent impacts to special-status bird habitat would be negligible and limited to the small loss of marginal habitat from installation of the Solar Salt Facility improvements. Proposed structures, pipelines, and appurtenances, including pump stations, piping, and sheet piles would be installed in unvegetated salt ponds, salt pond slopes, and salt pond berms. Proposed micro-trenching would also occur in the accumulated salt collected at the bottom of the salt ponds. Salinity levels in Ponds 10, 12, and 13 are too high for wetland macrofauna, and bird foraging is unlikely in these areas. Berm areas may be marginally suitable for foraging or nesting by some special-status bird species. Permanent loss of pond and adjoining upland berm habitat would occur within the existing Solar Salt Facility where salinity and

operations and maintenance activities limit the value of habitat for bird nesting and foraging. Further, the loss of habitat would be small relative the expansive areas of pond, playa, and other similar habitats occurring in other areas of the Solar Salt Facility and throughout the South Bay shoreline. The project would not impede or otherwise affect bird utilization of those nonproject areas. Long-term maintenance activities at the Solar Salt Facility would be consistent with current operating procedures on-site.

If present in the Solar Salt Facility area, direct or indirect construction impacts to foraging or nesting birds could occur during construction. Project construction and operation at the Solar Salt Facility would predominantly occur within the unvegetated salt ponds, salt pond slopes, and surrounding access berms. While construction would avoid salt marsh and mostly avoid tidal channels (estimated 0.1 acre of temporary impact from construction buffers), work would occur close to these features. There is also potential for construction work to temporally infringe upon marsh habitat, most likely including marsh habitat present on outboard salt pond berms adjacent to Plummer Creek, either through encroachment on marsh areas not included in CARI mapping or through accidental disturbance. The Solar Salt Facility berm roads are used regularly for existing operations and maintenance activities; birds are therefore unlikely to nest on berms where most of the construction would take place, and nesting birds in the vicinity are likely accustomed to some degree of disturbance.

The use of construction equipment or presence of workers in salt ponds, on salt pond berms, and near marsh habitat could injure or crush special-status bird species, their broods, or their nests; disturb nesting or foraging, individuals via noise, vibratory, or visual disturbance; and potentially cause nest abandonment and habitat degradation. As noted, construction activities would avoid salt marsh habitat to the extent practicable and construction access would predominantly occur on the Solar Salt Facility berms which are regularly trafficked. Impacts to nesting birds from construction are most likely to occur during the breeding season, typically occurring from February 1 through August 31. Changes from the baseline operations related to equipment and worker presence would be limited to the duration of construction. Although construction would avoid sensitive marsh habitat and be confined to marginal habitat occurring within the operating Solar Salt Facility, direct and indirect construction impacts to special-status bird species would be **potentially significant**.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

- All construction personnel will visually check for wildlife beneath vehicles and construction equipment before moving or operating them. If an animal is discovered and does not leave the site on its own, personnel will contact the project biologist for direction before using equipment.
- Confine all heavy equipment, vehicles, and construction activities to existing access roads, road shoulders, and disturbed/developed or designated work areas. Limit work areas to what is necessary for construction.
- Minimize grading and vegetation removal along access roads and construction work areas.
- Do not allow pets, hunting, open fires, or firearms at the project site.
- During project activities, properly contain all trash that may attract predators in covered garbage receptacles and remove the trash from the site daily. Following construction, all trash and construction debris from project sites will be removed.
- Use only tightly woven netting or similar material for all geo-synthetic erosion control materials such as coir rolls and geo-textiles. No plastic monofilament matting will be used.
- If night work is conducted, all nighttime lighting will be focused on construction activities and directional shields will be used to direct lighting away from natural habitats.

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

A USFWS- or CDFW-approved biologist (as applicable) will develop an environmental training and will present the training to all crew members before they begin work on the project. The training will include a description of special-

status species with potential to occur, life history and habitat associations, general measures that are being implemented to conserve the species as they relate to the project, the terms and conditions of project permits, penalties for noncompliance, the boundaries of the construction areas, and the boundaries of environmentally sensitive areas. A handout will be provided to all participating personnel, and at least one copy will be kept on-site, in the job packet, during construction activities. On completion of the training, crew members will sign a form stating that they attended the training and understand the mitigation measures.

Mitigation Measure 3.3-3: Conduct Focused Surveys for Nesting Special-Status Bird Species, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers

Prior to any planned construction activities occurring during the nesting season (approximately February 1 to August 31, as determined by a qualified biologist), a qualified biologist familiar with birds of California and with experience conducting nesting bird surveys will conduct focused surveys for special-status birds, other nesting raptors, and other native birds and will identify active nests. Preconstruction nesting bird surveys will be conducted within 14 days prior to when construction activities are initiated in each of the areas of suitable nesting habitat for northern harrier, salt-marsh common yellowthroat, California black rail, Alameda song sparrow, tricolored blackbird, burrowing owl, and yellow rail that are within 500 feet of the project footprint. In addition, nesting bird surveys will be conducted for all other common raptor species (within a 500-foot buffer) and passerine species (100-foot buffer) protected by the MBTA. Pre-construction surveys for white-tailed kite will occur within 0.25-mile area of the construction area.

Impacts on nesting birds will be avoided by establishing appropriate buffers around active nest sites identified during focused surveys to prevent disturbance to the nest. Project activity will not commence within the buffer areas until a qualified biologist has determined that the young have fledged, the nest is no longer active, or reducing the buffer will not likely result in nest abandonment. An avoidance buffer of 500 feet will be implemented for white-tailed kite, in consultation with CDFW. For other species, a qualified biologist will determine the size of the buffer for nonraptor nests after a site- and nest-specific analysis. Initial work buffers typically will be 150 feet for raptors (other than special-status raptors) and 50 feet for nonraptor species (unless otherwise specified in other mitigation measures). Factors to be considered for determining buffer size will include presence of natural buffers provided by vegetation or topography, nest height above ground, baseline levels of noise and human activity, species sensitivity, and project activities. The size of the buffer may be adjusted if a qualified biologist, determines that such an adjustment would not be likely to adversely affect the nest. Any reduction to the avoidance buffer described herein for white-tailed kite (500 feet) or the typical initial work buffers for raptor and nonraptor species (150 feet and 50 feet respectively) will require consultation with CDFW. Periodic monitoring of the nest by a qualified biologist during project activities will be required if the activity has potential to adversely affect the nest, the buffer has been reduced, or if birds within active nests are showing behavioral signs of agitation (e.g., standing up from a brooding position, flying off the nest) during project activities, as determined by the qualified biologist.

Mitigation Measure 3.3-4: Conduct Protocol-Level Surveys and Implement Protective Buffers for California Ridgway's Rail

Where feasible, project construction activities in suitable nesting habitat for California Ridgway's rail will not occur during the breeding season (February 1 through August 31).

If project activities during the breeding season within suitable nesting habitat for the California Ridgway's rail are unavoidable, a qualified permitted biologist will conduct two surveys prior to construction activities. The first survey would be a protocol-level survey in the spring of the year of construction. The second survey would be a preconstruction survey conducted at least 14 days prior to construction in the areas where suitable habitat is present. The surveys will occur in suitable habitats within a 700-foot buffer around the project area. Survey methods would follow USFWS-approved *Site Specific Protocols for Monitoring Marsh Birds: Don Edwards San Francisco Bay and San Pablo Bay National Wildlife Refuges* (USFWS 2017). If California Ridgway's rails are confirmed to be present, additional coordination with CDFW and USFWS will be required.

If surveys identify breeding California Ridgway's rails within 700 feet of the project area, no construction activities will occur during the breeding season (February 1 through August 31) unless authorization is obtained from CDFW and USFWS.

If the surveys confirm that there are no breeding California Ridgway's rails within 700 feet of the project area, work activities could occur during the breeding season (February 1 through August 31). If construction activities pause for more than 14 days, another preconstruction nesting California Ridgway's rail survey will be conducted before construction can resume in suitable habitat.

Use of heavy equipment in suitable habitat will be minimized to the maximum extent practicable.

Mitigation Measure 3.3-5: Avoid and Minimize Impacts to Western Snowy Plover

Nesting locations are to be identified through preconstruction surveys by a qualified biologist within 14 days prior to construction during the Western snowy plover breeding season (March 1 through September 14). No construction activities can be performed within 600 feet of an active Western snowy plover nest during the breeding season without the approval of USFWS.

If construction occurs where chicks are present outside the 600-foot no-disturbance buffer and are foraging, then a qualified biologist will be present to ensure that no chicks are located in close proximity (i.e., within 200 feet) to construction activities. If chicks are present, then construction activities will be halted until they move away from the work area on their own volition.

Mitigation Measure 3.3-6: Perform Biological Monitoring

For work that will occur in or adjacent to potential habitat for special-status species, a qualified biologist will be present during initial ground disturbing activities involving use of heavy equipment that could cause noise or vibration disturbance to listed species (species state or federally listed as threatened or endangered, state species of special concern, or species fully protected by the California Fish and Game Code). Biological monitoring thereafter will occur as needed to fulfil the role of the approved biologist in project permits, potentially including permits from USACE and the RWQCB for effects to waters of the United States and state and CDFW for effects to lakes, streams, and associated riparian habitat. The qualified biologist will have stop work authority to stop project activities to minimize disturbance, injury, or mortality of listed species. If the qualified biologist exercises stop work authority, the appropriate resources agencies will be notified by phone and email within 48 hours.

Significance after Mitigation

To reduce or avoid impacts on nesting special-status bird species, Mitigation Measure 3.3-3 would implement preconstruction nesting bird surveys and, as applicable, avoidance buffers between construction activities and nesting birds if any active nest is identified within the study area. In addition, Mitigation Measures 3.3-4 and 3.3-5 would provide additional protection for California Ridgway's rail and Western snowy plover, respectively. Mitigation Measure 3.3-6 would require that a biological monitor be present during all initial ground-disturbing activities within or near special-status species habitat, as well as for use of heavy equipment that could cause noise or vibration disturbance to species state or federally listed as threatened or endangered, state species of special concern, or species fully protected by the California Fish and Game Code.

Mitigation Measures 3.3-1 and 3.3-2, which entail standard biological resource avoidance measures and worker environmental awareness training, would ensure that construction encroachment or disturbance on special-status species habitats are avoided.

With the implementation of Mitigation Measures 3.3-1 through 3.3-6, impacts on special-status bird species would be reduced to **less than significant**.

Solar Salt Facility Improvements – Terrestrial Mammals

Two special-status terrestrial mammal species have the potential to occur in the project area: the salt-marsh harvest mouse and, salt marsh wandering shrew. These species use similar habitats for foraging—most notably, salt marsh habitat dominated by pickleweed. This habitat type occurs along Plummer Creek adjacent to Ponds 10, 12, and 13.

Construction activities could result in accidental spills or erosion that could enter and degrade aquatic, wetland, or other sensitive habitats. This could be deleterious to special-status mammals. However, project dewatering operations would be conducted in accordance with NPDES and/or waste discharge permits obtained for the project;

and a Storm Water Pollution Prevention Plan would be developed and implemented during construction in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) that would include BMPs to avoid or minimize impacts to biological resources from construction, including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent wetlands. In consideration of these project measures, impacts to special-status terrestrial mammals from construction erosion, sedimentation, and spills would be minimized or avoided.

There would be no permanent loss of pickleweed, salt marsh, or upland refugia habitat from project construction within the Solar Salt Facility, as proposed improvements would occur within high salinity salt ponds and associated pond slopes and pond berms. Improvements would not be constructed in any areas that would impede localized movement of salt marsh harvest mouse or salt marsh wandering shrew between suitable salt marsh areas. Therefore, there would be no permanent loss of salt marsh harvest mouse or salt marsh wandering shrew habitat related to the project.

Direct injury or mortality to individuals is unlikely during construction because construction would be limited to high salinity salt ponds, salt pond berms, and berm roads. Work in salt marsh or pickleweed habitat would be avoided to the extent practicable, and any work in these areas would be temporary and minimal. The high salinity salt ponds, including berms and banks, where construction would occur are unvegetated and are therefore unsuitable for use as upland refugia. Passage across the berms by salt marsh harvest mouse or salt marsh wandering shrew is unlikely, as pond interiors lack pickleweed habitat or other salt marsh vegetation required by these species. However, as work would occur adjacent to tidal marsh habitat at the fringe of Plummer Creek, injury or mortality of salt-marsh harvest mouse or salt-marsh wandering shew cannot be completely discounted. This impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-6: Perform Biological Monitoring

Mitigation Measure 3.3-7: Prevent Special-Status Wildlife Entrapment

To prevent inadvertent entrapment of special-status species in salt marsh and playa habitat during construction, excavated holes or trenches more than 1 foot deep with walls steeper than 30 degrees will be covered at the close of each working day by plywood or similar materials. Alternatively, an additional 4-foot-high vertical barrier, independent of exclusionary fences, will be used to further prevent the inadvertent entrapment of special-status species. If it is not feasible to cover an excavation or provide an additional 4-foot-high vertical barrier independent of exclusionary fences, one or more escape ramps constructed of earth fill or wooden planks will be installed for every 100 feet of trenching with no greater than 3:1 slopes. Before such holes or trenches are filled and when they are covered and uncovered each working day, they will be thoroughly inspected for trapped animals. If at any time a trapped special-status animal is discovered, an USFWS- or CDFW-approved biologist will be contacted (as appropriate), and they or their designee will immediately place escape ramps or other appropriate structures to allow the animal to escape, or USFWS and/or CDFW will be contacted by telephone for guidance.

All construction pipes, culverts, or similar structures that are stored at the project site for one or more overnight periods shall be securely capped before storage or inspected by the USFWS- or CDFW-approved biologist before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a special-status species is discovered inside a pipe, the individual shall be allowed to leave on its own volition

Mitigation Measure 3.3-8: Implement Measures to Avoid Impacts to Salt-Marsh Harvest Mouse and Salt-Marsh Wandering Shrew

Because salt-marsh harvest mouse is a fully protected species under the California Fish and Game Code, measures will be implemented to avoid injury or mortality of the species. These measures will also avoid impacts to salt-marsh wandering shrew.

A USFWS- and CDFW-approved biologist with previous salt marsh harvest mouse experience will be on-site during construction activities occurring in wetlands. The biologist will document compliance with all project permit conditions and avoidance and conservation measures. The approved biologist or their designee will have the authority to stop project activities if any requirement associated with these measures is not being fulfilled. Prior to the initiation of work each day, the USFWS- and CDFW-approved biologist will thoroughly inspect the work area and adjacent habitat areas to determine if salt-marsh harvest mouse is present.

Following confirmation by the USFWS- and CDFW-approved biologist that no salt-marsh harvest mouse is present, tidal wetland vegetation will be removed by hand using only nonmechanized hand tools (i.e., trowel, hoe, rake, and shovel) prior to the initiation of work within these areas. Vegetation will be removed to bare ground or stubble no higher than 1 inch. Vegetation will be removed under the supervision of the USFWS- or CDFW-approved biologist.

Unless otherwise instructed by USFWS and CDFW, temporary exclusion fencing will be installed immediately after the hand removal of tidal wetland vegetation (as described above) from the work area. The fence will be made of a heavy plastic sheeting material that does not allow salt-marsh harvest mice to pass through or climb, and the bottom will be buried so that salt-marsh harvest mice cannot crawl under the fence. Fence height will be at least 12 inches higher than the highest adjacent vegetation with a maximum height of 4 feet. A USFWS- and CDFW-approved biologist with previous salt-marsh harvest mouse experience will be on-site during fence installation and will check the fence alignment prior to vegetation clearing and fence installation to ensure no salt-marsh harvest mice are present.

Through project permitting (e.g., Clean Water Act 404/401) or CEQA review, if USFWS and CDFW suggest alternative measures that are equally effective (e.g., additional biological monitoring, marsh mats) as vegetation removal and temporary exclusion fencing (described in the previous two paragraphs), the suggested measures would be implemented instead, along with other suggested measures discussed herein.

The USFWS- and CDFW- approved biologist will inspect exclusion fencing during daily inspections prior to the initiation of work each day. If exclusion fencing shows signs of damage such that small mammals could enter the work area, work will not continue within 300 feet of the damaged exclusion fencing until the fences are repaired and the site is surveyed by a qualified biologist to ensure that salt-marsh harvest mouse has not entered the work area.

Construction access through wetland vegetation will be minimized to avoid the loss of individual harvest mice. If construction access through wetland vegetation is required, construction workers will follow wildlife and plant avoidance measures prescribed in *Walking in the Marsh: Methods to Increase Safety and Reduce Impacts to Wildlife/Plants* (San Francisco Bay Joint Venture 2017).

No work will occur within 50 feet of suitable tidal marsh habitat within 2 hours before and after an extreme high tide event (6.5 feet or higher measured at the Golden Gate Bridge and adjusted to the timing of local high tides) unless salt-marsh harvest mouse-proof exclusion fencing has been installed around the work area.

During berm alteration work salt-marsh harvest mouse corridors (i.e., corridors considered to be connected to larger areas of salt-marsh harvest mouse habitat) will be retained on at least one side of berms while construction activities take place.

Significance after Mitigation

Biological monitoring would be required within and adjacent to special-status species habitat as detailed above in Mitigation Measure 3.3-6. Mitigation Measure 3.3-7 would require ramps or barriers to limit the potential for entrapment of special-status wildlife species. Mitigation Measure 3.3-8 includes procedures specifically designed to avoid salt-marsh harvest mouse or shrew impacts, such as exclusionary fencing and monitoring.

Common to all special-status species resources, Mitigation Measures 3.3-1 and 3.3-2, which entail standard biological resource avoidance measures and worker environmental awareness training, would ensure that construction encroachment or disturbance on special-status species habitats are avoided.

With the implementation of Mitigation Measures 3.3-1, 3.3-2, and 3.3-6 through 3.3-8, impacts on special-status terrestrial mammal species would be reduced to **less than significant**.

Solar Salt Facility Improvements – Invertebrates

There are no recorded observations of monarch butterfly or its host species milkweed within or near the Solar Salt Facility, as determined through the focused reconnaissance-level surveys and review of the of the CNDDB and Western Monarch Milkweed Mapper. The nearest mapped priority overwintering site, Ardenwood Historic Farm, is located more than 2.5 miles north of the Solar Salt Facility. Implementation of the project at the Solar Salt Facility would not require removal or modification of habitat for overwintering monarchs. Because minimal habitat is available for overwintering monarchs at the Solar Salt Facility and removal or modification of overwintering habitat would not occur, adverse effects on monarch butterfly overwintering colonies sites are not anticipated. Therefore, impacts on special-status invertebrates would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Solar Salt Facility Improvements – Plants

Proposed permanent improvements within salt ponds and salt pond berms would occur in areas of little or marginal value to special-status plant species. The project construction would occur within unvegetated salt ponds, pond slopes, and pond berms, with limited temporary encroachment in tidal channels (estimated at approximately 0.1 acre). These areas were observed to be free of vegetation, and soil salinity likely precludes establishment of most special-status plant species. The wetland fringe along Plummer Creek may, however, provide suitable habitat for salt marsh associated species such as saline clover, Point Reyes salty bird's-beak, and Hoover's button-celery.

Construction activities could result in accidental spills or erosion that could enter and degrade aquatic, wetland, or other sensitive habitats. This could be deleterious to special-status plants and their habitat. However, project dewatering operations would be conducted in accordance with NPDES and/or waste discharge permits obtained for the project; and a Storm Water Pollution Prevention Plan would be developed and implemented during construction in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) that would include BMPs to avoid or minimize impacts to biological resources from construction, including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent wetlands. In consideration of these project measures, impacts to special-status plants from construction erosion, sedimentation, and spills would be minimized or avoided.

Although the project would avoid wetland habitat to the extent practicable, limited temporary disturbance of these areas is possible. Although the salt pond berm slopes and interior berms where construction would occur were observed to be free of vegetation during focused site surveys, limited potential remains for special-status species associated with these habitats to be present, such as San Joaquin spearscale and alkali milk-vetch. Potential temporary construction disturbance may result in loss of special-status plant species associated with salt marsh or pond habitats, which would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-9: Conduct Botanical Surveys and Implement Avoidance Measures and Mitigation

Prior to any ground-disturbing activities, a qualified botanist will conduct botanical surveys where there is potential for a special-status plant species to occur and during the appropriate identification period (typically, the blooming period) for plants that have a potential to occur in the project footprint. All habitats potentially suitable for special-status plants will be surveyed following CDFW's *Protocols for Surveying and Evaluating Impacts on Special-Status Native Plant Populations and Natural Communities* (CDFW 2018b or most recent version). If special-status plants are not found, the botanist would document the findings in a report to the project files, and no further mitigation would be required.

If special-status plants are found, the habitat occupied by special-status plants will be avoided completely, if feasible. This may include establishing a no-disturbance buffer around the plants and demarcation of this buffer by a qualified biologist or botanist using flagging or high-visibility construction fencing. The size of the buffer will be determined by the qualified biologist or botanist and will be large enough to avoid direct or indirect impacts on the special-status plants.

If special-status plants are found and cannot be avoided, the applicant will, in consultation with CDFW or USFWS as appropriate depending on the species status, develop and implement a site-specific mitigation program to avoid loss of occupied habitat and minimize loss of individuals. Mitigation measures shall include, at a minimum, preserving and enhancing existing populations, establishing populations through seed collection or transplantation from the site that is to be affected, and/or restoring or creating habitat in sufficient quantities to fully offset the loss of occupied habitat or individuals. Potential mitigation sites could include suitable locations within or outside of the project area, with a preference for on-site mitigation. Habitat and individual plants lost would be mitigated at a minimum 1:1 ratio, considering acreage as well as function and value and as approved by CDFW or USFWS. Success criteria for preserved and compensatory populations would include:

- The extent of occupied area and plant density (number of plants per unit area) in compensatory populations would be equal to or greater than the affected occupied habitat.
- Compensatory and preserved populations would be self-producing. Populations would be considered self-producing when:
  - plants reestablish annually for a minimum of 5 years with no human intervention such as supplemental seeding; and
  - reestablished and preserved habitats contain an occupied area and flower density comparable to existing occupied habitat areas in similar habitat types in the project vicinity.

If off-site mitigation includes dedication of conservation easements, purchase of mitigation credits, or other off-site conservation measures, the details of these measures will be included in the mitigation plan, including information on responsible parties for long-term management, conservation easement holders, long-term management requirements, success criteria such as those listed above and other details, as appropriate to target the preservation of long-term viable populations.

Significance after Mitigation

Mitigation Measure 3.3-9 would reduce significant impacts on special-status plants because it would require protocol-level surveys in suitable habitat, implementation of avoidance measures, and compensation for impacts on special-status plants. Additional consultation with state and/or federal regulatory agencies may be necessary if handling ESA- or CESA-listed species is required.

Common to all special-status species resources, standard BMPs required through Mitigation Measures 3.3-1 and 3.3-2, which entail standard biological resource avoidance measures and worker environmental awareness training, would ensure that construction encroachment or disturbance on special-status species habitats are avoided.

With the implementation of Mitigation Measures 3.3-1, 3.3.-2, and 3.3-9, impacts on special-status plant species would be reduced to **less than significant**.

MSS Brine Transport Pipeline - Fish

The project would blend MSS brine (a mixture of Bay water and MSS) with EBDA's low-salinity treated wastewater effluent to then discharge into the Bay from EBDA's existing deep-water outfall. The project would change the typical discharge of EBDA's treated wastewater at its deep-water outfall to a solution with higher salinity concentrations that would be closer to ambient Bay conditions. The effluent discharges of mixed MSS brine and EBDA-treated wastewater would be a covered action under the existing San Francisco Bay RWQCB NPDES Permit for EBDA system discharge operations (RWQCB Order R2-2022-0023, CA0037869) (RWQCB 2022) and would be fully compliant with all effluent criteria in that permit and well below any toxicity thresholds for any species potentially present in the Bay. A summary of the supporting technical analysis and confirmation by the San Francisco Bay RWQCB are presented in greater detail below.

The proposed MSS brine transport pipeline would tie into the EBDA's existing combined effluent conveyance system on the site of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. EBDA's existing discharge to the Bay is approximately 600 mg/L total dissolved solids (TDS). Under the project scenario, blending the MSS brine with the existing EBDA treated wastewater effluent would increase TDS concentrations such that the discharge would become more similar to ambient Bay conditions (e.g., at a 25:1 dilution the discharge would be around 17,000 mg/L TDS) (LWA 2022). The source of the new discharge (MSS brine) from the project would be Bay water, and processing does not entail adding any foreign materials to the discharge. Further, as per existing NPDES permit conditions, the addition of MSS brine would occur at a flow rate less than or equal to 4 percent of the total secondary treated wastewater flow, as calculated on a daily average. This permit condition is based on: (1) EBDA's updated outfall dilution study (EBDA 2021) that models mixing conditions and found that the minimum initial dilution at the outfall diffuser was 72:1 with the addition of the proposed MSS brine; and (2) side-by-side toxicity tests that used a 25:1 blend of EBDA's secondary treated wastewater to MSS brine (i.e., a 4 percent brine solution) which found no increased toxicity. The San Francisco Bay RWQCB concluded that these tests demonstrated that the addition of MSS brine to the EBDA treated wastewater effluent does not increase effluent toxicity and therefore would not harm receiving-water quality, particularly when considering the initial dilution achieved at the outfall (RWQCB 2022). In addition, the project does not include any improvements to the existing outfall structure. Therefore, the project does not anticipate any adverse water quality impacts that could affect fish or other aquatic species.

The proposed MSS brine transport pipeline includes several channel crossings, all of which would avoid directly impacting waterbodies through trenchless construction techniques such as HDD and microtunneling or by crossing at existing culverts and bridges. There would be no direct loss of special-status fish habitat from these crossings, and no shading or other permanent impacts would occur. HDD work would not occur in water, is a continuous and relatively low amplitude noise source (as compared to higher impact noise sources like pile driving), and noise from drilling would be insulated by streambed material. Because of these factors, HDD work is not anticipated to cause any meaningful in-water noise impacts that would affect aquatic species. There would be no injury, mortality, or behavioral impacts on special-status fish species due to channel and culvert crossings. Construction would occur outside of waterbodies, with the exception of small areas of temporary effects from pipeline disturbance (approximately 0.2 acre based on preliminary design and CARI mapping). Indirect effects (e.g., construction noise or vibration) are expected to be minimal, as no machinery would be operating in the channel.

Construction activities could result in accidental spills or erosion that could enter and degrade aquatic, wetland, or other sensitive habitats. This could be deleterious to special-status fish and aquatic habitat. However, project dewatering operations would be conducted in accordance with NPDES and/or waste discharge permits obtained for the project; and a Storm Water Pollution Prevention Plan would be developed and implemented during construction

in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) that would include BMPs to avoid or minimize impacts to biological resources from construction, including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent wetlands. In consideration of these project measures, impacts to special-status fish from construction erosion, sedimentation, and spills would be minimized or avoided.

Directional drilling operations have the potential to release drilling fluid (also referred to as drilling mud) to the surface environment resulting in what is commonly referred to as a "frac-out." It is relatively common for a frac-out to occur on an HDD project. Frac-outs frequently occur as the result of excessive down-hole pressure resulting from the choice of drill mud or drilling practice. Most frac-outs, however, are usually minor and located within construction right of way close to the bore entry or exit. Drilling muds consist largely of a bentonite clay-water mixture. Bentonite is a naturally occurring, nontoxic, inert substance; however, if released into waterbodies, bentonite has the potential to adversely affect fish (e.g., clogging gills or affecting respiration), as well as invertebrates that support a variety of foraging species.

The potential for frac-out and resulting adverse effects to fish would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures

Prior to directional drilling activities, containment and cleanup equipment, such as portable pumps, silt fence, and fiber rolls, will be present for use at the staging areas and active construction site. At high-risk boring locations directly adjacent to or under waterbodies or wetlands, damming and flume materials will be pre-staged. During directional drilling activities, construction crews will monitor bentonite flow and returns so that fluid loss can be identified before the material surfaces. Silt fencing or equivalent will be installed between the bore site and any water or wetland. This will prevent the bentonite mixture from entering the water or wetland should a spill occur. If a spill is detected in a water or wetland, drilling will immediately cease, and spill prevention and control measures will immediately be employed. If the mixture flows to the surface of a water, a pump will be used to pump it to a safe location within a BMP. If a release occurs in a water, the water will be immediately dammed and flumed and the bentonite mixture will be contained and removed. The appropriate permitting agencies will be contacted including the San Francisco Bay RWQCB.

Significance after Mitigation

Mitigation Measure 3.3-10 would minimize and substantially avoid an adverse environmental effect from directional drilling releases to fish and other species associated with aquatic and wetland habitats.

Common to all special-status species resources, Mitigation Measures 3.3-2 and 3.3-3, which entail standard biological resource avoidance measures and worker environmental awareness training, would ensure that construction encroachment or disturbance on special-status species habitats are avoided.

With the implementation of Mitigation Measures 3.3-1, 3.3.-2, and 3.3-10, impacts on special-status fish species would be reduced to **less than significant**.

MSS Brine Transport Pipeline - Birds

The proposed MSS brine transport pipeline would be almost entirely buried and would include only minimal above-ground appurtenances that could permanently encroach upon special-status bird habitats. Above-ground appurtenances would include isolation valves installed upstream and downstream of the SR 84 and SR 92 crossings and at the connection into the EBDA combined effluent conveyance system immediately downstream of the Oro

Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant; air release/vacuum valves at high points along the pipeline typically housed in an above-grade structure on a concrete pad in the median or behind the curb and sidewalk; and blowoff valves installed at major low points along the pipeline. These appurtenances would typically be placed in urban developed areas and would result in negligible displacement of habitat suitable for special-status birds.

Construction activities could result in accidental spills or erosion that could enter and degrade aquatic, wetland, or other sensitive habitats. This could be deleterious to special-status birds. However, project dewatering operations would be conducted in accordance with NPDES and/or waste discharge permits obtained for the project; and a Storm Water Pollution Prevention Plan would be developed and implemented during construction in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) that would include BMPs to avoid or minimize impacts to biological resources from construction, including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent wetlands. In consideration of these project measures, impacts to special-status birds from construction erosion, sedimentation, and spills would be minimized or avoided.

Most of the MSS brine transport pipeline would be installed beneath existing roadways and berm roads that do not provide high quality habitat for special-status bird nesting or foraging; however, the buried pipeline would require direct temporary construction disturbance of select undeveloped areas away from existing developed roadways. This includes a short segment along the shoulder of Thornton Avenue, in an annual grassland area adjacent to CARI mapped tidal marsh; a short segment along Quarry Road, identified in CARI mapping as playa and in the focused surveys as annual grassland and seasonal alkali wetland; and short segments on either side of the proposed Alameda Creek Flood Control Channel adjacent to Ardenwood Boulevard and Union City Boulevard, identified during focused surveys as annual grassland; and a short segment north of SR 92 that appears to contain annual grassland and ornamental plantings. Per the preliminary design and CARI mapping, the MSS brine transport pipeline is anticipated to result in 1.0 acre of temporary impact to playa habitat (0.9 acres from the pipeline and pipeline buffer, and 0.1 acres from laydown areas), 0.2 acre of temporary impact to unvegetated pond habitat, 0.1 acre of temporary impact to vegetated pond habitat, and 0.2 acre of impact to tidal channel habitat; and based on FVEG mapping, 1.7 acre of impact to annual grassland and 0.3 acre of impact to cropland habitats. If the optional alignment on Eden Shores Boulevard and Marina Drive is constructed, there would be marginally reduced impacts to annual grassland habitat. The project also includes pipeline segments on the former Skywest Golf Course berm, which is surfaced with compacted dirt and gravel along its eastern length and apparent annual grassland and ornamental vegetation along its western length. The segment on the Oro Loma Marsh berms would occur on trafficked berm roadways but would be immediately adjacent to the marsh. Trenching could also result in small areas of direct impact to adjoining habitats to accommodate the required 4 to 5 feet of trenching, particularly in confined areas that abut tidal marsh or other sensitive habitats (although no tidal marsh impacts are anticipated based on the preliminary design and CARI mapping).

The potential staging areas occur in easily accessible, previously developed, or disturbed areas with only limited coverage of ornamental or ruderal vegetation (if any) of marginal value to special-status bird species. Various channel and wetland crossings would also occur in habitat potentially suitable for special-status birds. Where crossings at existing bridges are not feasible, trenchless construction techniques such as HDD and microtunneling would be employed to avoid direct impacts to sensitive habitats such as tidal marsh. HDD and microtunneling does, however, require temporary disturbance for work areas associated with the construction pit entrance and receiving ends, and HDD does require a pipe string laydown area. This may result in additional direct temporary impacts to sensitive habitats. Per the preliminary design, staging and laydown would result in 0.1 acre of CARI mapped playa temporary impacts.

The MSS brine transport pipeline alignment from south of the former Skywest Golf Course to the Alameda Creek Flood Control Channel crossing would occur in urban developed areas. Suitable habitat for nesting or foraging birds

within the areas surrounding the proposed alignment is limited, likely confined to marginal nesting habitat in ornamental trees by species such as white-tailed kites and foraging in undeveloped disturbed parcels. From the Alameda Creek Flood Control Channel crossing to the Solar Salt Pond Facility, the MSS brine transport pipeline alignment would also be constructed on roadways and berm roads (except for the short segments described earlier), but many areas would occur in proximity to grassland, tidal marsh, and pond (vegetated and nonvegetated) habitats. Similarly, the former Skywest Golf Course berm segment would be located adjacent to grassland and sizable landscape trees within the golf course; and the Oro Loma Marsh berm segment would occur immediately adjacent to vegetated ponds, tidal marsh, tidal flat and marsh panne, and subtidal habitats. These adjoining areas may provide nesting or foraging habitat to special-status birds. Notably, there are CNDDB recorded occurrences of Alameda song sparrow within the Oro Lomo Marsh alignment area, although they date to 1939.

The use of construction equipment or presence of workers in habitats directly affected by the MSS brine transport pipeline has potential to result in disturbance, mortality, or injury to special-status bird species, their broods, or their nests. Indirect disturbance of special-status bird foraging or nesting could also occur from construction noise, vibratory, or visual disturbance of areas surrounding the pipeline alignment. These direct and indirect impacts are most likely within and near higher value habitats along the alignment (e.g., tidal marsh). As previously noted, salt marsh habitat may provide nesting and foraging habitat for California Ridgway's rail, California black rail, Alameda song sparrow, northern harrier, and salt marsh common yellowthroat. Barren habitats at the margins of salt ponds or emergent tidal marsh may provide nesting habitat for Western snowy plover, or burrowing owl (in burrows). Grasslands may provide nesting or foraging habitat for white-tailed kite, northern harrier, and burrowing owl. Impacts to nesting birds are most likely for construction occurring during the breeding season, typically occurring from February 1 through August 31.

As described for special-status fish species, directional drilling operations have the potential to release drilling fluid (also referred to as drilling mud) to the surface environment resulting in what is commonly referred to as a "frac-out." Frac-out can result in release of bentonite, which has the potential to adversely affect invertebrates that support a variety of foraging species, including birds.

Direct and indirect disturbance of suitable special-status bird nesting or foraging habitat, as well as potential adverse impacts to bird foraging from frac-outs, would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-3: Conduct Focused Surveys for Nesting Special-Status Bird Species, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers

Mitigation Measure 3.3-4: Conduct Protocol-Level Surveys and Implement Protective Buffers for California Ridgway's Rail

Mitigation Measure 3.3-5: Avoid and Minimize Impacts to Western Snowy Plover

Mitigation Measure 3.3-6: Perform Biological Monitoring

Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures

Significance after Mitigation

To reduce or avoid impacts on nesting special-status bird species, Mitigation Measure 3.3-3 would implement preconstruction nesting bird surveys and, as applicable, avoidance buffers between construction activities and nesting birds if any active nest is identified within the study area. In addition, Mitigation Measures 3.3-4 and 3.3-5 would provide additional protection for California Ridgway's rail and Western snowy plover, respectively. Lastly, Mitigation

Measure 3.3-6 would require that a biological monitor be present during all initial ground-disturbing activities within or near special-status species habitat, as well as for use of heavy equipment that could cause noise or vibration disturbance to species state or federally listed as threatened or endangered, state species of special concern, or species fully protected by the California Fish and Game Code. Mitigation Measure 3.3-10 would minimize and substantially avoid an adverse environmental impact to birds associated with aquatic and wetland habitats from directional drilling releases.

Common to all special-status species resources, Mitigation Measures 3.3-1 and 3.3-2, which entail standard biological resource avoidance measures and worker environmental awareness training, would ensure that construction encroachment or disturbance on special-status species habitats are avoided.

With the implementation of Mitigation Measures 3.3-1 through 3.3-6 and 3.3-10, impacts on special-status bird species would be reduced to **less than significant**.

MSS Brine Transport Pipeline – Terrestrial Mammals

As described for special-status birds, the MSS brine transport pipeline alignment would predominantly occur on roadways in urban developed environments. Along the proposed alignment, salt marsh habitat potentially suitable for salt-marsh harvest mouse and salt-marsh wandering shrew occurs only in select areas, including within Oro Loma Marsh, along the proposed Thornton Avenue alignment, at the proposed Newark Slough at Thornton Avenue crossing, at the proposed Newark Slough tributary south of Hetch Hetchy Aqueduct and SamTrans Rail Line/Hetch Hetchy Aqueduct crossings, east of the Pond 13 berm alignment (across a submerged channel), and at the proposed Plummer Creek crossing. Based on the preliminary design and CARI mapping, there would be no temporary or permanent impacts to tidal marsh habitats. The MSS brine transport pipeline alignment overlaps with CNDDB recorded ranges of salt marsh harvest mouse and salt marsh wandering shrew at the Newark Slough at Thornton Avenue crossing, and salt-marsh harvest mouse along Quarry Road. Salt marsh harvest mouse has also been recorded in Oro Loma Marsh.

Construction activities could result in accidental spills or erosion that could enter and degrade aquatic, wetland, or other sensitive habitats. This could be deleterious to special-status terrestrial mammals. However, project dewatering operations would be conducted in accordance with NPDES and/or waste discharge permits obtained for the project; and a Storm Water Pollution Prevention Plan would be developed and implemented during construction in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) that would include BMPs to avoid or minimize impacts to biological resources from construction, including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent wetlands. In consideration of these project measures, impacts to terrestrial mammals from construction erosion, sedimentation, and spills would be minimized or avoided.

Disturbance of salt marsh habitat throughout the alignment would be largely avoided through use of trenchless construction techniques such as HDD and microtunneling. HDD and microtunneling do, however, require temporary disturbance for work areas associated with the construction pit entrance and receiving ends, and HDD requires a pipe string laydown area. This could result in additional direct temporary impacts to sensitive habitats potentially including tidal marsh. In select narrow roadway or berm areas, trenching could also result in small areas of impact to adjoining salt marsh to accommodate the required 4 to 5 feet of trenching. The project also notably includes trenching adjacent to Quarry Road at the margins of playa habitat with a CNDDB recorded salt-marsh harvest mouse occurrence, and on the Oro Loma Marsh berm adjacent to recorded occurrences.

While the preliminary project design and CARI mapping indicates that direct permanent or temporary disturbance of tidal marsh habitat would be avoided, some encroachment may still potentially occur resulting from design revisions, actual on-site conditions, or temporal changes to vegetation communities. These species could also enter adjoining habitats such as annual grasslands. Construction in these areas could result in injury, mortality, or other disturbance of salt-marsh harvest mouse or salt-marsh wandering shrew. The potential for direct injury or mortality to individual

salt-marsh harvest mouse or salt-marsh wandering shrew would be confined to the brief duration of construction limited areas of temporary salt marsh disturbance, or disturbance to adjoining areas.

Potential encroachment on salt marsh habitat during construction would be limited to temporary work areas, the small areas of temporary disturbance for construction pit entrance and receiving, and possibly for pipe stringing and trenching. This would have a negligible temporary effect on available salt-marsh harvest mouse or salt-marsh wandering shrew habitat when considering the availability of expansive salt marsh habitat within the study area. As noted, the MSS brine transport pipeline would be almost entirely buried and would include only minimal above-ground appurtenances which would predominantly or entirely be constructed in developed areas and outside of salt marsh habitat. Neither the temporary pipe stringing and construction pits, nor the above-ground appurtenances, would inhibit salt-marsh harvest mouse or salt-marsh wandering shrew movement through or between salt marsh habitats.

The MSS brine transport pipeline alignment would also occur in areas potentially suitable for pallid bat roosting, nesting, and foraging. Pallid bats are associated with grasslands, such as those occurring near the pipeline alignment at Thornton Avenue, but also roost in structures within urban environments such as buildings and bridges, as well as in trees. Project construction activities such as pipeline installation on bridges or tree removal (if needed) could impact nesting or roosting of pallid bats, potentially resulting in mortalities. Potential disturbance of roosting or nesting pallid bats would likely be limited to construction affecting trees or urban structures.

As described for special-status fish and bird species, directional drilling operations have the potential to release drilling fluid (also referred to as drilling mud) to the surface environment resulting in what is commonly referred to as a "frac-out." Frac-out can result in release of bentonite, which has the potential to adversely affect invertebrates that support a variety of foraging species. Salt-marsh wandering shrews feed primarily on the large populations of amphipods and crustaceans, which could be affected by bentonite releases; whereas salt-marsh harvest mice generally feed upon pickle weed and other salt marsh plants, and are less likely to be affected. Pallid bats are less likely to forage in water or wetland habitats where frac-outs could potentially occur.

Potential temporary construction impacts including direct injury or mortality of individual salt-marsh harvest mouse or salt-marsh wandering shrew, disturbance or roosting or nesting pallid bats, and adverse effects on terrestrial mammal foraging from frac-outs would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-6: Perform Biological Monitoring

Mitigation Measure 3.3-7: Prevent Special-Status Wildlife Entrapment

Mitigation Measure 3.3-8: Avoid Impacts to Salt-Marsh Harvest Mouse and Salt-Marsh Wandering Shrew

Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures

Mitigation Measure 3.3-11: Avoid Impacts to Pallid Bat

Measures for avoiding and minimizing impacts to the pallid bat will include the following:

- A qualified wildlife biologist will be retained to conduct surveys for roosting bats in potentially suitable roosting habitat (i.e., structures, trees) within the construction area. Surveys will be conducted within 14 days prior to initiation of construction activities. If no active roosts are detected during surveys, then no additional mitigation is required.

- If pallid bat roosts are found in any areas that will be directly affected by construction activities during breeding season (April 1 to August 31), a no-disturbance buffer will be established around the roosting location to avoid disturbance or destruction of the roost site until after the breeding season or after a wildlife biologist determines that the pups are fully weaned. The extent of these buffers will be determined by a wildlife biologist in consultation with CDFW and will depend on the level of noise or disturbance, line of site between the roost and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors will be analyzed and used to make an appropriate decision on buffer distances.
- Tree removal where active roosts are present will be conducted only outside of the breeding season, between September 1 and March 31, or after a wildlife biologist determines that the pups have been weaned, typically by late August.

Significance after Mitigation

Biological monitoring would be required within and adjunct to special-status species habitat as detailed above in Mitigation Measure 3.3-6. Mitigation Measure 3.3-7 would require ramps or barriers to limit the potential for entrapment of special-status wildlife species. Mitigation Measure 3.3-8 includes procedures specifically designed to avoid salt-marsh harvest mouse or shrew impacts, such as exclusionary fencing. Mitigation Measure 3.3-10 would minimize and substantially avoid an adverse environmental impact on terrestrial mammal foraging habitat from directional drilling releases. Mitigation Measure 3.3.-11 includes survey, buffer, and seasonal removal requirements to avoid impacts to nesting and roosting pallid bats.

Common to all special-status species resources, Mitigation Measures 3.3-1 and 3.3-2, which entail standard biological resource avoidance measures and worker environmental awareness training, would ensure that construction encroachment or disturbance on special-status species habitats are avoided.

With the implementation of Mitigation Measures 3.3-1, 3.3-2, 3.3-6 through 3.3-8, 3.3-10, and 3.3-11, impacts on special-status terrestrial mammal species would be reduced to **less than significant**.

MSS Brine Transport Pipeline – Invertebrates

The MSS brine transport pipeline would require trenching or other disturbance that could affect habitat suitable for monarch butterfly overwintering. As noted, the Western Monarch Milkweed Mapper identifies occurrences of monarchs, monarch breeding, and milkweed occurrences within the study area. Further, the CNDDB identifies a recorded occurrence of monarch butterfly in blue gum eucalyptus trees in the former Skywest Golf Course area. Other known habitats include Ardenwood Historic Farm, a known priority overwintering site located approximately 1-mile east of the project site. While the Ardenwood Historic Farm priority overwintering site is located greater than 1 mile from the pipeline alignment, the site's relative proximity suggests potential for additional overwintering sites within the project study area.

The MSS brine transport pipeline alignment largely occurs in developed urban areas devoid of vegetation suitable for monarch butterflies, though some upland vegetated areas may provide habitat for this species. The project trenching or other construction activities in uplands could remove overwintering vegetation for monarch butterflies from limited limbing or removal of blue gum eucalyptus trees or other trees throughout the pipeline alignment. Monarchs do not favor eucalyptus trees; rather, most of the overwintering locations in California are within eucalyptus groves simply due to their abundance in the coastal areas in the state (Xerces Society 2017). Construction activities in vegetated uplands could result in inadvertent disturbance or loss of monarch overwintering colonies if present within tree stands in the MSS brine transport pipeline alignment.

Construction disturbance or removal of monarch overwintering populations would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-12: Implement Avoidance Measures for Monarch Overwintering Colonies

The project will implement the following measures to avoid and minimize potential impacts on monarch butterfly overwintering colonies:

- To minimize the potential for loss of monarch overwintering colonies, project activities that include vegetation removal within suitable overwintering habitat (e.g., eucalyptus or other large trees) will be conducted from April through September to avoid the overwintering season (October through March), if feasible. If project activities are conducted outside of the overwintering season, no further mitigation will be required.
- Within 14 days before the onset of project activities that include vegetation removal between October 1 and March 31, a qualified biologist familiar with monarchs and monarch overwintering habitat will conduct focused surveys for monarch colonies within habitat suitable for the species in the project site and will identify any colonies found within the project site.
- Monarch overwintering colonies that are identified within a project site will be demarcated with flagging or high-visibility construction fencing to prevent removal of the stand of trees containing the overwintering colony and encroachment by heavy machinery, vehicles, or personnel. Removal of the tree or stand of trees that contains the overwintering colony will not occur until the monarchs have left the area, as determined by a qualified biologist.
- If modification or removal of a stand that contains an identified overwintering colony is required for a project and cannot be delayed, a site-specific management plan will be prepared and implemented for the stand with the goal of maintaining habitat function for the monarch overwintering colony, following feasible recommendations from *Protecting California's Butterfly Groves Management Guidelines for Monarch Butterfly Overwintering Habitat* (Xerces Society 2017). Examples of management strategies that could be considered to maintain habitat function include:
  - remove or trim hazard trees;
  - selectively remove or trim trees to create a heterogeneous habitat that provides access to sunlight and shade for monarchs;
  - maintain suitable wind protection in the stand; and
  - replace removed trees with native trees in strategic locations to provide additional wind protection.

Significance after Mitigation

To reduce or avoid impacts on monarch overwintering sites, if monarch butterfly overwintering sites or suitable overwintering habitat are observed, additional measures such as work windows, flagging, and other management actions would be implemented through Mitigation Measure 3.3-12. Common to all biological resources, Mitigation Measure 3.3-1, which entails standard biological resource avoidance, would ensure that construction encroachment or disturbance on sensitive habitats are avoided.

With the implementation of Mitigation Measures 3.3-1, 3.3-2, and 3.3-12, impacts to monarch butterfly overwintering and reproduction would be reduced to **less than significant**.

MSS Brine Transport Pipeline – Plants

As described for special-status birds, most of the MSS brine transport pipeline alignment would occur along existing roadways and berm roads, which are unsuitable for special-status plant species. Some short segments of the alignment would encroach upon annual grassland and open fields, ornamental, and playa habitats. Several of the potential staging areas also include marginal ruderal or ornamental habitats at the margins of roadways. Additional

habitat disturbance may occur associated with temporary work areas, construction pits, pipe stringing, and trench excavation, which could affect additional habitat types such as tidal marsh and vegetated playa habitat.

Construction activities could result in accidental spills or erosion that could enter and degrade aquatic, wetland, or other sensitive habitats. This could be deleterious to special-status plants. However, project dewatering operations would be conducted in accordance with NPDES and/or waste discharge permits obtained for the project; and a Storm Water Pollution Prevention Plan would be developed and implemented during construction in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) that would include BMPs to avoid or minimize impacts to biological resources from construction, including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent wetlands. In consideration of these project measures, impacts to special-status plants from construction erosion, sedimentation, and spills would be minimized or avoided.

While developed and disturbed conditions likely preclude the presence of special-status species from most of the MSS brine transport pipeline alignment, potential temporary disturbance may result in loss of special-status plant species associated with affected habitats, particularly in sensitive areas such as salt marsh. There are a wide variety of special-status plant habitat associations in these areas, as detailed in the "Environmental Setting" section and in Appendix C (Special-Status Species). Potential frac-outs during directional drilling could also adversely affect water quality and degrade the quality of habitat for wetland associated special- status plant species. Loss of special-status plant species and habitat degradation from potential frac-outs would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-9: Conduct Botanical Surveys and Implement Avoidance Measures and Mitigation

Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures

Significance after Mitigation

Mitigation Measure 3.3-9 would reduce significant impacts on special-status plants because it would require protocol-level surveys in suitable habitat, implementation of avoidance measures, and compensation for impacts on special-status plants. Additional consultation with state and/or federal regulatory agencies may be necessary if handling ESA- or CESA-listed species is required. Mitigation Measure 3.3-10 would minimize and substantially avoid an adverse environmental impact from directional drilling releases to special-status plant species associated with wetland habitats.

Common to all special-status species resources, standard BMPs required through Mitigation Measures 3.3-1 and 3.3-2, which entail standard biological resource avoidance measures and worker environmental awareness training, would ensure that construction encroachment or disturbance on special-status species habitats are avoided.

With the implementation of Mitigation Measures 3.3-1, 3.3-2, 3.3-9, and 3.3-10, impacts on special-status plant species would be reduced to **less than significant**.

Impact 3.3-2: Potential Substantial Adverse Effect on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS

and

Impact 3.3-3: Potential Substantial Adverse Effect on State or Federally Protected Wetlands (including, but Not Limited to, Marshes, Vernal Pools, Coastal Wetlands, etc.) through Direct Removal, Filling, Hydrological Interruption, or Other Means

Implementing the project may result in temporary loss or disturbance of waters and wetlands from construction of the Solar Salt Facility Improvements and MSS brine transport pipeline. The Solar Salt Facility Improvements are anticipated to result in a small loss of unvegetated pond habitat, and construction of other permanent above-ground improvements could result in additional permanent loss of potentially jurisdictional features. Limited trimming or removal of riparian vegetation may also occur from MSS brine transport pipeline construction. Further, areas affected by the project may qualify as sensitive natural communities, most likely including tidal marsh habitats identified or likely to qualify as northern coastal salt marsh. Directional drilling to construct the MSS brine transport pipeline could result in accidental frac-out which could adversely affect water quality and degrade wetlands. Due to the sensitivity of these habitat types, and their protected statuses, this impact would be **potentially significant**.

Solar Salt Facility Improvements

The proposed Solar Salt Facility improvements would occur within the unvegetated salt ponds, salt pond slopes and surrounding access berms. Per CARI mapping, these improvements would result in permanent removal of unvegetated pond habitat from the proposed pump stations (0.1 acre) and temporary work area impacts to unvegetated pond (0.1 acre) and tidal channel habitats (0.1 acre). The Solar Salt Facility improvement areas do not contain any riparian habitat, as determined through the reconnaissance-level surveys focused on the Solar Salt Facility improvement area, and supplemented by CARI and FVEG dataset and aerial photograph review. The nearest CNDDB mapped sensitive natural communities are northern coastal salt marsh in Newark Slough north of Pond 13, away from the Solar Salt Facility Improvements area, and valley oak woodland approximately 0.6 mile east of the MSS brine transport pipeline alignment along Thornton Avenue.

Additional impacts outside of the areas identified through CARI mapping review could also occur due to design revisions, vegetation changes, and site-specific conditions that differ from CARI mapping. This could potentially include additional impacts to pond or tidal channel habitats, or to salt marsh habitat that occurs on the outboard side of the Pond 10, 12, and 13 berms, and along Plummer Creek. In addition to qualifying as jurisdictional wetlands, these salt marsh areas may also qualify as northern coastal salt marsh if the species assemblage, percent cover, and patch size are sufficient to meet membership rules and sensitive natural community requirements.

Northern maritime chaparral and valley needlegrass grassland natural communities have not been documented or observed in the study area based on review of the CNDDB, FVEG mapping, focused site surveys, and aerial photo review; however, comprehensive vegetation surveys throughout the study area have not occurred, and other plant communities in the study area may qualify as sensitive natural communities (e.g., arroyo willow thickets, black cottonwood forest and woodland) if the species assemblage, percent cover, and patch size are sufficient to meet membership rules and sensitive natural community requirements.

Operational water diversions at Plummer Creek and Mowry Slough are unlikely to result in hydrological interruption of tidal wetlands or other sensitive natural communities. The new pump station installed in the FMC ditch would pump water indirectly from Plummer Creek to the new dissolution water pond, which would be used to support a continuous rate of 600 to 1,200 gpm for the duration of the Pond 12 and 13 processing; and a backup water supply would be provided from the Multipurpose Ditch pumped at a maximum continuous flow rate of about 600 gpm. Conservatively, an increase in daily diversion of up to 2.7 acre-feet per day from Mowry Slough and 5.3 acre-feet per day from Plummer Creek would be required for the project. Overall, an increase in daily diversions of 2.7 acre-feet from Mowry Slough or 5.3 acre-feet from Plummer Creek would not be considered a substantial hydrologic change

in the region relative to the existing condition, because the volume of water moving into and out of South Bay sloughs is orders of magnitude larger than 5.3 acre-feet per day. Specifically, the increase in diversion would not be considered a substantial hydrologic change to either Mowry Slough or Plummer Creek because the project-related diversion from Mowry Slough represents a diversion of about 2 percent of the daily estimated tidal inflow into the upper Mowry Slough area and the project-related diversion from Plummer Creek represents a diversion of about 4 percent of the daily estimated tidal inflow into Plummer Creek (Nielsen, pers. comm., 2022). In addition, no return flows would occur from the Solar Salt Facility to Mowry Slough or Plummer Creek. In consideration of the minimal change in diversions for most of the year, it is anticipated that there would be no loss of function or area of wetlands or waters as a result of hydrological modification in the slough channels.

Long-term maintenance activities at the Solar Salt Facility would be consistent with current operating procedures on-site. Maintenance activities for the proposed on-site structures, pipelines, and appurtenances are not anticipated to result in impacts to sensitive natural communities. Because no substantial change to maintenance activities would occur, there would be no effect on wetlands, riparian, or other sensitive habitats during operation of the project.

Construction activities could result in accidental spills or erosion that could enter and degrade aquatic, wetland, or other sensitive habitats. However, project dewatering operations would be conducted in accordance with NPDES and/or waste discharge permits obtained for the project; and a Storm Water Pollution Prevention Plan would be developed and implemented during construction in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) that would include BMPs to avoid or minimize impacts to biological resources from construction, including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent wetlands. In consideration of these project measures, impacts to water or wetland habitats including habitats that may qualify as sensitive natural communities from construction erosion, sedimentation, and spills would be minimized or avoided.

Permanent displacement or temporary disturbance of water or wetland habitats from Solar Salt Facility improvements, including habitats that may qualify as sensitive natural communities, would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-6: Perform Biological Monitoring

Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State

Before initial ground disturbance or vegetation removal activities begin within areas that may contain wetlands and other waters, the following measures, which are intended to avoid and minimize impacts on state or federally protected wetlands, shall be implemented.

A qualified biologist will delineate the boundaries of state or federally protected wetlands within the project site according to methods established in the USACE wetlands delineation manual (Environmental Laboratory 1987) and the Western Mountains, Valleys, and Coast regional supplement (USACE 2010). The qualified biologist will also delineate the boundaries of wetlands that may not meet the definition of waters of the United States, but would qualify as waters of the state, according to the state wetland definition and procedures (SWRCB 2021).

If state or federally protected wetlands are determined to be present within a work area and can be avoided, the qualified biologist will establish a buffer around wetlands and mark the buffer boundary with high-visibility flagging,

fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway). The buffer will be a minimum width of 25 feet but may be larger if deemed necessary. The appropriate size and shape of the buffer zone will be determined in coordination with the qualified biologist and will depend on the type of wetland present, the timing of project activities (e.g., wet or dry time of year), whether any special-status species may occupy the wetland and the species' vulnerability to the project activities, environmental conditions and terrain, and the project activity being implemented.

Project activities (e.g., ground disturbance, vegetation removal, staging) will be prohibited within the established buffer. A qualified biologist will periodically inspect the materials demarcating the buffer to confirm that they are intact and visible, and wetland impacts are being avoided.

If it is determined that fill of waters of the United States would result from project implementation, authorization for such fill will be secured from USACE through the Section 404 permitting process. Any waters of the United States that would be affected by the project will be replaced or restored on a no-net-loss basis in accordance with USACE mitigation guidelines. In association with the Section 404 permit (if applicable) and prior to the issuance of any grading permit, Section 401 Water Quality Certification from the San Francisco RWQCB will be obtained.

If it is determined that disturbance or fill of state protected wetlands, or any other waters of the state cannot be avoided, the implementing party will notify CDFW and the San Francisco RWQCB before commencing any activity within the bed or, bank, or riparian corridor of any waterway and will notify the RWQCB before commencing any activity within a state wetland. If project activities trigger the need for a Streambed Alteration Agreement, the proponent will obtain an agreement from CDFW before the activity commences. Project construction activities will be implemented in accordance with the agreement, including implementing reasonable measures in the agreement necessary to protect the fish and wildlife resources, when working within the bed or bank of waterways that function as a fish or wildlife resource or in riparian habitats associated with those waterways. The applicant will apply for a permit from the San Francisco RWQCB for any activity that may result in discharges of dredged or fill material to waters of the state. The application will be completed in accordance with state procedures (SWRCB 2021).

State or federally protected waters and wetlands disturbed during project activities will be restored to pre-disturbance conditions or better. Restoration would include restoring pre-disturbance contours, hydrology, and vegetation. Temporary impacts to wetland would require preparation of a restoration plan which details how wetlands would be restored and would require implementation of a monitoring plan to ensure the restoration is successful. Permanent impacts to wetlands and other waters of the United States will be replaced in accordance with USACE regulations to achieve "no net loss" of area or function of waters of the United States, including wetlands.

Permanent impacts to waters of the state will be compensated in accordance with the state procedures, such that the project would not result in a net loss of overall abundance, diversity, and condition of aquatic resources within the affected watershed based on a watershed assessment using an assessment method approved by the San Francisco RWQCB or State Water Resources Control Board.

To the degree feasible and acceptable to the agencies with jurisdiction, restoration, rehabilitation, and/or replacement of jurisdictional waters for permanent impacts will be mitigated in-kind and completed on-site at a location agreeable to USACE and the RWQCB in accordance with USACE and San Francisco RWQCB mitigation guidelines. Any permanent impacts that cannot be mitigated through on-site restoration, rehabilitation, and/or replacement will be compensated through purchase of mitigation credits at a USACE/San Francisco RWQCB-approved mitigation bank.

Mitigation Measure 3.3-14: Compensate for Unavoidable Loss of Sensitive Natural Communities

The following measures shall be implemented before implementation of project activities:

- A qualified botanist will perform a protocol-level survey of the project site for sensitive natural communities and sensitive habitats following CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018b). Sensitive natural communities will be identified using the best available and current data, including keying them out using the most current edition of *A Manual*

of California Vegetation (including updated natural communities data at http://vegetation.cnps.org/), or referring to relevant reports (e.g., reports found on the VegCAMP website).

- Before implementation of project activities, development setbacks will be established around all sensitive habitats identified during surveys, and these setbacks will be flagged or fenced with brightly visible construction flagging and/or fencing under the direction of the qualified biologist and no project activities (e.g., vegetation removal (including herbicide application), ground disturbance, staging) will occur within these areas. Setback distances will be dependent on various factors (e.g., presence of special-status wildlife or plant species) and determined by a qualified biologist in consultation with the appropriate agency (e.g., CDFW), but will generally be a minimum of 50 feet. Foot traffic by personnel will also be limited in these areas to prevent the introduction of invasive or weedy species or inadvertent trampling of vegetation. Periodic inspections during construction will be conducted by the monitoring biologist to maintain the integrity of exclusion fencing/flagging throughout the period of construction involving ground disturbance.

If sensitive natural communities are determined to be present within a work area and these habitats cannot be avoided, the following measures shall be implemented:

- Compensate for unavoidable loss of any sensitive natural community habitat function such that no net loss of habitat function occurs by:
  - restoring sensitive natural community habitat function within the project site (e.g., using locally collected seed or cuttings);
  - restoring degraded sensitive natural communities outside of the project site at a sufficient ratio to offset the loss of habitat function (at least 1:1); or
  - preserving existing sensitive natural communities of that provide similar habitat function to the sensitive natural community affected through a conservation easement at a sufficient ratio to offset the loss of habitat function (at least 1:1).
- Prepare and implement a Compensatory Mitigation Plan that includes the following:
  - For preserving existing habitat outside of the project site in perpetuity, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands (e.g., the number and type of credits, location of mitigation bank or easement), parties responsible for the long-term management of the land, and the legal and funding mechanism for long-term conservation (e.g., holder of conservation easement or fee title).
  - For restoring or enhancing habitat within the project site or outside of the project site, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored or enhanced habitat.
  - Success criteria required to maintain habitat function for preserved and compensatory populations will include, but not be limited to:
    - The extent of occupied area and density of plants associated with the sensitive natural community (number of plants per unit area) in compensatory habitats will be equal to or greater than the affected occupied habitat.
    - Compensatory and preserved sensitive natural communities will be self-producing. Populations will be considered self-producing when:
      - Plants associated with sensitive natural communities reestablish annually for a minimum of 5 years with no human intervention such as supplemental seeding; and
      - Reestablished and preserved habitats contain an occupied area and density comparable to existing occupied habitat areas in similar habitat types in the project vicinity.

Significance after Mitigation

Mitigation Measure 3.3-13 requires that any direct impacts to protected wetlands would be replaced on a "no-net-loss" basis, while Mitigation Measure 3.3-14 requires avoiding or mitigating for loss of sensitive natural communities (if present). In addition, Mitigation Measure 3.3-6 requires that all work below mean higher high water or ordinary high-water mark be monitored by a qualified biologist. This would ensure that construction activities are restricted to approved areas only. Implementation of these measures would reduce potential impacts on wetlands and waters of the United States and state to a less-than-significant level.

Common to all special-status species resources, Mitigation Measure 3.3-1 would ensure that construction encroachment or disturbance on sensitive habitats are avoided, and Mitigation Measure 3.3-2 would provide worker environmental training including but not limited to identifying the boundaries of construction and environmentally sensitive areas.

With the implementation of Mitigation Measures 3.3-1, 3.3-2, 3.3-6, 3.3-13, and 3.3-14, impacts on waters, wetlands, or sensitive natural communities would be reduced to **less than significant**.

MSS Brine Transport Pipeline

Permanent impacts on waters, wetlands, riparian, or other sensitive natural communities from the MSS brine transport pipeline are not anticipated, as it would be almost entirely buried. Above ground appurtenances including various valves would not be placed in any waters, wetlands, or riparian areas to the extent feasible. While the likelihood is low and the area of effect would be minimal, there remains some potential for such appurtenances to be placed in sensitive habitats.

The proposed MSS brine transport pipeline alignment would avoid or minimize construction impacts to waters, wetlands, or other environmentally sensitive areas to the extent practicable. A segment of the alignment may require trenching or associated disturbance in CARI mapped playa habitat, which is considered a water of the United States and state subject to USACE and RWQCB jurisdiction. This includes an approximately 500-foot segment of the proposed MSS brine transport pipeline alignment next to Quarry Road (0.9 acre of pipeline disturbance, 0.1 acre of laydown). Temporary encroachment on waters and wetlands may also occur from pipeline trenching, staging, and laydown areas throughout the alignment. Based on CARI mapping, preliminary estimates of temporary impacts from MSS brine transport pipeline disturbance, staging, and laydown area (including construction buffers) presented in Table 3.3-2.

Table 3.3-2 Temporary Impacts to Waters and Wetlands from MSS Brine Transport Pipeline Construction

Habitat Type	Project Component	Impact Acreage
Playa	Laydown Area	0.1
	Pipeline Disturbance	0.9
Unvegetated Pond	Pipeline Disturbance	0.2
Vegetated Pond	Pipeline Disturbance	0.1
Tidal Channel	Pipeline Disturbance	0.2
	Total Impact	**1.5**

Note: Waters and wetlands habitat areas calculated using CARI mapping for study area (SFEI 2017).

Source: Data from SFEI 2017, compiled by AECOM in 2022.

Additional impacts outside of the areas identified through CARI mapping review could also occur due to design revisions, vegetation changes, and site-specific conditions that differ from CARI mapping. This could potentially include additional impacts to water and wetland features present throughout the study area.

To avoid sensitive habitat impacts at channel and tidal marsh crossings, trenchless construction techniques including HDD and microtunneling, or crossing at existing culverts or bridges would be employed. While HDD or microtunneling would avoid most impacts to sensitive habitat areas, HDD requires temporary disturbance for work areas, the construction pit entrance and receiving ends, and for the pipe string laydown areas. Based on the

preliminary design and CARI mapping, these temporary impact areas are quantified in Table 3.3-2, although, as noted, additional temporary impacts from trenchless crossing remain possible.

HDD or microtunneling would be implemented below water features at the former Barge Canal south of the Hetch Hetchy Aqueduct and the SamTrans/Hetch Hetchy Aqueduct crossings, which includes tidal marsh, tidal channels, and CDFW designated northern coastal salt marsh; the Newark Slough at Thornton Avenue crossing, which includes tidal marsh, tidal flat and marsh panne habitat, and CDFW designated northern coastal salt marsh; the SR 84 cloverleaf crossing, which include playa and vegetated pond habitat; the Old Alameda Creek Flood Control Channel, which includes CDFW designated northern coastal salt marsh sensitive natural community; and the former Skywest Golf Course and railroad crossing at Oro Loma Marsh, which includes vegetated pond habitat on its western end. Roadway or berm trenching could result in small areas of impact to adjoining salt marsh to accommodate the required 4 to 5 feet of trenching; this is most likely to occur in areas adjacent to tidal marsh habitat, including on the Solar Salt Facility and Oro Loma Marsh berms and along Thornton Avenue.

As described throughout this section, potential frac-outs during directional drilling could also adversely affect water quality and degrade wetland habitats.

Riparian habitat may be present in the vicinity of proposed channel crossings and on the former Skywest Golf Course berm. As evidenced by aerial photo review, channel adjacent trees appear to occur at the Old Alameda Creek and Alameda Creek Flood Control Channels, where trenchless crossings would occur (proposed crossings at the Old Alameda Creek Flood Control Channel and the Alameda Creek Flood Control Channel, respectively). Construction pits could result in impacts to riparian habitat in these areas (e.g., riparian vegetation removal or trimming), if present and unavoidable. On the former Skywest Golf Course berm where trenching would occur, there are several trees that may qualify as riparian trees associated with Sulphur Creek to the immediate south. While trenching would avoid trees to the extent possible, the former Skywest Golf Course berm trees, potentially including riparian trees, may be trimmed or removed during construction.

The CDFW sensitive natural community northern coastal salt marsh has been previously mapped in several locations that overlap the MSS brine transport pipeline alignment including the marshes associated with the trenchless crossing of the SamTrans Rail Line/Hetch Hetchy Aqueduct, former Barge Canal, and the Old Alameda Creek Flood Control Channel. As noted, trenchless construction techniques would be employed to avoid impacts to these areas. The precise coverage area of sensitive natural communities is, however, unknown, and temporary construction disturbance of such habitat remains possible (e.g., grubbing, removal, or other vegetation disturbance). This may include disturbance within tidal marsh habitat that meets the parameters of northern coastal salt marsh sensitive natural community, or other sensitive natural communities not yet recorded in the study area (e.g., valley needlegrass grassland, arroyo willow thickets, black cottonwood forest and woodland).

Portions of the MSS brine transport pipeline would occur within or near the Refuge and Hayward Regional Shoreline, BCDC's jurisdictional areas, and within several municipalities. These affected areas include habitat areas or features subject to their respective plans and regulations, as detailed in Section 3.3.1, "Regulatory Setting." Potential conflict with applicable plans and regulations are addressed under Impacts 3.3.5 and 3.3.6.

Construction activities could result in accidental spills or erosion that could enter and degrade aquatic, wetland, or other sensitive habitats. However, project dewatering operations would be conducted in accordance with NPDES and/or waste discharge permits obtained for the project; and a Storm Water Pollution Prevention Plan would be developed and implemented during construction in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) that would include BMPs to avoid or minimize impacts to biological resources from construction, including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent wetlands. In consideration of these project measures, impacts to waters and wetlands, riparian habitat, or sensitive natural communities from construction erosion, sedimentation, and spills would be minimized or avoided.

Impacts to waters and wetlands, riparian habitat, or sensitive natural communities from direct construction disturbance or accidental frac-out would be a **potentially significant** impact. This includes the potential impacts estimated based on CARI mapping and could include additional areas depending on site specific conditions and final project design.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-6: Perform Biological Monitoring

Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State

Mitigation Measure 3.3-14: Compensate for Unavoidable Loss of Sensitive Natural Communities

Mitigation Measure 3.3-15: Mitigate for Unavoidable Riparian Habitat Removal

Prior to implementing any project activity that may result in changes to the natural flow or bed, channel, or bank of any river, stream, or lake supporting fish or wildlife resources, a Lake and Streambed Alteration Notification will be submitted to CDFW, pursuant to Section 1602 of the California Fish and Game Code. If project activities trigger the need for a Streambed Alteration Agreement, the project proponent will obtain such agreement from CDFW and will conduct construction activities in accordance with the agreement, including implementing reasonable measures in the agreement necessary to protect fish and wildlife resources, including riparian habitat.

The project proponent will mitigate any removal of any riparian habitat through on-site, in-kind restoration, rehabilitation, and/or replacement of riparian trees and other riparian vegetation. If the loss of riparian habitat cannot be fully mitigated on-site, additional compensation will be provided through purchase of credits from a CDFW-approved mitigation bank.

Significance after Mitigation

Mitigation Measure 3.3-13 requires that any direct impacts to protected wetlands would be replaced on a "no-net-loss" basis, while Mitigation Measure 3.3-14 requires avoiding or mitigating for loss of sensitive natural communities (if present). Mitigation Measure 3.3-15 would ensure that riparian habitat (if impacted) is replaced as required by CDFW.

Common to all special-status species resources, Mitigation Measure 3.3-1 would ensure that construction encroachment or disturbance on sensitive habitats are avoided, and Mitigation Measure 3.3.-2 would provide worker environmental training including but not limited to identifying the boundaries of construction and environmentally sensitive areas.

With the implementation of Mitigation Measures 3.3-1, 3.3-2, 3.3-6, and 3.3-13 through 3.3-15, impacts on waters, wetlands, riparian habitat, or sensitive natural communities would be reduced to **less than significant**.

Impact 3.3-4: Potential Substantial Interference with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors, or Impediment to the Use of Native Wildlife Nursery Sites

Implementing the project may disturb nesting or rearing wildlife species including special-status birds and terrestrial mammals. Disturbance may occur from direct habitat encroachment or indirect disturbance (e.g., construction noise or habitat degradation). Impacts to fish rearing would be avoided through use of directional drilling techniques. Project construction and improvements are anticipated to result in negligible effects to localized movement and migration. Direct or indirect construction disturbance of special-status bird or mammal nursery sites would be a **potentially significant** impact.

Wildlife movement corridors are described as pathways or habitat linkages that connect discrete areas of natural open space otherwise fragmented by topography, changes in vegetation, and other natural or human inducted factors such as urbanization. Wildlife nursery sites include locations where fish and wildlife concentrate for hatching and/or raising young. Nursery sites may be occupied by common wildlife species; however, these species may depend on these sites for important life history periods (e.g., breeding) and local nursery sites may have importance to wildlife populations at a regional level.

Solar Salt Facility Improvements

Solar Salt Facility improvements would be constructed predominantly within nonvegetated, high salinity salt pond areas that provide minimal habitat value as migratory corridors or wildlife nursery sites. Construction at the margins of these areas, such as areas near the adjoining salt marsh or tidal channels, would not substantially diminish opportunities for terrestrial or aquatic wildlife to move in the vicinity of the project area.

Long-term operations and maintenance activities at the Solar Salt Facility would be consistent with current operating procedures on-site. As described for Impact 3.3-1, hydrologic changes in Plummer Creek and Mowry Slough are not anticipated to substantially affect fish movement. While San Francisco Bay is an important stopover for migratory shorebirds along the Pacific Flyway, and while salt ponds provide congregation and foraging habitat for shorebirds, project activities are similar in scope and duration to existing baseline activities to which birds are habituated.

Dry portions of ponds and barren berms may provide nesting habitat for native birds (see Impact 3.3-1 for discussion of impacts on nesting native birds). Fringe tidal marsh on the outboard Solar Salt Facility berms, such as along Plummer Creek, may provide nesting habitat to marsh-associated birds. However, habitat value for nesting birds is likely limited by the small area of fringe marsh available and by existing facility maintenance at Ponds 12 and 13. The small size of suitable habitat, lack of large trees, and existing maintenance activities likely also precludes presence of heron rookeries or other native wildlife nursery sites.

Fish species have potential to use the open water and tidal channel habitats in the study area for migration, foraging, or rearing; however, as detailed in the preceding analyses (see Impact 3.3-1), construction and operations at the Solar Salt Facility are not anticipated to result in substantial adverse effects to fish (including fish spawning).

The project does not entail any direct disturbance to potential marine mammal haul outs or rookeries, as the proposed crossings are located relatively far from the open Bay where these species would be most likely to occur. The nearest rookery is located more than 5 miles southeast of the study area in Mowry Slough. The project would have no impact on the Mowry Slough haul out site. Further, in the unlikely event of their presence while moving through the project area, construction activities would not result in indirect disturbance of marine mammals exceeding ambient conditions (e.g., through construction noise). MMPA-defined take or harassment of marine mammals would not occur.

Any temporary effects on wildlife movement would be minor, and the potential for disturbing small areas of limited habitat value for wildlife nurseries would be minimal. These effects would be similar to existing operating conditions at the Solar Salt Facility, and would be a **less-than-significant** impact.

Mitigation Measures

No mitigation is required for this impact.

MSS Brine Transport Pipeline

The MSS brine transport pipeline would be almost entirely buried, and therefore would result in no long-term effects to wildlife migration or movement. Above ground pipeline improvements would be limited to minor appurtenances such as valves and bridge crossings, which would be small in size and preferentially installed in developed areas. Long-term maintenance activities for the pipelines would include periodic inspections and pipe cleaning as well as as-needed servicing of fittings, valves, and other appurtenances. These activities would have negligible, if any, effect on localized wildlife movement limited to temporary displacement during maintenance.

Construction is not anticipated to substantially affect wildlife movement or migration, as the MSS brine transport pipeline alignment would predominantly occur on roadways in urban developed environments. Crossings would not require in-water work and would therefore not interfere with aquatic species movement. Work in grasslands, playa, or other undeveloped habitats, or adjacent to marsh areas such as Oro Loma Marsh, may have a marginally higher potential to discourage localized wildlife movement in these areas during construction, relative to work on roadways. The duration of construction is anticipated to be brief, approximately 12 to 18 months, and would be confined to relatively small staging and daily pipeline installation areas and to work areas for trenchless crossings. Indirect impacts to adjoining habitats, such as wetlands frequented by migratory birds, are expected to be minimal and would have no appreciable effect on migration or movement.

The MSS brine transport pipeline would entail construction within or adjacent to habitats that may be suitable for native bird rookeries or bat roosting. (See monarch butterfly discussion above under Impact 3.3-1 for impacts on monarch overwintering sites.) This includes work within or adjacent to habitats that may be suitable for heron rookeries, such as tidal marsh; and work within or adjacent to habitats that may be suitable for bat roosting, such as within bridges, buildings, or trees. If nursery sites are present, project activities could potentially result in removal or abandonment of a wildlife nursery. For example, project activities could remove trees containing a bat maternity roost or a bird nesting colony. In addition, project-related noise and human disturbance near nursery sites could result in temporary avoidance, changes in behavior, separation of adults and young, or, if the disturbance is severe, abandonment of the nursery site. These disturbances and behavioral responses could decrease the reproductive success on habitat of the affected population. Impacts on locally or regionally significant wildlife nursery sites may result in a substantial reduction in habitat for that species.

The project is unlikely to adversely affect fish or marine mammal nurseries. Fish species have potential to use the open water and tidal channel habitats in the study area for migration, foraging, or rearing; however, as noted, trenchless construction techniques would be utilized to avoid direct impacts to waterbodies. There are no shoreline areas potentially suitable as marine mammal nursery sites that would be affected by the project.

Direct or indirect construction disturbance of wildlife nursery sites would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-16: Retain Wildlife Nursery Habitat and Implement Buffers to Avoid Wildlife Nursey Sites

If wildlife nursery sites are discovered within or adjacent to the project site during surveys required under Mitigation Measures 3.3-3, 3.3-4, 3.3-5, 3.3-6, 3.3-8, 3.3-9, 3.3-11, and 3.3-12, the following measures will be implemented before commencement of project activities:

- A qualified biologist will identify the important habitat features of the wildlife nursery and, prior to commencement of project activities (e.g., ground disturbance, vegetation removal, staging), will mark these

features for avoidance and retention during project implementation to maintain the function of the nursery habitat.

- A no-disturbance buffer will be established around the nursery site if project activities are required while the nursery site is active/occupied. The appropriate size and shape of the buffer will be determined by a qualified biologist, based on potential effects of project-related habitat disturbance, noise, visual disturbance, and other factors. No project activity will commence within the buffer area until a qualified biologist confirms that the nursery site is no longer active/occupied. Monitoring of the effectiveness of the no-disturbance buffer around the nursery site by a qualified biologist during and after project activities will be required. If project activities cause agitated behavior of the individual(s), the buffer distance will be increased, or project activities modified until the agitated behavior stops. The qualified biologist will have the authority to stop any project activities that could result in potential adverse effects to wildlife nursery sites.

Significance after Mitigation

To reduce or avoid impacts on nursery sites, Mitigation Measure 3.3-16 would entail marking nursery sites and establishing a no-disturbance buffer. Common to all biological resources, Mitigation Measure 3.3-1, which entails standard biological resource avoidance, would ensure that construction encroachment or disturbance on sensitive habitats are avoided.

With the implementation of Mitigation Measures 3.3-1, 3.3-2, and 3.3-16, impacts to heron rookeries, bat roosting, or other wildlife nurseries would be reduced to **less than significant**.

Impact 3.3-5: Potential Conflict with Any Local Policies or Ordinances Protecting Biological Resources, Such as a Tree Preservation Policy or Ordinance

Implementing the project may result in adverse impacts to plants, wildlife, and sensitive habitats that would conflict with local biological resource policies and ordinances. This includes conflict with policies within municipal planning documents (e.g., general plans), site specific plans (e.g., Hayward Regional Shoreline Adaptation Master Plan), as well as BCDC plans and policies. The project may also require trimming or removal of municipal trees protected by local ordinances. These effects would be a **potentially significant** impact from conflicts with local biological resource policies and ordinances.

Solar Salt Facility Improvements

The Solar Salt Facility is in Newark, where tree trimming and removal is subject to Newark Municipal Code 12.08.450. The proposed Solar Salt Facility improvements would not affect any City trees, as proposed improvements and construction would occur in high salinity salt ponds, salt pond slopes, and surrounding access berms. Therefore, there would be no conflict with the Newark Municipal Code 12.08.450 related to trimming and removing trees.

The Newark General Plan recognizes that Cargill has the perpetual right to use salt evaporator ponds for solar salt production, and the purpose of the project is therefore consistent with the plan; however, the plan includes Policies that pertain to biological resources that may be applicable to the Solar Salt Facility Improvements. These policies are detailed in Section 3.3.1, "Regulatory Setting" and are categorized in the plan as Environmental Protection or Wetland Conservation policies. Environmental Protection policies include policies for minimizing impacts to natural resources through appropriate planning, design, and management; supporting conservation of reverentially sensitive areas or unique resources; and designing projects to avoid erosion impacts. Wetland Conservation policies include preservation of wetland habitats and associated species; feasible mitigation for impacts to wetlands and special-status species; preservation and maintenance of the Don Edwards San Francisco Bay National Wildlife Refuge, including managing salt ponds for use as wildlife habitat; and upland site development and management to avoid impacts to nearby wetlands.

The proposed Solar Salt Facility improvements would be constructed outside of sensitive habitats and construction would avoid impacting sensitive resources to the extent practicable. However, as discussed in the preceding impact assessments, there remains potential for project impacts on sensitive species and habitats, which may be in conflict with the Newark General Plan policies detailed in Section 3.3.1, "Regulatory Setting." For the Solar Salt Facility

Improvements, potential effects on sensitive species and habitats include less than significant impacts to special-status fish and invertebrate species, wildlife movement, and nursery sites; potentially significant impacts to special-status birds and terrestrial mammals; and potentially significant impacts from permanent displacement or temporary disturbance of water or wetland habitats. The project includes several mitigation measures to address these potential impacts. Erosion and water quality impacts that could conflict with Newark General Plan policies would be avoided through compliance with the California Construction General Permit Order 2009-0009-DWQ, which includes SWPPP development and implementation of construction BMPs.

BCDC exercises authority over salt ponds including Ponds 12 and 13 and may also have jurisdiction if project activities affect tidal channels such as Plummer Creek or areas within BCDC's shoreline jurisdiction. The project would therefore be subject to BCDC Bay Plan policies pertaining to those areas. These policies are detailed in the Regulatory Setting section. This includes but is not limited to BCDC's policy for continued maintenance and operation of the salt ponds consistent with Cargill's perpetual right to use the salt ponds for solar salt production. Other applicable BCDC policies generally focus on minimizing fill within BCDC jurisdictional areas; ensuring that fill minimizes harmful effects to the Bay and encourages public access; minimizing or avoiding impacts to special-status or sensitive wildlife species; and ensuring appropriate compensatory mitigation. Note that the berms that contain the Solar Salt Facility ponds, not the salt products within the ponds, are considered fill by BCDC.

The project is largely consistent with BCDC regulations and policies in the BCDC Bay Plan; however, without implementation of project-specific mitigation measures, there is a potential for impacts to biological resources to conflict with the agency's applicable policies. Potential impacts on biological resources include potential impacts to special-status species and habitats, as evaluated in the preceding impact analyses and summarized in the preceding analysis of potential conflicts with Newark General Plan Policies. As noted, the project includes several mitigation measures to address potential impacts related to both in-water fill and special status-species. Further, any project activities within BCDC jurisdictional areas would be subject to BCDC approval and review prior to construction, thereby contributing to compliance and consistency with BCDC policies. It should also be noted that removing highly saline MSS inventory from Ponds 12 and 13 would reduce the risk of a release of this material into the Bay, which would be consistent with BCDC's policy calling for sea level rise adaptation as well as BCDC's fundamental mission to improve the safety of fills (here, the safety provided by the berms).

Potential conflicts with the Newark General Plan or BCDC's applicable policies would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-3: Conduct Focused Surveys for Nesting Special-Status Bird Species, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers

Mitigation Measure 3.3-4: Conduct Protocol-Level Surveys and Implement Protective Buffers for California Ridgway's Rail

Mitigation Measure 3.3-5: Avoid and Minimize Impacts to Western Snowy Plover

Mitigation Measure 3.3-6: Perform Biological Monitoring

Mitigation Measure 3.3-7: Prevent Special-Status Wildlife Entrapment

Mitigation Measure 3.3-8: Avoid Impacts to Salt-Marsh Harvest Mouse and Salt-Marsh Wandering Shrew

Mitigation Measure 3.3-9: Conduct Botanical Surveys and Implement Avoidance Measures and Mitigation

Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures

Mitigation Measure 3.3-11: Avoid Impacts to Pallid Bat

Mitigation Measure 3.3-12: Implement Avoidance Measures for Monarch Overwintering Colonies

Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State

Mitigation Measure 3.3-14: Compensate for Unavoidable Loss of Sensitive Natural Communities

Mitigation Measure 3.3-15: Mitigate for Unavoidable Riparian Habitat Removal

Mitigation Measure 3.3-16: Retain Wildlife Nursery Habitat and Implement Buffers to Avoid Wildlife Nursey Sites

Significance after Mitigation

Mitigation Measures 3.3-1 through 3.3-16 are designed to avoid and minimize potential impacts to special-status species and habitats or other biological resources to a less-than-significant level, as discussed in detail in the preceding impact assessments. With implementation of these measures, impacts from conflict with the Newark General Plan and BCDC plans and policies related to sensitive species, habitats, and other biological resources would be reduced to **less than significant**.

MSS Brine Transport Pipeline

The MSS brine transport pipeline would be located in portions of San Lorenzo, an unincorporated community in Alameda County, and portions of the Cities of Hayward, Union City, Fremont, and Newark. Each of these municipalities have municipal codes or ordinances related to tree trimming or removal, as detailed in the "Regulatory Setting" section. These tree codes and ordinances typically apply to the City and County rights-of-way, and require permits for tree removal and trimming, tree protection during construction, and in some instances, replacement planting for removed trees.

Project construction activities such as pipeline trenching, or establishment of work areas for construction pits or HDD pipe string laydown areas could potentially require tree trimming or tree removal. Most of the MSS brine transport pipeline alignment would occur along existing roadways and berm roads that are unlikely to require tree removal or trimming. Channel and sensitive habitat crossings would occur via trenchless construction techniques such as HDD and microtunneling, or over existing bridges, which would minimize the potential need for tree trimming or removal in these areas. Nonetheless, trees may be present within the construction footprint area, and could require trimming or removal, or be otherwise damaged during construction. Based on aerial photo review, trees are most likely to be present and potentially affected within landscaped roadways and medians, on the former Skywest Golf Course berm, and at the proposed HDD or microtunnel crossing of Alameda Creek Flood Control Channel.

Because the project would occur within the Cities of Fremont, Newark, Union City, Hayward, and in unincorporated areas of Alameda County, it would be subject to the respective general plan policies and objectives of each municipality. Several of these plans acknowledge the Solar Salt Facility activities. Specifically, the Newark General Plan recognizes that Cargill has the perpetual right to use salt evaporator ponds for solar salt production; the Fremont General Plan notes salt harvesting operations are regulated to ensure that they are consistent with habitat protection and restoration goals; and the Alameda County General plan notes that salt extraction areas will be operative through the plan period. Other applicable general plan policies are detailed in Section 3.3.1, "Regulatory Setting." Generally, these policies pertain to conservation or protection of sensitive resources including but not limited to sensitive wildlife, wildlife habitat, open space, shoreline areas, waters and wetlands, riparian corridors, and the Don Edwards San Francisco Bay National Wildlife Refuge.

To the extent practicable, the MSS brine transport pipeline would be constructed outside of sensitive habitats and construction would avoid impacting sensitive resources. However, as discussed in the preceding impact assessments, there remains potential for the project to impact sensitive species and habitats which may be in conflict with the county or city general plan policies. These potential impacts are evaluated in the preceding impact analyses. For the MSS Brine Transport Pipeline, potential impacts include potentially significant impacts to special-status fish, birds, terrestrial mammals, invertebrates, plants, and wildlife nursery sites; and potentially significant impacts to waters and wetlands, riparian habitat, or sensitive natural communities from direct construction disturbance or accidental frac-out. Specific to city and county policies, this also includes potential conflicts with tree ordinances. The project includes several mitigation measures to address these potential impacts. Erosion and water quality impacts that could conflict with regional plan policies would be avoided through compliance with the California Construction General Permit Order 2009-0009-DWQ, which includes SWPPP development and implementation of construction BMPs. Consistency with the *Don Edwards San Francisco Bay National Wildlife Refuge: Final Comprehensive Conservation Plan and Environmental Assessment* is discussed in the following impact assessment (Section 3.3-6).

Portions of the MSS brine transport pipeline would be constructed in areas under BCDC's jurisdiction, potentially including tidal waterbody crossings, pipeline segments in the Shoreline Band, and pipeline segments on salt pond berms. The project would therefore be subject to BCDC Bay Plan policies pertaining to those areas. These policies are detailed in Section 3.3.1, "Regulatory Setting." Policies include BCDC's policy for continued maintenance and operation of the salt ponds. Other applicable BCDC policies generally focus on minimizing fill within BCDC jurisdictional areas (unless otherwise authorized); ensuring that fill minimizes harmful effects to the Bay and encourages public access; minimizing or avoiding impacts to special-status or sensitive wildlife species; and ensuring appropriate compensatory mitigation.

The project is largely consistent with BCDC regulations and policies in the BCDC Bay Plan; however, without implementation of project-specific mitigation measures, there is a potential for project impacts to biological resources to conflict with the agency's applicable policies. Conflict with applicable BCDC regulations or policies could include potential impacts to special-status species and habitats, as evaluated in the preceding impact analyses and summarized in the preceding analysis of potential conflicts with local general plan policies. As noted, project includes several mitigation measures to address potential impacts related to both in-water fill and special-status species. Further, any project activities within BCDC jurisdictional areas would be subject to BCDC approval and review prior to construction, thereby contributing to compliance and consistency with BCDC policies. It should also be noted that removing highly saline MSS inventory from Ponds 12 and 13 would reduce the risk of a release of this material into the Bay, which would be consistent with BCDC's policy calling for sea level rise adaptation as well as BCDC's fundamental mission to improve the safety of fills (here, the safety provided by the berms).

The MSS brine transport pipeline segment on the Oro Loma Marsh berm would be located within the Hayward Regional Shoreline Adaptation Master Plan coverage area and would therefore be subject to its goals and policies. The Hayward Regional Shoreline Adaptation Master Plan includes biological resource goals tailored towards the Plan's primary objective of providing resilience to prepare for sea level rise, groundwater intrusion, and storm surge. These biological resource objectives include "[enhancing] the shoreline's ecological value and adapt to sea level rise," "[providing] refuge to help endangered shoreline species to adapt climate change," and "[fostering] stewardship of the shoreline's cultural and ecological resources."

The MSS brine transport pipeline would not result in any permanent impacts to sensitive habitats within Oro Loma Marsh, as the pipeline would be buried in the upland trafficked berm area. As noted throughout this section, there is potential for temporary construction disturbance within sensitive Oro Loma Marsh habitat.

Potential conflicts with applicable county and city tree ordinances, general plans, BCDC plans and policies, and the Hayward Regional Shoreline Adaptation Master Plan would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-3: Conduct Focused Surveys for Nesting Special-Status Bird Species, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers

Mitigation Measure 3.3-4: Conduct Protocol-Level Surveys and Implement Protective Buffers for California Ridgway's Rail

Mitigation Measure 3.3-5: Avoid and Minimize Impacts to Western Snowy Plover

Mitigation Measure 3.3-6: Perform Biological Monitoring

Mitigation Measure 3.3-7: Prevent Special-Status Wildlife Entrapment

Mitigation Measure 3.3-8: Avoid Impacts to Salt-Marsh Harvest Mouse and Salt-Marsh Wandering Shrew

Mitigation Measure 3.3-9: Conduct Botanical Surveys and Implement Avoidance Measures and Mitigation

Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures

Mitigation Measure 3.3-11: Avoid Impacts to Pallid Bat

Mitigation Measure 3.3-12: Implement Avoidance Measures for Monarch Overwintering Colonies

Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State

Mitigation Measure 3.3-14: Compensate for Unavoidable Loss of Sensitive Natural Communities

Mitigation Measure 3.3-15: Mitigate for Unavoidable Riparian Habitat Removal

Mitigation Measure 3.3-16: Retain Wildlife Nursery Habitat and Implement Buffers to Avoid Wildlife Nursey Sites

Mitigation Measure 3.3-17: Comply with City and County Tree Ordinances

If tree removal is required for the project, the project will apply for any permits required by the Cities of Fremont, Union City, Newark, and Hayward, and Alameda County in accordance with applicable tree removal ordinances and comply with all regulations detailed in those permits and ordinances. This may include like-size and like-kind replacement of removed or damaged trees, as specified in the applicable ordinances.

Significance after Mitigation

Mitigation Measures 3.3-1 through 3.3-17 are designed to avoid and minimize potential impacts to special-status species and habitats or other biological resources to a less-than-significant level, as discussed in detail in the preceding impact assessments. These measures would ensure that implementing the project would result in a less-than-significant conflict with applicable county and city general plans, BCDC plans and policies, and the Hayward Regional Shoreline Adaptation Master Plan. Mitigation Measure 3.3.-17 would apply only to the MSS brine transport pipeline component in applicable municipalities and with compliance with applicable tree ordinances and the conditions of project tree removal permits (as required), impacts would be avoided or minimized. This would include as-needed permit approval and adherence to applicable conditions such as replacement planting, tree protection, and tree trimming or removal methods.

With the implementation of Mitigation Measures 3.3-1 through 3.3.-17, impacts from conflict with local policies or ordinances related to sensitive species, habitats, and other biological resources would be reduced to **less than significant**.

Impact 3.3-6: Potential Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan

For portions of the project that occur within the Refuge, potential adverse effects to plants, wildlife, and sensitive habitats may conflict with conservation policies in the *Don Edwards San Francisco Bay National Wildlife Refuge: Final Comprehensive Conservation Plan and Environmental Assessment*. Potential adverse effects include direct and indirect impacts to special-status birds, terrestrial mammals, and plants from project construction, and indirect impacts to fish or other species (e.g., from encroachment in sensitive habitats). Temporary encroachment within waters or wetlands, or disturbance of riparian vegetation, may also occur during construction. Accidental frac-outs from directional drilling to construct the MSS brine transport pipeline could also result in discharge of drilling mud that could be deleterious to special-status species and habitats. These effects would be a **potentially significant** impact from conflict with provisions in the *Don Edwards San Francisco Bay National Wildlife Refuge: Final Comprehensive Conservation Plan and Environmental Assessment*.

Solar Salt Facility Improvements

The Solar Salt Facility is within the Mowry and Newark Units of the Refuge and is therefore subject to policies within the Refuge's Final Comprehensive Conservation Plan and Environmental Assessment. The *Don Edwards San Francisco Bay National Wildlife Refuge: Final Comprehensive Conservation Plan and Environmental Assessment* acknowledges that Cargill retains the salt making rights in applicable Newark and Mowry ponds in perpetuity. The Refuge goals are detailed in Section 3.3.1, "Environmental Setting" and generally entail conservation and enhancement of sensitive species and habitats within the Refuge, including consistent public engagement and stewardship.

Construction and operation of the proposed Solar Salt Facility improvements would be consistent with Cargill's salt making rights, and would not conflict with plan goals, strategies, or objectives in the *Don Edwards San Francisco Bay National Wildlife Refuge: Final Comprehensive Conservation Plan and Environmental Assessment*.

However, construction activities at the Solar Salt Facility could result in spills, runoff, or erosion that could contribute pollutants, sedimentation, or other adverse effects to wetlands or other sensitive habitats in the Refuge. Inadvertent spills primarily have potential to occur in areas where Cargill retains salt making rights, indirect effects within the Refuge remain possible, particularly associated with water quality and transport of pollutants or sediments into tidal waterbodies. Project dewatering operations would be conducted in accordance with NPDES and/or waste discharge permits obtained for the project; and a Storm Water Pollution Prevention Plan would be developed and implemented during construction in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) that would include BMPs to avoid or minimize impacts to biological resources from construction, including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent wetlands. In consideration of these project measures, impacts to biological resources from construction erosion, sedimentation, and spills would be minimized or avoided.

As described in the preceding impact assessments, direct and indirect impacts to special-status birds, terrestrial mammals, and plants may occur from project construction, and indirect impacts to fish or other species are also possible (e.g., from encroachment in sensitive habitats). Temporary encroachment within waters or wetlands, or disturbance of riparian vegetation, may also occur during construction.

These effects to species and habitats may occur with the Refuge and would represent potential conflicts with habitat and conservation policies in the *Don Edwards San Francisco Bay National Wildlife Refuge: Final Comprehensive Conservation Plan and Environmental Assessment*. This impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-3: Conduct Focused Surveys for Nesting Special-Status Bird Species, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers

Mitigation Measure 3.3-4: Conduct Protocol-Level Surveys and Implement Protective Buffers for California Ridgway's Rail

Mitigation Measure 3.3-5: Avoid and Minimize Impacts to Western Snowy Plover

Mitigation Measure 3.3-6: Perform Biological Monitoring

Mitigation Measure 3.3-7: Prevent Special-Status Wildlife Entrapment

Mitigation Measure 3.3-8: Avoid Impacts to Salt-Marsh Harvest Mouse and Salt-Marsh Wandering Shrew

Mitigation Measure 3.3-9: Conduct Botanical Surveys and Implement Avoidance Measures and Mitigation

Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures

Mitigation Measure 3.3-11: Avoid Impacts to Pallid Bat

Mitigation Measure 3.3-12: Implement Avoidance Measures for Monarch Overwintering Colonies

Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State

Mitigation Measure 3.3-14: Compensate for Unavoidable Loss of Sensitive Natural Communities

Mitigation Measure 3.3-15: Mitigate for Unavoidable Riparian Habitat Removal

Mitigation Measure 3.3-16: Retain Wildlife Nursery Habitat and Implement Buffers to Avoid Wildlife Nursey Sites

Significance after Mitigation

Mitigation Measures 3.3-1 through 3.3-16 are designed to avoid and minimize potential impacts to special-status species and habitats or other biological resources to a less-than-significant level, as discussed in detail in the preceding impact assessments. With the implementation of Mitigation Measures 3.3-1 through 3.3.-16, impacts from conflict with the *Don Edwards San Francisco Bay National Wildlife Refuge: Final Comprehensive Conservation Plan and Environmental Assessment* policies related to sensitive species, habitats, and other biological resources would be reduced to **less than significant**.

MSS Brine Transport Pipeline

Portions of the MSS brine transport pipeline would be constructed on Solar Salt Facility berms within the Refuge. As noted for the Solar Salt Facility Improvements, Cargill retains the salt making rights in these affected areas, including the right to construct pipelines and related facilities for its operations. The MSS brine transport pipeline alignment would be located on trafficked pond berms, therefore minimizing the potential for direct impacts to valuable Refuge resources such as wetlands. The proposed crossings at the former Barge Canal and SamTrans Rail Line/Hetch Hetchy Aqueduct would occur just outside the Refuge, and trenchless construction techniques such as microtunneling or HDD would be implemented to avoid or minimize impacts to nearby Refuge sensitive habitats. From Thornton

Avenue to Oro Loma Marsh, the MSS brine transport pipeline is outside of the Refuge's *Final Comprehensive Conservation Plan and Environmental Assessment* coverage area, or other adopted habitat conservation plan areas. Oro Loma Marsh is within the Refuge area managed by East Bay Regional Park; similar to the Solar Salt Facility improvements, the MSS Transport alignment would be located on trafficked berms in this area, minimizing the potential for direct impacts to Oro Loma Marsh sensitive resources.

As described in the preceding impact assessments, direct and indirect impacts to special-status birds, terrestrial mammals, and plants may occur from project construction. Temporary encroachment within waters or wetlands, or disturbance of riparian vegetation, may also occur during construction. Accidental frac-outs could also result in discharge of drilling mud that could be deleterious to special-status species and habitats. Such conflicts would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-3: Conduct Focused Surveys for Nesting Special-Status Bird Species, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers

Mitigation Measure 3.3-4: Conduct Protocol-level Surveys and Implement Protective Buffers for California Ridgway's Rail

Mitigation Measure 3.3-5: Avoid and Minimize Impacts to Western Snowy Plover

Mitigation Measure 3.3-6: Perform Biological Monitoring

Mitigation Measure 3.3-7: Prevent Special-Status Wildlife Entrapment

Mitigation Measure 3.3-8: Avoid Impacts to Salt-Marsh Harvest Mouse and Salt-Marsh Wandering Shrew

Mitigation Measure 3.3-9: Conduct Botanical Surveys and Implement Avoidance Measures and Mitigation

Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures

Mitigation Measure 3.3-11: Avoid Impacts to Pallid Bat

Mitigation Measure 3.3-12: Implement Avoidance Measures for Monarch Overwintering Colonies

Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State

Mitigation Measure 3.3-14: Compensate for Unavoidable Loss of Sensitive Natural Communities

Mitigation Measure 3.3-15: Mitigate for Unavoidable Riparian Habitat Removal

Mitigation Measure 3.3-16: Retain Wildlife Nursery Habitat and Implement Buffers to Avoid Wildlife Nursey Sites

Mitigation Measure 3.3-17: Comply with City and County Tree Ordinances

Significance after Mitigation

Mitigation Measures 3.3-1 through 3.3-17 are designed to avoid and minimize potential impacts to special-status species and habitats or other biological resources to a less-than-significant level, as discussed in detail in the preceding impact assessments. Mitigation Measure 3.3-17 would apply only to the MSS brine transport pipeline component in applicable municipalities and with compliance with applicable tree ordinances and the conditions of project tree removal permits (as required), impacts would be avoided or minimized.

With the implementation of Mitigation Measures 3.3-1 through 3.3-17, impacts from conflict with an approved local, regional, or state habitat conservation plan would be reduced to **less than significant**.

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3.4 CULTURAL AND TRIBAL CULTURAL RESOURCES

This section analyzes and evaluates the potential impacts of the project on known and unknown cultural resources. Cultural resources include districts, sites, buildings, structures, or objects generally older than 50 years and considered to be important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. They include prehistoric resources, historic-period resources, and "tribal cultural resources" (the latter as defined by Assembly Bill (AB) 52, Statutes of 2014, in PRC Section 21074).

Archaeological resources are locations where human activity has measurably altered the earth or left deposits of prehistoric or historic-period physical remains (e.g., stone tools, bottles, former roads, house foundations). Historical (or built-environment) resources include standing buildings (e.g., houses, barns, outbuildings, cabins) and intact structures (e.g., dams, bridges, roads, districts), or landscapes. A cultural landscape is defined as a geographic area (including both cultural and natural resources and the wildlife therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. Tribal cultural resources are sites, features, places, cultural landscapes, sacred places, and objects, with cultural value to a tribe, and that are listed or eligible for listing as a cultural resource, or are otherwise determined through consultation and concurrence by the project's lead agency.

One comment letter regarding cultural resources was received in response to the notice of preparation (see Appendix A). The Native American Heritage Commission (NAHC) requested AB 52 and Senate Bill (SB) 18 compliance information; SB 18 does not apply because it applies only to projects wherein a general plan amendment is proposed, and there is no general plan amendment associated with the project. AB 52 compliance, which pertains to tribal cultural resources, is described below.

3.4.1 Regulatory Setting

FEDERAL

National Register of Historic Places

The National Register of Historic Places (NRHP) is the nation's master inventory of known historic properties. It is administered by the National Park Service and includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance at the national, state, or local level.

The formal criteria (36 CFR 60.4) for determining NRHP eligibility are as follows:

1. The property is at least 50 years old (however, properties under 50 years of age that are of exceptional importance or are contributors to a district can also be included in the NRHP);
2. It retains integrity of location, design, setting, materials, workmanship, feeling, and associations; and
3. It possesses at least one of the following characteristics:

   Criterion A Is associated with events that have made a significant contribution to the broad patterns of history (events).

   Criterion B Is associated with the lives of persons significant in the past (persons).

   Criterion C Embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant, distinguishable entity whose components may lack individual distinction (architecture).

   Criterion D Has yielded, or may be likely to yield, information important in prehistory or history (information potential).

For a property to retain and convey historic integrity it must possess most of the seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. Location is the place where the historic property was constructed or the place where a historic event occurred. Integrity of location refers to whether the property has been moved since its construction. Design is the combination of elements that create the form, plan, space, structure, and style of a property. Setting is the physical environment of a historic property that illustrates the character of the place. Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property. Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. Feeling is a property's expression of the aesthetic or historic sense of a particular period of time. This is an intangible quality evoked by physical features that reflect a sense of a past time and place. Association is the direct link between the important historic event or person and a historic property. Continuation of historic use and occupation help maintain integrity of association.

Listing in the NRHP does not entail specific protection or assistance for a property but it does guarantee consideration in planning for federal or federally assisted projects, eligibility for federal tax benefits, and qualification for federal historic preservation assistance. Additionally, project effects on properties listed in the NRHP must be evaluated under CEQA.

The National Register Bulletin series was developed to assist evaluators in the application of NRHP criteria. For example, National Register Bulletin #36 provides guidance in the evaluation of archaeological site significance. If a property cannot be placed within a particular theme or time period, and thereby lacks "focus," it will be unlikely to possess characteristics that would make it eligible for listing in the NRHP. Evaluation standards for linear features (such as roads, trails, fence lines, railroads, ditches, and flumes) are considered in terms of four related criteria that account for specific elements that define engineering and construction methods of linear features: (1) size and length, (2) presence of distinctive engineering features and associated properties, (3) structural integrity, and (4) setting. The highest probability for NRHP eligibility exists in the intact, longer segments, where multiple criteria coincide.

STATE

California Register of Historical Resources

All properties in California that are listed in or formally determined eligible for listing in the NRHP are also listed in the California Register of Historical Resources (CRHR). The CRHR is a listing of State of California resources that are significant in the context of California's history. It is a statewide program with a scope and with criteria for inclusion similar to those used for the NRHP. In addition, properties designated under municipal or county ordinances are also eligible for listing in the CRHR.

A historical resource must be significant at the local, state, or national level under one or more of the criteria defined in CCR Title 15, Chapter 11.5, Section 4850 to be included in the CRHR. The CRHR criteria are tied to CEQA because any resource that meets the criteria below is considered a significant historical resource under CEQA. As noted above, all resources listed in or formally determined eligible for listing in the NRHP are automatically listed in the CRHR.

The CRHR uses four evaluation criteria:

Criterion 1. Is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

Criterion 2. Is associated with the lives of persons important to local, California, or national history.

Criterion 3. Embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of a master; or possesses high artistic values.

Criterion 4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

Similar to the NRHP, a historical resource must meet one of the above criteria and retain integrity to be listed in the CRHR. The CRHR uses the same seven aspects of integrity used by the NRHP.

California Environmental Quality Act

CEQA requires public agencies to consider the effects of their actions on "historical resources," "unique archaeological resources," and "tribal cultural resources." Pursuant to PRC 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." Section 21083.2 requires agencies to determine whether projects would have effects on unique archaeological resources. PRC Section 21084.2 establishes 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."

Historical Resources

"Historical resource" is a term with a defined statutory meaning (PRC Section 21084.1; State CEQA Guidelines Sections 15064.5[a] and [b]). Under State CEQA Guidelines Section 15064.5(a), historical resources include the following:

1) A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in, the CRHR (PRC Section 5024.1).

2) A resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g), will be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

3) Any object, building, structure, site, area, place, record, or manuscript that 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 may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be historically significant if the resource meets the criteria for listing in the CRHR (PRC Section 5024.1).

4) The fact that a resource is not listed in or determined to be eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to PRC Section 5020.1[k]), or identified in a historical resources survey (meeting the criteria in PRC Section 5024.1[g]) does not preclude a lead agency from determining that the resource may be a historical resource as defined in PRC Sections 5020.1(j) or 5024.1.

Unique Archaeological Resources

CEQA also requires lead agencies to consider whether projects will affect unique archaeological resources. PRC Section 21083.2(g) states that "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one or more of the following criteria:

1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Tribal Cultural Resources

CEQA also requires lead agencies to consider whether projects will affect tribal cultural resources. PRC Section 21074 states:

a) "Tribal cultural resources" are either of the following:

   1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

      A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.

      B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

2) 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

Public Resources Code Section 21083.2

Treatment options under PRC Section 21083.2(b) to mitigate impacts on archaeological resources include activities that preserve such resources in place in an undisturbed state. PRC Section 21083.2 states:

(a) As part of the determination made pursuant to Section 21080.1, the lead agency shall determine whether the project may have a significant effect on archaeological resources. If the lead agency determines that the project may have a significant effect on unique archaeological resources, the environmental impact report shall address the issue of those resources. An environmental impact report, if otherwise necessary, shall not address the issue of nonunique archaeological resources. A negative declaration shall be issued with respect to a project if, but for the issue of nonunique archaeological resources, the negative declaration would be otherwise issued.

(b) If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. Examples of that treatment, in no order of preference, may include, but are not limited to, any of the following:

(1) Planning construction to avoid archaeological sites.

(2) Deeding archaeological sites into permanent conservation easements.

(3) Capping or covering archaeological sites with a layer of soil before building on the sites.

(4) Planning parks, greenspace, or other open space to incorporate archaeological sites.

(c) To the extent that unique archaeological resources are not preserved in place or not left in an undisturbed state, mitigation measures shall be required as provided in this subdivision.

(d) Excavation as mitigation shall be restricted to those parts of the unique archaeological resource that would be damaged or destroyed by the project.

(e) In no event shall the amount paid by a project applicant for mitigation measures required pursuant to subdivision (c) exceed the following amounts:

(1) An amount equal to one-half of 1 percent of the projected cost of the project for mitigation measures undertaken within the site boundaries of a commercial or industrial project.

(2) An amount equal to three-fourths of 1 percent of the projected cost of the project for mitigation measures undertaken within the site boundaries of a housing project consisting of a single unit.

(3) If a housing project consists of more than a single unit, an amount equal to three-fourths of 1 percent of the projected cost of the project for mitigation measures undertaken within the site boundaries of the project for the first unit plus the sum of the following:

(A) Two hundred dollars ($200) per unit for any of the next 99 units.

(B) One hundred fifty dollars ($150) per unit for any of the next 400 units.

(C) One hundred dollars ($100) per unit in excess of 500 units.

(f) Unless special or unusual circumstances warrant an exception, the field excavation phase of an approved mitigation plan shall be completed within 90 days after final approval necessary to implement the physical development of the project or, if a phased project, in connection with the phased portion to which the specific mitigation measures are applicable. However, the project applicant may extend that period if he or she so elects. Nothing in this section shall nullify protections for Indian cemeteries under any other provision of law.

Public Resources Code Section 21080.3

AB 52, signed by the California governor in September 2014, established a new class of resources under CEQA: "tribal cultural resources," defined in PRC Section 21074. Pursuant to PRC Sections 21080.3.1, 21080.3.2, and 21082.3, lead agencies undertaking CEQA review must, upon written request of a California Native American tribe, begin consultation before the release of an EIR, negative declaration, or mitigated negative declaration. PRC Section 21080.3.2 states:

> Within 14 days of determining that a project application is complete, or to undertake a project, the lead agency must provide formal notification, in writing, to the tribes that have requested notification of proposed projects in the lead agency's jurisdiction. If it wishes to engage in consultation on the project, the tribe must respond to the lead agency within 30 days of receipt of the formal notification. The lead agency must begin the consultation process with the tribes that have requested consultation within 30 days of receiving the request for consultation. Consultation concludes when either: 1) the parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource, or 2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.

California Native American Historical, Cultural, and Sacred Sites Act

The California Native American Historical, Cultural, and Sacred Sites Act (PRC Section 5097.9) applies to both state and private lands. The act requires, upon discovery of human remains, that construction or excavation activity cease and that the county coroner be notified. If the remains are those of a Native American, the coroner must notify NAHC, which notifies and has the authority to designate the most likely descendant (MLD) of the deceased. The act stipulates the procedures the descendants may follow for treating or disposing of the remains and associated grave goods.

Health and Safety Code Section 7050.5

Section 7050.5 of the Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If they are determined to be those of a Native American, the coroner must contact NAHC.

Public Resources Code Section 5097

PRC Section 5097 specifies the procedures to be followed if human remains are unexpectedly discovered on nonfederal land. The disposition of Native American burials falls within the jurisdiction of NAHC. Section 5097.5 of the code states:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

LOCAL

Alameda County

The overall purpose of Alameda County Municipal Code (ACMC) Chapter 17.62, Historic Preservation Ordinance, is to outline a consistent process for making determinations of historical significance and identify significant architectural, historic, prehistoric and cultural structures, sites, resources and properties within Alameda County. ACMC Section

17.62.040, Cultural Resource Surveys, requires the County to maintain a list of cultural resources surveys to generate an inventory of potential historic resources collectively known as the Alameda County Register.

City of Hayward

The Land Use and Community Character Element of the *Hayward 2040 General Plan* includes policies regarding historic preservation and archaeological resources. The following policies are applicable to the project:

- **LU-8.3. Historic Preservation Ordinance.** The City shall maintain and implement its Historic Preservation Ordinance to safeguard the heritage of the City and to preserve historic resources.
- **LU-8.6. Historic Preservation Standards and Guidelines.** The City shall consider *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* when evaluating development applications and City projects involving historic resources, or development applications that may affect scenic views or the historic context of nearby historic resources.

Union City

Chapter 8, "Resource Conservation," of the *Union City 2040 General Plan* includes policies regarding historic preservation and archaeological resources. The following policies regarding those resources in Union City are applicable to the project:

- **RC-4.1. Preserve Public Landmarks.** The City shall encourage the preservation of public landmarks.
- **RC-4.3. Use Appropriate Standards to Evaluate Historical Resources.** The City shall use appropriate Federal, State, and local standards in evaluating the significance of historical resources within the city.
- **RC-4.6. Protection of Archaeological Resources.** The City shall strive to ensure that significant archaeological resources are adequately identified and protected from destruction through avoidance where feasible. In the event that any previously unidentified cultural resources are uncovered during site preparation, excavation, or other construction activity, all such activity shall cease until these resources have been evaluated by a qualified archaeologist (or other qualified specialist as appropriate) and specific measures can be implemented to protect these resources in accordance with Section 21083.2 and 21084.1 of the California Public Resources Code. Where such resources are Native American, the developer shall prepare the assessment in consultation with appropriate Native American tribe(s).
- **RC-4.7. Treatment of Remains.** Consistent with the California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98, if human remains are encountered, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. The remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within 24 hours. The Native American Heritage Commission must then immediately identify the "most likely descendant(s)" to receive notification of the discovery. The most likely descendant(s) shall then make recommendations within 48 hours, and engage in consultations concerning the treatment of the remains.

City of Fremont

Chapter 4, "Community Character," of the *City of Fremont General Plan* includes historic preservation policies and actions regarding those resources within Fremont. The following policies and actions are applicable to the project:

- **Policy 4-6.1. Protection of Historic Resources.** Identify, preserve, protect and maintain buildings, structures, objects, sites and districts which are reminders of past eras, events, and persons important in local, state, or national history. Historic structures which provide significant examples of architectural periods and styles of the past are irreplaceable assets. They should be protected to provide present and future generations with examples of the physical environments in which past generations lived and worked. The needless destruction and impairment of significant historic resources must be prevented so that opportunities for public enjoyment and economic utilization of such resources are not diminished or lost.

- **Implementation 4-6.1.A. Demolition, Alteration or Relocation of Historic Resources.** Evaluate all applications for demolition, alteration or relocation of buildings, structures or objects constructed prior to 1955 to determine if there is sufficient significance and integrity to merit classification as a Potential Fremont Register Resource or formal designation as a Fremont Register Resource.
- **Implementation 4-6.1.E. Review and Approval of Demolition, Alteration, and Relocation.** Continue the role of Historical Architectural Review Board (HARB) as advisors to the City Council regarding demolition, alteration, and relocation affecting Fremont Register Resources. The City Council is the final body for review and approval of applications affecting Fremont Register Resources.

- **Policy 4-6.3. Resource Documentation and Funding.** Identify and record significant historic and archaeological resources, and maximize the use of all potential funding sources, including those available through State and federal programs, for the preservation, rehabilitation, restoration and enhancement of such resources. The City has an ongoing program of evaluating potential historic resources. In addition, project applicants may be required to evaluate historic resources as part of the development process. Property owners and the general public may also apply for listing of historic resources on the Fremont Register.
  - **Implementation 4-6.3.A. Document Historic Properties.** Conduct historic resource evaluations as part of the development review process based upon considerations such as the age, character-defining features, location and setting of the property.
  - **Implementation 4-6.3.C. Designation of Fremont Register Resources.** The HARB shall consider and recommend designation of proposed Fremont Register Resources, including buildings, structures, objects, sites, and districts. Such designations are subject to review and approval by the City Council.
- **Policy 4-6.4. Historic Settings and Landscapes.** Identify and pursue measures to protect the historic settings and landscapes that contribute to Fremont's historic resources. The City shall review proposed development and redevelopment projects to ensure their compatibility with existing historic settings. In particular, such review shall address the scale, massing and on-site improvements of proposed development as it relates to historic settings. This policy recognizes that the historic value of a site may extend beyond structures and include the landscape and setting around a structure. This could include heritage trees, gardens, historic plantings, significant landscape elements, fences and outbuildings, and other character-defining features.
- **Policy 4-6.10. Protection of Native American Remains.** Coordinate with representatives of local Native American organizations to ensure the protection of Native American resources and to follow appropriate mitigation, preservation, and recovery measures in the event such resources could be impacted by development.

City of Newark

The Land Use Element of the *Newark General Plan* includes policies regarding historic preservation. The following policy and action are applicable to the project:

- **Policy LU-5.5. Native American Resources.** Coordinate with local tribal representatives and the Native American Heritage Commission to ensure the protection of Newark's Native American resources and to follow appropriate mitigation, preservation, and recovery procedures in the event that important resources are identified during development.
- **Action LU-5.A. Evaluating Historic Resource Impacts.** Evaluate applications for demolition, alteration, or relocation of structures more than 50 years old to determine if the structure has sufficient significance and integrity to merit its designation as a historic resource. In the event alterations to a historic resource are proposed, use the Secretary of the Interior Standards for the Treatment of Historic Properties to guide application review.

3.4.2 Environmental Setting

The impact analysis for archaeological and historical resources is based on the findings and recommendations of the *Cultural Resources Technical Report for the Mixed Sea Salts Processing Project Newark, Fremont, Union City, and Hayward, Alameda County, California* (AECOM 2022).

REGIONAL PREHISTORY

The Central California Taxonomic System relies on identifying certain characteristics such as burial patterns, shell bead types, stone tools, and the environmental setting of various site types to define broad cultural adaptations associated with specific time periods. The current San Francisco Bay (Bay) Area standard uses radiocarbon dates from provenienced (meaning, found *in situ*) Olivella shell beads to describe cultural patterns in the region. Olivella beads are used to create temporal chronologies because they have distinct stylistic phases bound by time and were prehistorically widely traded throughout California, and extending into Nevada, Utah, and New Mexico.

The temporal sequence for the archaeology of the Bay Area can be organized into broad geologic time segments, with much greater temporal resolution for the Late Holocene. The temporal periods are defined as such:

- Terminal Pleistocene 13,500 - 11,700 calibrated before present (cal B.P.)
- Early Holocene 11,700 – 8200 cal B.P.
- Middle Holocene 8200 – 4200 cal B.P.
- Late Holocene 4200 – 180 cal B.P.
- Early Period 4200 – 2550 cal B.P.
- Early/Middle Transition 2550 – 215 cal B.P.
- Middle Period 2150 - 930 cal B.P.
- Middle/Late Transition 935 - 685 cal B.P.
- Late Period 685 - 180 cal B.P.
- Mission/Historic 180 - 115 cal B.P.

Terminal Pleistocene

The earliest evidence for human occupation in California, during the Terminal Pleistocene, is very sparse, consisting primarily of isolated fluted points, as well as limited archaeological evidence from the Santa Barbara Channel Islands. This poorly understood period is generally considered to be represented by multiple contemporaneous migrations into the New World, including nomadic hunters and gatherers who exploited large game using fluted points, and more coastal-oriented peoples. Throughout California, the Terminal Pleistocene occupation is infrequently encountered; no fluted points or archaeological deposits dating to this time period have been documented in the San Francisco Bay Area. The absence of these archaeological sites can be partially attributed to the small mobile populations leaving only a marginal footprint on the landscape, in conjunction with the subsequent rise of sea levels and coastal erosion burying what limited sites were deposited during this time.

Early Holocene

Early occupation of the Bay region is characterized by the use of handstones and millingslabs, stemmed points, crescents, and steep-edged formed flaked tools that served a semi-mobile hunter-gatherer population who exploited a wide range of plants and animals from marine, lacustrine, and terrestrial environments. Obsidian from the North Coast Ranges (particularly the Napa Valley) predominates, although eastern Sierra Nevada obsidian (Bodie Hills) is also present.

Early Holocene archaeological deposits in the Bay region are thus far limited to six sites: the Fremont Site, located in the City of Fremont in the South Bay region, several miles east of the project area; the Blood Alley site in the

Coyote Narrows of the Santa Clara Valley; Scott's Valley in the Santa Cruz Mountains; two at Los Vaqueros Reservoir in the East Bay hills; and the Laguna Creek site near Vacaville. All six sites were identified in buried terrestrial contexts. These deposits demonstrate that the general region was occupied throughout the Early Holocene and highlight the importance of identifying buried archaeological contexts to better understand the nature of early occupation of the region.

Middle Holocene

Middle Holocene archaeological deposits are represented with over 60 known sites in the Bay-Delta Area. Sites from this period include both surficial and buried deposits, with a number of substantial residential settlements. In addition, several isolated burials found in buried contexts have been identified, the closest being near Coyote Point. This time period shows the first evidence of populations extensively exploiting the Bay's mud flats and tidal marshes. Estuarine shell midden deposits are present around the Bay, with the San Bruno mound dating between 6300 and 5000 cal B.P. and an East Bay site dating somewhat later (4900 cal B.P.). Artifact assemblages from this time are varied and are characterized by groundstone (with both handstones and millingslabs represented, as well as mortars and pestles, sometimes together and sometimes independently of each other); side-notched dart points; cobble-based implements; and shell beads and ornaments. Mortar and pestle appear around 6000 cal B.P. and became the predominant groundstone implements thereafter. Type N grooved rectangular Olivella beads as well as obsidian tools from the Napa Valley and eastern Sierra Nevada are present, indicating the start of a pattern of extensive regional interaction by at least 5200 cal B.P. that would continue into the Late Holocene.

Late Holocene

The Late Holocene is well-documented in the Bay-Delta Area with over 240 known archaeological sites. This time period is reflective of an increase in population and socioeconomic complexity, coupled with resource intensification and an increase in inter-group violence. The examination of mortuary remains suggests to a number of scholars that social structure was non-egalitarian, and that status was ascribed. Most suggest that these changes took place near the beginning of the Late Period:

- **Early Period.** The most dramatic shift observable in the archaeological record during the Early Period includes the establishment and/or significant expansion of shellmounds around the Bay. These shellmound assemblages include stemmed and short, broad leaf projectile points; mortars and pestles; perforated charmstones; bone awls; notched and grooved net sinkers; rectangular and spire-lopped Olivella beads; and rectangular Haliotis beads and pendants. Marine resources are emphasized in Bay margin sites from this time period, while interior sites are dominated by freshwater fish and shellfish along with terrestrial animals. Plant resources include nuts, berries, and small seeds. Relative sedentary communities had emerged by the Early Period, as evidenced by very large cemeteries, mortars and pestles, residential structures, multi-season plant and animal foods, and evidence for regular exchange. Burials within sites along the Bay margin and Santa Clara Valley almost exclusively are found in a loose to tightly flexed position.
- **Middle Period.** Mound building reached its climax during the Middle Period, with the majority of the dated mound sites having components from this time. This trend is correlated with greater settlement permanence, including evidence of year-round or multi-season occupation, and greater social complexity and ritual elaboration. Artifact type changes occurring during this time period include barbless and single-barbed bone fishing spears; large, shaped mortars and large pestles; ear spools and various forms of Haliotis and Olivella shell beads and ornaments. Mortuary practices were highly ritualized; with some individuals having been buried with thousands of shell beads. Terrestrial resources appear to have been exploited in greater abundance during this time period, including greater use of deer and acorns. In addition, many shellmound sites show a shift from an almost-exclusive oyster exploitation to mussel and horn sail. Many burials from the Middle Period show evidence of a strong ritual culture, with a marked increase in the number and frequency of grave-associated goods.
- **Late Period.** The Late Period is the best-documented era, and current data suggests that the Bay-Delta Area populations increased in size, sedentary villages flourished, and ritual activity increased. Artifact assemblages include clam disk beads, distinctive Haliotis pendants, chevron-etched bone whistles and tubes, and elaborately finished stone 'flower pot' mortars. The bow and arrow make their appearance in the region around 700 cal B.P.,

with a distinctive arrow style dubbed the Stockton Serrate. Funerary rituals were strongly patterned and included flexed internments and "killed" grave offerings, along with occasional cremations. Extensive trade relations appear to have flourished, with diminished long-range acquisition of eastern Sierra obsidian; Napa Valley obsidian accounts for over 70 percent of the flaked stone debitage in parts of the East Bay. Clam disk beads manufactured in the North Bay were traded southward and east into the Central Valley but are rare in the South Bay region during the Late 2 Period (430–180 cal B.P.), indicating different regional interaction spheres.

Archaeological Sensitivity

The project area is on low-lying, level terrain—approximately 5 to 15 feet above mean sea level in most areas—on the eastern periphery of the Bay, primarily within the Alameda Creek watershed in southwestern Alameda County, California. Geology in the project area is mapped as Quaternary alluvium (Qal).

Mapped soils in the project area correspond with the geologic mapping. By correlating soils mapping with radiocarbon dated samples, it is possible to establish the approximate age of the surficial landform. Dates for the mapped soil series within the project area range from Middle Holocene in the southern portion of the project area to Late/Latest Holocene in the remainder of the MSS brine transport pipeline alignment:

- Marvin silt loam, saline-alkali – stream terraces, toe slope [Middle Holocene]
- Pescadero clay, drained – alluvium from sedimentary rocks [Late Holocene]
- Novato clay, ponded – tidal flats [Late Holocene]
- Pescadero clay, ponded – basin floors [Late Holocene]
- Omni silty clay loam, strongly saline – flood plains, toe slope [Latest Holocene]
- Omni silty clay loam, drained – flood plains, toe slope [Latest Holocene]
- Sycamore silt loam, clay substratum – flood plains, toe slope [Latest Holocene]
- Sycamore silt loam, drained, 0 to 2 percent slopes – flood plains, toe slope [Latest Holocene]

The potential for landforms to harbor buried or submerged archaeological components—i.e., resources that were deposited on a landform, but have since been covered in soils and/or water due to rising sea levels—is primarily a function of the landform's age and origin. In general, landforms and associated deposits formed during the Holocene have some potential to contain buried sites, whereas Terminal Pleistocene or older landforms have virtually no potential, given that they were deposited before human entry into California circa 14,000 years ago. In general, this sensitivity is inversely proportional to the age of the surficial soils (i.e., younger soils have a greater potential for harboring archaeological deposits) and increases with certain environmental factors such as proximity to fresh water. In other words, all things being equal, an area with very young surficial soils adjacent to freshwater (stream or lake) will have the highest potential for harboring buried prehistoric archaeological resources not visible at the surface. The Holocene age soils in the project area have a moderate to very high sensitivity for buried archaeological resources.

ETHNOGRAPHY

The study area was formerly the territory of the Costanoan—also commonly referred to as Ohlone—language groups. The basic Ohlone social unit was the family household, which was extended patrilineally. A household was made up of about 15 individuals. Households grouped together to form villages, which in turn combined to form tribelets. There were approximately 40 Ohlone tribelets. Tribelets exchanged trade goods such as obsidian, shell beads, and baskets; participated in ceremonial and religious activities together; intermarried; and could have extensive reciprocal obligations to one another involving resource collection. The study area falls within the ethnographic boundary of the Chochenyo subgroup of Ohlone, near the tribelet Lisyan.

The Ohlone used a range of other plant resources as food, medicine, soap, tools, and building materials; including acorn, buckeye, California laurel, elderberries, strawberries, manzanita berries, goose berries, toyon berries, wild grapes, wild onion, cattail, soap root, wild carrots, clover, and an herb called chuchupate. Animals eaten by the

Ohlone and their neighbors included large fauna such as black-tailed deer, Roosevelt elk, antelope, and marine mammals; smaller mammals such as dog, skunk, raccoon, rabbit, and squirrel; birds, including geese and ducks; and fish such as salmon, sturgeon, and mollusks. Frogs, toads, owls, eagles, and ravens were not eaten.

Besides providing sustenance, the Bay Area's flora and fauna provided the Ohlone with raw materials. For example, the Ohlone built dome-shaped shelters which they thatched with ferns, tule, grass, and reeds. The thatch was tied to the structure's frame with willow withes. The Ohlone also built small sweathouses, accommodating six to eight persons, which were dug into creek banks and roofed with brush; and circular dance areas, which were enclosed by fences woven from brush or laurel branches. Plants, particularly sedge, were also woven into baskets. Basket making was generally done by women, who crafted cooking and storage containers, fish traps, and trays for leaching acorns. Tightly woven baskets, decorated with feathers or shell, were valued exchange items.

Animal bones, teeth, beaks, and claws were made into awls, pins, knives, and scrapers. Pelts and feathers became clothing and bedding, while sinews were used for cordage and bow strings. Feathers, bone, and shells were crafted into ornaments. By the late eighteenth century, Spanish settlers moved into northern California, established the mission system, and dramatically transformed Ohlone culture. Many Ohlone were baptized by the Franciscan missionaries and made to work on mission farms. Following the secularization of the missions in 1834, many of the surviving Ohlone worked as manual laborers on ranchos. Ohlone people currently live in their traditional territory, which includes Alameda County, and continue to engage in traditional cultural practices.

HISTORIC SETTING

Post-European contact history for the State of California is generally divided into three periods: the Spanish Period from 1769 to 1822, the Mexican Period from 1822 to 1848, and the American Period from 1848 to present.

Spanish exploration of California began when Juan Rodriguez Cabrillo led the first European expedition into the region in 1542. For more than 200 years after his initial expedition, Spanish, Portuguese, British, and Russian explorers sailed the California coast and made limited inland expeditions, but they did not establish permanent settlements. It was not until 1769 when Gaspar de Portolá and Franciscan Father Junípero Serra established Mission San Diego de Alcalá that settlement of Alta (upper) California began in earnest. That same year Portolá discovered the San Francisco Bay. Seven years later the presidio and Mission of San Francisco de Asís was founded by an expedition led by Juan Bautista de Anza.

The Mexican Period commenced when news of the success of the Mexican revolution (1810-1821) against the Spanish crown reached California in 1822. The Mexican Period saw major changes in the Spanish mission system and land use in California. The Secularization Act of 1833 enabled Mexican governors in California to distribute mission lands to individuals in the form of land grants. Successive Mexican governors made more than 700 land grants between 1822 and 1846, putting most of the state's lands into private ownership for the first time. About 15 land grants, referred to as ranchos, were in Alameda County. The MSS brine transport pipeline alignment extends through the Rancho Potrero de los Cerritos, as well as former lands of the Mission San José.

Encompassing the majority of the proposed project area, Rancho Potrero de los Cerritos was granted to Augustín Alviso and Tomás Pacheco in 1844. Alviso was the son of the *mayordomo* (head steward) of Mission San José. Pacheco served in the Spanish military before taking a series of administrative posts at Pueblo de San José between 1834 and 1843. Rancho Potrero de los Cerritos served as a grazing area for Mission San José until a large portion of the tract was purchased in 1850 by John M. Horner, who plotted the town site for Union City.

The Treaty of Guadalupe Hidalgo was signed in 1848, ending the Mexican-American War and officially making California a territory of the United States. US jurisdiction over California had really begun two years earlier, when on July 7, 1846, Commodore John D. Sloat raised the US flag following the "Battle of Monterey," after 50 US Marines and 100 Navy sailors landed unopposed and captured the city without firing a shot. Settlement of California continued to increase during the early American Period. Many ranchos were sold or otherwise acquired by Americans, and most were subdivided into agricultural parcels or towns. The discovery of gold in northern California in 1848 led to the

California Gold Rush. In September 1850 California officially became a state. Thousands of settlers and immigrants continued to pour into the state, particularly after the completion of the transcontinental railroad in 1869.

City of Hayward

The modern City of Hayward had its origins in the 1850s, during the Gold Rush. In 1854 the Mexican colonist Guillermo Castro had a map surveyed for a town covering 28 blocks in the vicinity of his adobe (a site now occupied by Hayward's Historic City Hall) and began selling land to settlers. Castro also sold a large tract to William Hayward, who built a general store and lodging house at present-day A and Main Streets. The settlement that grew up around Hayward's Hotel became known as Haywards, later shortened to Hayward.

Rich soil and abundant water supported a prosperous farming and ranching culture in the area. Numerous farms and ranches spread across the flatlands and hills, producing grains, vegetables, fruits, dairy products, and meat. Most of these landholdings were large, ranging in size from 100 to 500 acres, with a few exceeding 1,000 acres. The premier agriculturist in the area was William Meek, who owned nearly 3,000 acres south and west of San Lorenzo Creek and Hayward, on which he pastured sheep and cultivated almonds, plums, oranges, lemons, limes, cherries, currants, wheat, oats, barley, and corn.

Railroads spurred urban and agricultural development in Hayward. In 1865, a local line began service between Hayward and Alameda, where trains connected with ferries to San Francisco. This line was soon taken over by the Central Pacific, and in 1869 transcontinental trains began running through Hayward. In 1878 a second railroad began service along the bay shore, with a station at the village of Mt. Eden. By 1870 Hayward had a population of 1,000 and a thriving commercial district. When Hayward was incorporated in 1876, the town plat extended east from the vicinity of present-day Mission Boulevard to Fourth Street. During the next 30 or 40 years, Hayward remained a small mercantile town with a cannery by the tracks and a couple of thousand residents.

The Hayward area entered a period of accelerated change in the early decades of the 20th century. A steady influx of farmers and townsfolk resulted in the gradual expansion of the town grid and the cutting up of larger farms into smaller farms. The opening of the Hayward-San Mateo Bridge in 1919 brought new prominence to the town as burgeoning numbers of automobiles passed through the area on newly improved county roads. During the prosperous 1920s, Hayward's population surged to 5,000 and new tracts pushed out the boundaries of the grid.

By 1950, with a population exceeding 14,000. Housing tracts had begun to appear around the fringes of the grid, and the City limits now stretched south to Tennyson Road and west to the Southern Pacific tracks, with an extension to the new municipal airport (established during the war as a military airbase). Explosive growth in the 1950s, facilitated by the opening of the Nimitz Freeway (Interstate 880), brought about a five-fold increase in the City's population, which exceeded 72,000 by 1960. As vast tracts of agricultural land were annexed, pushing the City limits south to Union City and west to the Bay, the farmland gave way to subdivisions, shopping centers, and industrial parks.

Union City

In the early 1850s, John Horner created a landing at a bend in Alameda Creek and founded a settlement called Union City, named for his steamship "The Union." Around the same time, Henry Smith founded the settlement of New Haven located in the vicinity of Smith Street and Union City Boulevard. These two settlements combined to form the town of Alvarado. Alvarado was known for its fertile lands and also benefited by being a main distribution point along the Bay for grain and produce going to San Francisco.

When Alameda County first established in 1853, Alvarado became the first County seat. At that same time, Alvarado functioned as the commerce center of Alameda County. A few years later, due to the recurring flooding within Alvarado, the County seat was relocated to San Leandro.

In the following years, agriculture continued to be an important component of the local economy in Alvarado. In 1869 a rail line was built from Niles to Oakland, finishing the transcontinental railroad, within the vicinity of the Decoto area, east of the project area. Like many others in the vicinity, the town of Decoto was established in 1870 as a farming community facilitated by the existing rail access. Produce canning processing plants subsequently developed in the surrounding areas near the existing rail lines, to effectively ship the local produce to other distant markets via rail.

The nearby City of Newark incorporated in 1955. With the Cities of Hayward and Fremont both looking to incorporate lands within the Alvarado and Decoto areas, the residents of these areas in addition to large industrial business owners located between the two communities, came together to form Union City in 1959 resulting in Union City's linear shape that generally extends in an east-west direction.

City of Fremont

The Fremont area was first settled by the Spanish and Father Fermin de Lasuen, who founded Mission San José in 1797. Several small farming communities developed around the Mission lands, serving as the center of social and economic activity. In 1846, American Army officer and explorer John C. Fremont, led a military survey from Sutter's Fort through Mission Pass, to map a trail to the Pacific Coast. Fremont encouraged an American rebellion which eventually overtook Mexican General Mariano Vallejo, and the Mexican government in Sonoma fell to the so-called Bear Flaggers, who declared California an independent republic. John C. Fremont officially took command of the Bear Flaggers and occupied the San Francisco Presidio. Six days later, US Commodore John D. Sloat declared war against Mexico and took possession of Monterey. The motivation behind the Bear Flag Revolt was to annex California to the United States, so the newly established California Republic quietly faded away, leaving a grizzly bear on the state flag and John C. Fremont praised as an instrumental individual in the downfall of the Mexican government.

In 1853, the five farming communities that surrounded the Mission lands—Centerville, Niles, Irvington, Mission San José, and Warm Springs—were merged to create the City of Fremont, named after John C. Fremont, who became one of California's first two US senators 3 years prior. The City of Fremont prospered as an agricultural town with access to multiple railroads. The railroads moved freight faster than was possible by wagon or ship. Ship landings disappeared and wagons carried freight to nearby rail stations. Fremont was incorporated in 1956.

City of Newark

Before California becoming a state in 1850, the shoreline near Newark was dotted with landings. The fertile ground of the floodplain was immediately recognized for agricultural purposes by settlers to the area, and its proximity to water solidified the commerce of shipping local agricultural crops to San Francisco and other ports within the expanding state, via boat. Among the first to settle in the Newark area was Origin Mowry, a Mormon settler who moved there in 1846 and established Mowry's Landing four years later, and Mayhew who established his own landing to the north in 1853. Mayhew's Landing included warehouses for wheat and hay, among other things. The townsite was planned for an area within Mayhew's farmland and the current project area, but the land was sold multiple times and after several failed land reclamation attempts, the town site of Newark was moved to coincide with a bend on the newly constructed South Pacific Coast Railroad. The owner of this narrow-gauge rail line which extended from Santa Cruz to Alameda, where it connected with the San Francisco Ferry, named the City Newark after the castle Newark in Port Glasgow, Scotland. A railroad station, roundhouse, and railroad shop were erected in the area near Thornton Avenue and Sycamore Street.

Newark remained a small agricultural and manufacturing center through the late 1800s and early 1900s. By 1880, Newark had a population of 200 people. Like other cities on the East Bay Plain, Newark evolved from an agricultural community to a suburban community with a substantial manufacturing base during the mid-1900s. In 1955, the City of Newark was incorporated. Its proximity to Silicon Valley has influenced the diversification of its economy from traditional industry to technology, communications, logistics, and other emerging sectors of the national and global economies.

Cargill Solar Salt Facility

Solar salt processing has been in operation on the eastern shorelines of the Bay since the 1860s. Marshland at the western edge of the project area could be purchased under the reclamation acts of the late 1800s, then diked, bermed, and converted to salt evaporation ponds. Salt processed this way was then bagged and shipped around the world. Early operations were family-run businesses, such as Charles A. Plummer and his father John and brother John Jr. who established the Turk Island Salt Works in 1868, near the mouth of Alameda Creek, west of the project area in Alvarado. The following larger companies operated in the vicinity of the project area in the early part of the 20th century: Crystal Salt Works, Arden Salt Company, California Salt Company, Pioneer Salt Company, Leslie Salt

Company, and today's Cargill, which manages operations from Mt. Eden to Newark. Leslie Salt Company grew over the years from consolidating with the smaller operations from Alameda and Santa Clara counties. Cargill purchased Leslie Salt Company in 1978. Today, solar salt processing occurs on both sides of the Bay.

Located in the southern portion of the project area, the US Fish and Wildlife Service's Don Edwards San Francisco Bay National Wildlife Refuge (Refuge) is on the western periphery of the City of Fremont. Established in 1972, the Refuge stretches along the marshy shoreline north and south of the Dumbarton Bridge and encompasses open bay, salt ponds, salt marsh, mudflats, and upland and vernal pool habitats. About 9,000 acres of salt ponds within the Refuge are managed by Cargill as part of its solar salt operation.

RECORDS SEARCHES, SURVEYS, AND CONSULTATION

The MSS brine transport pipeline alignment has been changed through the design phase; consequently, multiple records searches have been conducted for the project site and a 0.25-mile radius at the Northwest Information Center, at Sonoma State University, Rohnert Park. The latest record searches were conducted on May 11, 2022, and June 28, 2022:

- NRHP and CRHR,
- California Office of Historic Preservation Historic Property Directory,
- California Inventory of Historic Resources,
- California State Historic Landmarks,
- California Points of Historical Interest, and
- historic properties reference map.

Over 30 previous studies have been conducted in or adjacent to the project site, with over 20 more studies recorded within the 0.25-mile radius. These studies represent approximately 45 percent of the project site. The NWIC records search identified seven previously recorded cultural sites or features in or adjacent to the project site, with an additional 18 sites or features previously recorded within the 0.25-mile radius.

Archaeological pedestrian surveys were conducted at the Cargill Solar Salt Facility on June 3, 2020, and again on June 2, 2021; a windshield survey of the MSS brine transport pipeline alignment from the Solar Salt Facility to Union City Boulevard and Whipple Road (with pedestrian survey stops to spot check known resources) was conducted on June 3, 2020. Site conditions at the MSS brine transport pipeline alignment crossings from Newark Slough at Thornton Avenue to the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant and at laydown and staging areas were photo-documented in June 2022. Archaeologists reviewed site conditions from the June 2022 site visit and identified dense vegetation along the alignment south of the Skywest Golf Course, as well as a disturbed access road used to modify the flood control channel north of Corsair Boulevard. It was determined that an archaeological survey was not necessary at this location due to the heavy vegetation and previously disturbed ground surface. Likewise, archaeologists reviewed site conditions from the June 2022 site visit at the laydown and staging areas at the Oro Loma Marsh near the Skywest Golf Course and Sulphur Creek crossing location and indicated that the dense vegetation was a deterrent for further archaeological survey. The pipeline along this alignment is proposed to be constructed along the levee berm, which is composed of artificial fill. Therefore, this area was not surveyed by an archaeologist. No new cultural resources were identified during the archaeological surveys conducted in June 2020 and June 2021.

Archaeological Sites

P-01-000170/CA-ALA-448H, Historic Farm Site

This resource is the remnant historic-era archaeological site recorded postgrading, but preconstruction for an industrial park development on the eastern side of Paseo Padre Parkway. The site integrity was described as "poor" with about 50 percent of this site impacted by the excavation of approximately 2 feet of topsoil during grading for an

industrial business park. The southwestern corner of the site has also been looted. This resource has not been evaluated for the CRHR.

P-01-000239/CA-ALA-503H, Leslie Salt Company Plant One/Arden Salt Works

This resource is a remnant levee, salt crystallizing pond, and railroad that was constructed circa 1919 and operated by Leslie Salt Company until 1963. Since the ponds have been out of production, dust during the late spring-early summer was an ongoing problem that was dealt with first by seasonal flooding with bay water, then with continual spraying of bittern via a water truck, then in the 1980s, the crystallizing ponds were plowed. Thornton Avenue was constructed through the salt works ponds north beyond Highway 84 in the 1980s, and the highway was completed circa 1987. This resource has not been evaluated for the NRHP/CRHR.

Historic Features

P-01-10742, San Lorenzo Village Historic District

The San Lorenzo Village Historic District is an unincorporated area between the Cities of Hayward and San Leandro, that was developed between the mid-1940s through the 1950s by David D. Bohannon. Approximately 6,000 buildings comprise the district, most being single-family residences, but schools, churches, commercial and civic buildings are also included. This district was evaluated and found to appear eligible for the NRHP under Criteria A, B, and C at the local level of significance, as an early and prototypical example of a large-scale, post-World War II suburban housing development which retains a remarkably high degree of integrity.

P-01-002269/CA-ALA-681H, Eastshore-Grant Transmission Line

This transmission line, which runs between the Eastshore Substation in Hayward to the Grant Substation in San Lorenzo, was constructed in 1921-1922. The transmission line consists of a series of steel lattice towers measuring approximately 70 feet high with bases approximately 15 feet square. This transmission line was previously evaluated and found to lack integrity due to the altered setting, feeling, and association and was recommended as not eligible for listing in the CRHR. Therefore, this feature is not a resource under CEQA and is not discussed further.

P-01-011926, Hayward California Air National Guard Station

The Hayward California Air National Guard Station was built between 1950 and circa 1995 for military use. Buildings include a hanger, office buildings, boiler house, dining hall, bunk housing, an armory, and various buildings used for maintenance and storage. The station was previously evaluated for the CRHR and Hayward Register and did not appear to be eligible due to lack of association with a historic context and integrity. Therefore, this feature is not a resource under CEQA and is not discussed further.

P-01-011827, Alameda Creek

This resource is the channelized watercourse that bisects Alameda County. It was the boundary between Rancho Arroyo de la Alameda and Rancho de los Cerritos, and now serves as the boundary between Fremont and Union City. The course of the waterway, which is now Alameda Creek Flood Control Channel, has been altered by floods and by the US Army Corps of Engineers. This resource was listed on the Fremont historic resource inventory in 1967; this resource has not been evaluated for the CRHR.

P-01-001783/CA-ALA-623H, Southern Pacific Railroad Segment: Dumbarton Cutoff

The Dumbarton Cutoff crosses the south end of the Bay between Dumbarton Point (Alameda County) and East Palo Alto (San Mateo County). The cutoff is a single-track line that crosses marsh areas on dredged fill and crosses the Bay and Newark Slough on through truss swing bridges. The Southern Pacific Dumbarton Cutoff was previously evaluated and appears to meet the eligibility Criteria A, B, and C of the NRHP, at the local level of significance in transportation and engineering and retains historical integrity. Under Criterion A, it is associated with the system-wide improvements to the Southern Pacific that gave the railroad its 20th century form and made it the standard railroad of the West. It is inextricably linked with the economic growth of San Francisco and its port in the first half of the 20th century, and with the national defense efforts during both world wars. Under Criterion B, it is associated with the life of E.H. Harriman, who drove the modernization of the Southern Pacific Railroad during the first two decades of the

20th century, even beyond his death. Harriman saw the need for, and directed the building of, the Dumbarton Cutoff. Under Criterion C, contributive elements of the Cutoff, such as the Dumbarton and Newark Slough Bridges, are representative examples of their type, period, and method of construction.

Tribal Cultural Resources

Sacred Lands File Search

The NAHC was contacted to conduct a search of the Sacred Lands File database and request a list of appropriate Native American tribal representatives that might have an interest or knowledge about the project site. The NAHC replied on June 16, 2021, that culturally sensitive properties were located within or near the project site, and that further information could be acquired by contacting The Ohlone Indian Tribe.

Native American Consultation

Pursuant to AB 52, EBDA mailed notification letters to the following 12 tribal representatives on May 24, 2022:

- Irene Zwierlein, Chairperson, Amah Mutsun Tribal Band of Mission San Juan Bautista
- Quirina Luna Geary, Chairperson, Tamien Nation
- Johnathan Wasaka Costillas, Tribal Historic Preservation Officer, Tamien Nation
- Tony Cerda, Chairperson, Costanoan Rumsen Carmel Tribe
- Monica Arellano, Vice Chairwoman, Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- Andrew Galvan, The Ohlone Indian Tribe
- Kenneth Woodrow, Chairperson, Wuksache Indian Tribe/Eshom Valley Band
- Corrina Gould, Chairperson, Confederated Villages of Lisjan Nation
- Kanyon Sayers-Roods, MLD, Indian Canyon Mutsun Band of Costanoan
- Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Costanoan
- Timothy Perez, North Valley Yokuts Tribe
- Katherine Perez, Chairperson, Northern Valley Yokuts Tribe

Three responses, from the Confederated Villages of Lisjan Nation, the Indian Canyon Mutsun Band of Costanoan Ohlone People, and Northern Valley Yokuts/Ohlone and Nototomne Cultural Preservation, were received. No other tribes responded.

On May 29, 2022, the Confederated Villages of Lisjan Nation responded and requested further information about location, site records, and the results of the sacred lands search in the project area, which were provided. The Lisjan Nation responded on June 14, 2022, that the tribe would like to consult; EBDA conducted an initial consultation meeting on August 3, 2022, where the tribe requested to review the cultural report for the project.

On May 27, 2022, the Indian Canyon Mutsun Band of Costanoan Ohlone People requested consultation on this project as the project site "overlaps or is near the management boundary of a potentially eligible cultural site," and recommends that a Native American Monitor be present during any/all ground disturbing activities. EBDA conducted an initial consultation meeting on July 25, 2022; the tribal representative stated they would most likely back recommendations made by the Confederated Villages of Lisjan Nation and requested sensitivity training be included in the mitigation measures.

On May 28, 2022, the Northern Valley Yokuts/Ohlone and Nototomne Cultural Preservation sent a formal request to consult and requested cultural resource assessments, as well as the results of any records searches. A meeting between the Northern Valley Yokuts Tribe and EBDA occurred on August 16, 2022, where the tribe expressed concern for the areas in the project where the pipeline crosses the creek.

On October 27, 2022, EBDA sent the cultural report to the Confederated Villages of Lisjan Nation, the Indian Canyon Mutsun Band of Costanoan Ohlone People, and the Northern Valley Yokuts Tribe, and asked for meeting availability once the report had been reviewed. On November 14 and November 28, 2022, EBDA again requested meeting availability and to receive input on the cultural report by December 16, 2022. Because none of the three tribes responded by December 16, 2022, EBDA considered AB 52 consultation to be closed.

3.4.3 Impacts and Mitigation Measures

METHODOLOGY

The impact analysis for archaeological and historical resources is based on the findings and recommendations of the *Cultural Resources Technical Report for the Mixed Sea Salts Processing Project, Newark, Fremont, Union City, and Hayward, Alameda County, California* (AECOM 2022). The analysis is also informed by the provisions and requirements of federal, state, and local laws and regulations that apply to cultural resources.

As discussed in Section 3.4.1, "Regulatory Setting," PRC Section 21083.2(g) defines a "unique archaeological resource" as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one or more of the following CRHR-related criteria: (1) that it contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; (2) that it has a special and particular quality, such as being the oldest of its type or the best available example of its type; or (3) that it is directly associated with a scientifically recognized important prehistoric or historic event or person. An impact on a resource that is not unique is not a significant environmental impact under CEQA (State CEQA Guidelines Section 15064.5[c][4]). If an archaeological resource qualifies as a resource under CRHR criteria, then the resource is treated as a unique archaeological resource for the purposes of CEQA.

As discussed in Section 3.4.1, "Regulatory Setting," PRC Section 21074 defines "tribal cultural resources" as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" that are listed or determined eligible for listing in the CRHR, listed in a local register of historical resources, or otherwise determined by the lead agency to be a tribal cultural resource.

For the purposes of the impact discussion, "historical resource" is used to describe built-environment historic-period resources. Archaeological resources (both prehistoric and historic-period), which may qualify as "historical resources" pursuant to CEQA, are analyzed separately from built-environment historical resources.

THRESHOLDS OF SIGNIFICANCE

An impact related to cultural resources would be significant if implementation of the project would:

- cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5 of the State CEQA Guidelines;
- cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the State CEQA Guidelines;
- cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC 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; or
- disturb any human remains, including those interred outside of formal cemeteries.

ISSUES NOT DISCUSSED FURTHER

All potential archaeological, historical, and tribal cultural resources issues identified in the significance criteria are evaluated below.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.4-1: Potential to Cause a Substantial Adverse Change in the Significance of a Historical Resource

The results of the NWIC records searches identified three previously recorded historical resources present in the project area. Impacts associated with the proposed project would be **less than significant**. There would be **no impact** associated with the Solar Salt Facility improvements.

The proposed project would involve modifications within Cargill's Solar Salt Facility, including new pipelines and pumping facilities, and construction of approximately 15.6 miles of new underground pipeline, primarily within roadway rights-of-way, to connect the Solar Salt Facility to EBDA's outfall system just downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. These activities could be located within or adjacent to historical resources. Damage to or destruction of a building or structure that is a designated historical resource or eligible for listing as a historical resource, could result in a change in its historical significance.

The results of the records searches and pedestrian surveys identified three previously recorded historical resources present in the project area (P-01-010742, P-01-011827, and P-01-001783). No resources were identified in the Solar Salt Facility.

Proposed Project

Solar Salt Facility Improvements

The records searches and pedestrian surveys did not identify any historical resources within the Solar Salt Facility. There would be no impact.

MSS Brine Transport Pipeline

Historical resource P-01-10742, the San Lorenzo Village Historic District, is located approximately 120 feet east of the proposed MSS brine transport pipeline alignment, with both a canal and a railroad track separating these areas. Construction of an open trench pipeline at the adjacent Oro Loma Marsh would therefore not directly affect this resource. The resource would not be altered, nor would its integrity be reduced such that it could no longer convey its historical significance.

Historical resource P-01-011827, Alameda Creek, was previously listed on the Fremont historic resource inventory, retaining its importance as a place of "historic riparian activity" and a landmark boundary between Fremont and Union City. Construction of a trenchless crossing of the pipeline across Alameda Creek would not affect this resource by introducing significant above-ground features, or alter it in any way to detract from its historic status on the Fremont inventory.

Historical resource P-01-001783, the Dumbarton Cutoff of the Southern Pacific Railroad Segment, was previously evaluated and appears to meet the eligibility Criteria A, B, and C of the NRHP, at the local level of significance in transportation and engineering. Construction of a trenchless crossing of the pipeline under the railroad would not affect this resource by introducing significant above-ground features, or alter it in any way to detract from its historic status.

For these reasons, the proposed improvements would have a **less-than-significant** impact on historical resources.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.4-2: Potential to Cause a Substantial Adverse Change in the Significance of Unique Archaeological Resources

The NWIC records searches identified two previously recorded archaeological sites present in the project area. Additionally, project-related ground-disturbing activities could result in damage to these or other yet undiscovered archaeological resources as defined in State CEQA Guidelines Section 15064.5. This would be a **potentially significant** impact.

The proposed project would involve modifications within Cargill's Solar Salt Facility, including new pipelines and pumping facilities, and construction of approximately 15.6 miles of new underground pipeline, primarily within roadway rights-of-way, to connect the Solar Salt Facility to EBDA's outfall system just downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. Project-related ground-disturbing activities could result in damage to known, or other yet undiscovered archaeological resources as defined in State CEQA Guidelines Section 15064.5.

Based on the geoarchaeological sensitivity assessment of the study area, Holocene-age soils have been mapped throughout, which have an increased potential for containing buried and surface archaeological material. This sensitivity is greatest in areas near freshwater, which there are many—Plummer Creek, Ardenwood Creek, Crandall Creek, Alameda Creek, as well as numerous flood control channels. If these areas of sensitivity cannot be avoided by the project, the project activities in these areas are deep enough at 10 feet deep or deeper, to potentially encounter archaeological materials.

The results of the records searches and pedestrian surveys identified two previously recorded archaeological sites present in the project area (P-01-000170 and P-01-000239). Although these sites have not been evaluated for CRHR-eligibility, it is possible that they would be eligible and therefore would be a resource under CEQA. No archaeological sites were identified in the Solar Salt Facility.

Proposed Project

Solar Salt Facility Improvements

The records searches and pedestrian surveys did not identify any archaeological sites within the Solar Salt Facility. Nevertheless, project-related ground-disturbing activities could result in discovery or damage of yet undiscovered archaeological resources as defined in State CEQA Guidelines Section 15064.5. This would be a **potentially significant** impact.

MSS Brine Transport Pipeline

Archaeological sites P-01-000170, Historic Farm Site, and P-01-000239, Leslie Salt Company Plant One/Arden Salt Works are historic-era archaeological sites whose integrity has been impacted by recent construction. Approximately 50 percent of the farm site was graded before the development of an industrial park and 1 to 2 feet of topsoil was removed. Thornton Avenue was constructed through the salt works ponds north beyond Highway 84 in the 1980s, and the highway was completed circa 1987.

Construction of an open trench pipeline is not expected to affect the highly-disturbed P-01-000170, Historic Farm Site, as the proposed alignment is located west of the site within the roadway right-of-way along Paseo Padre Parkway. Construction of a trenchless crossing of the pipeline across Highway 84 in the north and open trench construction within the right-of-way along Thornton Avenue in the south is not expected to affect P-01-000239, Leslie Salt Company Plant One/Arden Salt Works, as it has already been disturbed in the construction of these two thoroughfares.

For these reasons, the proposed improvements would have a less-than-significant impact on known archaeological sites. Nevertheless, ground disturbance could damage or destroy previously undiscovered archaeological resources, which would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.4-2a: Develop and Implement a Worker Environmental Awareness Program

Before the start of any ground disturbing construction activities, a qualified archaeologist shall develop a construction worker awareness brochure for all construction personnel. The brochure will be developed in coordination with representatives from Native American tribes culturally affiliated with the project area. The topics to be addressed in the Worker Environmental Awareness Program will include, at a minimum:

- types of archaeological and tribal cultural resources expected in the project area;
- what to do if a worker encounters a possible resource;
- what to do if a worker encounters bones or possible bones; and
- penalties for removing or intentionally disturbing archaeological and tribal cultural resources, such as those identified in the Archeological Resources Protection Act.

Mitigation Measure 3.4-2b: Halt Ground-Disturbing Activity upon Discovery of Subsurface Archaeological Features

If any precontact or historic-era subsurface archaeological features or deposits (e.g., ceramic shard, trash scatters), including locally darkened soil ("midden"), which may conceal cultural deposits, are discovered during construction, all ground-disturbing activity within 100 feet of the resources shall be halted, and a qualified professional archaeologist (one who meets the Secretary of the Interior's Professional Qualification Standards for archaeology) shall be retained to assess the significance of the find. If the qualified archaeologist determines the archaeological material to be Native American in nature, Cargill shall be required by EBDA to contact the appropriate California Native American tribe. A tribal representative from a California Native American tribe that is traditionally and culturally affiliated with the project area may make recommendations for further evaluation and treatment as necessary and provide input on the preferred treatment of the find. If the find is determined to be significant by the archaeologist or the tribal representative (i.e., because it is determined to constitute a unique archaeological resource or a tribal cultural resource, as appropriate), the archaeologist and tribal representative, as appropriate, shall develop, and Cargill shall be required by EBDA to implement, appropriate procedures to protect the integrity of the resource and ensure that no additional resources are affected. Procedures may include but would not necessarily be limited to preservation in place (which shall be the preferred manner of mitigating impacts on archaeological and tribal sites), archival research, subsurface testing, or contiguous block unit excavation and data recovery (when it is the only feasible mitigation, and pursuant to a data recovery plan). No work at the discovery location shall resume until all necessary investigation and evaluation of the resource has been satisfied.

Significance after Mitigation

Implementation of Mitigation Measures 3.4-2a and 3.4-2b would require the performance of professionally accepted and legally compliant procedures for the discovery and protection of previously undocumented significant archaeological resources. Therefore, this impact would be reduced to **less than significant**.

Impact 3.4-3: Potential to Cause a Substantial Adverse Change in the Significance of a Tribal Cultural Resource

Tribal consultation under AB 52 did not result in the identification of tribal cultural resources on the project site. However, excavation activities associated with project construction may disturb or destroy previously undiscovered significant subsurface tribal cultural resources. This would be a **potentially significant** impact.

As detailed above, EBDA sent AB 52 notification letters to twelve tribal representatives; three tribes responded within the 30-day response window. Consultation with the responding tribes under AB 52 did not result in the identification of any tribal cultural resources, as defined by PRC Section 21074, on the project site; however, all three tribes have stated that the area is sensitive, particularly around water features.

Therefore, excavation activities associated with project construction may disturb or destroy previously undiscovered significant subsurface tribal cultural resources, and this would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.4-3: Protect Unidentified Tribal Cultural Resources

Implement Mitigation Measures 3.4-2a and 3.4-2b.

Significance after Mitigation

Implementation of Mitigation Measures 3.4-2a and 3.4-2b would require appropriate treatment and proper care of significant tribal cultural resources, in accordance with the wishes of the geographically and culturally affiliated tribe, in the case of a discovery. Therefore, this impact would be reduced to **less than significant**.

Impact 3.4-4: Potential to Disturb Human Remains

Based on documentary research, no evidence suggests that any human interments are present within or in the immediate vicinity of the project site. However, ground-disturbing construction activities could uncover previously unknown human remains. Compliance with California Health and Safety Code Section 7050.5 and PRC Section 5097 would make this impact **less than significant**.

Based on documentary research, no evidence suggests that any precontact or historic-period marked or un-marked human interments are present within or in the immediate vicinity of the project site. However, the location of grave sites and Native American remains can occur outside of identified cemeteries or burial sites. Therefore, there is a possibility that unmarked, previously unknown Native American or other graves could be present within the project site and could be uncovered by project-related construction activities. Excavation and trenching for pipe installation would typically occur at a depth of 5–10 feet below the ground surface; horizontal directional drilling sections would reach up to 40 feet below grade; and piles driven for the MSS brine pump stations, dissolution water pump station, and Plummer Creek Pump Station are assumed to reach a maximum depth of 35 feet below the ground surface.

California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The procedures for the treatment of Native American human remains are contained in California Health and Safety Code Section 7050.5 and PRC Section 5097. These statutes require that, if human remains are discovered, potentially damaging ground-disturbing activities in the area of the remains shall be halted immediately, and the appropriate county coroner shall be notified immediately. If the remains are determined by the coroner to be Native American, NAHC shall be notified within 24 hours and the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. Following the coroner's findings, the NAHC-designated Most Likely Descendant, and the landowner shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments, if present, are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in PRC Section 5097.94.

Compliance with California Health and Safety Code Section 7050.5 and PRC Section 5097 would provide an opportunity to avoid or minimize the disturbance of human remains, and to appropriately treat any remains that are discovered. Therefore, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

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3.5 GEOLOGY, SOILS, MINERAL RESOURCES, AND PALEONTOLOGICAL RESOURCES

This section describes current conditions related to geology, soils, mineral resources, and paleontological resources at the project site. In addition, this section includes analysis of the environmental impacts that may result from construction and operation of the proposed project. The primary sources of information used for this analysis include the general plans for Alameda County and the Cities of Hayward, Union City, Fremont, and Newark. The analysis also incorporates available information on the geotechnical conditions in the San Francisco Bay Area from maps and other documents published by agencies that include the US Geological Survey (USGS), California Geological Survey (CGS), and US Natural Resources Conservation Service (NRCS).

The San Francisco Bay Conservation and Development Commission (BCDC) submitted comments related to geology and soils in response to the notice of preparation. Specifically, BCDC commented that this EIR should address risk from subsidence and potential seismic safety of the existing berms surrounding Ponds 12 and 13. BCDC also recommended that Cargill consider design options for the Pond 12 and 13 berms that can increase the stability of the berms against a strong earthquake that may occur over the life of the proposed project.

CEQA requires that an EIR evaluate only impacts of the proposed project on the environment, including impacts associated with exacerbating existing environmental hazards. For example, courts have recognized that sea level rise is not an impact on the environment caused by a project (*California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369, 386, 377 (CBIA); *Ballona Wetlands Land Trust v. City of Los Angeles* (2011) 201 Cal.App.4th 455, 472–474 (Ballona Wetlands)). Likewise, the California Supreme Court has struck down CEQA regulations that claimed "an EIR on a subdivision astride an active fault line should identify as a significant effect the seismic hazard to future occupants of the subdivision" (CBIA, supra, 201 Cal.App.4th at pp. 388–389). Furthermore, because "[m]itigation is defined as an action that minimizes, reduces, or avoids a significant environmental impact or that rectifies or compensates for the impact," CEQA cannot be used to require adaptive responses to conditions not caused by the project (*King & Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814, 851).

Additionally, the primary purpose of the proposed project is to develop new infrastructure to support salt processing and managing salt inventory. The project has not been proposed out of concern that environmental factors, such as seismic events, pose an immediate threat to the integrity of the berms. As such, fortifying the ponds in which MSS is held is not one of the objectives of the proposed project. However, Cargill is proposing to implement sea level rise adaptation efforts as part of ongoing maintenance and operation activities, which include raising priority berms by approximately 12 inches and installing vinyl sheets to increase the resilience of berms. Cargill's current maintenance and operation activities are undertaken pursuant to a BCDC permit and Cargill is in the process of renewing this permit for another 10-year period. The environmental impacts of the proposed continued maintenance and operation activities of Cargill, including the reinforcement of existing berms, are evaluated in a 2021 Environmental Assessment (BCDC and Cargill 2021).

BCDC also commented that this EIR should indicate whether underlying soils along the new MSS brine transport pipeline alignment would support additional fill. As discussed further in Section 3.5.3, "Environmental Impacts and Mitigation Measures," a site-specific geotechnical and engineering report will be prepared to identify geologic hazards along the MSS brine transport pipeline alignment, including hazards related to soil stability. As required by the California Building Code, the project design would incorporate appropriate standard engineering practices and specifications to minimize geologic hazards.

3.5.1 Regulatory Setting

FEDERAL

National Earthquake Hazards Reduction Act

In October 1977, the US Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States. To accomplish this, the act established the National Earthquake Hazards Reduction Program (NEHRP). The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through postearthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities.

STATE

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (Alquist-Priolo Act) (PRC Sections 2621–2630) intends to reduce the risk to life and property from surface fault rupture during earthquakes by regulating construction in active fault corridors and by prohibiting the location of most types of structures intended for human occupancy across the traces of active faults. The act defines criteria for identifying active faults, giving legal support to terms such as "active" and "inactive," and establishes a process for reviewing building proposals in earthquake fault zones. Under the Alquist-Priolo Act, faults are zoned and construction along or across these zones is strictly regulated if they are "sufficiently active" and "well defined." A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the act as within the last 11,000 years). A fault is considered well defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Bryant and Hart 2007). Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards.

Seismic Hazards Mapping Act

The intention of the Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) is to reduce damage resulting from earthquakes. Whereas the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including ground shaking, liquefaction, and seismically induced landslides. The act's provisions are similar in concept to those of the Alquist-Priolo Act: The state is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped seismic hazard zones. Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development.

California Building Code

The California Building Code (CBC) (CCR Title 24) is based on the International Building Code. The CBC has been modified from the International Building Code for California conditions to include more detailed or more stringent regulations. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design. Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, whereas Chapter 18A regulates construction on unstable soils, such as expansive soils and areas subject to liquefaction. Appendix J of the CBC regulates drainage and erosion control during grading activities. The CBC contains a provision that provides for a preliminary soil report to be prepared to

identify "the presence of critically expansive soils or other soil problems which, if not corrected, would lead to structural defects" (CBC Chapter 18 Section 1803.1.1.1).

LOCAL

Alameda County

Alameda County General Plan

The Safety Element of the *Alameda County General Plan* describes natural hazards present in unincorporated areas of Alameda County and goals, policies, and actions to minimize losses related to seismic and geologic hazards (Alameda County 2022). The following goal and policies are applicable to the project:

GOAL 1. To minimize risks to lives and property due to seismic and geologic hazards.

- **Policy 1**. To the extent possible, projects should be designed to accommodate seismic shaking and should be sited away from areas subject to hazards induced by seismic shaking (landsliding, liquefaction, lurking, etc.) where design measures to mitigate the hazards will be uneconomic or will not achieve a satisfactory degree of risk reduction.
- **Policy 6**. The County shall not approve new development in areas with potential for seismic and geologic hazards unless the County can determine that feasible measures will be implemented to reduce the potential risk to acceptable levels, based on site-specific analysis. The County shall review new development proposals in terms of the risk caused by seismic and geologic activity.
- **Policy 8**. The County shall ensure that new major public facilities, including emergency response facilities (e.g., hospitals and fire stations), and water storage, wastewater treatment and communications facilities, are sited in areas of low geologic risk.
- **Policy 9**. Site specific geologic hazard assessments, conducted by a licensed geologist, shall be completed prior to development approval in areas with landslide and liquefaction hazards as indicated in Figures S-2 and S-4 [of the Safety Element of the County General Plan] and for development proposals submitted in Alquist-Priolo Zones as indicated in Figure S-1, hazards to be mapped include:
  - Seismic features
  - Landslide potential
  - Liquefaction potential

  Mitigation measures needed to reduce the risk to life and property from earthquake induced hazards should be included.
- **Policy 11**. All construction in unincorporated areas shall conform to the Alameda County Building Ordinance, which specifies requirements for the structural design of foundations and other building elements within seismic hazard areas.
- **Policy 12**. To the extent feasible, major infrastructure including transportation, pipelines, and water and natural gas mains, shall be designed to avoid or minimize crossings of active fault traces and to accommodate fault displacement without major damage that could result in long-term service disruptions.

Alameda County General Ordinance Code

Section 15.08.240 of the Alameda County Building Ordinance requires applicants for new construction to submit soils or geologic reports for sites affected by a number of seismic and geologic hazards. In addition, new structures are required to incorporate design elements to reduce building failures. The Grading, Erosion and Sediment Control Ordinance (Alameda County General Ordinance Code, Chapter 15.36) establishes standards for grading, construction, and the control of erosion and sediments. In addition, Section 15.36.110 of the County Grading Ordinance gives the director of Public Works the authority to require a soils and geologic investigation in support of any proposed

development on private property. Chapter 16, the Subdivision Ordinance, contains various provisions relating to the investigation of seismic and geologic hazards and to the design and construction of improvements relating to the subdivision of property.

City of Hayward

The *Hayward 2040 General Plan* establishes a community-based vision for the City of Hayward and establishes goals, policies, and implementation programs to help the city and greater Hayward community achieve that vision (City of Hayward 2014). The Hazards Element of the *Hayward 2040 General Plan* includes policies to protect life and minimize property damage from seismic and geologic hazards. The following policies are applicable to the project:

- HAZ-2.2. Geologic Investigations. The City shall require a geologic investigation for new construction on sites within (or partially within) the following zones:
  - Fault Zone (see Figure 9.2-1 in the Hazards Background Report)
  - Liquefaction Zone (see Figure 9.2-2 in the Hazards Background Report)
  - Landslide Zone (see Figure 9.2-3 in the Hazards Background Report)

  A licensed geotechnical engineer shall conduct the investigation and prepare a written report of findings and recommended mitigation measures to minimize potential risks related to seismic and geologic hazards.
- HAZ-2.6. Infrastructure and Utilities. The City shall require infrastructure and utility lines that cross faults to include design features to mitigate potential fault displacement impacts and restore service in the event of major fault displacement. Mitigation measures may include plans for damage isolation or temporary bypass by using standard isolation valves, flexible hose or conduit, and other techniques and equipment.

The Natural Resources Element of the *Hayward 2040 General Plan* includes policies to protect the economic viability of state-identified mineral resource extraction areas while avoiding potential land use conflicts and minimizing adverse environmental impacts. The following policy is applicable to the project:

- NR-5.1. Mineral Resource Protection. The City shall protect mineral resources in undeveloped areas that have been classified by the State Mining and Geology Board as having statewide or regional significance for possible future extraction by limiting new residential or urban uses that would be incompatible with mining and mineral extraction operations.

The Natural Resources Element also includes policies to identify, honor, and protect historically significant paleontological resources so they can be scientifically studied and preserved for current and future generations. The following policies are applicable to the project:

- NR-7.1. Paleontological Resource Protection. The City shall prohibit any new public or private development that damages or destroys a historically- or prehistorically-significant fossil, ruin, or monument, or any object of antiquity.
- NR-7.2. Paleontological Resource Mitigation. The City shall develop or ensure compliance with protocols that protect or mitigate impacts to paleontological resources, including requiring grading and construction projects to cease activity when a paleontological resource is discovered so it can be safely removed.

Union City

The *Union City 2040 General Plan* is a long-range planning document that serves as Union City's vision for future development (Union City 2019). The Safety Element includes policies to minimize the risks associated with geologic and soils hazards in order to protect public health and safety, property, and the environment. The following policies are applicable to the project:

- S-1.1. Development Review for Safety Compliance. The City shall evaluate all proposed projects to ensure compliance with all relevant building and safety codes, including those related to flooding, fire, earthquake, and other geologic hazards.

- S-3.1. Geotechnical Studies for New Development. The City shall require investigations by a qualified geologist or soils engineer prior to issuing building permits or discretionary approvals (e.g., general plan or zoning map amendment, site development review, use permit, subdivision map) for any new construction, unless waived by the Building Official. Soils engineering reports shall specifically address secondary seismic hazards, especially potential for soil liquefaction, ground shaking, lateral spreading, and local subsidence. All such reports shall be evaluated for completeness and accuracy by either City staff or a qualified third-party consultant paid for by the applicant or property owner. The reports shall identify appropriate mitigation measures to minimize risk.
- S-3.3. Resilience of Infrastructure to Earthquake Damage. The City shall not extend utility service lines and streets across known or suspected active fault traces or active or historic slide planes. The City may permit exceptions when special engineering practices or techniques are employed that ensure that the extension can remain operational after a disaster.

The Resource Conservation Element includes policies to protect the city's paleontological resources. The following policy is applicable to the project:

- RC-4.8. Protection of Paleontological Resources. The City shall require avoidance and/or mitigation for potential impacts to paleontological resources for any development in Union City that occurs within high sensitivity geologic units, whether they are mapped at the surface or occur at the subsurface. High sensitivity geology units include Great Valley Sequence (Panoche and Knoxville Formations), Monterey Group (Claremont Shale and Hambre Sandstone), Briones Formation, Orinda Formation, and Pleistocene age alluvial fan and fluvial deposits. When paleontological resources are uncovered during site excavation, grading, or construction activities, work on the site will be suspended until the significance of the fossils can be determined by a qualified paleontologist. If significant resources are determined to exist, the paleontologist shall make recommendations for protection or recovery of the resource.

  The City shall require the following specific requirements for projects that could disturb geologic units with high paleontological sensitivity:

  - Retain a Qualified Paleontologist to Prepare a PMMP. Prior to initial ground disturbance in previously undisturbed strata of geologic units with high sensitivity, the project applicant shall retain a Qualified Paleontologist, as defined by the SVP [Society of Vertebrate Paleontology] (2010), to direct all mitigation measures related to paleontological resources and design a Paleontological Mitigation and Monitoring Program (PMMP) for the project. The PMMP should include measures for a preconstruction survey, a training program for construction personnel, paleontological monitoring, fossil salvage, curation, and final reporting, as applicable.

City of Fremont

The *City of Fremont General Plan* serves as the foundation upon which all development decisions in the city are based and sets priorities and goals for the future (City of Fremont 2011). The Safety Element of the general plan includes policies to minimize risks to life and property resulting from land instability and other geologic hazards. The following policies are applicable to the project:

- Policy 10-1.1. Location of Buildings and Structures. Regulate new development and redevelopment in a manner that avoids geologic hazards to life and property.
- Policy 10-1.2. Mitigation of Hazards. Require proposed development in areas of potential land instability to evaluate and sufficiently mitigate such hazards through site planning, appropriate construction techniques, building design and engineering.
- Policy 10-1.3. Limits on Grading. Prohibit excessive and unnecessary grading activity, especially in areas of potential landslide risk as identified on State and local geologic hazard area maps or as identified during site reconnaissance.
- Policy 10-2.1. Location of Buildings and Structures. Regulate new development and redevelopment in a manner to minimize potential damage and hazards related to expected seismic activity.

- **Policy 10-2.4. Location of Critical Facilities**. Locate critical facilities and systems vital to public health and safety (e.g., water, power and waste disposal systems, police and fire stations, hospitals, bridges and communication facilities) away from the areas of greatest seismic hazards and land instability, and require that such facilities are designed to mitigate any hazards associated with their sites.

The Conservation Element of the general plan includes policies to protect state-designated and regionally significant mineral resources. The following policies are applicable to the project:

- **Policy 7-5.1. Protect Mineral Resources**. Protect identified state designated mineral resources from incompatible development whenever feasible consistent with the City's long range development plans.
- **Policy 7-5.2. Minimize Impacts of Mineral Resource Extraction on City**. Ensure mineral resource extraction activities do not create a significant impact to the character and long term health of the City.

City of Newark

The *Newark General Plan* is a comprehensive statement of the goals, policies, and actions that will guide future growth and conservation in the city (City of Newark 2013). The Environmental Hazards Element of the general plan addresses potential risks to life and property resulting from geologic hazards. The following policies are applicable to the project:

- **Policy EH-1.1. Development Regulations and Code Requirements**. Establish and enforce development regulations and building code requirements to protect residents and workers from flooding, liquefaction, earthquakes, fires, and other hazards.
- **Policy EH-1.2. Considering Hazards in Project Location and Design**. Prohibit development in any area where it is determined that the potential risk from natural hazards cannot be mitigated to acceptable levels.
- **Policy EH-1.4. Critical Facilities**. Ensure that public facilities that are critical to health and safety (such as police and fire stations, and water and sewer facilities) are designed to maximize their resilience and ability to function during and after a natural disaster.
- **Policy EH-2.4. Infrastructure Resilience**. Maintain standards for roads and infrastructure which consider geologic hazards, including subsidence and liquefaction.

The Conservation and Sustainability Element of the general plan addresses the preservation and conservation of natural resources in the City of Newark. The following policy is applicable to the project:

- **Policy CS-1.4. Soil Erosion**. Identify and eliminate erosion problems on public and private lands. The potential for erosion should be considered as a design and engineering factor in new development.

3.5.2 Environmental Setting

REGIONAL GEOLOGY

The project site is in the Coast Ranges Geomorphic Province, which is composed of northwest–trending mountain ranges (2,000–4,000 and occasionally 6,000 feet in elevation above sea level) and valleys. The Coast Ranges are composed of thick Mesozoic and Cenozoic sedimentary strata (CGS 2002). These ranges are subparallel to the San Andreas Fault and are controlled by folds and faults that resulted from the collision of the Farallon oceanic plate with the Pacific oceanic plate and the North American continental plate. This collision resulted in the subduction of the Farallon plate underneath the Pacific and North American plates, and the subsequent strike-slip faulting along the San Andreas Fault System between the Pacific and North American plates.

LOCAL GEOLOGY

The project site is in the southeast San Francisco Bay Area (Bay Area), in the San Francisco Bay (Bay) plain. Generally, the project site is mapped as Pleistocene- to Holocene-age marine and nonmarine sedimentary rocks composed of alluvium, lake, playa, and terrace deposits that are unconsolidated and semiconsolidated (CGS 2015a). Based on geologic mapping for the San Francisco Bay region, the inland portions of the project site are underlain by Holocene-age alluvium, and the coastal portions of the project site are underlain by late Holocene-age mud deposits (USGS and CGS 2006).

TOPOGRAPHY AND DRAINAGE

The project site is primarily situated in flat land between the South San Francisco Bay shore and the East Bay hills. The westernmost part of the project site consists of tidal salt marshes that are fed, in part, from local creeks and drainages originating in the eastern hills and agricultural land uses. Stormwater in the project site drains to the Bay.

Elevations in the project area slope gently from east to west toward the Bay. Ground surface elevations at the Solar Salt Facility work areas vary from approximately -1.5 feet to about 13 feet above mean sea level, accounting for work areas in the ponds, as well as those on the adjacent levees. Slopes along the proposed on-site pipelines vary by a few feet (typically within the range of 9.5 to 11.5 feet above mean sea level).

Ground surface elevations along the MSS brine transport pipeline range from 0 to 39 feet above mean sea level. From the Solar Salt Facility to Corporate Avenue, ground surface elevations along the MSS brine transport pipeline alignment typically range from approximately 8 to 15 feet above mean sea level, but in some areas, they can be as low as 1 foot or as high as 28 feet above mean sea level. From Corporate Avenue to Sulphur Creek, ground surface elevations range from 15 feet to 39 feet above mean sea level. From Sulphur Creek to the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant, ground surface elevations are 0 feet above mean sea level.

GROUNDWATER

As described further in Section 3.8, "Hydrology and Water Quality," the majority of the project site, including the Solar Salt Facility and the portions of the MSS brine transport pipeline alignment south of SR 92, is within the Santa Clara Valley Groundwater Basin, Niles Cone Subbasin (Basin No. 2-9.01). From the early 1970s, water levels in the Niles Cone Subbasin have ranged from sea level to approximately 20 feet above mean sea level (DWR 2006). The portion of the project site that is north of SR 92 is located in the Santa Clara Valley East Bay Plain Subbasin (2-009.04). In 2000, water levels were very near surface in all aquifers (DWR 2004).

The project site overlies a shallow groundwater table. Based on measurements taken at five USGS monitoring wells near the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant from 2006 to 2022, the depth to groundwater ranged from 0 to 31 feet below the ground surface (USGS 2022). Based on measurements conducted by the Alameda County Water District and East Bay Municipal Utility District, groundwater levels in proximity to the Solar Salt Facility and MSS brine transport pipeline alignment are also expected to fall within this range (ACWD 2022; EBMUD 2022).

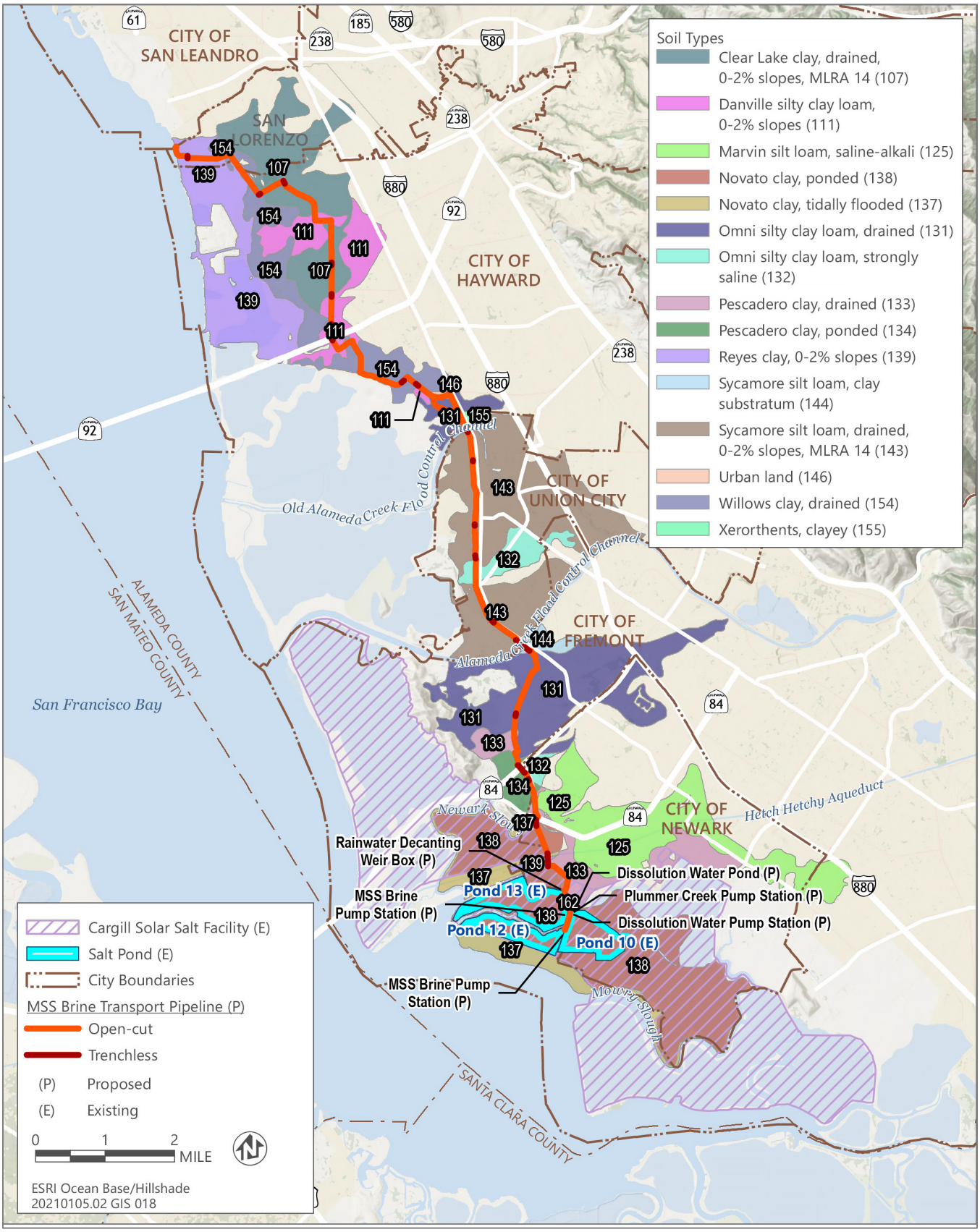
SOILS

The project site generally consists of a thin layer of compacted artificial fill underlain by native geologic units, composed of Bay mud and/or fine-grained alluvium (SCS 1981). Table 3.5-1 presents a summary of the soil types on the project site, including soils underlying the Solar Salt Facility work areas and the MSS brine transport pipeline alignment. As shown in Table 3.5-1, many of these soils have a very slow to slow surface runoff potential, no or slight hazard of erosion, low soil-bearing strength, and high shrink-swell potential. Soil types in the vicinity of the project site are shown in Figure 3.5-1.

Table 3.5-1 Soil Types

Soil Type	Description	Permeability	Surface Runoff Potential	Erosion Hazard	Strength	Shrink-Swell Potential
Clear Lake clay, drained, 0 to 2 percent slopes	Very deep, poorly drained soil that formed in alluvium in basins	Slow	Slow	None	Low	High
Danville silty clay loam, 0 to 2 percent slopes	Very deep, well-drained soil that formed on low terraces in alluvium that derived mainly from sedimentary rock	Slow	Slow	None	Low	High
Marvin silt loam, saline-alkali	Very deep, somewhat poorly drained soil on low alluvial terraces	Slow	Unknown	Unknown	Low	High
Novato clay, ponded	Very deep, very poorly drained soils along the margins of bays in tidal marshes	Slow	Very slow	None	Unknown	Unknown
Novato clay, tidally flooded	Very deep, very poorly drained soils along the margins of bays in tidal marshes	Slow	Very slow	None	Unknown	Unknown
Omni silty clay loam, drained	Very deep, poorly drained soil on floodplains	Slow	Slow	Slight	Low	High
Omni silty clay loam, strongly saline	Very deep, poorly drained soil on floodplains	Slow	Slow	None	Unknown	Unknown
Pescadero clay, drained	Very deep, poorly drained soil that formed on basin rims in alluvium that derived from sedimentary rock	Very slow	Very slow	None	Unknown	Unknown
Pescadero clay, ponded	Very deep, poorly drained soil that formed on basin rims in alluvium that derived from sedimentary rock	Very slow	Very slow	None	Unknown	Unknown
Reyes clay, 0 to 2 percent slopes	Very deep, poorly drained soil that formed in alluvium that derived from mixed sources; this soil is in areas subject to tidal inundation	Very slow	Very slow	None	Unknown	Unknown
Sycamore silt loam, clay substratum	Very deep, poorly drained soil that formed in recent alluvium that derived from sedimentary rock; it is on floodplains	Moderate in the surface layer and subsoil and slow in the clay substratum	Slow	Slight	Unknown	Unknown
Sycamore silt loam, drained, 0 to 2 percent slopes	Very deep, poorly drained soil that formed in alluvium that derived from sedimentary rock; it is on floodplains	Moderate	Slow	Slight	Unknown	Unknown
Urban land	Land that is covered by buildings, roads, parking lots, and other urban structures; the soil material is mainly heterogenous fill	Unknown	Unknown	Unknown	Unknown	Unknown
Willows clay, drained	Very deep, poorly drained soil on basin rims	Very slow	Slow	None	Low	High
Xerorthents, clayey	Clayey material that is used as fill for building sites	Slow to very slow	Slow	None	Low	High

Source: US Soil Conservation Service 1981.



Source: Data downloaded from NRCS in 2016; adapted by Ascent Environmental in 2022.

Figure 3.5-1 Soil Types in the Vicinity of the Project Site

EXPANSIVE SOILS

Expansive soils are composed largely of clays, which greatly increase in volume when saturated with water and shrink when dried (referred to as "shrink-swell" potential). The potential for soil to undergo shrink and swell is greatly enhanced by the presence of a variable, shallow groundwater table. Soil movement associated with expansive soil can result in cracking of foundations and pipelines.

Near-surface soils are expected to consist of compacted artificial fill on the project site. As shown in Table 3.5-1, many of the native soils underlying the project site have a high shrink-swell potential. These soils would be expected to undergo volume changes with increasing or decreasing soil moisture content.

MASS WASTING AND LANDSLIDES

"Mass wasting" refers to the collective group of processes that characterize down-slope movement of rock and unconsolidated sediment overlying bedrock. These processes include landslides, slumps, rockfalls, flows, and creeps. Many factors contribute to the potential for mass wasting, including geologic conditions, as well as the drainage, slope, and vegetation of the site. Based on mapping by the CGS, the project site is not in an area mapped as a landslide zone (CGS 2021). Furthermore, there are no steep slopes at the project site or in the project vicinity where landslides could occur.

SEISMICITY

Most earthquakes originate along fault lines. A fault is a fracture in the Earth's crust along which rocks on one side are displaced relative to those on the other side as a result of shear and compressive crustal stresses. Most faults are the result of repeated displacement that may have taken place suddenly or by slow creep (Bryant and Hart 2007). The state of California has a classification system that designates faults as active, potentially active, or inactive, depending on how recently displacement has occurred along them. Faults that show evidence of movement within the last 11,000 years (the Holocene geologic period) are considered active, and faults that have moved between 11,000 and 1.6 million years ago (the later Pleistocene geologic period) are considered potentially active. The project site is in a seismically active region. The Hayward Fault is approximately 2.3 miles to the east, and the San Andreas Fault is approximately 11 miles to the west (CGS 2015b). Both faults are part of the San Andreas Fault System.

Seismic hazards resulting from earthquakes include surface fault rupture, ground shaking, and liquefaction. Each of these potential hazards is discussed below.

Surface Fault Rupture

Surface rupture is the surface expression of movement along a fault. Structures built over an active fault can be torn apart if the ground ruptures. The potential for surface rupture is based on the concepts of recency and recurrence. Surface rupture along faults is generally limited to a linear zone a few meters wide. The Alquist-Priolo Act (see the "Regulatory Setting" discussion, above) was created to prohibit the location of structures designed for human occupancy across, or within 50 feet of, an active fault, thereby reducing the loss of life and property from an earthquake.

The project site is not in or adjacent to a fault zoned under the Alquist-Priolo Act or any other known fault. The nearest fault zoned under the Alquist-Priolo Act is the Hayward Fault, approximately 2.3 miles east of the project site (at the closest point on the MSS brine transport pipeline alignment) (CGS 2015b).

Ground Shaking

The intensity of seismic shaking, or strong ground motion, during an earthquake is dependent on the distance and direction from the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions of the surrounding area. Ground shaking could potentially result in the damage or collapse of buildings and other structures.

The 2014 Working Group on California Earthquake Probabilities estimates there is a 72-percent chance that an earthquake with a magnitude equal to or greater than 6.7 (i.e., an earthquake causing substantial damage in a populated area) will occur within the next 30 years in the San Francisco region (USGS 2015). In 1868, a magnitude 6.8 earthquake occurred along the northern portion of the Hayward Fault from Oakland to Warm Springs (CGS 2015b); this fault is approximately 2.3 miles east of the project site (at the closest point on the MSS brine transport pipeline alignment). The Hayward Fault is considered active by the CGS.

The intensity of ground shaking depends on the distance from the earthquake epicenter to the site, the magnitude of the earthquake, and site soil conditions. Peak horizontal ground acceleration (PGA), which is a measure of the projected intensity of ground shaking from seismic events and expressed in units of g where 1 g equals 9.81 meters per second squared, can be estimated by probabilistic method using a computer model. The CBC requires a site-specific calculation of the PGA for use in earthquake-resistant design.

The CGS Probabilistic Seismic Hazards Assessment Model was used to estimate PGA at the project site. Based on the model, there is a 1-in-10 probability that an earthquake within 50 years would result in a PGA of approximately 0.502 g at the Solar Salt Facility work areas and 0.562 g along the MSS brine transport pipeline alignment (CGS 2008). The PGA along the MSS brine transport pipeline alignment was calculated at the Hesperian Boulevard and Industrial Parkway West intersection. Generally, a PGA of 0.001 g is perceptible by people, and a PGA of 0.5 g is considered high intensity. Because PGA would exceed 0.5 g at the project site, strong seismic ground shaking in the project area would be anticipated in the event of an earthquake.

Liquefaction and Lateral Spreading

Soil liquefaction occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and take on the characteristics of a fluid, becoming similar to quicksand. Factors determining liquefaction potential are soil type, level and duration of ground motions, and depth to groundwater. Liquefaction is most likely to occur in low-lying areas where the substrate consists of poorly consolidated to unconsolidated water-saturated sediments, recent Holocene-age sediments, or deposits of artificial fill.

The Solar Salt Facility work areas and the off-site pipeline are generally located in existing developed areas consisting of a thin veneer of artificial fill over unconsolidated Bay mud or fine-grained Holocene-age alluvial deposits. Bay mud, which consists of soft, plastic, water-saturated silt and clay interbedded with thin lenses of silty sands, is rich in organic materials and has a very low bearing strength. The fine-grained alluvial deposits consist of plastic silt and clay with some organic material (USGS and HUD 1979). As noted above, the project site is approximately 2.3 miles (at the closest point on the MSS brine transport pipeline alignment) from the Hayward Fault, and strong seismic ground shaking is anticipated in the event of an earthquake along this fault.

The entire project site is within an area mapped as a liquefaction zone (CGS 2021). However, mapping for the San Francisco Bay region found that most of the project site is moderately susceptible to liquefaction. Some portions of the project site near the Oro Loma Facility, Hayward Regional Shoreline, and Alameda Creek are within areas mapped as having very high liquefaction susceptibility (USGS and CGS 2006).

Liquefaction may also lead to lateral spreading. Lateral spreading (also known as expansion) is the horizontal movement or spreading of soil toward an "open face," such as a streambank, the open side of fill embankments, or the sides of levees. It often occurs in response to liquefaction of soils in an adjacent area. The potential for failure from lateral spreading is highest in areas where there is a high groundwater table, where there are relatively soft and recent alluvial deposits, and where creekbanks are relatively high. Because the project site is within areas of moderate to very high liquefaction susceptibility, is underlain with alluvial deposits, and overlies a shallow groundwater table, there is potential for lateral spreading to occur at the project site.

MINERAL RESOURCES

Under the State of California's Surface Mining and Reclamation Act of 1975 (SMARA), the State Mining and Geology Board may designate certain mineral deposits as being regionally significant to satisfy future needs. The board's decision to designate an area is based on a classification report prepared by the California Division of Mines and

Geology (now the CGS) and on input from agencies and the public. The project site is included in a mineral land classification report for the South San Francisco Bay region (CGS 1987).

In compliance with SMARA, the mineral resource zone (MRZ) classification system, shown in Table 3.5-2, was established to denote both the location and significance of key extractive resources.

Table 3.5-2 Mineral Land Classification

Classification	Description
MRZ-1	Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence
MRZ-2	Areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood exists for their presence
MRZ-3	Areas containing mineral deposits, the significance of which cannot be evaluated from available data
MRZ-4	Areas where available information is inadequate for assignment to any other MRZ

Note: MRZ = mineral resource zone.

Source: State Mining and Geology Board n.d.

The Solar Salt Facility work areas have not been classified by CGS for mineral resources (CGS 1987: Plate 2.17). In the *City of Newark General Plan*, the land use designation for the Solar Salt Facility is Salt Harvesting, Refining and Production. As described in greater detail in Chapter 2, "Project Description," Cargill uses a series of evaporator ponds (also referred to as "salt ponds" or "evaporators") adjacent to the Bay for salt production. Salt products from Cargill's operations are used for a variety of purposes, including the California dairy industry, pharmaceutical companies, and retail consumption. No mining operations occur at the facility.

The portion of the MSS brine transport pipeline north of Alameda Creek is designated by CGS as MRZ-1 (CGS 1987: Plates 2.10, 2.17, and 2.23). South of Alameda Creek, the pipeline crosses areas designated by CGS as MRZ-2 and MRZ-3.

As shown in the *City of Fremont General Plan*, this segment traverses an area that has been designated as aggregate production Sector L (City of Fremont 2011). Sector L is an alluvial deposit consisting of five parcels on the southern side of Alameda Creek (located between Interstate 880, Alameda Creek, the Coyote Hills, and Jarvis Avenue in the northwestern part of Fremont) (CGS 1987). Since the mineral land classification report was prepared, all but one of the parcels has been built out, which means that any remaining aggregate resources are no longer available for mining. The remaining undeveloped MRZ-2 parcel is adjacent to the southern side of Alameda Creek, between Ardenwood Boulevard and the Coyote Hills Regional Park boundary. However, there are no known plans to conduct mining activities on this parcel. The City of Fremont indicates that no future mining operations are anticipated in any location, including the remaining undeveloped parcel that is zoned MRZ-2 next to the Coyote Hills Regional Park (adjacent to the MSS brine transport pipeline alignment), because of the environmental issues associated with mining activities (such as air quality, water quality, noise, and loss of habitat) and the high cost of subsequent mine reclamation (City of Fremont 2011).

The Dumbarton Quarry, west of Thornton Avenue in the City of Fremont, is also classified by CGS as MRZ-2. However, this former gravel quarry closed in 2007 and is not expected to reopen (City of Fremont 2011). The Dumbarton Quarry is approximately 0.3 mile west of the MSS brine transport pipeline alignment.

PALEONTOLOGICAL RESOURCES

As described above, the project site is underlain with Holocene-age alluvium and mud deposits (USGS and CGS 2006). Holocene-age deposits include those formed within the last 11,700 years and are therefore considered to have low paleontological sensitivity.

3.5.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The examination of geology, soils, mineral resources, and paleontological resources is based on information obtained from reviews of:

- the project description;
- available information on the geotechnical conditions in the San Francisco Bay Area, including maps and other publications from USGS, CGS, and NRCS; and
- applicable elements from the general plans for Alameda County and the Cities of Hayward, Union City, Fremont, and Newark.

THRESHOLDS OF SIGNIFICANCE

An impact related to geology, soils, mineral resources, or paleontological resources would be significant if implementation of the proposed project would:

- directly or indirectly expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic shaking, seismic-related ground failure, soil liquefaction, or landslides;
- result in substantial soil erosion or the loss of topsoil;
- locate project facilities 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;
- locate project facilities on expansive soil, creating substantial direct or indirect risks to life or property;
- 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;
- directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;
- result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state; or
- 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.

ISSUES NOT DISCUSSED FURTHER

Destruction of Paleontological Resources or Unique Geologic Features

The proposed project would require earthmoving activities for installation of the off-site pipeline at a typical depth of 5–10 feet below the ground surface, with horizontal directional drilling sections reaching up to 40 feet below grade. Earthmoving activities would also be needed for the installation of the on-site pump stations and the Pond 13 weir, and for road crossings of the on-site pipelines. The maximum depth of piles driven for the pump stations is expected to reach 35 feet below the ground surface. The new facilities would be constructed in areas composed of Holocene-age artificial fill near the surface, underlain by either Holocene-age alluvium or mud deposits.

Any unique paleontological resources that may have originally been present in the artificial fill would have been destroyed during the original excavation, transport, grading, and compacting processes. Holocene-age deposits include those formed within the last 11,700 years and are considered to have low paleontological sensitivity.

Therefore, implementing the proposed project would have no impact on unique paleontological resources or unique geologic features. This topic is not discussed further.

Soils Incapable of Supporting Septic Tanks or Alternative Wastewater Disposal Systems

The project consists of the installation and operation of pipelines and pumping facilities. No septic tanks or wastewater disposal systems are proposed under the project. Therefore, the proposed project would have no impact related to the siting of wastewater disposal systems. This topic is not discussed further.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.5-1: Potential to Expose People or Structures to Substantial Adverse Impacts from Seismic or Geologic Hazards

The project would not be constructed in an area that is susceptible to surface fault rupture and landslides. Additionally, the project would comply with the requirements of the CBC, which include preparing and incorporating the recommendations of a site-specific geotechnical and engineering report. Compliance with the CBC would minimize hazards from seismic ground shaking and seismic-related ground failure. Therefore, the impact related to the potential to expose people or structures to substantial adverse impacts from seismic or geologic hazards would be **less than significant**.

The potential for the proposed project to expose people or structures to substantial adverse impacts from seismic or geologic hazards, including rupture of a known earthquake fault, strong seismic shaking, seismic-related ground failure, soil liquefaction, and landslides, is described in the following sections.

Surface Fault Rupture

The project site, including the Solar Salt Facility work areas and MSS brine transport pipeline alignment, is not in or adjacent to a fault zoned under the Alquist-Priolo Act or any other known fault. The nearest fault zoned under the Alquist-Priolo Act is the Hayward Fault, approximately 2.3 miles east of the project site (at the closest point on the MSS brine transport pipeline alignment) (CGS 2015b). Thus, implementing the proposed project would result in no impact from surface fault rupture.

Strong Seismic Shaking

As discussed in Section 3.5.2, "Environmental Setting," the project site, including the Solar Salt Facility work areas and MSS brine transport pipeline alignment, would be expected to experience strong seismic ground shaking in the event of an earthquake.

All project-related facilities would be designed and constructed in accordance with standard engineering practices and local building codes for unincorporated Alameda County and the Cities of Hayward, Union City, Fremont, and Newark. These jurisdictions have adopted the CBC. Appendix J of the CBC regulates grading activities, including drainage and erosion control and construction, on expansive soils, areas subject to liquefaction, and other unstable soils. Appendix J of the CBC requires preparation of a site-specific geotechnical and engineering report that contains recommendations to reduce seismic, geologic, and soils hazards.

Cargill would comply with the CBC and local city building code requirements in preparing a site-specific geotechnical report; would incorporate the design and engineering recommendations contained in the CBC and local codes; and would coordinate with Alameda County and the Cities of Hayward, Union City, Fremont, and Newark regarding grading and site plan review and review of geotechnical hazards. Therefore, the proposed project would result in a less-than-significant impact from strong seismic ground shaking.

Seismic-Related Ground Failure, Including Liquefaction

As described in Section 3.5.2, "Environmental Setting," the Solar Salt Facility is located in an area moderately susceptible to liquefaction. Most of the MSS brine transport pipeline alignment also is located in areas moderately susceptible to liquefaction, with some localized areas having very high liquefaction susceptibility. However, a site-

specific liquefaction analysis by a licensed engineer would be required by the CBC before improvement permits would be issued.

As noted above, Alameda County and the Cities of Hayward, Union City, Fremont, and Newark have adopted Appendix J of the CBC, which regulates grading activities, including drainage and erosion control and construction, on expansive soils, areas subject to liquefaction, and other unstable soils. Appendix J of the CBC requires preparation of a site-specific geotechnical and engineering report that contains recommendations to reduce seismic, geologic, and soils hazards. Based on the findings of the geotechnical report, the project design would incorporate appropriate standard engineering practices and specifications to minimize risk of structural failure in a seismic event, and would reduce secondary effects that may occur as a result. Because Cargill would comply with CBC and local city building code requirements in preparing a site-specific geotechnical report; would incorporate the design and engineering recommendations contained in the CBC and local codes; and would coordinate with Alameda County and the Cities of Hayward, Union City, Fremont, and Newark regarding grading and site plan review and review of geotechnical hazards, implementing the proposed project would result in a less-than-significant impact related to seismic-related ground failure, including liquefaction.

Landslides

As described in Section 3.5.2, "Environmental Setting," there are no steep slopes on the project site or in the project vicinity where landslides could occur. Therefore, there would be no impact from landslide hazards.

Summary

Based on the above discussion, the proposed project would have no impact related to surface fault rupture and landslides. Because the proposed project would comply with the requirements of the CBC, which include preparing a site-specific geotechnical and engineering report and incorporating the appropriate standard engineering practices and specifications, hazards related to seismic ground shaking and seismic-related ground failure, including liquefaction, would be minimized. Therefore, the potential to expose people or structures to substantial adverse impacts from seismic or geologic hazards would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.5-2: Potential to Result in Substantial Soil Erosion or the Loss of Topsoil

The project would require earthmoving activities that could result in soil erosion. Because Cargill would be required to implement a storm water pollution prevention plan (SWPPP) and implement best management practices (BMPs) designed to control stormwater runoff and reduce erosion, substantial soil erosion would not result during project construction. BMPs consistent with ongoing Cargill maintenance practices and existing permit conditions would be applied to all operation-related activities involving earth moving. Therefore, the impact related to substantial soil erosion or the loss of topsoil would be **less than significant**.

As described in Section 3.5.2, "Environmental Setting," soils on the project site, including at the Solar Salt Facility work areas and along the MSS brine transport pipeline alignment, have no hazard or a slight hazard of erosion. The proposed project would require earthmoving activities (including excavating, grading, and trenching, as well as installing pipelines, air release valves, and the foundations for the on-site pump stations) at the Solar Salt Facility work areas and throughout the approximately 15.8-mile-long MSS brine transport pipeline alignment. Earthmoving activities could expose and mobilize loose soils, exposing construction areas to soil and wind erosion. Subsequent soil transport during storm events could result in sedimentation both within and downstream of the project site.

Construction activities for the proposed project would require up to 66.9 acres of ground disturbance, including 3.4 acres of ground disturbance for improvements at the Solar Salt Facility, 54.4 acres of ground disturbance for open-cut trenching and trenchless crossings along the MSS brine transport pipeline alignment, and up to 9.1 acres of ground disturbance for activities in laydown and staging areas. Because implementing the proposed project would disturb more than 1 acre of land, Cargill would be required under the National Pollutant Discharge Elimination System

(NPDES) Program to prepare a SWPPP and implement associated BMPs that are specifically designed to reduce construction-related erosion. The SWPPP and list of BMPs would be submitted to the San Francisco Bay Regional Water Quality Control Board (RWQCB) in compliance with the statewide *NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit) (Order 2009-009-DWQ as amended by Order 2012-0006-DWQ). BMPs that could be implemented to reduce erosion may include using silt fences, staked straw bales/wattles, geofabric, trench plugs, terraces, water bars, and soil stabilizers; applying mulches; and revegetating disturbed areas. Construction techniques that could be implemented to reduce the potential for stormwater runoff include minimizing site disturbance, controlling water flow over the construction site, stabilizing bare soil, and ensuring proper site cleanup.

Because Cargill would prepare and implement a SWPPP and implement BMPs designed to control stormwater runoff and reduce erosion (as required by the San Francisco Bay RWQCB), substantial soil erosion would not result during project construction at the Solar Salt Facility or along the 15.8-mile MSS brine transport pipeline alignment. Similar BMPs consistent with ongoing Cargill maintenance practices and existing permit conditions would be applied to all operations-related activities involving earth moving. Therefore, the impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.5-3: Potential to Result in Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse

The project would not be constructed in an area that is susceptible to landslides. Additionally, the project would comply with the requirements of the CBC, which include preparing and incorporating the recommendations of a site-specific geotechnical and engineering report. Compliance with the CBC would minimize hazards related to lateral spreading, subsidence, liquefaction, and collapse. Therefore, the impact related to the potential for landslide, lateral spreading, subsidence, liquefaction, or collapse would be **less than significant**.

As discussed in Section 3.5.2, "Environmental Setting," the project site consists of a thin layer of compacted artificial fill underlain by native Holocene-age alluvium and mud deposits. Excavation and trenching for pipe installation would typically occur at a depth of 5–10 feet below the ground surface; horizontal directional drilling (HDD) sections would reach up to 40 feet below grade; and piles driven for the MSS brine pump stations, dissolution water pump station, and Plummer Creek Pump Station are assumed to reach a maximum depth of 35 feet below the ground surface. Therefore, project-related excavation would occur within the native geologic units and soils. As shown in Table 3.5-1, many of the soils underlying the project site have a low soil-bearing strength, are frequently water saturated, have a high percentage of clay and organic materials, and are unstable.

As described for Impact 3.5-1, above, Alameda County and the Cities of Hayward, Union City, Fremont, and Newark have adopted Appendix J of the CBC. The CBC regulates grading activities, including drainage and erosion control and construction on expansive soils, areas subject to liquefaction, and other unstable soils. Appendix J of the CBC requires preparation of a site-specific geotechnical and engineering report that contains recommendations to reduce seismic, geologic, and soils hazards. Based on the findings of the geotechnical report, the project design would incorporate appropriate standard engineering practices and specifications to minimize risk of structural failure from landslides, lateral spreading, subsidence, liquefaction, or collapse. Because Cargill would comply with CBC and local building code requirements in preparing a site-specific geotechnical report; incorporate the appropriate standard engineering practices and specifications; and coordinate with Alameda County and the Cities of Hayward, Union City, Fremont, and Newark regarding grading and site plan review and review of geotechnical hazards, impacts related to unstable geologic units and soils would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.5-4: Potential to Locate Project Facilities on Expansive Soil, Creating Substantial Direct or Indirect Risks to Life or Property

The project would comply with the requirements of the CBC, which include preparing and incorporating the recommendations of a site-specific geotechnical and engineering report. Compliance with the CBC would minimize hazards related to expansive soils. Therefore, the potential to create substantial direct or indirect risks to life or property from locating project facilities on expansive soils would be **less than significant**.

As discussed in Section 3.5.2, "Environmental Setting," many of the native soils underlying the project site have a high shrink-swell potential and would be expected to undergo volume changes with increasing or decreasing soil moisture content. For the portions of the MSS brine transport pipeline alignment that are within the right-of-way of existing paved roads, the near-surface soils are expected to consist of compacted artificial fill. However, excavation and trenching for pipe installation would typically occur at a depth of 5–10 feet below the ground surface; HDD sections would reach up to 40 feet below grade; and piles driven for the MSS brine pump stations, dissolution water pump station, and Plummer Creek Pump Station at the Solar Salt Facility would reach a maximum depth of 35 feet below the ground surface. Therefore, project-related excavation would occur in native soils below the artificial fill.

As described previously, Alameda County and the Cities of Hayward, Union City, Fremont, and Newark have adopted Appendix J of the CBC, which regulates grading activities, including drainage and erosion control, as well as construction on expansive soils, areas subject to liquefaction, and other unstable soils. Appendix J of the CBC requires preparation of a site-specific geotechnical and engineering report that contains recommendations to reduce seismic, geologic, and soils hazards. Based on the findings of the geotechnical report, the project design would incorporate appropriate standard engineering practices and specifications to minimize risk of structural failure from expansive soils. Because Cargill would prepare a site-specific geotechnical report; would incorporate appropriate standard engineering practices and specifications recommended in the geotechnical report; and would coordinate with Alameda County and the Cities of Hayward, Union City, Fremont, and Newark regarding grading and site plan review and review of geotechnical hazards, impacts from the proposed project related to expansive soils would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.5-5: Potential to Result in the Loss of Availability of Regionally Significant Mineral Resources or a Locally Important Mineral Resource Recovery Site

The location of Cargill's Solar Salt Facility is identified as an area of salt production and is not used for mining operations. Implementing the proposed project would enhance MSS processing to assist Cargill with its ongoing salt production operations and therefore would result in a benefit to the harvesting of this resource. Although the proposed MSS brine transport pipeline would pass through an area that contains regionally significant mineral deposits, there are no active mining operations in this area. In addition, the project would not prevent the recovery of aggregate resources from this area in the future. Therefore, the proposed project would not result in the loss of availability of regionally significant mineral resources or a locally important mineral resource recovery site, and this impact would be **less than significant**.

Solar Salt Facility Improvements

As described in Section 3.5.2, "Environmental Setting," the location of the Solar Salt Facility is identified as an area of salt production in the *City of Newark General Plan*. The proposed improvements at the Solar Salt Facility would enhance MSS processing to assist Cargill with its ongoing salt production operations and therefore would result in a benefit to the harvesting of this resource. The Solar Salt Facility is not used for mining operations. Thus, the proposed improvements at the Solar Salt Facility would not result in the loss of availability of regionally significant mineral resources or a locally important mineral resource recovery site.

MSS Brine Transport Pipeline

As described in Section 3.5.2, "Environmental Setting," the MSS brine transport pipeline alignment crosses Sector L, an area designated as containing regionally significant mineral deposits (MRZ-2). However, all but one of the parcels in Sector L have been developed with urban land uses. The remaining undeveloped parcel is immediately east of the Coyote Hills Regional Park, on the western side of the proposed MSS brine transport pipeline alignment. The City of Fremont indicates that no mining operations are anticipated in this area (City of Fremont 2011). Furthermore, the proposed pipeline would be installed within the existing right-of-way of Ardenwood Boulevard; therefore, even if mining operations were to commence on the remaining MRZ-2 parcel in Section L in the future, the proposed MSS brine transport pipeline would not interfere with any mining operator's ability to recover aggregate resources.

For the reasons discussed above, implementing the proposed project would not result in the loss of availability of regionally significant mineral resources or a locally important mineral resource recovery site, and this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

3.6 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

This section presents a summary of regulations applicable to greenhouse gas (GHG) emissions, a summary of climate change science and GHG sources in California, quantification of project-generated GHG emissions and discussion about their contribution to global climate change, and analysis of the project's resiliency to climate change–related risks.

Comments received during the notice of preparation process related to GHG emissions and climate change included concerns about the project's vulnerability to sea level rise and other climate change impacts. Based on the decision in *California Building Industry Association v. Bay Area Air Quality Management District* (2015) Cal.4th, CEQA does not require that environmental review evaluate the impacts of the environment on a project, unless the project would exacerbate an existing adverse environmental condition. As discussed in Section 3.6.3, the project would not have a cumulatively considerable contribution to climate change, and would therefore not exacerbate anthropogenic climate change.

3.6.1 Regulatory Setting

FEDERAL

Greenhouse Gas Emission Standards

In *Massachusetts et al. v. Environmental Protection Agency et al.,* 549 US 497 (2007), the Supreme Court of the United States ruled that carbon dioxide (CO_2) is an air pollutant as defined under the federal Clean Air Act (CAA) and that the US Environmental Protection Agency (EPA) has the authority to regulate GHG emissions. In 2010, EPA started to address GHG emissions from stationary sources through its New Source Review permitting program, including operating permits for "major sources" issued under Title V of the CAA.

In October 2012, EPA and the National Highway Traffic Safety Administration (NHTSA), on behalf of the US Department of Transportation, issued final rules to further reduce GHG emissions and improve corporate average fuel economy (CAFE) standards for light-duty vehicles for model years 2017 and beyond (77 *Federal Register* 62624). These rules would increase fuel economy to the equivalent of 54.5 miles per gallon, limiting vehicle emissions to 163 grams of CO_2 per mile for the fleet of cars and light-duty trucks by model year 2025 (77 *Federal Register* 62630).

On April 2, 2018, however, the EPA administrator announced a final determination that the current standards should be revised. On that date, the US Department of Transportation and EPA proposed the Safer Affordable Fuel-Efficient Vehicles Rule (SAFE Rule), which would amend existing CAFE standards for passenger cars and light-duty trucks by increasing the stringency of the standards by 1.5 percent per year for model years 2021–2026. With a change in federal administrations in early 2021, the SAFE Rule is being reconsidered. On April 26, 2021, as directed in Executive Order (EO) 13990, "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis," EPA announced plans to reconsider Part One of the SAFE Rule. On December 21, 2021, NHTSA published its CAFE Preemption Rule, which finalized the repeal of the SAFE Rule Part 1, allowing states, like California, to continue to set its own fuel economy standards

SAFE Rule Part Two was finalized on March 31, 2020, and went into effect on June 29, 2020. Part Two of the SAFE Rule requires that CAFE standards increase in stringency by 1.5 percent per year above model year 2020 levels for model years 2021–2026. These standards are less stringent than the previous CAFE standards, which required an increase in stringency of 5 percent per year for model years 2021–2026.

STATE

Statewide GHG Emission Targets and Climate Change Scoping Plan

Reducing GHG emissions in California has been the focus of the state government for approximately two decades. GHG emission targets established by the state legislature include reducing statewide GHG emissions to 1990 levels by 2020 (Assembly Bill [AB] 32 of 2006) and further reducing them to 40 percent below 1990 levels by 2030 (Senate Bill [SB] 32 of 2016). EO S-3-05 calls for statewide GHG emissions to be reduced to 80 percent below 1990 levels by 2050. EO B-55-18 calls for California to achieve carbon neutrality by 2045 and achieve and maintain net negative GHG emissions thereafter. These targets are in line with the scientifically established levels needed in the United States to limit the rise in global temperature to no more than 2 degrees Celsius, the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

California's 2017 Climate Change Scoping Plan (2017 Scoping Plan), prepared by the California Air Resources Board (CARB), outlines the main strategies California will implement to achieve the legislated GHG emission target for 2030 and "substantially advance toward our 2050 climate goals" (CARB 2017). It identifies the reductions needed by each GHG emission sector (e.g., transportation, industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste). CARB and other state agencies also released the January 2019 draft *California 2030 Natural and Working Lands Climate Change Implementation Plan* consistent with the carbon neutrality goal of EO B-55-18 (CalEPA et al. 2019). On May 10, 2022, CARB released the Draft 2022 Scoping Plan Update, which sets the framework for the state to achieve carbon neutrality as set by EO B-55-18 and an 80-percent reduction in 1990 baseline GHG emissions by 2050. At the time this Draft EIR was prepared, CARB had not adopted the final version of the Draft 2022 Scoping Plan Update.

The state has also passed more detailed legislation addressing GHG emissions associated with transportation, electricity generation, and energy consumption, as summarized below.

Transportation-Related Standards and Regulations

As part of its Advanced Clean Cars program, CARB established GHG emission standards and fuel efficiency standards for fossil fuel–powered on-road vehicles more stringent than EPA's standards. In addition, the program's zero-emission vehicle (ZEV) regulation requires battery, fuel cell, and plug-in hybrid electric vehicles (EVs) to account for up to 15 percent of California's new vehicle sales by 2025 (CARB 2018a). When the rules are fully implemented by 2025, GHG emissions from the statewide fleet of new cars and light-duty trucks will be reduced by 34 percent and cars will emit 75 percent less smog-forming pollution than the statewide fleet in 2016 (CARB 2016).

EO B-48-18, signed into law in January 2018, requires all state entities to work with the private sector to have at least 5 million ZEVs on the road by 2030, as well as 200 hydrogen-fueling stations and 250,000 EV-charging stations installed by 2025. It specifies that 10,000 of these charging stations must be direct-current fast chargers.

CARB adopted the Low Carbon Fuel Standard (LCFS) in 2007 to reduce the carbon intensity (CI) of California's transportation fuels. Low-CI fuels emit less CO_2 than other fossil fuel–based fuels, such as gasoline and fossil diesel. The LCFS applies to fuels used by on-road motor vehicles and off-road vehicles, including construction equipment (Wade, pers. comm., 2017).

In addition to regulations that address tailpipe emissions and transportation fuels, the state legislature has passed regulations to address the amount of driving by on-road vehicles. Since passage of SB 375 in 2008, CARB requires metropolitan planning organizations to develop and adopt sustainable community strategies as a component of the federally prepared regional transportation plans to show reductions in GHG emissions from passenger cars and light-duty trucks in their respective regions for 2035. These plans link land use and housing allocation to transportation planning and related mobile-source emissions. The Metropolitan Transportation Commission and Association of Bay Area Governments (MTC/ABAG) jointly serve as the metropolitan planning organization for the San Francisco Bay Area's nine counties (i.e., Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties). The project is located in Alameda County. Under the most recently adopted SB 375 reduction targets, MTC/ABAG was tasked by CARB to achieve a 10-percent per capita reduction in automobile emissions

compared to 2012 emissions by 2020 and a 19-percent per capita reduction by 2035. In 2021, MTC/ABAG released *Plan Bay Area 2050* to set the framework for how the San Francisco Bay Area would achieve its reduction targets. CARB is currently reviewing the technical methodology to confirm that *Plan Bay Area 2050* would meet the per capita reduction targets.

Legislation Associated with Electricity Generation

The state has passed legislation requiring the increasing use of renewables to produce electricity for consumers. California's Renewable Portfolio Standard (RPS) Program was established in 2002 (SB 1078) with the initial requirement to generate 20 percent of their electricity from renewables by 2017, 33 percent by 2020 (SB X1-2 of 2011), 52 percent by 2027 (SB 100 of 2018), 60 percent by 2030 (also SB 100 of 2018), and 100 percent by 2045 (also SB 100 of 2018).

REGIONAL

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) is the primary agency responsible for addressing air quality concerns in the San Francisco Bay Area, including Alameda County. Its role is discussed further in Section 3.2, "Air Quality." BAAQMD also recommends methods for analyzing project-related GHG emissions in CEQA analyses and recommends multiple GHG reduction measures for land use development projects. BAAQMD recently developed and finalized its *Justification Report: CEQA Thresholds for Evaluating the Significance from Land Use Project and Plans* (Justification Report) (BAAQMD 2022). The Justification Report is intended to be used to uniformly evaluate the significance of operation-related emissions from land use development projects; however, the project is primarily a construction project with few operation-related emissions associated with a marginal increase in GHG emissions from increased electricity use from operation of new pumps and some new vehicle trips to support maintenance activities.

LOCAL

Alameda County General Plan

The County's General Plan Conservation Element contains the following goal and objective related to climate change and energy (Alameda County 1994):

GOAL: To insure measures which conserve energy.

- **Objective 4.** To investigate and implement measures to conserve energy.

City of Hayward General Plan

The *Hayward 2040 General Plan* contains the following goals and policies related to climate change and energy (City of Hayward 2014a):

GOAL LU-1. Promote local growth patterns and sustainable development practices that improve quality of life, protect open space and natural resources, and reduce resource consumption, traffic congestion, and related greenhouse gas emissions.

- **Policy LU-1.8. Green Building and Landscaping Requirements.** The City shall maintain and implement green building and landscaping requirements for private- and public-sector development to:
  - Reduce the use of energy, water, and natural resources.
  - Minimize the long-term maintenance and utility expenses of infrastructure, buildings, and properties.
  - Create healthy indoor environments to promote the health and productivity of residents, workers, and visitors.
  - Encourage the use of durable, sustainably-sourced, and/or recycled building materials.
  - Reduce landfill waste by promoting practices that reduce, reuse, and recycle solid waste.

GOAL NR-2. Improve the health and sustainability of the community through continued local efforts to improve regional air quality, reduce greenhouse gas emissions, and reduce community exposure to health risks associated with toxic air contaminants and fine particulate matter.

- Policy NR-2.4. Community Greenhouse Gas Reduction. The City shall work with the community to reduce community-based GHG emissions by 20 percent below 2005 baseline levels by 2020, and strive to reduce community emissions by 61.7 percent and 82.5 percent by 2040 and 2050, respectively.
- Policy NR-2.7. Coordination with Bay Area Air Quality Management District. The City shall coordinate with the Bay Area Air Quality Management District to ensure projects incorporate feasible mitigation measures to reduce greenhouse gas emissions and air pollution if not already provided for through project design.
- Policy NR-2.12. Preference for Reduced-Emission Equipment. The City shall give preference to contractors using reduced-emission equipment for City construction projects and contracts for services (e.g., garbage collection), as well as businesses that practice sustainable operations.

Union City General Plan

The *Union City General Plan* contains the following goal and policy related to energy in the Resource Conservation Section (Union City 2019):

GOAL RC-6. The City shall continue to promote programs and initiatives that support and maximize energy conservation and the use of renewable energy in Union City.

- Policy RC-6.1. Reduced Energy Consumption. The City shall support measures to reduce energy consumption and increase energy efficiency in residential, commercial, industrial, and public buildings.

City of Fremont General Plan

The Conservation Element of the *City of Fremont General Plan* (City of Fremont 2011) addresses climate change and may apply to the project:

GOAL 7-8: Greenhouse Gas Emissions. Greenhouse gas emissions reduced by 25% from 2005 levels by 2020. This goal is aspirational and not meant to supersede Assembly Bill 32 (AB 32) targets as a standard for project review.

- Policy 7-8.1. Climate Action Plan. Maintain a Climate Action Plan (CAP) that outlines the specific strategies the City will implement to achieve its 2020 reduction goals.

City of Newark General Plan

The following goal and policy from the Health and Wellness Element in the *Newark General Plan* are relevant to the analysis of GHG and climate change effects (City of Newark 2013):

GOAL CS-5. Reduce greenhouse gas emissions in Newark and make reduction of the City's carbon output a high priority.

- Policy CS-5.3. Alternative Fuel Vehicles. Encourage the use of alternative fuel and electric vehicles and development of the necessary infrastructure for such vehicles to be viable in Newark.
  - Action CS-5.F. Adaptation Planning. Collaborate with surrounding cities, the Federal Emergency Management Agency (FEMA), and other appropriate regional, state, and federal agencies to conduct a vulnerability assessment and strategic plan for long-term climate change adaptation.

3.6.2 Environmental Setting

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected toward space. The absorbed radiation is then emitted from the earth as low-frequency infrared radiation. Most solar radiation passes through GHGs; however, infrared radiation

is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are found to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. The Sixth Assessment Report contains IPCC's strongest warnings to date on the causes and impacts of climate change. Importantly, the report notes that, in terms of solutions, "We need transformational change operating on processes and behaviors at all levels: individual, communities, business, institutions, and governments. We must redefine our way of life and consumption."

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas most pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the lifetime of any GHG molecule depends on multiple variables and cannot be determined with any certainty, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 55 percent are estimated to be sequestered through ocean and land uptake every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remain stored in the atmosphere (IPCC 2013).

The quantity of GHGs in the atmosphere responsible for climate change is not precisely known, but it is considered to be enormous. No single project alone would measurably contribute to an incremental change in the global average temperature or to global or local climates or microclimates. From the standpoint of CEQA, GHG impacts relative to global climate change are inherently cumulative.

STATEWIDE GHG EMISSIONS

As discussed previously, GHG emissions are attributable in large part to human activities. The total GHG inventory for California in 2019 was 418.2 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) (CARB 2021). This is less than the 2020 target of 431 $MMTCO_2e$. Table 3.6-1 summarizes the statewide GHG inventory for California by percentage.

Table 3.6-1 Statewide GHG Emissions by Economic Sector

Sector	$MMTCO_2e$	Percent
Transportation	171	41%
Industrial	100	24%
Electricity (in state)	38	9%
Residential	33	8%
Agriculture and Forestry	29	7%
Commercial	25	6%
Electricity (Imports)	21	5%
Total	**418**	**100%**

Note: $MMTCO_2e$ = million metric tons of carbon dioxide equivalent.

Source: CARB 2021.

As shown in Table 3.6-1, transportation, industry, and in-state electricity generation are the largest GHG emission sectors.

Emissions of CO_2 are byproducts of fossil fuel combustion. Methane, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices, landfills, and forest fires. Nitrous oxide is also largely attributable to

agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution (CO_2 dissolving into the water) and are two of the most common processes for removing CO_2 from the atmosphere.

Alameda County Greenhouse Gas Inventory

Alameda County prepared an inventory for county-wide emissions in 2005. Table 3.6-2 summarizes the county's 2005 baseline emissions by sector.

Table 3.6-2 Alameda County GHG Emissions Baseline by Sector

2005 Community Emissions Sector	2005 $MTCO_2e$	Percent
Transportation	7,842,536	57%
Commercial/Industrial	2,476,590	18%
Residential	1,926,237	14%
Direct Access	963,118	7%
Waste	500,353	4%
Total	**13,758,835**	**100%**

Note: $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Alameda County 2009.

City of Hayward Greenhouse Gas Inventory

The City of Hayward performed a GHG emissions inventory in 2014 for the baseline year of 2010. Table 3.6-3 summarizes emissions in the city by sector in 2010.

Table 3.6-3 City of Hayward GHG Emissions Baseline by Sector

2010 Community Emissions Sector	2010 $MTCO_2e$	Percent
Transportation	700,310	63%
Commercial/Industrial	235,693	21%
Residential	154,423	14%
Waste	24,048	2%
Water/Wastewater	4,087	<1%
Total	**1,118,560**	**100%**

Note: $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: City of Hayward 2014b.

Union City Greenhouse Gas Inventory

Union City conducted a GHG inventory for the baseline year 2005. Table 3.6-4 summarizes the city's 2005 GHG emissions by sector.

Table 3.6-4 Union City GHG Emissions Baseline by Sector

2005 Community Emissions Sector	2005 MTCO2e	Percent
Transportation	126,984	37%
Commercial/Industrial	113,454	33%
Residential	70,239	20%
Waste	25,324	7%
Water/Wastewater	6,296	2%
Total	**342,297**	**100%**

Note: $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Union City 2010.

City of Fremont Greenhouse Gas Inventory

In 2012, the City of Fremont prepared its Climate Action Plan (CAP), which contains a GHG inventory for 2005. Table 3.6-5 summarizes the community-wide emissions for the city in 2005.

Table 3.6-5 City of Fremont GHG Emissions Baseline by Sector

2005 Community Emissions Sector	2005 $MTCO_2e$	Percent
Transportation	996,000	60%
Commercial/Industrial	365,200	22%
Residential	249,000	15%
Waste	49,800	3%
Total	**1,660,000**	**100%**

Note: $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: City of Fremont 2012.

City of Newark Greenhouse Gas Inventory

In 2010, the city prepared baseline GHG emissions inventories for the year 2005 for both community activities and the city's municipal operations (City of Newark 2010). In total, the city's emissions in 2005 were approximately 433,860 $MTCO_2e$. Per capita, in 2005, Newark emissions are estimated at 10.5 $MTCO_2e$, which is slightly lower than the statewide average. Table 3.6-6 summarizes the city's 2005 baseline emissions as well as projected emissions using city-specific growth rates.

Table 3.6-6 City of Newark GHG Emissions Baseline and Forecast by Sector

2005 Community Emissions Growth Forecast by Sector	2005 $MTCO_2e$	2020 $MTCO_2e$	Annual Growth Rate	Percent Change from 2005 to 2020
Residential	47,313	52,215	0.657%	10.4%
Commercial/Industrial	175,096	200,310	0.901%	14.4%
Transportation	192,841	241,399	1.509%	25.2%
Waste	18,607	20,535	0.659%	10.4%
Total	**433,857**	**514,549**	--	**18.6%**

Note: $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: City of Newark 2010.

EFFECTS OF CLIMATE CHANGE ON THE ENVIRONMENT

The global average temperature is expected to increase by 3 to 7°F by the end of the century, depending on future GHG emission scenarios (IPCC 2007). According to California's Fourth Climate Change Assessment, depending on future GHG emissions scenarios, average annual maximum daily temperatures in California are projected to increase between 3.6 and 5.8°F by 2050 and by 5.6 to 8.8°F by 2100 (OPR, CEC, and CNRA 2018).

Other environmental resources could be indirectly affected by the accumulation of GHG emissions and resulting rise in global average temperature. In recent years, California has been marked by extreme weather and its effects. Climate model projections for California demonstrate that impacts will vary throughout the state and show a tendency for the northern part of the state to become wetter while the southern portion of California to become drier (Pierce et al. 2018). According to California Natural Resources Agency's (CNRA) report, *Safeguarding California Plan: 2018 Update* (CNRA 2018), California experienced the driest four-year statewide precipitation on record from 2012 through 2015; the warmest years on average in 2014, 2015, and 2016; and the smallest and second smallest Sierra snowpack on record in 2015 and 2014 (CNRA 2018). Climate model projections included in California's Fourth Climate Change Assessment, demonstrate that seasonal summer dryness in California may be prolonged due to earlier spring soil drying and would last longer into the fall and winter rainy season. Increases in temperature are also predicted to result in changes to California's snowpack. Based on climate model projections, the mean snow water equivalent (SWE), a common measurement which indicates the amount of water contained within snowpack, in California is

anticipated to decline to two-thirds of its historic average by 2050 and between less than half and less than one-third of historic average by 2100, depending on future emissions scenarios (OPR, CEC, and CNRA 2018a).

Climate model projections demonstrate that California will experience variation in precipitation patterns as well. The Northern Sierra Nevada range experienced its wettest year on record in 2016 (CNRA 2018). As temperatures increase, the increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the snowpack of the Sierra Nevada and Cascade mountains until spring will flow into the Central Valley concurrently with winter rainstorm events. This scenario will place more pressure on California's levee/flood control system (CNRA 2018). As the climate continues to warm, extreme precipitation events in California will increase and could, subsequently, increase the probability of 'mega-flood" events (Polade et al. 2017).

Climate change is also projected to result in tertiary impacts on energy infrastructure throughout California. Changes in temperature, precipitation patterns, extreme weather events, and sea-level rise have the potential to affect and decrease the efficiency of thermal power plants and substations, decrease the capacity of transmission lines, disrupt electrical demand, and threaten energy infrastructure with the increased risk of flooding (CNRA 2018).

According to California's Fourth Climate Change Assessment, climate change will create impacts on the state's transportation network that will have 'ripple effects' including direct and indirect impacts on inter-dependent infrastructure networks as well as negative impacts on the economy. Without appropriate adaptations strategies for roadway materials (i.e., asphalt and pavement), researchers estimate that the median total cost to California for 2040-2070 will be between $1 billion and $1.25 billion (OPR, CEC, and CNRA 2018a). The California Department of Transportation (Caltrans) owns and operates more than 51,000 miles along 265 highways, as well as three of the busiest passenger rail lines in the nation. Sea level rise, storm surge, and coastal erosion are imminent threats to highways, roads, bridge supports, airports, transit systems and rail lines near sea level and seaports. Shifting precipitation patterns, increased temperatures, wildfires, and increased frequency in extreme weather events also threaten transportation systems across the state. Temperature extremes and increased precipitation can increase the risk of road and railroad track failure, decreased transportation safety, and increased maintenance costs (CNRA 2018). Modeling for flood events in California demonstrates that approximately 370 miles of highways are susceptible to flooding in a 100-year storm event by the year 2100 (OPR, CEC, and CNRA 2018a).

Water availability and changing temperatures affect the prevalence of pests, disease, and species, which will directly impact crop development, forest health, and livestock production. Other environmental concerns include decline in water quality, groundwater security, and soil health (CNRA 2018). Vulnerabilities of water resources also include risks to degradation of watersheds, alteration of ecosystems and loss of habitat, (OPR, CEC, and CNRA 2018a).

California's Fourth Climate Change Assessment also identifies the impacts climate change will have on public health and social systems. Average temperature increases in California are estimated to have impacts on human mortality, with 6,700 to 11,300 additional annual deaths in 2050, depending on higher or lower emissions scenarios (Ostro et al. 2011). Studies have also shown that impacts from climate change can also have indirect impacts on public health, such as increased vector-borne diseases, and stress and mental trauma due to extreme events, economic disruptions, and residential displacement (Gould and Dervin 2012; McMichael and Lindgren 2011).

3.6.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

Regional and local criteria air pollutant GHG emissions and associated impacts were assessed in accordance with BAAQMD-recommended methodologies.

Construction and operational emissions of GHGs were calculated using a combination of the California Emissions Estimator Model (CalEEMod) version 2020.4.0 computer program using available project-specific information. CalEEMod modeling was based on project-specific information (e.g., land use type, construction and operational equipment to be used, trip projections) where available; reasonable assumptions based on typical construction activities; and default values in CalEEMod that are based on the project's location and land use type.

Construction emissions were estimated using CalEEMod 2020.4.0. Modeling was based on project-specific information, where available. An equipment inventory and usage assumptions and on-road vehicle activity were provided by the applicant and default values in CalEEMod that are based on the project's location. The applicant assumed that construction of the project would begin on June 3, 2023, and conclude on December 31, 2024.

Levels of GHGs associated with the use of off-road equipment, haul trucks delivering equipment and materials, and worker commute trips were calculated using CalEEMod using estimations provided by the applicant. Construction activities associated with the project would likely require the use of equipment such as excavators, loaders, backhoes, generators, welders, dump trucks, pavers, cranes, pumps, tunnel boring equipment, and solids control machinery.

To assess the climate change impacts that would result from operations following implementation of the project, information pertaining to operational emissions provided by the client were used in CalEEMod to produce an estimation of GHGs that would result from both off-site and on-site operational trips. The most recent available emissions inventory for Alameda County was derived from EMFAC2021v1.0.2 and applied to CalEEMod to provide the most current vehicle emissions rates for on-road vehicles. These trips included maintenance trips and maintenance equipment pick up trips. Additionally, off-model calculations were used to determine the emissions resulting from the operation of the project's multiple pumps, with this figure being included in operational emissions data.

See Appendix B for a detailed description of modeling assumptions, CalEEMod outputs, and off-model calculations.

THRESHOLDS OF SIGNIFICANCE

The issue of global climate change is inherently a cumulative issue because the GHG emissions of individual projects cannot be shown to have any material effect on global climate. Thus, the project's impact on climate change is addressed only as a cumulative impact.

State CEQA Guidelines Section 15064 and relevant portions of Appendix G recommend that a lead agency consider a project's consistency with relevant, adopted plans and discuss any inconsistencies with applicable regional plans, including plans to reduce GHG emissions. Under Appendix G of the State CEQA Guidelines, implementing a project would result in a cumulatively considerable contribution to climate change if it would:

- generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or
- conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

As noted in Section 3.6.1, "Regulatory Setting," BAAQMD published new guidance for evaluating climate change impacts for land use development projects in 2022. The guidance provides development and lead agencies with mechanisms that can be incorporated as project design features that would suggest that a project is doing their fair share to reduce GHG emissions and assist the state in meeting its long-term GHG reduction goals. These project design features recommended by BAAQMD are intended to reduce operational GHG emissions from land use development projects, which the project is not. The project would introduce minimal trips (i.e., one new vehicle trip per day) and electricity consumption beyond what is currently operating at the project site. Thus, because the project is not a land use development project and has minimal operational emissions, BAAQMD's CEQA guidance is not applicable to the project.

In its guidance, BAAQMD states, "[t]here is no proposed construction-related climate impact threshold at this time. Greenhouse gas emissions from construction represent a very small portion of a project's lifetime GHG emissions. The proposed thresholds for land use projects are designed to address operational GHG emissions which represent the vast majority of project GHG emissions." In its 2017 CEQA Air Quality Guidelines, BAAQMD recommends that operational GHG emissions from stationary sources be compared to a 10,000 $MTCO_2e$ per year threshold of significance. GHG emissions is, therefore, evaluated against this bright-line threshold in the absence of a bright-line threshold for construction-related emissions.

The 10,000 $MTCO_2e$ per year threshold originated from the state's Cap-and-Trade Program as the minimum emissions level that would trigger a stationary source's requirement to report emissions to CARB. Although this threshold is

generally intended for ongoing sources of emissions (e.g., manufacturing facilities, refineries), this use in CEQA is appropriate for construction projects that occur over a relatively short period and contribute a relatively low total amount of GHGs as compared to a land use development project that would generate annual emissions indefinitely.

Thus, as a component of the Solar Salt Facility, which is a stationary source of air pollution and GHG emissions, a stationary bright-line threshold would be an appropriate threshold of significance to evaluate the project's contribution to global climate change. For the reasons stated above, the proposed project would have a potentially significant contribution to global climate change if it were to:

- generate a combined total of amortized construction over a 20-year period and operational emissions in exceedance of 10,000 $MTCO_2e$ per year.

Impact 3.6-1: Potential to Generate GHG Emissions during Construction and Operation of the Proposed Project

Amortized project-generated construction emissions would total 298 $MTCO_2e$ per year, and project operation would result in 258 $MTCO_2e$ per year, resulting in a combined total of 556 $MTCO_2$ per year. These levels of emissions would not exceed the applicable stationary bright-line threshold of 10,000 $MTCO_2e$ per year. This impact would be **less than significant**.

Construction-related activities would generate GHG emissions from the use of heavy-duty off-road equipment, materials transport, and worker commute trips. Based on modeling conducted for the proposed project, construction is estimated to generate a total of 5,960 $MTCO_2e$ of GHG emissions for the duration of construction activities (2023–2024) (Table 3.6-7). These emissions were amortized over a 20-year period (the assumed lifetime of the proposed project) and estimated to be 298 $MTCO_2e$ per year. Table 3.6-7 shows total construction emissions generated over the course of completing construction activities for the proposed project. Refer to Appendix B for construction assumptions and detailed input parameters and results, respectively.

Table 3.6-7 Construction-Generated Greenhouse Gas Emissions

Construction Year	Total $MTCO_2e$
2023	2,837
2024	3,123
Total construction GHG emissions	**5,960**
Amortized construction emissions ($MTCO_2e$ per year)[1]	**298**

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

See Appendix B for construction assumptions.

[1] Construction emissions were amortized over a 20-year period, which represents the lifetime of the proposed project.

Source: Modeled by Ascent Environmental in 2022.

Implementation of the project would enable the enhanced processing and removal of MSS in existing Cargill ponds, which would require the operation of new pumps to discharge a brine of residual MSS at an average rate of 0.86 million gallons per day. This increase in removal of MSS would result in increased electricity consumption at the project site, resulting in approximately 258 $MTCO_2e$ in the project's first year of operation (2024). Additionally, the project would require maintenance, which would result in an average of one new vehicle trip per day or 18,000 vehicle miles traveled (VMT) per year. This level of VMT would generate 5 $MTCO_2e$ in 2024. In total, the project would result in operational emissions of 258 $MTCO_2$ per year. Following the amortization of construction emissions, the total GHG emissions generated by the project in the long term would be 556 $MTCO_2e$ per year. This level of emissions is below the applicable 10,000 $MTCO_2e$ per year threshold of significance. Therefore, project-related GHG emissions would not be a considerable contribution to global climate change. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

3.7 HAZARDS AND HAZARDOUS MATERIALS

This section describes the regulatory and environmental setting related to hazards and hazardous materials for the proposed project. In addition, it presents analysis of the environmental impacts related to hazards and hazardous materials that may result from construction and operation of the proposed project. The evaluation provided in this section is based, in part, on review of the State Water Resources Control Board's (SWRCB's) GeoTracker online database and the California Department of Toxic Substances Control's (DTSC's) EnviroStor online database and the general plans for Alameda County and the Cities of Hayward, Union City, Fremont, and Newark.

Impacts related to emission of toxic air contaminants along transportation routes are addressed in Section 3.2, "Air Quality." Geologic hazards are discussed in Section 3.5, "Geology, Soils, Mineral Resources, and Paleontological Resources." Risks associated with flooding are discussed in Section 3.8, "Hydrology and Water Quality."

Several comments received in response to the notice of preparation expressed concerns relating to hazards and hazardous materials:

- The Alameda County Water District (ACWD) stated that this EIR should identify known open and closed cleanup sites in and adjacent to the project area, including along the pipeline alignment, and should identify mitigation measures to ensure that construction activities would not adversely affect the cleanup and remediation of those sites, result in any potential health risks, or result in plume migration. ACWD also stated that this EIR should address scenarios under which the contractor performing subsurface activities may encounter soil or groundwater contamination that is unknown or is not associated with an identified or known cleanup site. ACWD stated that in such cases, this EIR should include a provision that the appropriate agencies, including ACWD, be contacted.
- The San Francisco Bay Conservation and Development Commission stated that this EIR should identify whether any portions of the project site are polluted with toxic or hazardous substances and that the discussion should address any anticipated effects associated with such contaminants, including effects associated with future sea level rise anticipated through the life of the project; how these risks would be addressed; and the role other agencies would take in the review. However, CEQA requires that an EIR evaluate only impacts of the project on the environment (CEQA Guidelines Section 15126.2[a]), and sea level rise is not an impact on the environment caused by a project. Not only do the CEQA Guidelines and the statute not contemplate the effect of the environment on a project, but various cases have affirmed this concept unless the project itself would exacerbate this environmental condition.
- The San Francisco Public Utilities Commission (SFPUC) stated that projects and other activities that would use, cross, or otherwise affect SFPUC property must undergo the Project Review Process if the project would involve construction; digging or earth moving; clearing; installation; the use of hazardous materials; other disturbance to watershed and right-of-way resources; or the issuance of new or revised leases, licenses and permits. This review is done by SFPUC's Project Review Committee.

3.7.1 Regulatory Setting

FEDERAL

Management of Hazardous Materials

Various federal laws address the proper handling, use, storage, and disposal of hazardous materials, as well as require measures to prevent or mitigate injury to human health or the environment if such materials are accidentally released. The US Environmental Protection Agency (EPA) is the agency primarily responsible for enforcing and implementing federal laws and regulations pertaining to hazardous materials. Applicable federal regulations pertaining to hazardous materials are contained primarily in Titles 29, 40, and 49 of the Code of Federal Regulations

(CFR). Hazardous materials, as defined in the code, are listed in 49 CFR 172.101. Management of hazardous materials is governed by the following laws:

- The Toxic Substances Control Act of 1976 (15 US Code [USC] Section 2601 et seq.) regulates the manufacturing, inventory, and disposition of industrial chemicals, including hazardous materials. Section 403 of the Toxic Substances Control Act establishes standards for lead-based paint hazards in paint, dust, and soil.
- The Resource Conservation and Recovery Act of 1976 (RCRA) (42 USC Section 6901 et seq.) established a federal regulatory program for the generation, transport, and disposal of hazardous substances. Under RCRA, EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous substances. RCRA was amended by the Hazardous and Solid Waste Amendments of 1984, which banned the disposal of hazardous waste on land and strengthened EPA's reporting requirements.
- The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (also called the Superfund Act or CERCLA) (42 USC Section 9601 et seq.) provided broad federal authority and created a trust fund for addressing releases and threatened releases of hazardous substances that could endanger public health or the environment. EPA is responsible for compiling the National Priorities List for known or threatened release sites of hazardous substances, pollutants, or contaminants (commonly referred to as "Superfund sites"). EPA provides oversight of, and supervision for, Superfund investigation/remediation projects, evaluates remediation technologies, and develops hazardous materials disposal restrictions and treatment standards.
- The Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-499, 42 USC Section 11001 et seq.), also known as SARA Title III or the Emergency Planning and Community Right-to-Know Act of 1986, imposes hazardous materials planning requirements to help protect local communities in the event of accidental release.
- The Spill Prevention, Control, and Countermeasure (SPCC) rule includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend, and implement SPCC Plans.

Transport of Hazardous Materials

The US Department of Transportation regulates transport of hazardous materials between states and is responsible for protecting the public from dangers associated with such transport. The basic statute regulating transport of hazardous materials in the United States, addressed in 49 USC 5101 et seq. (formerly the Hazardous Materials Transportation Act, 49 USC 1801 et seq.), regulates intrastate and interstate transport by rail car, aircraft, motor vehicle, and vessel and includes requirements related to the appropriate packaging and labeling of the hazardous material for transit. There are registration requirements for organizations that offer and accept hazardous wastes, and hazardous materials must be properly classed, described, packaged, marked, and labeled. Regulations regarding the transport of hazardous materials are enforced by the Federal Highway Administration, US Coast Guard, Federal Railroad Administration, and Federal Aviation Administration.

Occupational Safety and Health Administration Worker Safety Requirements

The federal Occupational Safety and Health Administration (OSHA) is the agency responsible for ensuring worker safety in the handling and use of chemicals identified in the Occupational Safety and Health Act of 1970 (Public Law 91-596, 29 USC Section 651 et seq.). OSHA has adopted numerous regulations pertaining to worker safety, contained in CFR Title 29. These regulations set standards for safe workplaces and work practices, including standards relating to the handling of hazardous materials and those required for excavation and trenching. OSHA also establishes criteria by which each state can implement its own health and safety program. The Hazard Communication Standard (CFR Title 29, Part 1910) requires that workers be informed of the hazards associated with the materials they handle. Workers must be trained in safe handling of hazardous materials, use of emergency response equipment, and building emergency response plans and procedures. Containers must be labeled appropriately, and material safety data sheets must be available in the workplace.

STATE

The Hazardous Waste Control Act

The Hazardous Waste Control Act (Health and Safety Code [HSC] Section 25100 et seq.) is the seminal hazardous waste control law in California. It establishes standards for regulating the generation, handling, processing, storage, transportation, and disposal of hazardous wastes. The hazardous waste control program is administered by DTSC and local Certified Unified Program Agencies (CUPAs). In the California Environmental Protection Agency (CalEPA), DTSC is primarily responsible for regulating the generation, transport, and disposal of hazardous substances under the authority of the Hazardous Waste Control Act; enforcement is delegated to local jurisdictions. Regulations implementing the Hazardous Waste Control Act list hazardous chemicals and common substances that may be hazardous; establish criteria for identifying, packaging, and labeling hazardous substances; prescribe hazardous substances management; establish permit requirements for the treatment, storage, disposal, and transportation of hazardous substances; and identify hazardous substances prohibited from landfills. These regulations apply to the protection of human health and the environment during construction.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program

CalEPA has adopted regulations implementing the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The six program elements of the Unified Program are hazardous waste generation and on-site treatment, underground storage tanks, aboveground storage tanks, hazardous material release response plans and inventories, risk management and prevention programs, and Uniform Fire Code hazardous materials management plans and inventories. The program is implemented at the local level by a local agency, referred to as the CUPA, which is responsible for consolidating the administration of the six program elements within its jurisdiction. In the project area, the Alameda County Department of Environmental Health (ACDEH) is the CUPA pursuant to HSC Section 25180 for the City of Newark, the unincorporated community of San Lorenzo, and the unincorporated areas of Fremont and Hayward. The CUPAs for the Cities of Fremont, Union City, and Hayward are the Fremont City Fire Department, the Union City Environmental Programs Division, and the Hayward Fire Department, respectively.

California Government Code Section 65962.5 (Cortese List)

The provisions of California Government Code Section 65962.5 are commonly referred to as the "Cortese List" (after the legislator who authored the law). The Cortese List is a planning document used by state and local agencies to comply with CEQA requirements in providing information about the location of hazardous materials release sites. The list, or a site's presence on the list, has bearing on the local permitting process. DTSC is responsible for a portion of the information contained in the Cortese List. Other state and local government agencies in California, such as SWRCB, also must provide additional release information.

Government Code Section 65962.5 requires CalEPA to develop an updated Cortese List at least annually. However, because this statute was enacted more than 20 years ago, some of the provisions refer to agency activities that are no longer being implemented, and in some cases, the information to be included in the Cortese List does not exist. Further, although Government Code Section 65962.5 refers to the preparation of a "list," many changes have occurred related to web-based information access since 1992, and this information is now largely available on the websites of the responsible organizations. A centralized list is no longer compiled.

Transport of Hazardous Materials and Hazardous Materials Emergency Response Plan

The State of California has adopted US Department of Transportation regulations for the movement of hazardous materials originating in and passing through the state. State regulations are contained in 26 CCR. State agencies with primary responsibility for enforcing state regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol and the California Department of Transportation (Caltrans). Together, these agencies determine container types used and license hazardous waste haulers to transport hazardous waste on public roads.

California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local governments and private agencies. Response to hazardous materials incidents is one part of the plan. The plan is managed by the Governor's Office of Emergency Services, which coordinates the responses of other agencies in the vicinity of the incidents.

Management of Construction Activities

Through the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) and the National Pollutant Discharge Elimination System (NPDES) program, regional water quality control boards (RWQCBs) have the authority to require proper management of hazardous materials during project construction. For a detailed description of the Porter-Cologne Act, the NPDES permit program, and the role of the San Francisco RWQCB (which has jurisdiction over the project site), see Section 3.8, "Hydrology and Water Quality."

SWRCB adopted the statewide NPDES General Permit in August 1999. The state requires that projects disturbing more than 1 acre of land during construction file a Notice of Intent with the RWQCB to be covered under this permit. Construction activities subject to the General Permit include clearing, grading, stockpiling, and excavating. Dischargers are required to eliminate or reduce nonstormwater discharges to storm sewer systems and other waters. A stormwater pollution prevention plan (SWPPP) must be developed and implemented for each site covered by the permit. The SWPPP must identify best management practices (BMPs) designed to prevent construction pollutants from contacting stormwater and keep products of erosion from moving off-site into receiving waters throughout the construction and life of the project. The BMPs must address source control and, if necessary, pollutant control.

California Division of Occupational Safety and Health Workplace Safety Requirements

The California Division of Occupational Safety and Health (commonly known as Cal/OSHA) assumes primary responsibility for developing and enforcing workplace safety regulations in the state. Cal/OSHA standards typically are more stringent than federal OSHA regulations and are presented in Title 8 of the CCR. Cal/OSHA conducts on-site evaluations and issues notices of violation to enforce necessary improvements to health and safety practices.

LOCAL

Alameda County General Plan

The *Safety Element of the Alameda General Plan* addresses natural and human-caused hazards, as well as emergency preparedness, in unincorporated areas of Alameda County, and it presents goals, policies, and actions to minimize the hazards associated with exposure to hazardous materials (Alameda County 2022). The following goals and policies are applicable to the proposed project:

GOAL 4. Minimize residents' exposure to the harmful effects of hazardous materials and waste.

- Policy P6. Adequate separation shall be provided between areas where hazardous materials are present and sensitive uses such as schools, residences and public facilities.
- Policy P9. The safe transport of hazardous materials through the unincorporated areas shall be promoted by implementing the following measures:
  - Maintain formally-designated hazardous material carrier routes to direct hazardous materials away from populated and other sensitive areas.
  - Prohibit the parking of empty or full vehicles transporting hazardous materials on County streets.
  - Require new pipelines and other channels carrying hazardous materials avoid residential areas and other immobile populations to the extent possible.
  - Encourage businesses to ship hazardous materials by rail.

Alameda County Water District

As part of ACWD's Groundwater Protection Program, ACWD entered into cooperative agreements with the San Francisco Bay RWQCB and the Cities of Fremont, Newark, Union City, and Hayward to strengthen the interagency coordination and cost-effective implementation of groundwater protection in the cities. The agreements allow ACWD to provide technical oversight for the investigation and remediation of leaking underground fuel tank sites and sites where the pollution is attributed to spills or leaks from structures other than underground fuel tanks, referred to as Site Cleanup Program sites (formerly known as Spills, Leaks, Investigation, and Cleanup sites). The agreement with the City of Hayward specifically addresses sites that threaten or affect water quality in the portions of the city in the Niles Cone Groundwater Basin (ACWD n.d.).

City of Hayward General Plan

The *Hayward 2040 General Plan* establishes a community-based vision for the future of Hayward and establishes goals, policies, and implementation programs to help the city and the greater Hayward community achieve that vision (City of Hayward 2014). The Hazards Element of the general plan includes policies to reduce the risk of harm associated with hazardous materials. The following policies are applicable to the proposed project:

- Policy HAZ-6.2. Site Investigations. The City shall require site investigations to determine the presence of hazardous materials and/or waste contamination before discretionary project approvals are issued by the City. The City shall require appropriate measures to be taken to protect the health and safety of site users and the greater Hayward community.
- Policy HAZ-6.3. Permit Requirements. The City shall direct the Fire Chief (or their designee) and the Planning Director (or their designee) to evaluate all project applications that involve hazardous materials, electronic waste, medical waste, and other hazardous waste to determine appropriate permit requirements and procedures.

Union City General Plan

The *Union City 2040 General Plan* is a long-range planning document that serves as Union City's vision for future development (Union City 2019). The Safety Element includes policies to minimize the risks associated with various hazards, including fire and hazardous materials. The following policies are applicable to the proposed project:

- Policy S-1.1. Development Review for Safety Compliance. The City shall evaluate all proposed projects to ensure compliance with all relevant building and safety codes, including those related to flooding, fire, earthquake, and other geologic hazards.
- Policy S-7.3. Environmental Site Assessment. The City shall require applications subject to Site Development Review or applications for development on sites where there is potential for contamination to exist to include submittal of a Phase 1 Environmental Site Assessment and Phase 2 Environmental Site Assessment (if required). Any recommendations contained in these documents, including the need for remediation activities or additional study, shall be completed consistent with applicable Federal, State, and local regulations.

City of Fremont General Plan

The *City of Fremont General Plan* serves as the foundation on which all development decisions are based and sets priorities and goals for the future (City of Fremont 2011). The Safety Element of the general plan includes policies to minimize risks associated with fire and hazardous materials and waste. The following policy is applicable to the proposed project:

- Policy 10-6.5. Hazardous Material Oversight. Maintain sufficient oversight regarding the storage, transport and handling of hazardous materials within the City.

City of Newark General Plan

The *Newark General Plan* is a comprehensive statement of the goals, policies, and actions that will guide future growth and conservation in the city (City of Newark 2013). The Environmental Hazards Element of the general plan addresses potential risks associated with fire and hazardous materials. The following policy is applicable to the proposed project:

- **Policy EH-4.1. Hazardous Materials Risk Reduction.** Seek to reduce the risk of hazardous materials accidents, spills and vapor releases, and minimize the effects of such incidents if they occur.

San Francisco Public Utilities Commission

Proposed projects and other activities that would use, cross, or otherwise affect SFPUC lands must apply for permission to do so. Applications are reviewed by a multidisciplinary committee that includes planners, biologists, engineers, real estate analysts, land managers, foresters, and hydrologists. Among other things, the committee is charged with ensuring that proposals comply with all SFPUC's plans and policies. Following successful completion of the Project Review meeting with the committee, the committee issues a certificate that outlines project compliance and protection measures that need to be coordinated and completed before the project may commence. The certificate also enables project applicants to obtain access permits, if required. The certificate is also required to obtain authorizations from the Water Supply and Treatment Division's Land Engineering Group and Real Estate Services Division (SFPUC n.d.). The pipeline for the project would cross under SFPUC's Hetch Hetchy Aqueduct.

3.7.2 Environmental Setting

GENERATION AND DISPOSAL OF HAZARDOUS MATERIALS AND WASTE

Materials and waste may be considered hazardous if they are poisonous (toxic); can be ignited by open flame (ignitable); corrode other materials (corrosive); or react violently, explode, or generate vapors when mixed with water (reactive). For purposes of this section, the term "hazardous materials" refers to both hazardous substances and hazardous wastes. A "hazardous material" is defined in the CFR as "a substance or material that…is capable of posing an unreasonable risk to health, safety, and property when transported in commerce" (49 CFR 171.8). California Health and Safety Code Section 25501 defines a hazardous material as "a material…that, because of its 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…." "Hazardous materials" include hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

"Hazardous wastes" are defined in California Health and Safety Code Section 25141(b) as wastes that because of their quantity, concentration, or physical, chemical, or infectious characteristics may either cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Past industrial or commercial uses on a site sometimes have resulted in spills or leaks of hazardous materials and petroleum that caused contamination of underlying soil and groundwater. Federal and state laws require that soils and groundwater having concentrations of contaminants that are higher than certain acceptable levels be handled and disposed of as hazardous waste during excavation, transportation, and disposal. CCR Title 22, Sections 66261.20–66261.24, contains technical descriptions of characteristics that would cause a soil to be classified as a hazardous waste. The use of hazardous materials and disposal of hazardous wastes are subject to numerous laws and regulations at all levels of government (see Section 3.7.1, "Regulatory Setting," above).

Various hazardous materials are commonly transported, stored, used, and disposed of in activities such as construction, industry (both light and heavy), dry cleaning, film processing, landscaping, automotive maintenance and repair, and common residential/commercial maintenance activities. The use, transport, storage, and disposal of hazardous materials are regulated by EPA and CalEPA plus six boards, departments, and offices: the California Air Resources Board, the California Department of Pesticide Regulation, DTSC, the Office of Environmental Health Hazard Assessment, SWRCB, and the California Department of Public Health Center for Environmental Health. State and local regulatory agencies closely monitor businesses and industry in the control of hazardous materials. Hazardous

materials require special methods of disposal, storage, and treatment, and any unintentional release of hazardous materials requires an immediate response to protect human health and safety and the environment.

Hazardous Materials from Known Release Sites

Hazardous materials, including pesticides and herbicides, heavy metals, volatile organic compounds, and oil and gas, may be present in soil and groundwater in areas where land uses have resulted in leaking fuel or chemical storage tanks or where other releases of hazardous materials have occurred. Land uses that typically involve the handling of hazardous materials include commercial or industrial operations, as well as agricultural operations, which can leave soils contaminated with pesticides and herbicides.

Various federal, state, and local regulatory agencies maintain lists of hazardous materials sites where soil or groundwater contamination is known or suspected to have occurred. These facilities are readily identified through searches of regulatory agency databases, such as SWRCB's GeoTracker online database; DTSC's EnviroStor online database; and several other federal, state, and local regulatory agency databases. These databases include closed sites that have been fully remediated; sites where contamination is contained but land use restrictions are in place; and sites under evaluation, active remediation, and monitoring. Sites listed on these databases generally are located in more densely populated areas with a history of light and heavy industrial uses.

A preliminary search of the GeoTracker and EnviroStor online databases was conducted to determine whether any known hazardous materials are present within 0.25 mile of the project site. Numerous hazardous materials sites—including locations of leaking underground storage tanks; actual or suspected releases of solvents, waste oil, insecticides, herbicides, lead, or other hazardous material; and permitted underground storage tanks—are located within 0.25 mile of the Solar Salt Facility or in or within 0.25 mile of the MSS brine transport pipeline alignment. The active sites involve investigation and, if necessary, remediation of contaminated soil or groundwater or both. In addition, closed sites that involve contaminated groundwater could result in a human health or environmental hazard from project-related earthmoving activities. The number of sites listed in the GeoTracker and EnviroStor databases and their location relative to the project site are summarized in Table 3.7-1. The locations of the hazardous materials sites are shown in Figure 3.7-1.

Table 3.7-1 Documented Hazardous Materials Sites within One-Quarter Mile of the Solar Salt Facility and MSS Brine Transport Pipeline Alignment

Sites	Sites within One-Quarter Mile of Solar Salt Facility	Sites within One-Quarter Mile of MSS Brine Transport Pipeline Alignment
GeoTracker sites		
Open	0	16
Completed	2	108
Underground storage tank	0	16
EnviroStor sites	0	28

Note: One of the completed GeoTracker sites is listed above as being located within one-quarter mile of both the solar salt facility and the pipeline alignment.

Sources: DTSC 2021; SWRCB 2022.

No sites on the Superfund's National Priorities List are located in the project area (EPA 2022).

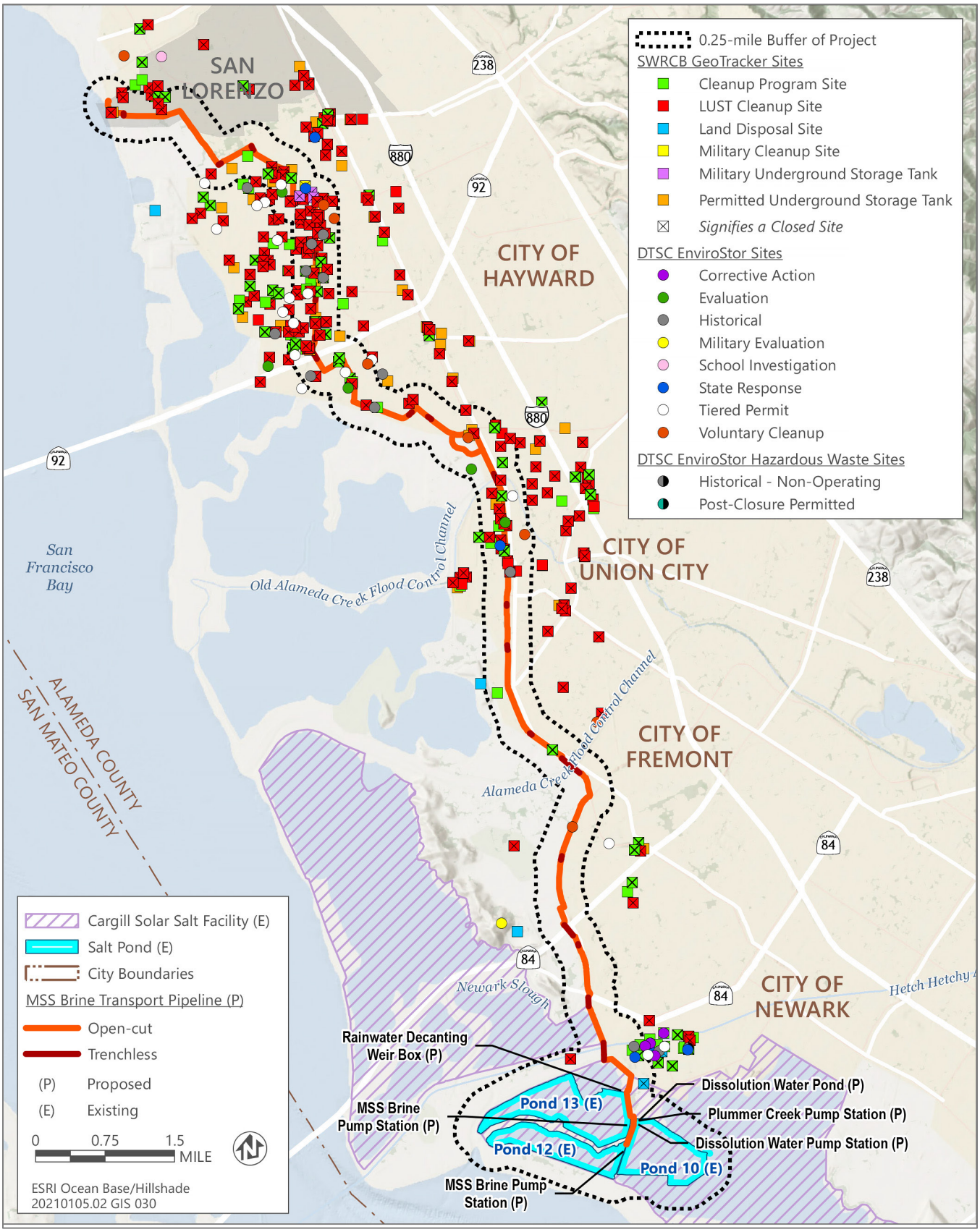
To address the potential for documented and undocumented hazards on a site, ASTM International has developed widely accepted practice standards for the preliminary evaluation of site hazards (E-1527-05). Phase I Environmental Site Assessments (ESAs) include an on-site visit to determine current conditions, an evaluation of possible risks posed by neighboring properties, interviews with persons knowledgeable about the site's history, an examination of local planning files to check prior land uses and permits granted, file searches with appropriate agencies having oversight authority relative to water quality and/or soil contamination, examination of historic aerial photography of the site and adjacent properties, a review of current topographic maps to determine drainage patterns, and an examination of chain-of-title for environmental liens and/or activity and land use limitations. If the results of a Phase I ESA indicate

the presence or potential presence of contamination, a site-specific Phase II ESA is generally conducted to test soil and/or groundwater. Depending on the outcome of the Phase II ESA, remediation of contaminated sites under federal and state regulations may be required before construction. The Preliminary Endangerment Assessment process, which typically is conducted for sites with DTSC oversight, is similar but includes screening evaluations and public participation.

Hazardous Materials from Roadway Corridors

The yellow thermoplastic and yellow painted traffic stripe and pavement marking that was applied to roadways before 1997 contained as much as 2.6 percent lead (Caltrans 2018:234). Residue produced from the removal of this yellow thermoplastic and yellow painted traffic stripe and pavement marking contains heavy metals in concentrations that exceed thresholds established by the California Health and Safety Code and Title 22 of the CCR (Caltrans 2018:234).

In addition to paint, aerially deposited lead can be present along major roadway corridors. SR 84 and SR 92, which carry high traffic volumes, would be crossed underground. Lead alkyl compounds were first added to gasoline in the 1920s to boost octane levels and improve engine performance. Beginning in 1973, EPA ordered a gradual phaseout of lead from gasoline, which substantially reduced the prevalence of leaded gasoline by the mid-1980s. Before the 1970s, EPA estimated that vehicles emitted approximately 75 percent of the lead consumed with leaded gasoline as particulate matter in tailpipe exhaust (DTSC 2004:1-2). DTSC regulations specify the levels at which lead in soil is considered to be a risk. In some areas where construction in roadways has occurred, Caltrans has found levels of lead that are higher than DTSC's specifications. The lead was found within 30 feet of the edge of the pavement and in the top 6 inches of the soil. In some cases, lead has been found as deep as 2–3 feet below the surface (DTSC 2016). Therefore, soils in major roadway corridors have the potential to be contaminated with aerially deposited lead from car emissions that occurred before the elimination of lead from gasoline.



Source: Data downloaded from SWRCB and DTSC in 2022; adapted by Ascent Environmental in 2022.

Figure 3.7-1 Hazardous Materials Sites in the Vicinity of the Project Site

Underground Pipelines

As described below, major underground gas transmission pipelines containing natural gas, as well as hazardous liquid pipelines (e.g., pipelines that carry gasoline, diesel, crude oil, etc.), are located underneath the route traveled and crossed by the MSS brine transport pipeline alignment (PHMSA 2022). In addition, other pipelines containing wastewater may be located in some of the areas where project-related construction, including installation of new underground pipelines, would occur. Health and safety hazards could occur if earthmoving activities disrupt existing pipelines.

When the alignment for the MSS brine transport pipeline turns north onto Union City Boulevard, it runs along a gas transmission pipeline route in the roadway. It continues to share the alignment with the gas transmission pipeline as Union City Boulevard becomes Hesperian Boulevard. In San Lorenzo, the proposed alignment and gas transmission pipeline route separate when the gas transmission pipeline route turns west onto Bockman Road and the proposed alignment continues north on Hesperian Boulevard. In Hayward, the alignment turns west onto Industrial Parkway, following the route of a hazardous liquid pipeline between Hesperian Boulevard and Baumberg Avenue and crossing a gas pipeline alignment running alongside the UPRR tracks. Further north, after crossing SR 92, the alignment continues north on Clawiter Road, crossing a gas pipeline alignment alongside the UPRR tracks and then in Depot Road. Where the pipeline alignment continues northwest/west around the perimeter of the Oro Loma Marsh past the solar fields and biosolids drying beds, it shares an alignment with a gas pipeline.

SCHOOLS

No schools are located within 0.25 mile of the Solar Salt Facility; however, four schools are located within 0.25 mile of the MSS brine transport pipeline alignment (Table 3.7-2). One of these schools—Delaine Eastin Elementary School—is located adjacent to the alignment.

Table 3.7-2 Schools Located within One-Quarter Mile of the MSS Brine Transport Pipeline Alignment

School Name	School Address	Grades Served
Alvarado Elementary School	31100 Fredi Street, Union City	K–5
Delaine Eastin Elementary School	34901 Eastin Drive, Union City	K–5
Itliong-Vera Cruz Middle School	31604 Alvarado Boulevard, Union City	6–8
Lorin Eden Elementary School	27790 Portsmouth Avenue, Hayward	K–6

Source: Data compiled by Ascent Environmental in 2022.

AIRPORTS

No aviation facilities are located within 2 miles of the Solar Salt Facility; however, two such facilities—Hayward Executive Airport, a public use airport, and the St. Rose Hospital Helistop, a private facility—are located within 2 miles of the MSS brine transport pipeline alignment. At its closest point, the pipeline alignment is located less than 0.25-mile from the airport on the west and approximately 1 mile from the heliport on the southwest, and the alignment extends through the airport influence area for the Hayward Executive Airport as identified in the *Hayward Executive Airport Airport Land Use Compatibility Plan* (Alameda County ALUC 2012).

3.7.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The analysis of potential impacts related to hazards and hazardous materials is based on information obtained from review of:

- the project description;

- reports and data sources documenting existing and potential hazardous conditions at and near the project site, such as SWRCB's GeoTracker online database and DTSC's EnviroStor online database; and
- applicable elements from the general plans for Alameda County and the Cities of Hayward, Union City, Fremont, and Newark.

The evaluation of hazards and hazardous materials impacts assumes that the construction and operation of the proposed project would adhere to the applicable federal, state, and local regulations and would conform to appropriate standards in the industry.

THRESHOLDS OF SIGNIFICANCE

An impact related to hazards and hazardous materials would be significant if implementation of the proposed project would:

- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- 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 create a significant hazard to the public or the environment;
- for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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; or
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.7-1: Potential to Create a Significant Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials

Implementation of the project would involve the limited transport, use, storage, and disposal of hazardous materials. All project activities would be required to comply with federal, state, and local regulations designed to reduce to an acceptable level the potential for the release of large quantities of hazardous materials and wastes into the environment. Because the existing federal, state, and local regulations and oversight in place would effectively reduce the inherent hazard associated with these activities, this impact would be **less than significant**.

Project activities would involve the limited transport, storage, use, and disposal of hazardous materials related to the fueling and servicing of construction equipment, such as transportation fuels, lubricating fluids, and solvents; however, these types of materials are not acutely hazardous and would be used in small amounts. Transportation of hazardous materials on area roadways is regulated by the California Highway Patrol (CHP) and Caltrans, and use of these materials is regulated by DTSC, as outlined in CCR Title 22. Cargill and its construction contractors would be required to use, store, and transport hazardous materials in compliance with applicable federal and state regulations during project construction and operation.

Regulations related to the use and disposal of hazardous materials are promulgated and enforced at the federal level by agencies such as EPA and OSHA, at the state level by agencies such as SWRCB and DTSC, and at the local level by the CUPAs (in this case, the Alameda County Department of Environmental Health, Fremont City Fire Department,

Union City Environmental Programs Division, and Hayward Fire Department). Workers who handle hazardous materials are required to adhere to OSHA and Cal/OSHA health and safety regulations. During construction, hazardous materials must be transported in accordance with RCRA, CHP, and Caltrans regulations; stored in accordance with the state's Unified Program, which is enforced by the CUPAs; and disposed of at a facility that is permitted to accept the waste. Enforcement of the Unified Program ensures that local regulatory agencies consistently apply statewide standards when they issue permits, conduct inspections, and engage in enforcement activities. Because the project would be required to implement and comply with existing hazardous material regulations and because each of these regulations is specifically designed to protect the public health through improved procedures for the handling of hazardous materials, better technology in the equipment used to transport these materials, and a more coordinated, quicker response to emergencies, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.7-2: Potential to Create a Significant Hazard to the Public or the Environment through Reasonably Foreseeable Upset and/or Accident Conditions Involving the Release of Hazardous Materials into the Environment

Construction and operation of the project would entail the use of small amounts of hazardous materials, such as fuel, oils, and solvents. Existing federal, state, and local regulations and oversight would address the potential for upset and accident conditions and would effectively reduce to an acceptable level the inherent hazard to the public and the environment associated with project activities. This impact would be **less than significant**.

Construction and operation of the proposed project would entail the use of small amounts of hazardous materials, such as fuel, oils, and solvents. The use of these materials is heavily regulated at both the federal and the state level. These regulations are promulgated and enforced by agencies such as EPA, SWRCB, DTSC, and the local CUPAs. Furthermore, because implementing the proposed project would involve disturbing more than 1 acre of land, Cargill would be required by law to comply with the provisions of SWRCB's NPDES general permit for stormwater discharges from construction activities (Construction General Permit). The Construction General Permit would require Cargill to develop and implement a SWPPP with appropriate BMPs, such as spill prevention and contingency measures to reduce the potential for accidental spills and procedures for implementation of appropriate and prompt cleanup activities if spills do occur. Therefore, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.7-3: 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

No schools are located within 0.25 mile of the Solar Salt Facility; however, four schools are located within 0.25 mile of the MSS brine transport pipeline alignment. Project-related construction activities would involve the handling of hazardous materials within 0.25 mile of these schools; however, because only minor amounts of hazardous materials would be used during construction and operation, the substances would not be acutely hazardous, they would be managed in accordance with applicable laws and regulations, and the pace of construction would ensure extremely limited exposure of the schools to these substances, implementing the project would not be expected to create a hazard to the health of children and employees at nearby schools. Further, the limited duration of exposure to toxic air contaminants from project-related construction emissions at any single sensitive receptor, including the adjacent school, would not have the potential to result in substantial health risks. Therefore, this impact would be **less than significant**.

No schools are located within 0.25 mile of the Solar Salt Facility; however, four schools are located within 0.25 mile of the MSS brine transport pipeline alignment (Table 3.7-2). As discussed for Impacts 3.7-1 and 3.7-2, above, minor

amounts of hazardous materials used during project-related construction and operation (such as fuels, oils, and solvents) would be managed in accordance with applicable laws and regulations and would not be expected to create a hazard to human health, including the health of children and employees at nearby schools. None of the substances used would be acutely hazardous. Delaine Eastin Elementary School is located immediately adjacent to the pipeline alignment, but because only minor amounts of hazardous materials would be used during pipeline construction, these materials would be managed in accordance with applicable laws and regulations, and two to three construction crews would work simultaneously at different locations along the pipeline route with each able to install up to approximately 150 feet of pipeline per day, the exposure of these schools to these substances during construction would be extremely limited. Further, as discussed in Section 3.2, "Air Quality," the limited duration of exposure to toxic air contaminants from project-related construction emissions at any single sensitive receptor, including the adjacent school, would not have the potential to result in substantial health risks. The brine that would be transported in the pipeline is not hazardous; it would contain only MSS, which are natural sea salts, dissolved in Bay water. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.7-4: Potential to Result in or Create a Significant Hazard to the Public or the Environment Due to Being Located on a Site Which Is Included on a List of Hazardous Materials Sites Compiled Pursuant to Government Code Section 65962.5

Earthmoving activities associated with construction of the project would occur in proximity to known sites of contamination and areas with the potential to contain hazardous materials due to past uses, which could result in hazards to the public or the environment if contamination from these sites is encountered during construction. The potential for encountering hazardous materials or wastes would be dependent on site-specific conditions. This impact would be **potentially significant**.

The GeoTracker and EnviroStor databases list numerous hazardous materials sites that are located within 0.25 mile of the Solar Salt Facility and the MSS brine transport pipeline alignment and therefore that could pose a hazard during project construction (Table 3.7-1, Figure 3.7-1). Some of these sites involve ongoing investigation and remediation of contaminated soil or groundwater or both. Project-related earthmoving activities in areas of contaminated soil or groundwater could result in human health and environmental hazards and could potentially interfere with ongoing remedial activities. Project-related earthmoving activities on closed sites that involve contaminated groundwater also could result in a human health or environmental hazard because groundwater remediation typically occurs over a period of many years. Where groundwater remediation is occurring, land use controls are frequently in place that prevent ground-disturbing activities unless prior authorization is obtained from SWRCB or DTSC. Further, groundwater dewatering anticipated to address the relatively high water table along the pipeline alignment has the potential to cause plumes of contaminated water in the vicinity to migrate in the direction of the dewatering activity. In addition, because the project would involve removing existing pavement, construction workers and the environment could be exposed to lead in yellow pavement marking. Furthermore, elevated amounts of lead, from the aerial deposition of automobile exhaust, could be present in the soil adjacent to SR 84 and SR 92 where horizontal directional drilling would be used to install pipeline crossings under the highways. Finally, major underground pipelines containing natural gas, as well as hazardous liquid pipelines, are located underneath the routes traveled and crossed by the MSS brine transport pipeline alignment. Health and safety hazards could occur if earthmoving activities disrupt these pipelines. For these reasons, this impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure 3.7-4a: Prepare a Phase I ESA for the Project

Before the start of earthmoving activities, Cargill will hire a licensed environmental professional to prepare a Phase I ESA in accordance with the ASTM International E-1527-05 standard. All recommendations included in the Phase I ESA

shall be implemented. If the Phase I ESA indicates the presence or likely presence of contamination, a Phase II ESA shall be required (see Mitigation Measure 3.7-4b).

Mitigation Measure 3.7-4b: Prepare a Phase II ESA in the Ground Disturbance Areas in Locations Where Contamination May Be Present

If the Phase I ESA indicates the presence or likely presence of contamination in areas proposed for ground disturbance, Cargill will hire a licensed environmental professional to prepare a Phase II ESA for these areas before the start of earthmoving activities. The Phase II study will assess the potential for human health and environmental hazards related to potential contact with existing environmental contamination of the surface and subsurface soil and groundwater in the areas where ground disturbance and excavation associated with the project would occur and soil adjacent to SR 84 and SR 92, where horizontal directional drilling is planned.

The Phase II assessment will comply with the ASTM International E1903-19 standard and include soil and groundwater sampling and laboratory analysis sufficient to identify the types of chemicals and their respective concentrations. If the laboratory analysis determines that contaminants are present at concentrations below RWQCB threshold levels, the Phase II assessment will present such results, and no further analysis or mitigation will be necessary.

If the laboratory analysis determines that contaminants are found at levels that exceed RWQCB threshold levels, the Phase II assessment will examine and discuss all potential exposure pathways for the locations where project-related excavation could encounter hazardous materials, including:

- dermal—physical contact with contaminated soil and groundwater during construction;
- inhalation—dust generated by construction activities;
- groundwater—potential for groundwater generated by construction dewatering to cause migration of a contaminant plume; and
- surface water—potential for overland flow of contaminated groundwater generated during construction dewatering to contaminate surface waters.

The Phase II assessment will evaluate potential hazards to both construction workers and the environment and will make recommendations governing project excavation, staging, soil reuse or disposal, and construction dewatering requirements.

The results from the Phase II assessment will be provided to project contractors so that recommendations from the Phase II assessment regarding excavation, staging, soil reuse or disposal, and construction dewatering can be incorporated into contractor specifications in accordance with Mitigation Measure 3.7-4d and to inform preparation of a site-specific health and safety plan (HASP), in accordance with Mitigation Measure 3.7-4e. If it is determined through the Phase II assessment that in some areas along the pipeline alignment, groundwater dewatering likely would cause plumes of contaminated water in the vicinity to migrate in the direction of the dewatering activity, contractor specifications will state that shoring rather than dewatering will be used in these areas.

Mitigation Measure 3.7-4c: Coordinate with Regulatory Agencies and Implement Appropriate Remedies

If the results of the Phase II assessment indicate that any contaminants are present at a level that exceeds the associated RWQCB or DTSC threshold level, Cargill will notify the appropriate city, the appropriate CUPA, ACWD, and the RWQCB or DTSC, as appropriate. Coordination will occur with the RWQCB or DTSC, as appropriate, regarding the necessity for and types of protective measures required during project-related excavation activities and to ensure that project activities do not interfere with ongoing remedial actions by other entities. Such protective measures could include marking and avoiding existing groundwater monitoring wells, employing shoring and avoiding dewatering activities, installing temporary soil trench plugs, containing contaminated groundwater in Baker Tanks and treating the water before discharge, monitoring groundwater, and documenting backfill quality. As required by the regulatory agencies, reports documenting the implementation of appropriate protective measures, including any required groundwater monitoring, will be prepared and submitted during the course of construction activities.

Mitigation Measure 3.7-4d: Incorporate Standards for Proper Excavation and Staging Activities, for Handling, Transport, and Disposal of Excavated Soils, and for Construction-Related Dewatering into the Project's Construction Specifications

Specifications and procedures to be followed by the contractor for proper excavation and staging activities, for the handling, transport, and disposal of excavated soils, and for construction-related dewatering in affected area(s), which will be based on the results of the Phase II assessment completed under Mitigation Measure 3.7-4b, will be incorporated into the construction specifications. These specifications and procedures will be consistent with federal and state requirements, including RCRA, CERCLA, the federal hazardous materials transportation law, the Clean Water Act, the Occupational Safety and Health Act, and Title 22, Division 4.5 of the CCR. The following provisions will be included in the project's construction specifications:

- Construction workers in the affected area(s) who will be involved with ground disturbance will be trained in Hazardous Waste Operations and Emergency Response if the types of contaminants and their concentrations warrant this training based on the results of the Phase II ESA completed under Mitigation Measure 3.7-4b.
- Soil and materials removal from the affected area(s) will be performed by a licensed engineering contractor with a Class A license and hazardous substance removal certification. A California-licensed engineer will provide field oversight on behalf of Cargill and will document the origin and destination of all removed materials. If necessary, removed materials will be stockpiled temporarily and covered with plastic sheeting, pending relocation, segregation, or off-site hauling. To protect groundwater and surface water quality, contaminated soils will not be stored on-site during the winter rainy season (i.e., November through April).
- If excess materials from the affected area(s) are hauled off-site, waste profiling of the material will be completed and documented. Materials classified as nonhazardous waste will be transported under a bill of lading. Materials classified as non-RCRA hazardous waste will be transported under a hazardous waste manifest. All materials will be disposed of at an appropriately licensed landfill or facility.
- Trucking operations will comply with Caltrans requirements and any other applicable regulations, and all trucks will be licensed and permitted to carry the appropriate waste classification. The tracking of dirt by trucks leaving the project site will be minimized by cleaning the wheels on exit and by cleaning the loading zone and exit area as needed.
- If contaminated materials require dewatering before being hauled off-site, or if excavation would encounter shallow groundwater in the affected area(s), a dewatering plan will be prepared, specifying methods of collecting, transporting, treating, and discharging all water produced by dewatering, and demonstrating compliance with RWQCB requirements and permits.

Mitigation Measure 3.7-4e: Prepare and Implement a Site-Specific Health and Safety Plan

To protect the health of construction workers and the environment, a site-specific HASP will be prepared as follows:

- The HASP will be prepared in accordance with state and federal OSHA regulations (29 CFR 1910.120) and approved by a certified industrial hygienist. Copies of the HASP will be made available to construction workers for review during their orientation training and/or during regular health and safety meetings. The HASP will identify potential hazards (including groundwater or stained or odiferous soils at any location where earthmoving activities would occur), chemicals of concern (if any have been determined), personal protective equipment and devices, decontamination procedures, the need for personal or area monitoring, and emergency response procedures.
- The HASP will state that if stained or odiferous soil or groundwater is discovered during project-related construction activities, Cargill will retain a licensed environmental professional to conduct a Phase II ESA that includes appropriate soil and/or groundwater analysis. Recommendations contained in the Phase II ESA to address any contamination that is found will be implemented before continuing with ground-disturbing activities in these areas.
- The HASP will also require notification of the appropriate federal, state, and local agencies if evidence is found of previously undiscovered soil or groundwater contamination (e.g., stained soil or odorous groundwater) or if

previously undiscovered underground storage tanks are encountered during construction activities. Any contaminated areas will be remediated in accordance with recommendations made by the RWQCB, DTSC, the local CUPA, and/or other appropriate federal, state, or local regulatory agencies.

Mitigation Measure 3.7-4f: Locate and Avoid Underground Utilities in Areas Where Excavation Is Proposed, and Prepare a Response Plan to Be Implemented If Accidental Rupture Occurs

Cargill will implement the following measures before construction begins, to avoid and minimize potential damage to utilities that could result in hazardous materials incidents:

- Before the start of construction activities, verify through field surveys and the services of Underground Service Alert the locations of any utilities that may be buried at the project site in the areas where development is proposed (e.g., high-pressure natural gas, fuel, stormwater, sewer, water, electrical, or communication). Any buried utility lines will be clearly marked in the field.
- Inform all construction personnel of the location of the pipelines during safety briefings throughout the period when construction is occurring. The locations of the pipelines will be clearly identified on construction drawings and posted in the construction superintendent's trailer.
- Prepare a response plan that identifies chain-of-command rules for notification of authorities and appropriate actions and responsibilities regarding the safety of the public and workers. A component of the response plan will include worker education training in response to such situations. The plan will include telephone numbers for emergency response providers, as well as the location of the nearest hospital. This information also will be posted in the construction superintendent's trailer on the job site during construction.

Mitigation Measure 3.7-4g: Safely Remove, Handle, and Dispose of Pavement Containing Yellow Paint

The construction contractor will follow Caltrans Standard Specifications (Caltrans 2018) for removal of pavement containing yellow pavement markings. Yellow marking residue will be handled, removed, and disposed of in accordance with state and federal regulations related to lead waste.

Significance after Mitigation

Implementation of Mitigation Measures 3.7-4a through 3.7-4g would reduce potential impacts from construction in a known hazardous materials site or areas with the potential to contain hazardous materials due to past uses to a less-than-significant level because a Phase I ESA would be prepared to identify the presence or likely presence of contamination; a Phase II ESA with materials testing would be prepared to identify hazardous materials and hazardous conditions; coordination with regulatory agencies would occur, and appropriate remedies would be implemented during construction that protect human health and environment; excavation and staging, soil handling, transport, and disposal, and dewatering would occur in a manner that is protective of the environment, as required by federal and state regulations and as recommended by a licensed environmental professional; a HASP would be prepared to ensure appropriate protection for construction workers; existing pipelines would be located in advance and marked to avoid accidental rupture; and yellow pavement striping residue would be removed, handled, and disposed of in accordance with state and federal requirements. Therefore, this impact would be reduced to **less than significant**.

Impact 3.7-5: For a Project Located in an Airport Land Use Plan or, Where Such a Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Potential to Result in a Safety Hazard or Excessive Noise for People Residing or Working in the Project Area

No aviation facilities are located within 2 miles of the Solar Site Facility; however, implementation of the project would involve the installation of the MSS brine transport pipeline within 2 miles of two aviation facilities: Hayward Executive Airport and the St. Rose Hospital Helistop. In addition, the pipeline alignment extends through the airport influence area for the Hayward Executive Airport. Because construction on the project site in the airport influence area involves installation of a pipeline belowground, implementing the project would not involve any new or changed land use in the area. Most important, the project would not involve construction of any structures above ground and thus would not result in the potential exposure of people residing or working in close proximity (i.e., 2 miles) to an existing airport or private airstrip to potential safety hazards or excessive noise from air traffic. Therefore, this impact would be **less than significant**.

No aviation facilities are located within 2 miles of the Solar Site Facility; however, two such facilities—Hayward Executive Airport, a public use airport, and the St. Rose Hospital Helistop, a private facility—are located within 2 miles of the MSS brine transport pipeline alignment. At its closest point, the pipeline alignment is located less than one-quarter-mile from the airport on the west and approximately 1 mile from the helistop on the southwest, and the alignment extends through the airport influence area for the Hayward Executive Airport as identified in the *Hayward Executive Airport Airport Land Use Compatibility Plan* (Alameda County ALUC 2012). Where the alignment is located in the airport influence area, the project involves installation of a pipeline belowground, primarily in road rights-of-way. Implementing the project would not involve any new or changed land use in the airport influence area. Most important, the project would not involve construction of any structures in this location and thus would not result in the potential exposure of people residing or working in close proximity (i.e., within 2 miles) of an existing airport or private airstrip to potential safety hazards or excessive noise from air traffic. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.7-6: Potential to Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan

Construction of the project would require temporary lane closures where the MSS brine transport pipeline is installed in roadway rights-of-way, which could affect emergency access and evacuation routes. However, the closures would be confined to one lane and would be short term at any given location; a lane would remain open for traffic to pass; temporary paving would occur to reduce traffic control needs in accordance with local jurisdictional requirements; and a traffic control plan would be implemented in compliance with city and county encroachment permit requirements consistent with the most current California Manual on Uniform Traffic Control Devices and State Standard Plans. Therefore, project-related construction activities would not substantially impair or physically interfere with emergency access or an adopted emergency response plan or emergency evacuation plan and this impact would be **less than significant**.

During construction of the MSS brine transport pipeline, construction materials, equipment, and personnel would be staged at designated off-street locations, such as vacant lots or parking lots. The pipeline itself, however, would be installed primarily in road rights-of-way. A trench approximately 4–5 feet wide and 5–10 feet deep would be needed for the pipeline. An additional foot on each side of the trench would be saw-cut for final pavement. Construction activities would require short-term closures of one lane throughout the pipeline alignment where it is located on public roads. Affected roadways are used by emergency vehicles. It is anticipated that two to three construction crews would work simultaneously at different locations along the pipeline route with each able to install up to approximately 150 feet of pipeline per day. At any given location, the road closure would be short term. Pipeline installation is anticipated to be completed by closing the northbound or southbound lane(s), depending on which side the pipeline is constructed. A traffic control plan would be implemented in compliance with city and county

encroachment permit requirements consistent with the most current California Manual on Uniform Traffic Control Devices and State Standard Plans (refer to the construction best management practices in Section 2.6.8, "Construction," for additional information). Standard traffic control procedures, such as use of signage and orange cones, would be used during construction. Traffic would be diverted to the other side of the road, or flaggers would be used to direct traffic to available lanes. Temporary paving along the pipeline alignment would occur during construction to reduce traffic control needs, and the amount of temporary paving would be based on local jurisdictional requirements. SR 84 and SR 92 would be unaffected by pipeline construction because horizontal directional drilling would be used to install pipeline crossings under the highways. The relatively limited amount of proposed construction would result in only minor increases in short-term, temporary construction-related traffic on local roadways. For these reasons, project-related construction activities would not substantially impair or physically interfere with emergency access or an adopted emergency response plan or emergency evacuation plan. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

3.8 HYDROLOGY AND WATER QUALITY

This section identifies the regulatory context and policies related to hydrology and water quality, describes the existing hydrologic conditions at the project site, and evaluates potential hydrology and receiving water-quality impacts of the proposed project.

Comments related to hydrology and water quality that were provided during the notice of preparation process included identifying wells adjacent to the project area and protecting or destroying them, questions about the potential for substantial dewatering and groundwater depletion, potential for brine to leak and impact water quality, vulnerability of new infrastructure due to sea level rise, and modeling the zone of initial dilution at the discharge outlet. Comments related to nearby plumes of contaminated groundwater are addressed in Section 3.7, "Hazards and Hazardous Materials."

3.8.1 Regulatory Setting

FEDERAL

Clean Water Act

The US Environmental Protection Agency (EPA) is the lead federal agency responsible for water quality management. The Clean Water Act (CWA) is the primary federal law that governs and authorizes water quality control activities by EPA as well as the states. Various elements of the CWA address water quality. These are discussed below.

CWA Water Quality Criteria/Standards

Pursuant to federal law, EPA has published water quality regulations under Title 40 of the Code of Federal Regulations. Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the act, water quality standards consist of designated beneficial uses of the water body in question and criteria that protect the designated uses. Section 304(a) requires EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. As described in the discussion of state regulations below, the State Water Resources Control Board (SWRCB) and its nine regional water quality control boards (RWQCBs) have designated authority in California to identify beneficial uses and adopt applicable water quality objectives.

CWA Section 303(d) Impaired Waters List

Under Section 303(d) of the CWA, states are required to develop lists of water bodies that do not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). Section 303(d) requires that the state develop a total maximum daily load (TMDL) for each of the listed pollutants. The TMDL is the amount of the pollutant that the water body can receive and still comply with water quality objectives. The TMDL is also a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. In California, implementation of TMDLs is achieved through water quality control plans, known as Basin Plans, of the RWQCBs.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program was established in the CWA to regulate municipal and industrial discharges to surface waters of the United States. NPDES permit regulations have been established for broad categories of discharges including point source waste discharges and nonpoint source stormwater runoff. Each NPDES permit identifies limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits.

"Nonpoint source" pollution originates over a wide area rather than from a definable point. Nonpoint source pollution often enters receiving water in the form of surface runoff and is not conveyed by way of pipelines or

discrete conveyances. Two types of nonpoint source discharges are controlled by the NPDES program: discharges caused by general construction activities and the general quality of stormwater in municipal stormwater systems. The goal of the NPDES nonpoint source regulations is to improve the quality of stormwater discharged to receiving waters to the maximum extent practicable. In California, the RWQCBs are responsible for implementing the NPDES permit system.

National Flood Insurance Act

The Federal Emergency Management Agency (FEMA) is tasked with responding to, planning for, recovering from and mitigating against disasters. The Federal Insurance and Mitigation Administration within FEMA is responsible for administering the National Flood Insurance Program (NFIP) and administering programs that aid with mitigating future damages from natural hazards.

FEMA prepares Flood Insurance Rate Maps (FIRMs) that delineate the regulatory floodplain to assist local governments with the land use planning and floodplain management decisions needed to meet the requirements of NFIP. Floodplains are divided into flood hazard areas, which are areas designated per their potential for flooding, as delineated on FIRMs. Special Flood Hazard Areas are the areas identified as having a one percent chance of flooding in each year (otherwise known as the 100-year flood). In general, the NFIP mandates that development is not to proceed within the regulatory 100-year floodplain, if the development is expected to increase flood elevation by 1 foot or more.

STATE

Porter-Cologne Water Quality Control Act California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Board and each of the nine RWQCBs power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the CWA. The applicable RWQCB for the project is the San Francisco Bay RWQCB. The SWRCB and the San Francisco Bay RWQCB have the authority and responsibility to adopt plans and policies, regulate discharges to surface water and groundwater, regulate waste disposal sites, and require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substances, sewage, or oil or petroleum products.

Under the Porter-Cologne Act, each RWQCB must formulate and adopt a Basin Plan for its region. The Basin Plan for the San Francisco Bay Region (San Francisco Bay Basin Plan) includes a comprehensive list of water bodies within the region and detailed language about the components of applicable Water Quality Objectives (WQOs). It recognizes natural water quality, existing and potential beneficial uses, and water quality problems associated with human activities throughout the Bay Area. Through the San Francisco Bay Basin Plan, the San Francisco Bay RWQCB executes its regulatory authority to enforce the implementation of TMDLs, and to ensure compliance with surface WQOs. The San Francisco Bay Basin Plan includes both narrative, and numerical WQOs designed to provide protection for all designated and potential beneficial uses in all its principal streams and tributaries. Applicable beneficial uses include municipal and domestic water supply, irrigation, non-contact and contact water recreation, groundwater recharge, freshwater replenishment, hydroelectric power generation, and preservation and enhancement of wildlife, fish, and other aquatic resources.

The San Francisco Bay RWQCB also administers the adoption of waste discharge requirements (WDRs), manages groundwater quality, and adopts projects within its boundaries under the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit). The San Francisco Bay RWQCB issued Order Number R2-2022-0023 NPDES Number CA0037869, which authorizes EBDA and its member agencies to discharge secondary treated municipal wastewater and Zone 7 reverse osmosis reject water to the lower San Francisco Bay in July of 2022.

NPDES Construction General Permit for Stormwater Discharges Associated with Construction Activity

The SWRCB adopted the statewide NPDES General Permit in August 1999. The state requires that projects disturbing more than 1 acre of land during construction file a Notice of Intent with the RWQCB to be covered under this permit. Construction activities subject to the General Permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce nonstormwater discharges to storm sewer systems and other waters. A stormwater pollution prevention plan (SWPPP) must be developed and implemented for each site covered by the permit. The SWPPP must include best management plans (BMPs) designed to prevent construction pollutants from contacting stormwater and keep products of erosion from moving off-site into receiving waters throughout the construction and life of the project; the BMPs must address source control and, if necessary, pollutant control.

NPDES Stormwater Permit for Discharges from Municipal Separate Storm Sewer Systems

The Municipal Stormwater Permitting Program regulates stormwater discharges from municipal separate storm sewer systems (MS4s). Stormwater is runoff from rain or snow melt that runs off surfaces such as rooftops, paved streets, highways, or parking lots and can carry with it pollutants such as oil, pesticides, herbicides, sediment, trash, bacteria, and metals. The runoff can then drain directly into a local stream, lake, or bay. Often, the runoff drains into storm drains, which eventually drain untreated stormwater into a local water body.

The project is proposed in San Lorenzo, an unincorporated community in Alameda County, and portions of the Cities of Hayward, Union City, Fremont, and Newark, all of which operate Municipal Separate Storm Sewer Systems under Order Number R2-2015-0049 NPDES Permit Number CAS612008.

NPDES Statewide General Permit for Stormwater Discharges Associated with Industrial Activities

Order 2014-0057-DWQ as amended in 2015 and 2018 (Industrial General Permit) implements the federally required stormwater regulations in California for stormwater associated with industrial activities discharging to waters of the United States. The Industrial General Permit regulates discharges associated with nine federally defined categories of industrial activities. Industrial facilities such as manufacturers, landfills, mining, steam generating electricity, hazardous waste facilities, transportation with vehicle maintenance, larger sewage and wastewater plants, recycling facilities, and oil and gas facilities are typically required to obtain Industrial General Permit coverage. The permit requires the implementation of a SWPPP and sampling requirements.

NPDES General Order for Dewatering

Order No. R2-2018-0026 includes general waste discharge requirements for the discharge of extracted brackish groundwater and extracted groundwater from structural dewatering requiring treatment to surface waters. The Order covers discharges to surface waters, such as creeks, streams, rivers (including flood control canals), lakes, and the San Francisco Bay. Such discharges may occur directly or through constructed storm drain systems.

California Water Code

The California Water Code is enforced by the California Department of Water Resources (DWR). The mission of DWR is "to manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments." DWR is responsible for promoting California's general welfare by ensuring beneficial water use and development statewide.

Groundwater Management

Groundwater management is outlined in the California Water Code, Division 6, Part 2.75, Chapters 1–5, Sections 10750 through 10755.4. The Groundwater Management Act was first introduced in 1992 as Assembly Bill (AB) 3030, and has since been modified by Senate Bill (SB) 1938 in 2002, AB 359 in 2011, and the Sustainable Groundwater Management Act (SB 1168, SB 1319, and AB 1739) in 2014. The intent of the Acts is to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions and to provide a methodology for developing a Groundwater Management Plan.

The Sustainable Groundwater Management Act of 2014 (SGMA) became law on January 1, 2015, and applies to all groundwater basins in the state (Water Code Section 10720.3). By enacting SGMA, the legislature intended to provide local agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater within their jurisdiction (Water Code Section 10720.1).

Pursuant to SGMA, any local agency that has water supply, water management or land use responsibilities within a groundwater basin may elect to be a "groundwater sustainability agency (GSA)" for that basin (Water Code Section 10723). The Alameda County Water District (ACWD) is the GSA pursuant to Water Code Section 10723.8, and implements the groundwater management program with the objective of replenishing groundwater supplies and preventing seawater intrusion into groundwater. ACWD submitted an Alternative to a Groundwater Sustainability Plan (Alternative) for the management of the Niles Cone Subbasin 2-09.01 under SGMA in 2016. ACWD's Alternative preserves and continues the successful sustainable groundwater management already being performed by ACWD. In the northernmost portion of the project area, the East Bay Municipal Utility District is the GSA in the East Bay Plain Groundwater Basin and implements the East Bay Plain Subbasin Ground Water Sustainability Plan

California Coastal Commission

The California Coastal Commission published Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits per Public Resources Code Division 20.6 Planning for Sea Level Rise. This document provides an overview of the best available science on sea level rise for California and recommended methodology for addressing sea level rise in Coastal Commission planning and regulatory actions. It is intended to serve as a multi-purpose resource for a variety of audiences and includes a high level of detail on many subjects (CCC 2018).

LOCAL

East Bay Dischargers Authority

The project will be required to enter an Operations Agreement with EBDA and adhere to the requirements of the San Francisco Bay RWQCB issued Order Number R2-2022-0023 NPDES Number CA0037869, which authorizes EBDA and its member agencies to discharge secondary treated municipal wastewater and Zone 7 reverse osmosis reject water to the lower San Francisco Bay in July of 2022. Average monthly effluent limitations are 86 mg/L as nitrogen for total ammonia, 53 µg/L for total recoverable copper, 20 µg/L for total cyanide, and 1.4×10^{-8} µg/L for dioxin toxic equivalency.

San Francisco Bay Conservation and Development Commission

The San Francisco Bay Conservation and Development Commission's (BCDC's) authority derives from two statutes, the McAteer-Petris Act and the Suisun Marsh Preservation Act. Under the McAteer-Petris Act, jurisdiction of the San Francisco Bay includes:

- the Bay itself (all areas that are subject to tidal action, including sloughs, from the south end of the Bay to the Golden Gate to the Sacramento River, as more specifically defined by the act);
- a shoreline band of land extending inland for 100 feet from the shoreline of the Bay;
- salt ponds (as defined by the act);
- managed wetlands (as defined by the act); and
- certain waterways consisting of all areas that are subject to tidal action on named tributaries that flow into the Bay, as listed in the act.

The McAteer-Petris Act requires that any person or governmental agency wishing to place fill in, or to extract materials exceeding $20 in value from, or make any substantial change in use of any land, water, or structure within the area of BCDC's jurisdiction must secure a permit from the Commission (as well as any permit required from any city or county within which any part of the work is to be performed). The act provides that the Commission shall grant a permit if it finds that the project is either: (1) necessary to the health, safety, or welfare of the public in the entire Bay Area; or (2) consistent with the provision of the act and with the applicable provisions of the San Francisco Bay Basin Plan.

In addition to its permit authority under state law, BCDC exercises authority under Section 307 of the federal Coastal Zone Management Act (CZMA) (16 US Code Section 1456) over federal activities and development projects and non-federal projects that require a federal permit or license or are supported by federal funding. The consistency provisions of Section 307 of the CZMA provide that any federal activity, including a federal development project, that affects any land or water use or natural resource of the BCDC's coastal zone, must be conducted in a manner that is "consistent to the maximum extent practicable" with the enforceable policies of the BCDC's federally approved coastal management program. Similarly, any nonfederal activity that requires either a federal permit or license or is supported by federal financial assistance that affects the BCDC's coastal zone must be conducted in a manner that is fully consistent with the enforceable policies of the BCDC's federally approved coastal management program.

Alameda County General Plan and Code

The Conservation Element of the Alameda County General Plan contains the following goals and objectives related to hydrology and water quality (Alameda County 1994).

GOAL: To insure and maintain a continuing supply of high-quality water for the citizens of Alameda County.

- Objective 2. To conserve groundwater resources and prevent overdraft of existing groundwater supplies.
- Objective 3. To define areas of periodic flooding and reduce loss through the application of sound land use planning.
- Objective 4. To reduce man-caused stream and ground water pollution and general resource degeneration through cumulative impacts on surface and ground water systems.
- Objective 5. To maintain all water resources in their highest quality.
- Objective 7. Through sound design of drainage systems throughout the County and by regulation of land use, erosion of soil caused by water could be controlled.

The County Code Title 15 requires projects to include drainage structures designed and constructed in accordance with standards and criteria authorized by the director of public works that will not cause erosion (15.36.570 and 15.36.600). Grading plans need to include a sediment and erosion control plan (15.36.620). Grading work is not permitted within any area designated as floodplain in accordance with Chapter 15.4 except as approved by the director of public works in accordance with County Code.

Alameda County Water District

ACWD provides water service to approximately 345,000 people in Alameda County. They also manage the Niles Cone Groundwater Basin, which is a major water source for ACWD. ACWD, through Ordinance No. 2010-01) requires a drilling permit prior to the start of any subsurface drilling activities for wells, exploratory holes, or directional boreholes, within the Cities of Fremont, Newark, and Union City. ACWD has existing water system infrastructure in the vicinity of the project area from which minimum clearances should be maintained.

Alameda County Flood Control and Water Conservation District

Alameda County Flood Control and Water Conservation District (ACFCWCD) plans, designs, constructs, and maintains western Alameda County's flood control systems such as natural creeks, channels, levees, pump stations, dams, and reservoirs. ACFCWCD inspects and maintains more than 500 miles of conduit, channels, and natural creeks in western Alameda County, as well as 22 pump stations and 3,700 county tide gates. The District also leads and participates in the Coastal Hazards Adaptation Resiliency Group (CHARG) which facilitates a coordinated assessment of the impacts of sea level rise and evaluation.

City of Hayward General Plan and Municipal Code

The Natural Resources Element of the City of Hayward General Plan contains the following goals and policies related to hydrology and water quality:

GOAL NR-6: Improve overall water quality by protecting surface and groundwater sources, restoring creeks and rivers to their natural state, and conserving water resources.

- Policy NR-6.1: Surface Watercourse Restoration. The City shall coordinate with local and regional partners to improve and restore surface watercourses to their natural condition to the greatest extent possible.
- Policy NR-6.2: Saltwater Intrusion Prevention. The City shall prohibit groundwater withdrawals in industrial and commercial areas near the Bay shoreline which could result in saltwater intrusion into freshwater aquifers.
- Policy NR-6.3: Saltwater Sough and Marsh Sedimentation Protection. The City shall ensure that dredging and grading activities do not contribute to sedimentation of saltwater sloughs or marshes.
- Policy NR-6.4: Minimize Grading. The City shall minimize grading and, where appropriate, consider requiring onsite retention and settling basins.
- Policy NR-6.5: Erosion Control. The City shall concentrate new urban development in areas that are the least susceptible to soil erosion into water bodies in order to reduce water pollution.
- Policy NR-6.6: Stormwater Management. The City shall promote stormwater management techniques that minimize surface water runoff and impervious ground surfaces in public and private developments, including requiring the use of Low-Impact Development (LID) techniques to best manage stormwater through conservation, onsite filtration, and water recycling.

The City of Hayward includes the following hydrology and water quality–related sections in its Municipal Code:

Section 9-2.30 Building of Structures, Permit Required

It shall be unlawful for any person to build, construct or maintain any structure in or upon private property, which said structure abuts or is upon the bank of any watercourse, or any of the tributaries of the same in the City of Hayward, without first securing a permit to build, construct or maintain any such structure as herein provided.

Section 9-4.03 Method of Reducing Flood Losses

To accomplish its purposes, this article includes methods and provisions that:

(a) Restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;

(b) Require that properties vulnerable to floods, including facilities on such properties, be protected against flood damage at the time of initial construction;

(c) Control the alteration of natural flood plains, stream channels, and natural protective barriers, which help accommodate or channel flood waters;

(d) Control filling, grading, dredging, and other development which may increase flood damage; and

(e) Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards in other areas.

(f) These regulations take precedence over any less restrictive conflicting local laws, ordinances, and codes.

Section 11-5.22 Reduction of Pollutants in Stormwater

Any person engaged in activities which will or may result in pollutants entering the City storm sewer system shall undertake all practicable measures to reduce such pollutants.

Union City General Plan and Municipal Code

The Union City 2040 General Plan contains the following goals and policies related to hydrology and water quality in the Resource Conservation and Safety Chapters:

GOAL RC-3: To protect and enhance the natural qualities of Union City's groundwater, surface water, and streams, and to ensure sufficient water supplies of good quality for all beneficial uses.

- Policy RC-3.1: Work with Alameda County Flood Control and Water Conservation District to Protect Streams and Creeks. The City shall work with the Alameda County Flood Control and Water Conservation District (ACFCWCD)

in an effort to restore and protect the natural conditions along stream and creek corridors to improve water quality; provide for enhanced animal, plant, and fish habitats; and provide for additional recreation amenities.

- Policy RC-3.2: Work with ACWD to Protect and Recharge Aquifers. The City shall work with the Alameda County Water District to protect and recharge the Niles Cone water-bearing aquifers through a variety of measures including the incorporation of green infrastructure elements into new development projects.
- Policy RC-3.3: Erosion Control. The City shall require an erosion control plan for new construction, and shall ensure, through review and inspection, that erosion control is being implemented correctly on construction sites.
- Policy C-3.6: Soil Conservation Practices. The City shall require new development to incorporate soil conservation best practices to minimize erosion and related impacts on water quality and effects on drainage courses.

GOAL S-1: To protect the public health and safety and minimize the damage to structures, property, and infrastructure as a result of natural and manmade hazards.

- Policy S-1.1: Development Review for Safety Compliance. The City shall evaluate all proposed projects to ensure compliance with all relevant building and safety codes, including those related to flooding, fire, earthquake, and other geologic hazards.

The Union City Municipal Code contains the following chapters related to hydrology and water quality:

13.36.021 Discharge of Pollutants

The discharge of nonstormwater discharges to the City storm sewer system is prohibited. All discharges of material other than storm water must be in compliance with an NPDES permit issued for the discharge (other than NPDES permit No. CA0029831).

15.85.230 Erosion Control

A. Erosion Control Plan. The applicant shall submit an erosion control plan showing the locations and details of devices and methods proposed to be implemented to minimize erosion and arrest any sediment on-site that is generated during construction. The erosion control plan shall consist of one or more sheets submitted as part of grading plan set.

B. Slopes. The faces of cut and fill slopes shall be prepared and maintained to control against erosion. The protection for the slopes shall be installed as soon as practicable and prior to calling for final approval. Where cut slopes are not subject to erosion due to the erosion-resistant character of the materials, such protection may be omitted, if approved by the City Engineer.

C. Other Devices. Where necessary, check dams, cribbing, riprap, silt fences, straw wattles, jute blankets, hydro-seeding or other devices or methods shall be employed to control erosion and provide safety.

D. Dust Control. The contractor shall take all possible measures to control dust from getting airborne during grading, construction, loading, off-loading and hauling operations. These measures may consist of doing such operations when it is not windy and applying water or dust palliatives to keep dust on the project site.
(Ord. 776-13 Section 3, 2013)

City of Fremont General Plan and Municipal Code

The Conservation and Safety Elements of the City of Fremont General Plan contain the following goals and policies related to hydrology and water quality:

Conservation Element

GOAL 7-2: Water Resources

- Policy 7-2.1: Preservation of Water Resources. Water resources such as the Niles Cone Groundwater Basin, wetlands, flood plains, recharge zones, riparian areas, open space and native habitats should be identified, preserved and restored as valued assets for flood protection, water quality improvement, groundwater recharge, habitat, and overall long term water resource sustainability.

- Policy 7-2.3: Niles Cone Groundwater Basin Maintenance. Maintain the Niles Cone Groundwater Basin as a reliable water source.

GOAL 7-3: Water Quality. High quality water protected from pollutants and managed to improve the quality of the San Francisco Bay and groundwater resources.

- Policy 7-3.1: Protect and Improve Water Quality. Protect and improve water quality in all Fremont's creeks, streams, water courses and water bodies.
- Policy 7-3.2: Groundwater Resources. Protect groundwater from contamination, specifically, the Niles Cone Groundwater Basin.
- Policy 7-3.3: Enforce Water Quality Requirements. Enforce Federal, State and locally issued mandates regarding water quality such as the National Pollutant Discharge Elimination System (NPDES) permit requirements.

Safety Element
GOAL 10-3: Flood Hazards

- Policy 10-3.1: Limit Construction in Floodplain. Prohibit new buildings in the 100 year flood zone as determined by the Federal Emergency Management Agency (FEMA) and as shown on the FEMA Flood Insurance Rate Maps (FIRM) unless sufficient mitigation can be provided or the area is removed from the flood zone.
- Policy 10-3.4: Mitigate Flood Hazards. Require appropriate mitigation of flood hazards associated with failing water storage tanks and other water supply and storage facilities.
- Policy 10-3.6: Flood Impacts from Sea-Level Rise. Evaluate proposed development in areas of the City subject to flooding impacts caused by rising sea levels.

Public Facilities Element
GOAL 9-3: Water, Sewer, and Flood Control

- Policy 9-3.1: Long Range Planning. Work with the Alameda County Water District, Union Sanitary District, and Alameda County Flood Control District to encourage their long range plans are consistent with the Fremont General Plan.

The City of Fremont contains the following ordinances in their Municipal Code related to hydrology and water quality:

18.205.050 Permit Applications - Plans and Specifications
Landscaping and erosion control plans and specifications of soil erosion control areas; any required interim or final erosion control plans shall be prepared in accordance with measures and techniques approved by the city engineer and in accordance with city council adopted public works guidelines for staff.

18.200.040 Methods of Reducing Flood Losses
To accomplish its purposes, this chapter includes methods and provisions for:

(a) Restricting or prohibiting uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion of flood heights or velocities;

(b) Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

(c) Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters;

(d) Controlling filling, grading, dredging and other development which may increase flood damage; and

(e) Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas. (Ord. 1829 Section 1, 7-26-88. 1990 Code Section 8-8103.)

18.210.120 Stormwater Pollution Reduction

All applicants for permits pertaining to the planning, design, and construction of all projects subject to this chapter shall design and implement stormwater best management practices so as to reduce stormwater pollution to the maximum extent practicable. Such projects shall utilize standards and guidelines set forth in the C3 Technical Guidance Manual and the CASQA Stormwater Best Management Practice Handbook, as revised, and shall incorporate the numeric sizing criteria for best management practices set forth in this chapter. (Ord. 01-2021 Section 1, 2-2-21.)

Newark General Plan and Municipal Code

The Conservation and Safety Elements of the City of Newark General Plan contain the following goals and policies related to hydrology and water quality:

GOAL CS-1: Protect Newark's natural environment, landscape, and physical features.

- **Policy CS-1.1:** Environmental Impacts of Development. Ensure that development minimizes its impacts on Newark's environment and natural resources through sound planning, design, and management.

GOAL CS-2: Conserve Newark's wetlands and baylands.

- **Policy CS-2.1: Wildlife and Habitat Protection**. Preserve and protect Newark's plant and animal species and habitats, including wetlands, salt marshes, creeks, and lakes. Ensure that land use decisions avoid and mitigate potential impacts on wildlife habitat to the extent feasible.
- **Policy CS-2.4: Wetlands Delineation**. Encourage the owners of large potentially developable properties to enter into early discussions with appropriate federal agencies to conduct wetlands delineation studies. Such studies should be used to identify areas to be conserved as permanent open space, as well as appropriate mitigation measures to offset any wetland impacts.
- **Policy CS-2.8: Location of Mitigation**. When off-site mitigation to address wetland impacts is necessary, encourage mitigation to be provided as close as possible to the affected site.

GOAL CS-3: Conserve and enhance Newark's water resources.

- **Policy CS-3.1: Protection of Water Resources**. Ensure that land use decisions consider the availability of water for domestic and non-domestic uses, potential impacts on groundwater quality and groundwater recharge capacity, and potential off-site impacts on water quality.
- **Policy CS-3.4: Reducing Water Pollution**. Protect the quality of Newark's surface waters by supporting controls on point source and non-point sources of pollution.

GOAL EH-1: Reduce the potential for injury, harm, property damage, and loss of life resulting from environmental hazards.

- **Policy EH-1.1: Development Regulations and Code Requirements**. Establish and enforce development regulations and building code requirements to protect residents and workers from flooding, liquefaction, earthquakes, fires, and other hazards.

GOAL EH-3: Reduce risks to life and property associated with flooding.

- **Policy EH-3.1: Planning to Avoid Flood Hazards.** Identify flood prone areas in Newark and utilize this data for land use and transportation planning purposes. Flood resistant construction techniques and minimum building elevations shall be required to reduce flood hazards.
- **Policy EH-3.2: Maintaining Drainage Patterns.** Prohibit development, grading, and land modification activities that would adversely affect Newark's drainage system or create unacceptable erosion impacts.
- **Policy EH-3.5: Storm Drain Maintenance.** Manage and maintain the storm drainage system to avoid flooding and reduce the negative effects of stormwater runoff.

- **Policy EH-3.6: Dam Safety.** Advocate for dam safety and maintenance at Calaveras and/or San Antonio Reservoirs, and take the precautions necessary to protect Newark properties from related flood hazards in the event of dam failure.
- **Policy EH-3.7: Mitigating Downstream Flood Impacts.** Design new development to reduce the potential for downstream flooding. Measures such as porous pavement and on-site drainage retention facilities should be considered to reduce downstream impacts.
- **Policy EH-3.8: Flood Control Improvements.** Work with Alameda County Flood Control and Water Conservation District (ACFC&WCD) on improvements to the storm drain, flood control channel, and levee system which ensure that these systems continue to protect Newark neighborhoods and business districts from flooding.
- **Policy EH-3.9: Sea Level Rise.** Consider the effects of rising sea level on the potential for flooding in low-lying areas, and participate in regional adaptation efforts for these areas. Information on flood hazards related to sea level rise should be used to ensure that flood risk is reduced.

The Newark Municipal Code contains the following ordinances related to hydrology and water quality:

Chapter 8.36 - Stormwater Management and Discharge

A. The purpose of this chapter is to ensure the future health, safety and general welfare of the citizens of the city by:
   1. Eliminating non-stormwater discharges to the city storm sewer;
   2. Controlling the discharge to city storm sewers from spills, dumping or disposal of materials other than stormwater;
   3. Reducing pollutants in stormwater discharges to the maximum extent practicable.
B. The intent of this chapter is to protect and enhance the water quality of our watercourses, water bodies and wetlands in a manner pursuant to and consistent with the Clean Water Act.

Chapter 15.40.014 – Methods of Reducing Flood Losses

To accomplish its purposes, this chapter includes methods and provisions for:

A. Restricting or prohibiting uses which are dangerous to health, safety and property due to water hazards, or which result in damaging increases in erosion or flood heights or velocities;

B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

C. Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters;

D. Controlling filling, grading, dredging, and other development which may increase flood damage; and

E. Preventing or regulating the construction of flood barriers, which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

Chapter 15.50.042 – Erosion Control

Where necessary, check dams, cribbing, riprap, or other devices or methods shall be employed to control erosion and provide safety.

3.8.2 Environmental Setting

HYDROLOGY AND DRAINAGE

Regional Hydrology

The project is located in the eastern San Francisco Bay Area, including portions of San Lorenzo, an unincorporated community in Alameda County, and portions of the Cities of Hayward, Union City, Fremont, and Newark. The project is proposed in the San Francisco Bay Delta watershed, which covers more than 75,000 square miles and includes the

only inland delta in the world (EPA 2022). The regional watersheds are generally characterized by a series of northeast- to southwest-trending linear drainage basins that extend from higher elevations in the eastern hills to the San Francisco Bay in the west (Alameda County 1994). Runoff from these watershed discharges to South San Francisco Bay (South Bay) or the Lower South Bay, located north and south of SR 84, respectively. The South Bay is a large shallow basin with a relatively deep main channel surrounded by broad shoals and mudflats. The Lower South Bay is a shallow embayment surrounded by, and interconnected with, a network of sloughs, marshes, and salt ponds. Daily tides, riverine input from local tributaries, wind-driven currents, and slow circulation patterns can influence mixing and flushing processes in the South Bay. The San Francisco Bay receives its major source of fresh water from the Sacramento-San Joaquin drainage basin with minor contributions from local streams around the Bay. The South Bay does not receive much of the Sacramento-San Joaquin freshwater outflow due to limited circulation in the southernmost location in the Bay.

The South Bay experiences a Mediterranean climate with mild, wet winters and dry, warm summers. Weather data from the Newark weather station between 1981 to 2010 records mean temperature ranges in the project area of a low of 49.9 degrees Fahrenheit (F) in January to a high of 67.9 degrees F in August (WRCC 2022). Average annual precipitation is 15.09 inches of rain that mostly falls from November to April (WRCC 2022).

Local Hydrology

Elevations in the vicinity of the project area range from sea level along the San Francisco Bay shoreline in the west to approximately 20 feet above sea level on the east side of the project area. There are several watersheds mapped by the ACFCWCD (2017) in the project area including from north to south:

- Bockman Canal watershed (2.8 square miles) flows from the flat lands of western San Leandro to the San Francisco Bay and includes a network of storm drains and canals.
- Lower Sulphur Creek watershed (2.7 square miles) flows from downtown Hayward to the San Francisco Bay. Its historical headwaters, Upper Sulphur Creek, have been artificially diverted into San Lorenzo Creek at 2nd Street to prevent flooding.
- Hayward Landing watershed (3.4 square miles) flows from downtown Hayward to the San Francisco Bay and includes a network of underground storm drains feeding three major canals that join near the end of Winton Avenue and enter the Bay at Hayward Landing.
- Johnson Landing watershed (3 square miles) drains an industrial area of Hayward into the San Francisco Bay near the San Mateo Bridge.
- Mt. Eden Creek watershed (7 square miles) includes a network of underground storm drains through a small industrial area of Hayward that discharges into Mt. Eden Creek and then the San Francisco Bay.
- Old Alameda Creek watershed (22 square miles) drains the Hayward Hills and a large area of the East Bay plain into the historical channel of Alameda Creek into the San Francisco Bay.
- Alameda Creek watershed (660 square miles) is the largest watershed on the eastern shore of the San Francisco Bay. The headwaters of Alameda Creek are located in the Diablo Range and drain through the Sunol Valley and Niles Canyon. Alameda Creek then flows across the East Bay Plain and to the San Francisco Bay. The subwatersheds that the alignment passes through within this watershed include the Lower Alameda Creek, Line J-2, and Crandall Creek subwatersheds.
- Newark Slough watershed (4.9 square miles) drains the flatlands of Newark and Fremont via a system of underground storm drains and engineered channels into Newark Slough and San Francisco Bay.
- Plummer Creek watershed (2.6 square miles) drains the urban flatlands into Plummer Creek and the south San Francisco Bay. The EBDA salt ponds are bermed ponds in this watershed and therefore do not exchange water with the watershed.

The Cargill salt ponds are located within the Don Edwards San Francisco Bay National Wildlife Refuge in the City of Newark. The refuge's mission to protect natural resources co-exists with Cargill's solar salt system. Berms constructed

of Bay mud dredged from adjacent borrow ditches or pond areas separate the salt ponds from the wildlife refuge and from the natural hydrology. Berms are augmented with additional Bay mud or imported fill when they settle or deform. Berms on the Bayfront and slough/creek berms adjacent to tidal waters were built to protect the salt ponds from Bay inundation. Internal berms separate the individual salt ponds from each other and are typically smaller than the outboard berms. Generally, pond berms were not designed, constructed, or maintained following well-defined standards (USACE 1988).

Stormwater Drainage

Stormwater drains through the project area through underground culverts, storm drains, and engineered channels, which flow to creeks and drainages that enter the San Francisco Bay. Stormwater in the project area drains to the South Bay and the Lower South Bay. Stormwater facilities are mapped and maintained by the jurisdictions in which they are located (cities and counties). The ACFCWCD reviews development proposals and advises the cities on appropriate storm drain measures. Stormwater that falls into the salt pond remains in the ponds, which are disconnected from any stormwater drainage system. Stormwater management would occur during both the construction and operational phase of the project.

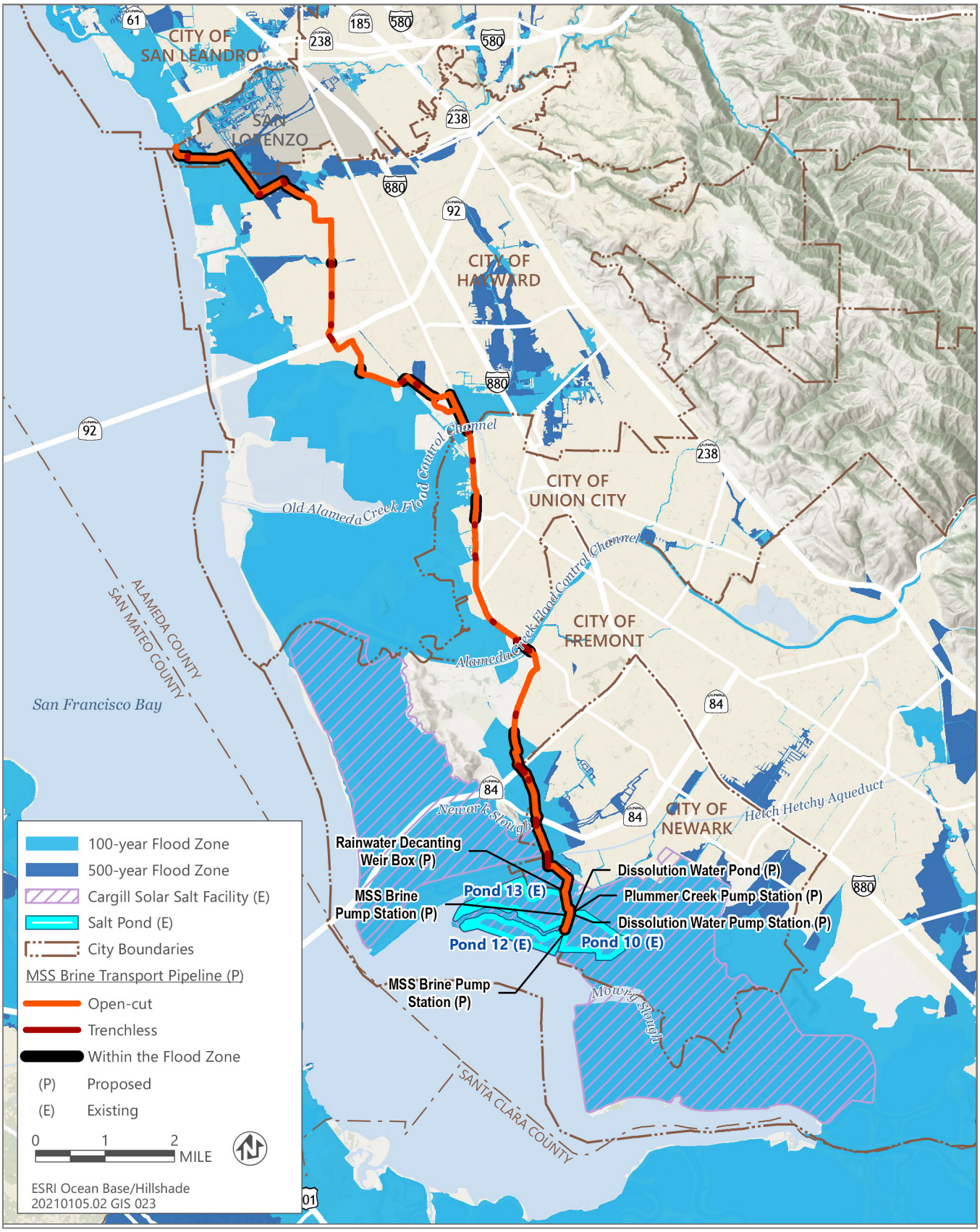
Groundwater Hydrology

The majority of the project site is located in the Santa Clara Valley Groundwater Basin, Niles Cone Subbasin (Basin No. 2-9.01). The subbasin is 103 square miles in area and is bounded on the south by the Alameda-Santa Clara County boundary and on the north by the boundary of ACWD and southern portions of the City of Hayward (DWR 2006). The subbasin is bounded on the east by the Diablo Range and on the west by the San Francisco Bay (DWR 2006). The Niles Cone Subbasin is comprised chiefly of alluvial fan deposits from Alameda Creek and marine deposits related to rising and falling sea levels. Pleistocene to Holocene aged alluvium is the most substantial water-bearing unit in the groundwater basin. The Niles Cone is referred to as a basin locally with two subbasins because it is cut by the Hayward Fault at the apex of the Niles Cone, which impedes the westward flow of groundwater. The two sections of the groundwater basins are called the Above Hayward Fault (AHF) subbasin and the Below Hayward Fault (BHF) subbasin. The AHF subbasin on the east side of the fault is composed of relatively homogeneous sand and gravel. The AHF subbasin has significantly higher groundwater levels than the BHF subbasin (City of Fremont 2011a). The BHF subbasin on the west side of the fault is composed of a series of gently westward dipping aquifers separated by extensive clay aquitards. The BHF subbasin was at record low groundwater levels in the early 1960s due to overdraft of the basin. In 1962, the ACWD used a source of water from the State Water Project to recharge the basin. From the early 1970s, water levels have ranged from sea level to approximately 20 feet above mean sea level (msl) due to elevation and topography (DWR 2006). With regard to groundwater storage capacity of the basin, two values have been calculated. The estimated storage to a base corresponding to msl is 47,000 acre-feet (af). The estimated storage to –400 feet below msl is 1,361,000 af (DWR 2006).

The northern portion of the project site is located in the Santa Clara Valley East Bay Plain Groundwater Subbasin (2-009.04). This subbasin is located to the north of the Niles Cone Subbasin and covers a surface area of 122 square miles (DWR 2004). The East Bay Plain Subbasin is a northwest trending alluvial plain bounded on the north by San Pablo Bay, on the east by the contact with Franciscan basement rock, and on the south by the Niles Cone Groundwater Basin. The East Bay Plain Basin extends beneath San Francisco Bay to the west. Historic water levels in the more than 500 feet deep aquifer in the basin have varied between 10 to 140 feet below msl since the early 1950s (DWR 2004). Water levels rose about 5 feet per year between 1965 and 1980. Water levels have been rising continuously since then, but at a less rapid rate. In 2000, water levels were very near surface in all aquifers.

Flood Conditions

Flooding in the project area could be caused by heavy rainfall, extremely high tides, and the failure of flood control or water supply structures. FEMA has mapped special flood hazard areas in the project area (Figure 3.8-1). According to FIRMs prepared by FEMA's National Flood Insurance Program, several portions of the project site are located in the 100-year and 500-year flood hazard area zones (FEMA 2022). The 100-year flood hazard areas within the project area includes the salt ponds, a portion of the southern portion of the pipeline alignment, isolated areas along the alignment, and the northernmost portion of the project area.



Source: Data downloaded from FEMA in 2021; adapted by Ascent Environmental in 2022.

Figure 3.8-1 FEMA Flood Zones in the Vicinity of the Project Site

Flood protection efforts in the project area are primarily handled by ACFCWCD. ACFCWCD operates and maintains a system of water control infrastructure, including a series of 22 pump stations; erosion control structures; dams; and over 500 miles of pipelines, channels, levees, and creeks, that protects western Alameda County from flooding.

Sea Level Rise

BCDC anticipates that global warming will result in 16 inches of sea level rise (SLR) in the San Francisco Bay by 2050 (City of Fremont 2011b). SLR is one of the reasons this project is proposed. A large MSS inventory remains in the Cargill facility in Ponds 12 and 13, and due to the long-term threat of sea level rise, Cargill is proposing this project for enhanced processing and removal of this MSS inventory. A Sea Level Rise Assessment developed for the salt ponds identified high-priority berms that could be overtopped by a combination of 6 inches of SLR and a 100-year storm event (AECOM 2021). The project would move brine containing MSS through the system faster and minimize the risk of the MSS inventory entering the San Francisco Bay if the berms were breached by SLR. A predicted SLR of 12 inches is shown in Figure 3.8-2. The areas labeled disconnected areas represent low-lying areas that could be flooded via storm drain and culvert connection to adjacent flooded areas. Most of the pipeline alignment remains outside of the area impacted by SLR of this magnitude either by protection due to berms or their inland location.

Seiche/Tsunami

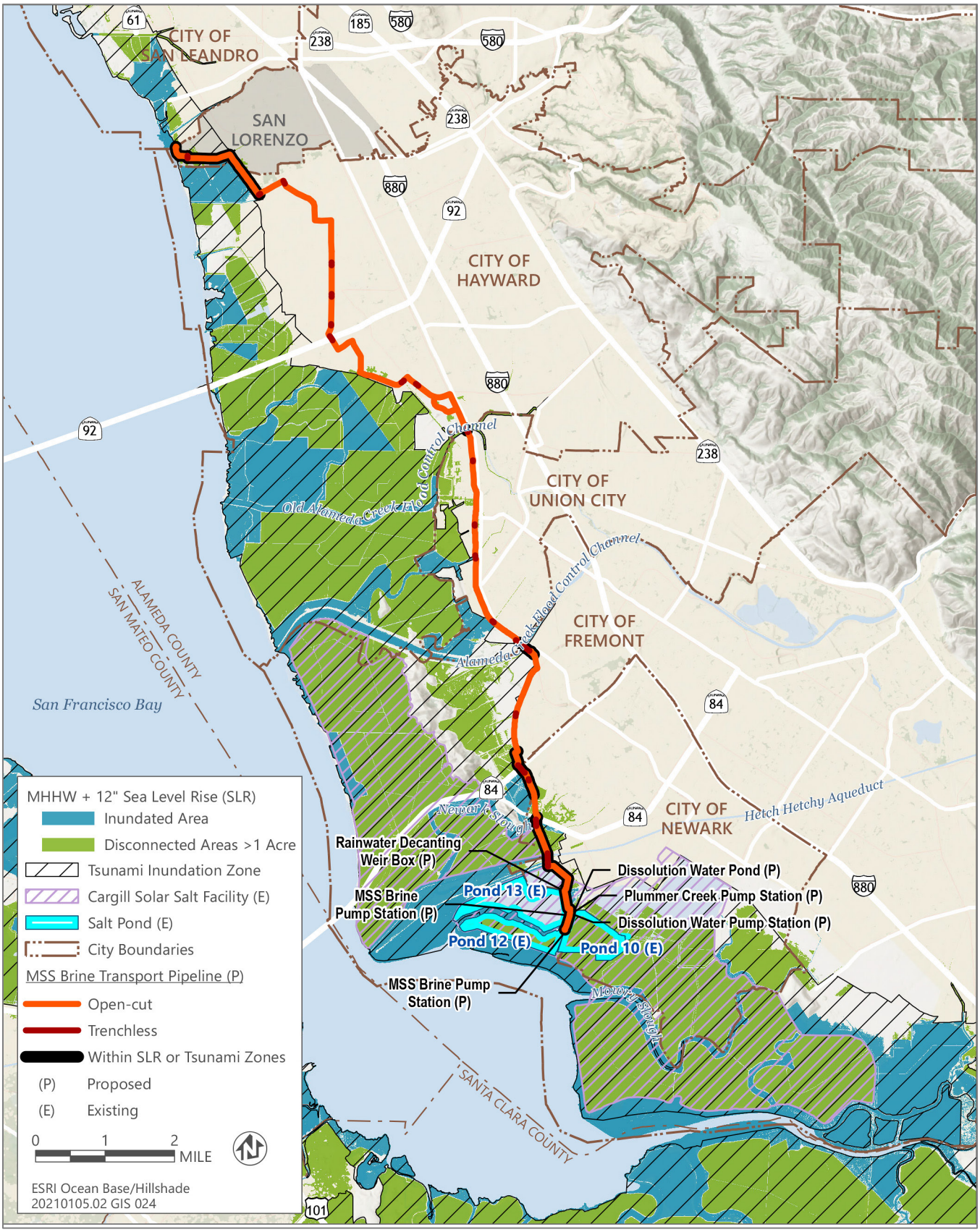
Tsunamis are ocean waves cause by large earthquakes or landslides that occur near or under the ocean. Due to the shallowness of the Bay along the waterfront, tsunamis are not considered a significant hazard for developed areas (City of Fremont 2011b, Newark 2013). Seiches are standing waves created on rivers, reservoirs, ponds, and lakes when seismic waves or large landslide occur. The multiple berms and long stretch of shallow water associated with the adjacent salt ponds between the Bay and the site would minimize waves generated by a seiche on the Bay. Seiches could cause water in nearby reservoirs in the hills to overtop their dams, leading to inundation or flooding in Niles Canyon and other portions of Fremont (City of Fremont 2011b).

In the unlikely event that seiche or tsunami waves in the Bay could overtop the outboard berms of the salt ponds, the Bay water would flow into the ponds, but pond water would likely not flow out into the Bay because the ponds are against the eastern shore of the bay, and prevailing winds in San Francisco Bay are regularly from the west or northwest and the brine levels in the salt ponds are kept below the top of the berms, so any water overtopping the berms would be captured by the ponds.

The Tsunami Inundation Zone is shown in Figure 3.8-2 and includes the Cargill salt ponds but most of the pipeline alignment remains inland of the inundation zone with the exception of the northern end of the project site.

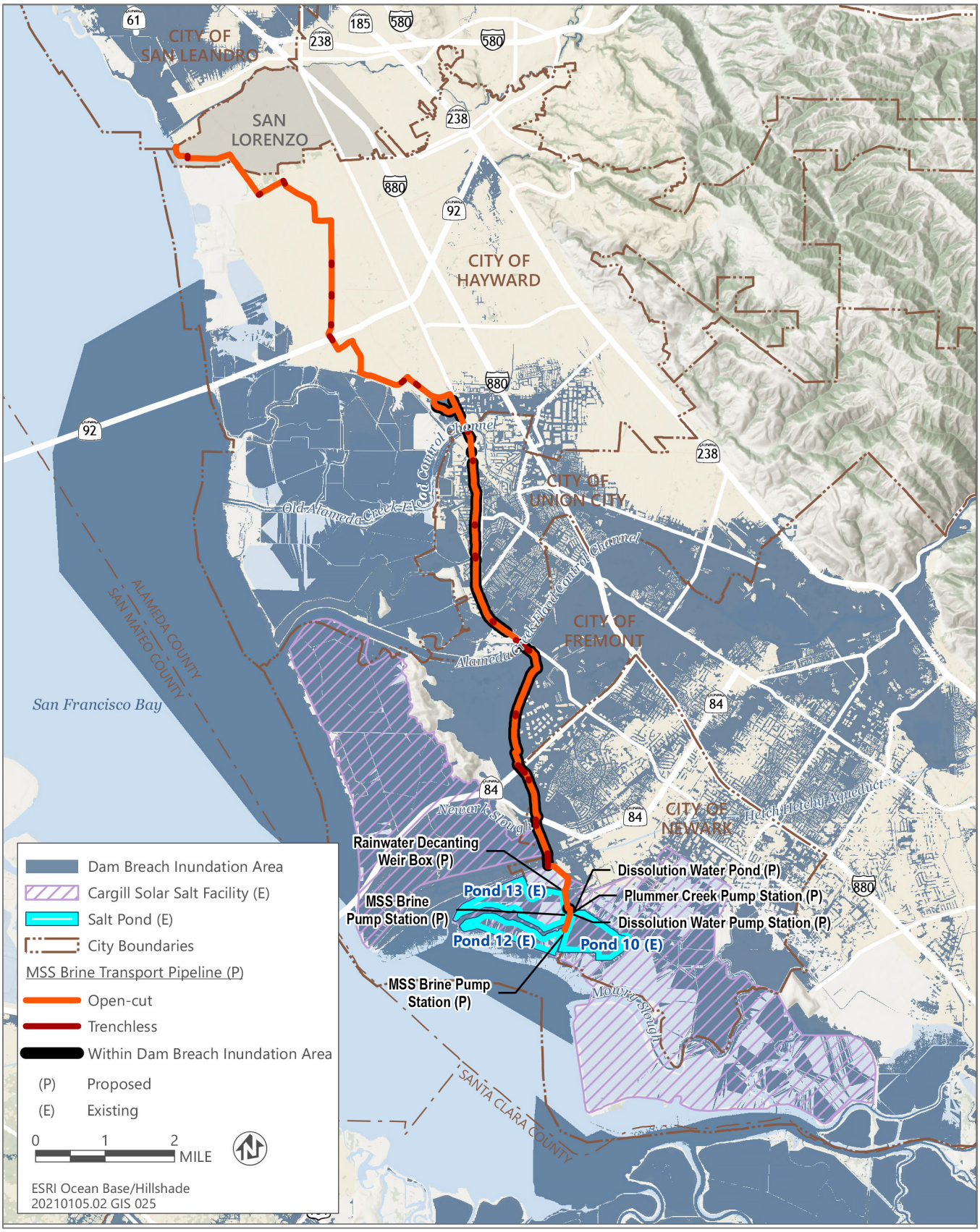
Dam Failure

According to the Association of Bay Area Governments, most of Fremont and Newark would be inundated if upstream reservoirs (Calaveras, Del Valle, or Turner) were to fail (Figure 3.8-3). Inundation resulting from catastrophic dam failure could damage property and structures within the project area and pose a severe hazard to public safety. The Del Valle and Turner Dams are classified as high-hazard dams because their failure would result in a significant loss of life and property damage. The project area is located within the dam inundation areas for three dams (including the reconstructed Calaveras Dam), all of which fall under the jurisdiction of the California Division of Safety of Dams. The Division inspects each dam on an annual basis to ensure the dam is safe, performing as intended, and is not developing problems. The Del Valle Dam is an earth fill dam built in 1968. The James H. Turner Dam is also an earth fill dam, completed in 1964. Calaveras Dam is a hydraulic fill dam completed in 1925 and was recently reconstructed. After the reconstruction, the risk of the Calaveras Dam failing is extremely low and, therefore, is not considered a significant hazard. The southern portion of the pipeline alignment, including portions of the Cargill salt ponds, is located in the dam inundation zone.



Source: Data downloaded from Adapting To Rising Tides Bay Area Sea Level Rise & Mapping Project in 2022; adapted by Ascent Environmental in 2022.

Figure 3.8-2 Predicted Sea Level Rise in the Vicinity of the Project Site



Source: Data downloaded from DWR in 2022; adapted by Ascent Environmental in 2022.

Figure 3.8-3 Dam Failure Inundation Areas in the Vicinity of the Project Site

WATER QUALITY

Surface Water Quality

Surface water quality is closely tied to the amount of development that occurs nearby (City of Fremont 2011a). Stormwater runoff is the principal source of water pollution in Newark (Newark 2013). The San Francisco Bay is an impaired water body mostly due to non-point source pollution from urban runoff, air deposition, and point source discharges from sewage treatment plants and industrial users (City of Fremont 2011a). Impairments of the Bay are separated into the Lower San Francisco Bay and South San Francisco Bay in the vicinity of the project area. Both the Lower and South Bay are impaired for dieldrin, dioxin compounds (including 2,3,7,8-TCDD), furan compounds, mercury, selenium, polychlorinated biphenyls (PCBs), total chlordane (sum of isomers: cis- and trans-nonachlor, doxychlordane, alpha- and gamma-chlordane), and total dichloro-diphenyl-trichloroethane (DDT), including dichloro-diphenyl-dichloroethane [DDD], dichloro-diphenyl-dichloroethylene [DDE] and DDT) (SWRCB 2022). Within the project area, Alameda Creek and San Lorenzo Creek are impaired for diazinon (SWRCB 2022).

The San Francisco Bay Basin Plan establishes beneficial uses that serve as a basis for setting WQOs. The San Francisco Bay RWQCB's "tributary rule," establishes that the beneficial uses of any specifically identified water body generally apply to all its tributaries. In some cases, a beneficial use may not be applicable to the entire body of water; per the judgement of the San Francisco Bay RWQCB. Additionally, beneficial uses of streams that only have intermittent flows must be protected throughout the year (San Francisco Bay RWQCB 2019). The existing and potential beneficial uses designated in the San Francisco Bay Basin Plan for surface waters that could receive runoff or discharges from the project are shown in Table 3.8-1. The waters are separated into hydrologic planning areas with the South Bay Planning Area located north of the Santa Clara Planning Area.

Table 3.8-1 Beneficial Uses of Major Water Bodies in the Project Area

Water Body	Agricultural Supply (AGR)	Municipal and Domestic Supply (MUN)	Freshwater Replenishment (FRSH)	Groundwater Recharge (GWR)	Industrial Service Supply (IND)	Commercial and Sport Fishing (COMM)	Shellfish Harvesting (SHELL)	Cold Freshwater Habitat (COLD)	Estuarine Habitat (EST)	Marine Habitat (MAR)	Fish Migration (MIGR)	Rare & Endangered Species Preservation (RARE)	Fish Spawning (SPWN)	Warm Freshwater Habitat (WARM)	Wildlife Habitat (WILD)	Water Contact Recreation (REC-1)	Non-Contact Water Recreation (REC-2)	Navigation (NAV)
South Bay Basin																		
San Lorenzo Creek		E	E	E				E			E		E	E	E	E	E	
Sulphur Creek (west)														E	E	E	E	
Old Alameda Creek									E						E	E	E	
Ward Creek														E	E	E	E	
Alameda Creek	E			E		E		E			E	E	E	E	E	E	E	
Coyote Hills Slough									E		E	E	E		E	E	E	
Crandall Creek														E	E	E	E	
San Francisco Bay South					E	E	E		E		E	E	E		E	E	E	E
Santa Clara Basin																		
Newark Slough									E			E			E	E	E	
Plummer Creek (Zone 5 Line F-1)									E			E			E	E	E	
Mowry Slough									E			E			E	E	E	
San Francisco Bay Lower					E	E	E		E		E	E	E		E	E	E	E

Note: E = existing beneficial use.
Source: San Francisco Bay RWQCB 2019.

To protect beneficial uses, the San Francisco Basin Plan lists and describes both narrative and numeric WQOs for surface water and groundwater. Narrative objectives include salinity, sediment, biostimulatory substances, toxicity, and population and community ecology. Numeric WQOs are established for trace metals, dissolved oxygen, pH, turbidity, and other water quality constituents (San Francisco Bay RWQCB 2019).

EBDA Outfall to the San Francisco Bay

EBDA, its member agencies (City of Hayward, City of San Leandro, Oro Lomo Sanitary District, Castro Valley Sanitary District, and Union Sanitary District), and the Livermore-Amador Valley Water Management Agency discharge secondary treated municipal wastewater and reverse osmosis reject water via the EBDA common outfall and diffuser to a deep-water portion of the Bay. These discharges are regulated by the San Francisco Bay RWQCB under Order No. R2-2022-0023, NPDES No. CA0037869. The permit includes effluent limitations that apply to water at the treatment plants and the EBDA common outfall, as well as receiving water limitations that apply to waters in the South Bay. The San Francisco Bay RWQCB has designated the EBDA discharge location in the Lower Bay as marine, based on nearby salinity measurements. Normal South Bay water salinity ranges from 10 to approximately 30 parts per thousand (ppt), depending on the time of year.

Salt Ponds

During extreme storm events, excess stormwater may be discharged from the salt ponds into the Alameda Flood Control Channel in Alameda Creek and into Mowry Slough, which has the potential to affect water quality. Berm maintenance activities such as outboard berm maintenance and excavation for lock access may also have a temporary effect on water quality, particularly turbidity.

Groundwater Quality

Groundwater quality can be affected by many things, but the chief controls on the characteristics of groundwater quality are the source and chemical composition of recharge water, properties of the host sediment, and history of discharge or leakage of pollutants. The water quality in the groundwater system is characterized by fresh groundwater in the eastern portion of the Niles Cone Groundwater Basin transitioning into brackish groundwater in the western portion of the basin. The brackish groundwater is a result of historical seawater intrusion from the adjacent Bay. A sodium chloride groundwater type predominates on the western margin and central portion of the subbasin and a sodium bicarbonate groundwater type predominates along the eastern portion of the subbasin. Saline water intrusion has occurred in the subbasin. ACWD has taken significant steps to control the movement of the saline groundwater and restore the quality of groundwater in the affected aquifers (DWR 2006). Since the 1960s, ACWD has managed the groundwater basin to prevent any additional seawater intrusion and has an ongoing program to pump trapped brackish groundwater back to the Bay (City of Fremont 2011a).

In the East Bay Plain Subbasin, calcium bicarbonate type groundwater occurs mostly in the upper 200 feet of the subsurface, while sodium bicarbonate waters are common below 200 feet. The San Francisco Bay RWQCB identified 13 distinct locations with areas of major groundwater pollution due to release of fuels and solvents (San Francisco RWQCB 1999). Most contamination appears to be restricted to the upper 50 feet of the subsurface. Total dissolved solids also exceeded 500 mg/l in 15 of the 29 sampled wells in the subbasin.

The salt ponds are isolated from groundwater by Bay Mud clays that underlie the ponds and crystallizers, and also form the salt pond berms. The Cargill Solar Salt System operations do not use groundwater.

3.8.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

Evaluation of potential hydrologic and water quality impacts is based on a review of existing documents and studies that address water resources in the vicinity of the project. Information obtained from these sources was reviewed and summarized to describe existing conditions and to identify potential environmental effects, based on the standards of significance presented in this section. In determining the level of significance, the analysis assumes that the project would comply with relevant federal, state, and local laws, ordinances, and regulations.

THRESHOLDS OF SIGNIFICANCE

An impact on hydrology or water quality would be significant if implementation of the proposed project would:

- violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water or groundwater quality;
- substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the affected basin;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would
  - result in substantial erosion or siltation on- or off-site;
  - result in flooding on-site or off-site;
  - create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
  - impede or redirect flood flows
- in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or
- conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.8-1: Potential to Violate Any Water Quality Standards or Waste Discharge Requirements or Otherwise Substantially Degrade Surface Water or Groundwater Quality during Construction

Construction of the project would cause soil disturbance during trenching for installation of the MSS brine transport pipeline and during construction of Solar Salt Facility ponds and associated infrastructure improvements. This disturbance has the potential to impact surface water and groundwater quality through increased potential of erosion and sedimentation especially when construction is adjacent to waterways and wetlands or within wetlands. If needed, dewatering would occur during construction using sump pumps. The water would be disposed of in an approved sewer system or settling tank to protect water quality. Additionally, the use of equipment during construction could cause spills or leaks of fuel, oil, and other fluids that could degrade water quality especially when construction is adjacent to or within wetlands. The project would adhere to California Construction General Permit Order 2009-0009-DWQ, as well as city and county codes, which would reduce the water quality impact associated with construction. The pipeline would also include several directional drills under wetlands, waters of the United States, and other infrastructure. Directional drilling has the potential to release drilling fluid (bentonite clay-water mix) to the surface, which could spill into adjacent wetlands and waters. Impacts to water quality from direct work in wetlands and from drilling fluids would be **potentially significant**.

According to the Association of Bay Area Governments, most of Fremont and Newark would be inundated if upstream reservoirs (Calaveras, Del Valle, or Turner) were to fail (Figure 3.8-3). The project area is located within the dam inundation areas for the three dams. The southern half of the pipeline alignment is located in the dam inundation zone including portions of the Cargill salt ponds. This includes 57,023 linear feet of the pipeline alignment and 4.27 acres of staging areas. As previously stated, if the berms surrounding the salt ponds were to breach, salt and brine residue could be released to the Bay along with sediment from the berms.

Soil disturbance, excavation, cutting and filling, directional drilling, stockpiling, dewatering, and grading could result in impacts to surface water and groundwater quality through increased erosion and sedimentation. Additionally, use

of construction equipment has the potential to release fuel, oil, lubricants, and other fluids in the case of an accident or spill, which could adversely affect surface water and groundwater quality.

Construction activities at the Solar Salt Facility associated with pump station, weirs, distribution system, and electrical utility connection improvements would include vegetation removal, soil disturbance excavation, cutting and filling, stockpiling, dewatering, and grading within unvegetated salt ponds, salt pond slopes and surrounding access berms. Construction-related activities associated with the proposed approximately 16 miles of underground MSS brine transport pipeline would involve removal of asphalt, trenching, dewatering, directional drilling, and paving mostly along disturbed rights of way to connect with EBDA's system downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. During construction of the pipeline, dewatering to remove excess groundwater from excavations created for installation of the pipeline may also be required.

Wetland types in the project area are described in Section 3.3, Biological Resources under Habitat Communities. Approximately 30 percent (25,357 linear feet) of the MSS brine transport pipeline alignment is located on uplands directly adjacent to a mapped wetland (Figure 3.8-4), and 5,827 linear feet of directional drilling would occur under wetlands or waters. In total, 1.72 acres of wetland would be temporarily affected during construction and 0.12 acres of wetlands would be permanently affected in the salt pond area where pump stations and weirs are proposed (Table 3.8-2). Construction activities adjacent waterways and wetlands or directly in wetlands could affect water quality through sedimentation or from the potential spill of concrete which could increase the pH of the affected water temporarily.

Table 3.8-2 Wetland Water Quality Impacts

Impacted Wetland Type	Permanent Impact (acres)	Temporary Impact (acres)	Total Impact (acres)
Playa		1.02 (Laydown Area, Pipeline Disturbance, Staging Area)	1.02
Pond	0.08 (Pump Station, Weir)	0.36 (Laydown Area, On-Site Facility Work Area, Pipeline Disturbance)	0.44
Pond and associated vegetation		0.10 (Laydown Area, Pipeline Disturbance)	0.10
Tidal Channel	0.04 (Pump Station)	0.22 (On-Site Facility Work Area, Pipeline Disturbance)	0.26
Tidal Marsh		0.02 (Laydown Area, On-Site Facility Work Area, Pipeline Disturbance)	0.02
TOTAL	**0.12**	**1.72**	**1.85**

Project dewatering operations would be conducted in accordance with the General Order for Dewatering Order No. R2-2018-0036 or other waste discharge permits. The discharge from the dewatering operations would be disposed of in approved sewer systems or settling tanks. A Storm Water Pollution Prevention Plan would be developed and implemented during construction in accordance with the California Construction General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) that would include BMPs to avoid or minimize impacts to water quality from construction, including perimeter control, minimizing wind- and water-related soil and sediment discharges from work areas, minimizing potential contamination of stormwater and nonstormwater discharges, minimizing the potential for hazardous material spills, and storm water sampling of stormwater flowing off of the project area. Perimeter control would be implemented to ensure construction equipment does not enter adjacent waterways or wetlands where possible.

Source: Data downloaded from SFEI & the Aquatic Science Center in 2016; adapted by Ascent Environmental in 2022.

Figure 3.8-4 California Aquatic Resources Inventory

Construction activities at the Solar Salt Facility and construction of the MSS pipeline have the potential to introduce pollutants and sediment into surface water and groundwater that could adversely affect water quality. As described above, a SWPPP would be developed that specifies BMPs in accordance with California Construction General Permit Order 2009-0009-DWQ (as described above) and city and county codes. Dewatering operations would be conducted in accordance with the General Order for Dewatering Order No. R2-2018-0036 as described above. Even with adherence to these permits, impacts to wetland water quality due to construction of the project could still occur.

Directional drilling has the potential to result in "frac-out." It is relatively common for a frac-out to occur during directional drilling. Frac-outs frequently occur as the result of excessive down-hole pressure resulting from the choice of drilling mud or drilling practice. Drilling muds typically consist largely of a bentonite clay-water mixture. Bentonite is a naturally occurring, nontoxic, inert substance. Other materials used sometimes include soda ash and chemical additives. Frac-out of drilling muds can adversely affect water quality by increasing turbidity, introducing toxic material, and changing the pH of adjacent surface water and potentially groundwater. The longer the directional drill under water bodies and wetlands, the longer the area that could experience water quality effects if frac-out occurs. However, most frac-outs are usually minor and located within construction rights of way close to the bore entry or exit. Nevertheless, while compliance with the Construction General Permit and the General Order for Dewatering would minimize the potential for water quality impacts associated with trenching, dewatering, and paving activities, water quality impacts associated with directional drilling would be **potentially significant**.

Mitigation Measures

Mitigation Measure 3.3-10: "Implement Directional Drilling Fluid Containment Measures"

Prior to directional drilling activities, containment and cleanup equipment such as portable pumps, silt fence, fiber rolls, etc. will be present for use at the staging areas and active construction site. At high-risk boring locations directly adjacent to or under water bodies or wetlands, damming and flume materials will be pre-staged. During directional drilling activities, construction crews will monitor bentonite flow and returns so that fluid loss can be identified before the material surfaces. Silt fencing or equivalent will be installed between the bore site and any water or wetland. This will prevent the bentonite mixture from entering the water or wetland should a spill occur. If a spill is detected in a water or wetland, drilling will immediately cease, and spill prevention and control measures will immediately be employed. If the mixture flows to the surface of a water, a pump will be used to pump it to a safe location within a BMP. If a release occurs in a water, the water will be immediately dammed and flumed and the bentonite mixture will be contained and removed. The appropriate permitting agencies will be contacted including the San Francisco Bay RWQCB.

Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State

Before initial ground disturbance or vegetation removal activities begin within areas that may contain wetlands and other waters, the following measures, which are intended to avoid and minimize impacts on state or federally protected wetlands, shall be implemented.

- A qualified biologist will delineate the boundaries of state or federally protected wetlands within the project site according to methods established in the USACE wetlands delineation manual (Environmental Laboratory 1987) and the Western Mountains, Valleys, and Coast regional supplement (USACE 2010). The qualified biologist will also delineate the boundaries of wetlands that may not meet the definition of waters of the United States, but would qualify as waters of the state, according to the state wetland definition and procedures (SWRCB 2021).
- If state or federally protected wetlands are determined to be present within a work area and can be avoided, the qualified biologist will establish a buffer around wetlands and mark the buffer boundary with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway). The buffer will be a minimum width of 25 feet but may be larger if deemed necessary. The appropriate size and shape of the buffer zone will be determined in coordination with the qualified biologist and will depend on the type of wetland present, the timing of project activities (e.g., wet or dry time of year), whether any special-status species may occupy the wetland and the species' vulnerability to the project activities, environmental conditions and terrain, and the project activity being implemented.

- Project activities (e.g., ground disturbance, vegetation removal, staging) will be prohibited within the established buffer. A qualified biologist will periodically inspect the materials demarcating the buffer to confirm that they are intact and visible, and wetland impacts are being avoided.
- If it is determined that fill of waters of the United States would result from project implementation, authorization for such fill will be secured from USACE through the Section 404 permitting process. Any waters of the United States that would be affected by the project will be replaced or restored on a no-net-loss basis in accordance with USACE mitigation guidelines. In association with the Section 404 permit (if applicable) and prior to the issuance of any grading permit, Section 401 Water Quality Certification from the San Francisco RWQCB will be obtained.
- If it is determined that disturbance or fill of state protected wetlands, or any other waters of the state cannot be avoided, the implementing party will notify CDFW and the San Francisco RWQCB before commencing any activity within the bed or, bank, or riparian corridor of any waterway and will notify the RWQCB before commencing any activity within a state wetland. If project activities trigger the need for a Streambed Alteration Agreement, the proponent will obtain an agreement from CDFW before the activity commences. Project construction activities will be implemented in accordance with the agreement, including implementing reasonable measures in the agreement necessary to protect the fish and wildlife resources, when working within the bed or bank of waterways that function as a fish or wildlife resource or in riparian habitats associated with those waterways. The applicant will apply for a permit from the San Francisco RWQCB for any activity that may result in discharges of dredged or fill material to waters of the state. The application will be completed in accordance with state procedures (SWRCB 2021).
- State or federally protected waters and wetlands disturbed during project activities will be restored to pre-disturbance conditions or better. Restoration would include restoring pre-disturbance contours, hydrology, and vegetation. Temporary impacts to wetland would require preparation of a restoration plan which details how wetlands would be restored and would require implementation of a monitoring plan to ensure the restoration is successful. Permanent impacts to wetlands and other waters of the United States will be replaced in accordance with USACE regulations to achieve "no net loss" of area or function of waters of the United States, including wetlands.
- Permanent impacts to waters of the state will be compensated in accordance with the state procedures, such that the project would not result in a net loss of overall abundance, diversity, and condition of aquatic resources within the affected watershed based on a watershed assessment using an assessment method approved by the San Francisco RWQCB or State Water Resources Control Board.
- To the degree feasible and acceptable to the agencies with jurisdiction, restoration, rehabilitation, and/or replacement of jurisdictional waters for permanent impacts will be mitigated in-kind and completed on-site at a location agreeable to USACE and the RWQCB in accordance with USACE and San Francisco RWQCB mitigation guidelines. Any permanent impacts that cannot be mitigated through on-site restoration, rehabilitation, and/or replacement will be compensated through purchase of mitigation credits at a USACE/San Francisco RWQCB-approved mitigation bank.

Significance after Mitigation

Implementation of Mitigation Measure 3.3-10 would minimize and substantially avoid adverse water quality effects because it would substantially reduce the potential for and duration of a spill into waters and wetlands during directional drilling. Mitigation Measure 3.3-13 requires that wetlands be delineated and that any direct impacts to protected wetlands be subject to permitting requirements and be replaced on a "no-net-loss" basis. Implementation of this measure would reduce potential impacts on wetlands and waters of the United States and state. With the implementation of Mitigation Measures 3.3-10 and 3.3-13, water quality impacts would be reduced to **less than significant**.

Impact 3.8-2: Potential to Violate Any Water Quality Standards or Waste Discharge Requirements or Substantially Degrade Surface Water or Groundwater Quality during Operation

Operation of the project would cause soil disturbance during maintenance of the MSS brine transport pipeline and the proposed infrastructure at the Solar Salt Facility, which has the potential to impact surface water and groundwater quality through increased potential for erosion and sedimentation. However, the project would adhere to the current California Industrial General Permit Order 2014-0057-DWQ, which requires the implementation of operational BMPs to reduce impacts to water quality associated with operations. Compliance with this permit would minimize the potential for effects on groundwater and surface water quality resulting from operations and maintenance of project features. The MSS brine transport pipeline would tie into EBDA's existing combined effluent conveyance system on the site of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. The brine would be blended with secondary treated wastewater effluent from the other agencies that discharge into the EBDA system before discharge to the Bay through EBDA's outfall. This could adversely affect water quality of the San Francisco Bay. The constituents in the MSS brine, a concentrate of Bay water that is the source water used in the salt production process, have been closely analyzed to determine if any water quality objectives set for the Bay would be violated when the brine is blended with effluent in the EBDA system and discharged to the Bay. None of the constituents in the blended effluent would violate WQOs (LWA 2022). Additionally, in the event of any system upset or other reasons that may affect EBDA system capacity or water quality, brine discharge operations would be suspended. Thus, operations-related impacts on surface water and groundwater quality would be **less than significant**.

The Solar Salt Facility does not discharge water to the Bay directly from the salt ponds or crystallizers, other than stormwater during extreme storm events in accordance with approved permits and in coordination with San Francisco Bay RWQCB authorization. Operation of the project would not result in changes to these controlled discharges. However, infrastructure replacement or maintenance on the outboard side of the ponds during Solar Salt Facility operations could result in the suspension of fine sediments which could cause temporary, localized increases in turbidity. Long-term maintenance activities at the Solar Salt Facility would be consistent with current operating procedures on site. Operations at the Solar Salt Facility are required to be conducted in compliance with California Industrial General Permit Order 2014-0057-DWQ as amended in 2015 and 2018. This permit requires the implementation of a SWPPP tailored to the industrial activities taking place on site and requires implementation of BMPs and monitoring for pollutants. TSS, oil and grease, pH, total chloride, and total iron are listed as pollutants of concern in Cargill's current SWPPP (Cargill 2021). Cargill would continue to implement BMPs including berm maintenance and riprap replacement to minimize sediment discharge to the Bay. WRA (2016) determined that implementation of BMPs at the Cargill facility resulted in a measurable decrease in sediments placed within the Bay. Adherence to the WDRs for Dewatering Order R2-2018-0026, in addition to compliance with the California Industrial General Permit Order 2014-0057-DWQ would also minimize the potential for water quality impacts during operation of facilities proposed at the Solar Salt Facility. Because no substantial change to maintenance activities would occur, there would be no effect on wetland or surface water quality during operation of the project.

The MSS brine transport pipeline would be almost entirely buried and above-ground appurtenances associated with the pipeline, including various valves, would not be placed in any waters or wetlands. Maintenance of the MSS brine transport pipeline and appurtenant structures would prevent leakage of brine to groundwater and adjacent waterways and wetlands and would include injecting pipeline inspection gauges (PIGs) into the pipeline to inspect and maintain the pipeline. Pigging would be used to force out buildup within the pipeline and sensors on the PIGs would inspect and record data that would be used to inform maintenance needs. Pigging would also occur without stopping the flow of effluent in the pipeline. In addition to periodic inspections and pipe cleaning, as-needed servicing of fittings, valves, and other appurtenances would occur. No dewatering would be required to perform these maintenance activities. The functional life of the pipeline used to transport the MSS brine from Cargill's Solar Salt Facility to the EBDA system is expected to greatly exceed that of the initial proposed project term.

The MSS brine transport pipeline would tie into EBDA's existing combined effluent conveyance system on the site of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. The San

Francisco Bay RWQCB issued Order Number R2-2022-0023 NPDES No. CA0037869, which authorizes EBDA and its member agencies to discharge secondary treated municipal wastewater and Zone 7 reverse osmosis reject water to the Lower Bay in July of 2022. The project would be required to adhere to the conditions of this permit, which limit the brine to 4 percent of the total discharge, consistent with the dilution modeling. The permit also includes updated effluent limits for those constituents with dilution that would begin upon notification to the State Water Board that the brine discharge has commenced. The brine would be blended with secondary treated wastewater effluent from the other agencies that discharge into the EBDA system before discharge to the Bay through EBDA's outfall. The added salinity from the MSS brine would incrementally increase the density of the blend, and thus could affect mixing and water quality at the outfall. The EBDA outfall diffuser system provides approximately 100:1 near-field dilution during current dry season flow conditions (EOA 2021). At the current EBDA average dry weather flow rate of 51.8 million gallons per day (mgd), MSS brine would account for less than 4 percent of the total commingled discharge under typical low-flow conditions. At these low-flow conditions there is an approximately 25:1 ratio between EBDA effluent and MSS brine. Priority pollutant and chronic toxicity testing of EBDA combined effluent and Cargill MSS brine blends was conducted to evaluate compliance with EBDA's NPDES permit. Testing was done on 100 percent EBDA effluent together with testing of 50:1 and 25:1 EBDA effluent: MSS brine to simulate the predicted as-discharged compositions for the proposed range of future operating conditions. The levels of conventional constituents in the 50:1 and 25:1 blends were generally observed to be close to that in the 100-percent EBDA effluent, showing that blended effluent is unlikely to be of regulatory concern (Table 3.8-3) (EOA 2021).

EBDA also retained Larry Walker Associates in 2021 to model discharge conditions that are representative of the WQOs for the Bay and to identify dilution credits under representative discharge scenarios with and without the addition of the MSS brine. Regional Monitoring Program (RMP) data collected since 1993 indicate that water quality in the vicinity of the EBDA outfall exhibits a high level of compliance with ambient WQOs for the Bay (LWA 2022). The MSS brine solution would have an average total dissolved solids concentration of approximately 184,000 parts per million and would be discharged at a rate of up to 2.0 mgd. Because the receiving water is marine, the additional salt loading in the discharge would not be a concern per se, but the brine increases the density of the commingled discharge, which could affect dilution as noted above (LWA 2022).

Table 3.8-3 Physical Characteristics and Nutrients in Effluent and Brine Blends and Regulatory Requirements

Conventional Parameter	Average Sampling Results from May, August, and November 2020			Regulatory Requirement	
	100% EBDA Effluent (mg/L)	50:1 EBDA Effluent: Brine (mg/L)	25:1 EBDA Effluent: Brine (mg/L)	Current EBDA Effluent Limits (mg/L)	Ambient Water Quality Criteria (mg/L)
Total Suspended Solids	9	13.7	18.3	None	Narrative
Volatile Suspended Solids	7.3	11.3	14.3	None	Narrative
Carbonaceous Biochemical Oxygen Demand	21	18	19.7	25	None
Ammonia as N	31	30.7	30.3	91	0.4[1]
Total Phosphorus as P	2.5	2.6	2.6	None	Narrative
Nitrate + Nitrite as N	4.1	4.0	3.7	None	Narrative
Total Dissolved Solids	573.3	6,833.3	13,266.7	None	Narrative

[1] Maximum concentration of unionized ammonia, Basin Plan Objective for the Lower San Francisco Bay

Source: EOA 2021.

EBDA submitted a report of waste discharge in September 2021, including a reasonable potential analysis to evaluate if the constituents contained in the effluent have a potential to cause or contribute to an exceedance of a WQO. They collected 53 samples and 1 sample for organic compounds during the 53 months represented by the period and

these samples were compared to ambient background data from the Yerba Buena Island Station (LWA 2022). Maximum concentrations were compared to the relevant WQO and if the maximum effluent concentration was greater than the WQO then effluent limitations would be required (LWA 2022).

Parameters with effluent limitations were evaluated for their potential to result in surface water quality impacts, and the results are summarized as follows:

- Ammonia: The project would result in a *de minimis* increase in ammonia concentrations in the Lower Bay outside of the EBDA mixing zone as compared to current conditions but would still be well below the acute and chronic WQOs set for ammonia (LWA 2022).
- Chlorine: MSS brine does not contain residual chlorine. As a result, there would be no change in ambient water quality related to chlorine with implementation of the project as concentrations in the commingled discharge would be unaffected by addition of MSS brine (LWA 2022).
- Copper: The concentration of total recoverable copper in the MSS brine is typically higher than measured in the EBDA effluent (LWA 2022). The project would result in a minor increase in total copper concentrations in the Lower Bay outside of the EBDA mixing zone as compared to current conditions but would still be well below the acute and chronic WQOs set for copper (LWA 2022).
- Cyanide: The project would result in a *de minimis* increase in total cyanide concentrations in the Lower Bay outside of the EBDA mixing zone as compared to current conditions but would still be well below the acute and chronic WQOs set for cyanide (LWA 2022).
- Dioxin-TEQ: Incorporating the MSS brine into the EBDA effluent would not adversely affect the dioxin-TEQ concentrations in the Lower Bay (LWA 2022).
- Mercury: The project would result in a minor increase in total mercury concentrations in the Lower Bay outside of the EBDA mixing zone as compared to current conditions but would still be under the WQO set for mercury (LWA 2022).
- PCBs: No Aroclors (the measurement of specific PCB mixtures) were detected in any analyses of EBDA effluent, ambient water quality, or the mixtures of effluent and MSS brine. Therefore, incorporating the MSS brine into the EBDA effluent would not affect Aroclor concentrations in the Lower Bay (LWA 2022).
- Selenium (added because this constituent was identified in the brine sample above the current WQO and adoption of a South Bay TMDL for selenium is anticipated): the project would result in a *de minimis* increase in total selenium concentrations in the Lower Bay outside of the EBDA mixing zone as compared to current conditions but would still be well below the acute and chronic WQOs set for selenium (LWA 2022).

Water quality testing for constituents that currently lack an effluent limitation, including chronic whole effluent toxicity, microplastics and constituents of emerging concern (CECs), was performed qualitatively. Chronic toxicity testing examines effects on specific test organisms' ability to survive, grow and reproduce. Results showed a relatively small range of differences between the species tested and the blends tested (LWA 2022). The current EBDA NPDES permit contains "triggers" requiring accelerated monitoring if chronic toxicity values (TUc) exceed 10 Tuc as a three-sample median or exceed 20 Tuc as a single sample. Most results of the tests with the brine blends were between ~1.5 to 4 Tuc. The levels of microplastics in the Lower Bay at the edge of the ZID would not be adversely affected by the addition of MSS brine to the EBDA effluent currently discharged. CECs are expected to include per-and polyfluoroalkyl substances (PFAS) analytes, and other CECs identified by the San Francisco Bay Regional Monitoring Program, EPA, and the SWRCB and additional brine testing will be conducted to evaluate CECs.

During periods of exceptionally high stormwater discharge rates into the EBDA system, the discharge of MSS brine could be interrupted by shutting down the brine discharge pump at the Solar Salt Facility to ensure EBDA maintains sufficient capacity to accommodate wet weather flows from its Member Agencies. Similarly, in the event of any system upset or other reasons that may affect EBDA system capacity or water quality, brine discharges would be suspended. Suspension of the MSS brine discharge would be implemented immediately by Cargill upon direct notification received from EBDA through a dedicated 24-hour, 7-days per week (24/7) communication link

established as part of the operations agreement that would be required between the two entities and would typically last 1 to 2 days and occur approximately two times a year. The Solar Salt Facility would not be adversely affected by such temporary interruptions of MSS brine export, as Cargill would retain the brine in Ponds 12 and 13, in such instances consistent with its existing operations.

Constituents in the MSS brine have been closely studied to determine if any WQOs set for the Bay would be violated. As summarized above, the results of these studies demonstrated that none of the constituents in the MSS brine mix would violate established WQOs (LWA 2022). Additionally, in the event of any system upset or other reasons that may affect EBDA system capacity or water quality, brine discharges would be suspended. Therefore, MSS brine discharges would not adversely affect Bay water quality.

Because operation and maintenance of the proposed Solar Salt Facility and MSS brine transport pipeline would adhere to the WDRs for Dewatering Order R2-2018-0026 and California Industrial General Permit Order 2014-0057-DWQ and maintenance activities would prevent leaks in the MSS brine transport pipeline, and discharge of the combined EBDA effluent and MSS brine through the EBDA outfall to the Bay would be in compliance with EBDA's NPDES permit and would not cause WQOs to be exceeded, operation of the project would not violate any water quality standards or waste discharge requirements or substantially degrade surface water or groundwater quality. Thus, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.8-3: Potential to Substantially Decrease Groundwater Supplies or Interfere Substantially with Groundwater Recharge Such That the Project May Impede Sustainable Groundwater Management of the Basin

The project area generally has very high groundwater levels and is located within large groundwater basins. The project would use small amounts of water during construction for dust control. Trenching and directional drilling to install the pipeline could require dewatering where groundwater levels are high enough to infiltrate trenches or access pits. Dewatering would be performed by sump pump and groundwater would be discharged into an approved sewer line or settling tank and then discharged to the sewer or storm drain system. Because the quantity of groundwater that would need to be extracted during trenching or directional drilling to keep trenches and access pits free of water during construction of the pipeline is unknown, the potential need for substantial dewatering exists, and because dewatering water would be discharged to the sewer or storm drain system, groundwater supply or recharge could be adversely affected. Therefore, this impact would be **potentially significant**.

The majority of the project is located in the area of the Santa Clara Valley Groundwater Basin, Niles Cone Subbasin (Basin No. 2-9.01). The Subbasin is 103 square miles in area. From the early 1970s water levels have ranged from sea level to approximately 20 feet above mean sea level (DWR 2006). The northern portion of the project is located in the Santa Clara Valley East Bay Plain Subbasin (2-009.04). This subbasin covers a surface area of 122 square miles (DWR 2004). In 2000, water levels were very near the surface in all aquifers.

ACWD is the GSA pursuant to Water Code Section 10723.8 and is responsible for implementation of the groundwater management program with the objective of replenishing groundwater supplies and preventing seawater intrusion into groundwater. In the northernmost portion of the project area, the East Bay Municipal Utility District is the GSA in the East Bay Plain Groundwater Basin.

No groundwater would be used during construction at the Solar Salt Facility. Construction-related water needs for dust control would be met by existing service connections or imported water from a water truck. Furthermore, the salt ponds are isolated from groundwater by Bay Mud clays that underlie the ponds and crystallizers, and operation of the Solar Salt Facility relies on Bay water. No groundwater would be extracted or used, nor would groundwater recharge be affected.

Construction of the MSS brine transport pipeline would require water for dust control and some directional drilling operations. The amount of water required for these uses would be negligible compared to the amount of groundwater supply. However, if groundwater is encountered in trenches when laying the pipeline, dewatering would be required, which could result in extraction of groundwater from the affected basin. Dewatering would be performed with a sump pump and disposed of in an approved sewer system or discharged to settling tank and then to the sewer or a nearby storm drain system in accordance with permit conditions in General Order for Dewatering Order No. R2-2018-0036. Because the quantity of groundwater that would need to be extracted during trenching or directional drilling over the approximately 16-mile pipeline corridor to keep trenches and access pits free of water during construction of the pipeline is unknown and could be substantial, the potential exists for groundwater supply or recharge to be adversely affected. Therefore, this impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure 3.8-2: Minimize Groundwater Loss Due to Dewatering during Construction of the MSS Brine Transport Pipeline

To minimize the loss of groundwater due to dewatering during construction of the pipeline, compliance with one of the following measures is required:

- Where groundwater levels are high and trench or access pit installation would require significant dewatering, pump groundwater to settling tanks and discharge clean water back to a nearby well, if permitted, or use the water for dust control in the vicinity of where the dewatering occurred.
- If discharge to a nearby well or using dewatering water for dust control in the vicinity is not feasible, then pay the appropriate replenishment assessment fee to the applicable GSA to compensate for loss of groundwater from the basin.

Significance after Mitigation

Implementation of Mitigation Measure 3.8-2 would require discharge of dewatering water back to the basin or require payment of a groundwater replenishment fee to compensate for groundwater depletion if significant dewatering is required during construction. Therefore, this impact would be reduced to **less than significant**.

Impact 3.8-4: Potential to Substantially Alter the Existing Drainage Pattern of the Area, Including through the Alteration of the Course of a Stream or River, in a Manner That Would Result in Substantial Erosion or Siltation On- or Off-Site, Result in Flooding On- or Off-Site, Create or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Storm Water Drainage Systems or Provide Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows

The project would not alter drainage patterns. Aboveground infrastructure proposed at the Solar Salt Facility, which includes surface pipelines, a weir, pump stations, and electrical boxes, would result in a small increase in impervious area, which would not cause runoff that would exceed the capacity of existing or planned stormwater drainage systems. The aboveground components for the extent of the pipeline are minimal and include access vaults. All other project components are below ground and would not alter existing drainages or increase impervious area. The project would comply with the Statewide Construction General Permit (Order No. 2009-0009-DWQ) to minimize erosion or siltation during construction. Although located in the FEMA 100-year floodplain in some locations, the project would not result in flooding or redirect flood flows. The project's impact on existing drainage patterns, erosion or siltation, stormwater runoff, and flooding would be **less than significant**.

The project would include the construction and operation of new surface pipelines, a weir, pump stations, and electrical boxes at the Solar Salt Facility and construction and operation of approximately 16 miles of new underground MSS brine transport pipeline, a narrow linear feature.

Project construction would comply with the Statewide Construction General Permit (Order No. 2009-0009-DWQ, NPDES No. CAS000002, as amended). In accordance with the Construction General Permit, a SWPPP would be developed that specifies BMPs that minimize wind- and water-related soil and sediment discharges from the work area, minimizes potential contamination of stormwater and non-stormwater discharges, minimizes the potential for hazardous material spills, and requires storm water sampling to regulate any pollutants coming off of the project area. Implementation of the SWPPP would minimize erosion or siltation on or off-site as well as the risk of polluted runoff.

A large portion of the MSS brine transport pipeline would be constructed in existing paved city streets. The pipeline would be backfilled to the original grade and stabilized following installation, and then where trenching would occur in city streets, the city streets would be repaved returning them to preproject conditions. Staging areas in disturbed unpaved areas would also be stabilized with mulch or vegetation and would be returned to preproject conditions following construction. Furthermore, infrastructure associated with the Solar Salt Facility would result in a negligible increase in impervious area, and stormwater does not leave the salt ponds until it evaporates. Furthermore, project operation would be consistent with the Municipal Regional Stormwater Permit (Order R2-2015-0049; NPDES No. CAS612008) for stormwater discharge issued by the San Francisco Bay RWQCB. Therefore, project operations would not result in a substantial increase in impervious area that would alter drainage patterns or increase stormwater runoff that would exceed the capacity of an existing storm drain system, nor result in increased sources of polluted runoff.

Portions of the project area are located within the 100-year floodplain (Figure 3.8-1). The pipeline would include 30,507 linear feet in the 100-year flood zone and 5,907 linear feet in the 500-year floodplain. Additionally, 3.23 acres of staging areas are located in the 100-year flood zone and 1.01 acres of staging areas are located in the 500-year flood zone. There are very few permanent aboveground structures proposed with the project. Therefore, the project would not result in flooding or impede or redirect flood flows.

To support MSS processing, additional bay water would be diverted from Plummer Creek (increase of approximately 5.3 acre-feet per day) and Mowry Slough (increase of approximately 2.7 acre-feet per day) to provide dissolution water. These increases in daily diversions would not be considered a substantial hydrologic change in the region relative to the existing condition, because the volume of water moving into and out of South Bay sloughs is orders of magnitude larger than 5.3 acre-feet per day. Furthermore, the increase in diversion would not be considered a substantial hydrologic change to either Mowry Slough or Plummer Creek, in particular, because the project-related diversion from Mowry Slough represents a diversion of about 2 percent of the daily estimated tidal inflow into the upper Mowry Slough area and the project-related diversion from Plummer Creek represents a diversion of about 4 percent of the daily estimated tidal inflow into Plummer Creek (Nielsen, pers. comm., 2022).

Because construction and operation of the project would comply with the Construction General Permit and the Municipal Regional Stormwater Permit, and would not substantially increase erosion or siltation, stormwater runoff, or sources of polluted runoff; alter the existing drainage pattern of the area; substantially increase flooding; or impede or redirect flood flows, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.8-5: Potential to Risk Release of Pollutants Due to Project Inundation from Flood Hazard, Dam Failure, Tsunami, Seiche, or Sea Level Rise

The project is located in a flood hazard area, tsunami inundation zone, dam failure inundation zone, and an area potentially subject to sea level rise. The MSS brine transport pipeline would be constructed below ground and therefore would not risk long term release of pollutants due to flooding. The salt ponds are surrounded by berms that would protect against the release of MSS brine in the event of a flood. Cargill's ongoing maintenance of berms and infrastructure minimizes the risk of berm failure and release of pollutants. If a flood were to occur during construction of the project, sediment and other pollutants could be released especially from staging areas located within flood zones. Therefore, this impact would be **potentially significant**.

The project is located in a flood hazard area, tsunami inundation zone, dam failure inundation zone, and area potentially subject to sea level rise. The MSS brine transport pipeline would be constructed below ground, minimizing the impacts of potential flood events on its infrastructure. If the pipeline was empty and flooded, saturated soils may cause pipes to 'float' or become displaced due to buoyant effects. Because the pipeline would be empty only during a service interruption or maintenance, which would occur infrequently and only for a short period (potentially once a year), this displacement due to flooding and soil saturation is considered unlikely.

FEMA mapped 100-year and 500-year flood hazard areas, which include the salt ponds, a portion of the southern pipeline alignment, a few areas along the alignment, and the northern portion of the alignment (Figure 3.8-1). The pipeline would include 30,507 linear feet in the 100-year flood zone and 5,907 linear feet in the 500-year flood zone. Additionally, 3.23 acres of staging areas are in the 100-year flood zone and 1.01 acres of staging areas are in the 500-year flood zone. The salt ponds are isolated from the surrounding area due to the large berms that surround them. If the berms were to breach, salt and brine residue could be released to the Bay along with sediment from the berms.

Tsunamis are ocean waves caused by large earthquakes or landslides that occur near or under the ocean. Due to the shallowness of the Bay along the waterfront, tsunamis and seiches are not considered a significant hazard for developed areas (City of Fremont 2011b; City of Newark 2013). The Tsunami Inundation Zone is shown in Figure 3.8-2 and includes the Cargill salt ponds and the northernmost portion of the pipeline but most of the pipeline alignment remains inland of the inundation zone (24,218.2 linear feet of the pipeline and 3.83 acres of staging areas). In the unlikely event that seiche or tsunami waves in the Bay overtop the outboard berms of the salt ponds, the Bay water would flow into the ponds, but pond water would likely not flow out into the Bay because the ponds are against the eastern shore of the bay, and prevailing winds in San Francisco Bay are regularly from the west or northwest and the brine levels in the salt ponds are kept below the top of the berms. So any water overtopping the berms would be captured by the ponds.

According to the Association of Bay Area Governments, most of Fremont and Newark would be inundated if upstream reservoirs (Calaveras, Del Valle, or Turner) were to fail (Figure 3.8-3). The project area is located within the dam inundation areas for the three dams. The southern half of the pipeline alignment is located in the dam inundation zone including portions of the Cargill salt ponds. This includes 56,240 linear feet of the pipeline alignment and 4.27 acres of staging areas. As previously stated, if the berms surround the salt ponds were to breach, salt and brine residue could be released to the Bay along with sediment from the berms.

BCDC anticipates that global warming is expected to result in 16 inches of SLR in the Bay by 2050 (City of Fremont 2011b). Sea level rise is one of the reasons this project is proposed. The berms containing the salt ponds would potentially be affected by sea level rise and the proposed system remove MSS inventory from the system minimizing the risk of MSS introduction into the sea if the berms were to be breached by SLR. A predicted SLR of 12 inches is shown in Figure 3.8-2 and would cover 2,447 linear feet of the pipeline alignment. Staging areas would only be necessary during construction and would be restored prior to any predicted SLR.

Because staging areas and active construction areas could risk release of pollutants due to project inundation, this impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure 3.8-5: Locate Staging Areas Outside of the Flood Zone or Install a Protective Barrier around Potential Sources of Pollutants Stored within the Staging Area

Prioritize staging of materials outside of the FEMA 100-year flood zone, tsunami inundation zone, or dam failure inundation zones. If construction related stockpiles of soil, oil, fuel, lubricants, or other chemicals must be stored at any staging area that is located in a flood zone, then prior to construction, the construction contractor shall install a temporary protective barrier around the materials sufficient to provide protection from flood inundation and maintain the barrier throughout the construction period.

Significance after Mitigation

Implementation of Mitigation Measure 3.8-5 reduces the chance that pollutants could be released from staging areas due to flooding by protecting staging areas. Therefore, this impact would be reduced to **less than significant**.

Impact 3.8-6: Potential to Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan

The project would comply with the San Francisco Bay Basin Plan. However, because the quantity of groundwater that would need to be extracted during trenching or directional drilling over the approximately 16-mile pipeline corridor to keep trenches and access pits free of water during construction of the pipeline is unknown, the potential exists for groundwater supply or recharge in the Niles Cone Groundwater Subbasin or East Bay Plain Subbasin Groundwater to be adversely affected. Therefore, the project could potentially impede the implementation of the Alternative to a Groundwater Sustainability Plan for the Management of the Niles Cone Groundwater Subbasin administered by ACWD, or the East Bay Plain Subbasin Groundwater Sustainability Plan implemented by EBMUD, and this impact would be **potentially significant**.

The project would comply with the San Francisco Bay Basin Plan. The project would protect the beneficial uses of water bodies in the Basin Plan through the implementation of the following Board Orders, policies, and codes:

- Statewide Construction General Permit (Order No. 2009-0009-DWQ
- Municipal Regional Stormwater Permit (Order R2-2015-0049; NPDES No. CAS612008)
- General Order for Dewatering Order No. R2-2018-0026
- California Industrial General Permit Order 2014-0057-DWQ
- San Francisco Bay RWQCB issued Order Number R2-2022-0023 NPDES Number CA0037869 which authorizes EBDA and its member agencies to discharge secondary treated municipal wastewater and Zone 7 reverse osmosis reject water to the Lower Bay; and
- city and county policies and codes.

Compliance with these orders is described in Impacts 3.8-1 and 3.8-2.

ACWD submitted an Alternative to a Groundwater Sustainability Plan (Alternative) for the management of the Niles Cone Subbasin 2-09.01 under SGMA in 2016. ACWD's Alternative preserves and continues the successful sustainable groundwater management already being performed by ACWD. The East Bay Plain Subbasin Groundwater Sustainability Plan is implemented by EBMUD in the northern portion of the project area. However, as discussed under Impact 3.8-3, because the quantity of groundwater that would need to be extracted during trenching or directional drilling over the approximately 16-mile pipeline corridor to keep trenches and access pits free of water during construction of the pipeline is unknown and could be substantial, the potential exists for groundwater supply or recharge in the Niles Cone Groundwater Subbasin or East Bay Plain Subbasin Groundwater to be adversely affected. Therefore, the project could potentially impede the implementation of the Alternative to a Groundwater Sustainability Plan for the Management of the Niles Cone Groundwater Subbasin administered by ACWD, or the East Bay Plain Subbasin Groundwater Sustainability Plan implemented by EBMUD, and this impact would be **potentially significant**.

Mitigation Measures

Implement Mitigation Measure 3.8-2, "Minimize Groundwater Loss Due to Dewatering during Construction of the MSS Brine Transport Pipeline."

Significance after Mitigation

Implementation of Mitigation Measure 3.8-2 would reduce the potential for the project to obstruct implementation of a sustainable groundwater management plan by ensuring that groundwater depletion would be minimized or compensated for if significant dewatering is required during construction. Therefore, this impact would be reduced to **less than significant**.

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3.9 NOISE AND VIBRATION

This section includes a summary of applicable regulations related to noise and vibration, a description of ambient-noise conditions, and an analysis of potential short-term construction and long-term operational-source noise impacts associated with the project. Mitigation measures are recommended as necessary to reduce significant noise impacts. Additional related data are provided in Appendix D, "Noise Measurement Data and Noise Modeling Calculations."

The following definitions are provided for noise-related terms used throughout this section:

- **Equivalent Continuous Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound level that occurs during the same period (Caltrans 2013: 2-48). For instance, the 1-hour equivalent sound level, also referred to as the hourly L_{eq}, is the energy average of sound levels occurring during a 1-hour period and is the basis for noise abatement criteria used by the California Department of Transportation and the Federal Transit Administration (FTA) (Caltrans 2013: 2-47; FTA 2018: Table 3-1).
- **Maximum Sound Level (L_{max}):** L_{max} is the highest instantaneous sound level measured during a specified period (Caltrans 2013: 2-48; FTA 2018: Table 3-12).
- **Day-Night Level (L_{dn}):** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-decibel (dB) "penalty" applied to sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m. (Caltrans 2013: 2-48; FTA 2018: Table 3-12).
- **Community Noise Equivalent Level (CNEL):** CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m. and a 5-dB penalty applied to the sound levels occurring during the evening hours between 7 p.m. and 10 p.m. (Caltrans 2013: 2-48).
- **Vibration Decibels (VdB):** VdB is the vibration velocity level in decibel scale (FTA 2018: Table 5-1). The reference velocity in the United States is one micro-inch per second.
- **Peak Particle Velocity (PPV):** PPV is the peak signal value of an oscillating vibration waveform. Usually, it is expressed in inches per second (in/sec) (FTA 2018: Table 5-1).

3.9.1 Regulatory Setting

FEDERAL

US Environmental Protection Agency Office of Noise Abatement and Control

The US Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. In 1981, EPA administrators determined that subjective issues, such as noise, would be better addressed at more local levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to state and local governments. However, documents and research completed by the EPA Office of Noise Abatement and Control continue to provide value in the analysis of noise effects.

Federal Transit Administration

To address the human response to ground vibration, FTA has set forth guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines are presented in Table 3.9-1. In addition, FTA has also established construction vibration damage criteria, shown below in Table 3.9-2.

Table 3.9-1 FTA Indoor Ground-Borne Vibration Impact Criteria for General Vibration Assessment

Land Use Category	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch/sec)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

Notes: VdB = vibration decibels referenced to 1 micro-inch per second.

[1] Frequent events: More than 70 events per day.

[2] Occasional events: 30–70 events per day.

[3] Infrequent events: Fewer than 30 events per day.

[4] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. For equipment that is more sensitive, a detailed vibration analysis must be performed.

Source: Table based on FTA 2018: 126.

Table 3.9-2 FTA Construction Damage Vibration Criteria

Land Use Category	PPV, in/sec
Reinforced-concrete, steel, or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Nonengineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12

Notes: in/sec = inches per second; PPV = peak particle velocity.

Source: Table based on FTA 2018: 126.

STATE

California General Plan Guidelines

The State of California General Plan Guidelines 2017, published by the California Governor's Office of Planning and Research (2017), provides guidance for the compatibility of projects within areas of specific noise exposure. Acceptable and unacceptable community noise exposure limits for various land use categories have been determined to help guide new land use decisions in California communities. In many local jurisdictions, these guidelines are used to derive local noise standards and guidance. Citing EPA materials and the state's sound transmissions control standards (Chapter 2-35, Part 2, Title 24, CCR), the state's general plan guidelines recommend interior and exterior CNEL of 45 and 60 dB for residential units, respectively (OPR 2017: 378).

LOCAL

The MSS brine transport pipeline would extend through the jurisdictional boundaries of Alameda County, the City of Hayward, the City of Union City, the City of Fremont, and the City of Newark; thus, it would be subject to construction noise standards from each of these jurisdictions. A summary of relevant noise standards is provided below.

Alameda County

Noise is regulated in Alameda County through implementation of general plan policies and enforcement of municipal code performance standards. A summary of both is provided below.

General Plan

The Noise Element of the Alameda County General Plan establishes interior and exterior noise levels of 45 A-weighted decibels (dBA) L_{dn} and 55 dBA L_{dn}, respectively, for residential land uses based on federal noise level standards. In addition, exterior noise limits are set in the general plan. Table 11.1-1 of the Noise Element (Table 3.9-3 in this EIR) shows the number of cumulative minutes that a particular external noise level is permitted, as well as the maximum noise allowed noise levels.

Table 3.9-3 Exterior Noise Standards

Cumulative Number of Minutes in Any One Hour	Daytime (7 a.m.-10 p.m.)	Nighttime (10 p.m.-7 a.m.)
Residential uses, schools, hospitals, churches, and libraries		
30	50 dBA	45 dBA
15	55 dBA	50 dBA
5	60 dBA	55 dBA
1	65 dBA	60 dBA
Maximum (0)	70 dBA	65 dBA
Commercial uses		
30	65 dBA	60 dBA
15	70 dBA	65 dBA
5	75 dBA	70 dBA
1	80 dBA	75 dBA
Maximum (0)	85 dBA	80 dBA

Note: dBA= A-weighted decibels.

Source: Alameda County 1994: 4-6.

Municipal Code

The Alameda County Municipal Code Noise Ordinance (Chapter 6.60) includes the following noise standards applicable to the project.

A. It is unlawful for any person at any location within the unincorporated area of the county to create any noise or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the exterior noise level when measured at any single- or multiple-family residential, school, hospital, church, public library or commercial properties situated in either the incorporated or unincorporated area to exceed the noise level standards as set forth in Table 6.60.040A [Table 3.9-4 in this EIR] or Table 6.60.040B [not shown in this EIR as only the residential standards apply to the project] following:

Table 3.9-4 Receiving Land Use — Single-or Multiple-Family Residential, School, Hospital, Church or Public Library Properties Noise Level Standards (dBA)

Category	Cumulative Number of Minutes in Any One Hour Time Period	Daytime (7 a.m.-10 p.m.)	Nighttime (10 p.m.-7 a.m.)
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

Source: Alameda County 2022.

B. In the event the measured ambient noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted so as to equal said ambient noise level.

C. Each of the noise level standards specified in Tables 6.60.040A [Table 3.9-4 in this EIR] and B [not shown in this EIR] shall be reduced by five dB(A) for simple tone noises, noises consisting primarily of speech or music or for recurring impulsive noises.

D. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the applicable noise level standards in Table 6.60.040A [Table 3.9-4 in this EIR] and Table 6.60.040B [not shown in this EIR].

E. Notwithstanding the noise level standards set forth in this section, the noise level standard applicable to the emission of sound from transformers, regulators, or associated equipment in electrical substations shall be 60 dB(A).

SEC. 6.60.070 – Special Provisions or Exceptions

F. E. Construction. The provisions of this chapter shall not apply to noise sources associated with construction, provided said activities do not take place before seven a.m. or after seven p.m. on any day except Saturday or Sunday, or before eight a.m. on Saturday or Sunday.

City of Hayward

The City of Hayward regulates noise through general plan policies and adopted local ordinances contained in the municipal code. A summary of both is provided below.

General Plan

The "Hazards" section of the City of Hayward 2040 General Plan (City of Hayward n.d.) contains the following noise policies that pertain to the project:

- HAZ-8.20: Construction Noise Study. The City may require development projects subject to discretionary approval to assess potential construction noise impacts on nearby sensitive uses and to minimize impacts on those uses, to the extent feasible.
- HAZ-8.21: Construction and Maintenance Noise Limits. The City shall limit the hours of construction and maintenance activities to the less sensitive hours of the day (7:00 a.m. to 7:00 p.m. Monday through Saturday and 10:00 a.m. to 6:00 p.m. on Sundays and holidays).
- HAZ-8.22: Vibration Impact Assessment. The City shall require a vibration impact assessment for proposed projects in which heavy-duty construction equipment would be used (e.g. pile driving, bulldozing) within 200 feet of an existing structure or sensitive receptor. If applicable, the City shall require all feasible mitigation measures to be implemented to ensure that no damage or disturbance to structures or sensitive receptors would occur.

Municipal Code

Article 1, Public Nuisances, of Chapter 4 of the City of Hayward Municipal Code identifies maximum noise levels that apply to different land uses and noise sources. Noise standards relevant to the project are presented below.

SEC. 4-1.03.1 - Noise Restriction by Decibel

(a) Residential Property Noise Limits.

1. No person shall produce or allow to be produced by human voice, machine, device, or any combination of same, on residential property, a noise level at any point outside of the property plane that exceeds seventy (70) dBA between the hours of 7:00 a.m. and 9:00 p.m. or sixty (60) dBA between the hours of 9:00 p.m. and 7:00 a.m.

2. No person shall produce or allow to be produced by human voice, machine, device, or any combinations of same, on multifamily residential property, a noise level more than sixty (60) dBA three (3) feet from

any wall, floor, or ceiling inside any dwelling unit on the same property, when the windows and doors of the dwelling unit are closed, except within the dwelling unit in which the noise source or sources may be located.

(b) Commercial and Industrial Property Noise Limits. Except for commercial and industrial property abutting residential property, no person shall produce or allow to be produced by human voice, machine, device, or any other combination of same, on commercial or industrial property, a noise level at any point outside of the property plane that exceeds seventy (70) dBA. Commercial and industrial property that abuts residential property shall be subject to the residential property noise limits set forth in Subsections (a)(1) and (2) above.

(c) Public Property Noise Limits. Except as otherwise provided in these regulations, no person shall produce or allow to be produced on public property, by human voice, machine, device, or any combination of same, a noise level that exceeds sixty (60) dBA at a distance of 25 feet or more from the source. Noise from activities of the City of Hayward is exempted from these regulations.

(d) When the Enforcement Officer responds to an initial complaint of unreasonable noise and perceives activities or circumstances that violate Section 4-1.03.1, the Enforcement Officer may issue a written warning or a citation, specifying those activities or circumstances that constitute a violation of these regulations.

SEC. 4-1.03.4 – Construction and Alteration of Structures; Landscaping Activities

Unless otherwise provided pursuant to a duly-issued permit or a condition of approval of a land use entitlement, the construction, alteration, or repair of structures and any landscaping activities, occurring between the hours of 10:00 a.m. and 6:00 p.m. on Sundays and holidays, and 7:00 a.m. and 7:00 p.m. on other days, shall be subject to the following:

(a) No individual device or piece of equipment shall produce a noise level exceeding eighty-three (83) dBA at a distance of twenty-five (25) feet from the source. If the device or equipment is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close as possible to twenty-five (25) feet from the equipment.

(b) The noise level at any point outside of the property plane shall not exceed eighty-six (86) dBA.

(c) During all other times, the decibel levels set forth in Section 4-1.03.1 shall control.

City of Union City

The City of Union City regulates noise through general plan policies and adopted local ordinances, contained within the municipal code. A summary of both is provided below. The Union City General Plan Noise Element identifies noise and land use compatibility standards for various land uses. These standards are intended to provide compatible land uses throughout the community as related to environmental noise. Residential land uses are considered "normally acceptable" in exterior noise environments of 60 dBA L_{dn} or less. Interior noise levels attributable to exterior noise sources shall be maintained at or below 45 dBA L_{dn}.

General Plan

The following goals, policies, and programs from the City of Union City's 2040 General Plan (City of Union City 2019) are relevant to the project:

- **Policy S-8.1: Noise Sensitive Land Uses.** The City shall consider the following land uses to be "noise sensitive":
  1. single- and multi-family residential;
  2. group homes;
  3. hospitals and other medical facilities;
  4. schools and other learning institutions;
  5. libraries; and
  6. similar uses as may be determined by the City.

- **Policy S-8.8: Limit Construction Hours.** To minimize the potential noise impacts of construction activities on surrounding land uses, the City shall limit construction activities between the hours of 8:00 a.m. and 8:00 p.m. on Monday through Friday, 9:00 a.m. and 8:00 p.m. on Saturdays, and 10:00 a.m. and 6:00 p.m. on Sundays and holidays. The City Manager may make specific exceptions to the construction hours when utility work in the streets would have a severely negative impact on traffic flow and public safety.
- **Policy S-8.9: Construction Noise Control Measures.** The City shall include the following noise control measures as standard conditions of approval for projects involving construction:
    1. Properly muffle and maintain all construction equipment powered by internal combustion engines.
    2. Prohibit unnecessary idling of combustion engines.
    3. Locate all stationary noise-generating construction equipment such as air compressors as far as practical from existing nearby residences and other noise-sensitive land uses. Such equipment shall also be acoustically shielded.
    4. Select quiet construction equipment particularly air compressors, whenever possible. Fit motorized equipment with proper mufflers in good working order.
    5. Residences adjacent to project sites shall be notified in advance in writing of the proposed construction schedule before construction activities commence. The construction schedule shall comply with Policy S-8.8.
    6. The project applicant shall designate a "noise disturbance coordinator" responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of any noise complaint (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures be implemented to correct the problem. A telephone number for the disturbance coordinator shall be posted at the construction site.
- **Policy S-8.10: Construction Vibration Control Measures.** The City shall include the following measures as standard conditions of approval for applicable projects involving construction to minimize exposure to construction vibration:
    1. Avoid the use of vibratory rollers (i.e., compactors) within 50 feet of buildings that are susceptible to damage from vibration.
    2. Schedule construction activities with the highest potential to produce vibration to hours with the least potential to affect nearby institutional, educational, and office uses that the Federal Transit Administration identifies as sensitive to daytime vibration (FTA 2018).
    3. Notify neighbors of scheduled construction activities that would generate vibration.

Municipal Code

Section 9.40.053 of the Union City Municipal Code includes standards related to construction noise. Construction activity is restricted to the hours of 8:00 a.m. to 8:00 p.m. on Monday through Friday, 9:00 a.m. to 8:00 p.m. on Saturdays, and 10:00 a.m. to 6:00 p.m. on Sundays and holidays, provided that either no individual piece of equipment produces a noise level over 83 dBA at a distance of 25 feet or that the noise level outside the property plane exceeds 86 dBA.

City of Fremont

Noise is regulated in Fremont through implementation of City of Fremont General Plan policies and enforcement of Municipal Code performance standards. A summary of both is provided below.

General Plan

The City of Fremont General Plan Safety Element (adopted in 2011) (City of Fremont 2011) addresses noise. The Safety Element includes goals, policies, and implementation measures that work to minimize impacts on residents and property related to noise and ground vibration sources. The General Plan Safety Element states that the city controls

construction noise through limitations on construction hours. In addition, the city has adopted noise level standards for new industrial and commercial sources, summarized below in Table 3.9-5. Note that these apply to stationary sources associated with industrial and commercial uses, not construction activities.

Table 3.9-5 Noise Levels Standards for New Industrial and Commercial Noise Sources

Exterior Noise Level Standards (dBA)		
	Daytime (7 a.m.-10 p.m.)	Nighttime (10 p.m.-7 a.m.)
Hourly L_{eq}	50	45
Hourly L_{max}	70	65

Notes: dBA = A-weighted decibels; L_{eq} = hourly average level; L_{max} = maximum instantaneous level.

Source: City of Fremont 2011: 10-43.

The City of Fremont General Plan Noise Element (City of Fremont 2011) also identifies noise and land use compatibility standards for various land uses. These standards are intended to provide compatible land uses throughout the community as related to environmental noise. Residential land uses are considered "normally acceptable" in exterior noise environments of 60 dBA L_{dn} or less. Interior noise levels attributable to exterior noise sources shall be maintained at or below 45 dBA L_{dn}.

Municipal Code

City of Fremont Municipal Code Chapter 18.160.010 Construction hours - Limitations, provides the following construction-related limits.

(a) Except as modified herein, construction activity for development projects in any zoning district on any property within 500 feet of one or more residences, lodging facilities, nursing homes or inpatient hospitals shall be limited to the weekday hours of 7:00 a.m. to 7:00 p.m. and the Saturday or holiday hours of 9:00 a.m. to 6:00 p.m., while Sunday construction is not allowed. Construction activity for projects not located within 500 feet of residences, lodging facilities, nursing homes or inpatient hospitals shall be limited to the weekday hours of 6:00 a.m. Construction activity for projects not located within 500 feet of residences, lodging facilities, nursing homes or inpatient hospitals shall be limited to the weekday hours of 6:00 a.m. to 10:00 p.m. and the weekend or holiday hours of 8:00 a.m. to 8:00 p.m.

(b) Resident homeowners and their uncompensated volunteer workers performing construction activity on their own single-family detached home shall be limited to the weekday hours of 7:00 a.m. to 8:00 p.m. and the weekend hours of 8:00 a.m. to 8:00 p.m.

(c) This section shall not apply to construction necessary to prevent or repair an emergency condition, as reasonably determined by the City manager's designee.

(d) Projects requiring a permit under the authority of this code shall have construction hours noted on the cover sheet of the construction plans.

(e) Projects requiring a permit under the authority of this code, except additions and alterations to single-family residential homes or lots, shall have an all-weather notice board conspicuously placed adjacent to the most visible public right-of-way for the duration of construction activity. The placement, format and content of the notice board shall be prescribed by city staff, and shall contain, at a minimum, summary project information, allowable construction hours, and city staff information.

(f) The city manager's designee shall have the authority to modify these hours under any of the following conditions:

1. To facilitate staff supervision or inspection or when the applicant is required to comply with more restrictive provisions of this code, state or federal law.

2. When, based upon the nature of nearby uses and/or site-specific considerations, he or she makes a finding that such modified construction hours are reasonably foreseeable to result in an equal or superior level of comfortable enjoyment of life and property by the community.
3. When the project is located in a right-of-way or easement or on publicly owned property, and such modified hours, on balance, will minimize disruption to the community as a whole, such as to facilitate the orderly flow of traffic or to reduce negative impacts on commercial or residential activity.

(g) Violations of the provisions of this section shall be considered a public nuisance as defined in Section 8.60.040 for purposes of enforcement and remedy. In addition to the provisions of Title 8, staff shall have the power to withhold inspections if construction hours are not observed. (Ord. 36-2005 § 1, 11-22-05. 1990 Code § 8-2205.)

City of Newark

The City of Newark regulates noise through general plan policies, as well as adopted local ordinances contained within the municipal code. A summary of both is provided below.

General Plan

The City of Newark General Plan Noise Element (City of Newark 2013) identifies noise and land use compatibility standards for various land uses. These standards are intended to provide compatible land uses throughout the community as related to environmental noise. Residential land uses are considered "normally acceptable" in exterior noise environments of 60 dBA L_{dn} or less. Interior noise levels attributable to exterior noise sources shall be maintained at or below 45 dBA L_{dn}.

The following policies within the City of Newark's General Plan (City of Newark 2013) may be relevant to the project:

- Policy EH-6.6: Construction Noise - Regulating Construction Hours. Reduce noise associated with construction activities by prohibiting construction in residential neighborhoods between the hours of 7 PM and 7 AM Monday through Friday and at all times on Saturdays, Sundays, and State/federal holidays.
- Policy EH-6.7: Construction Noise - Addressing Sources of Construction Noise. Reduce noise associated with construction activities by requiring properly maintained mufflers on construction vehicles, requiring the placement of stationary construction equipment as far as possible from developed areas, and requiring temporary acoustical barriers/shielding to minimize construction noise impacts at adjacent receptors. Special attention should be paid to noise-sensitive receptors (including residential, hospital, school, and religious land uses).

Municipal Code

Section 17.24.100.A of the City of Newark Municipal Code regulates noise and indicates that it shall be unlawful for any person to disturb the peace, quiet, and comfort of the community, or any portion thereof, or neighborhood therein, by creating or causing to be created any unreasonable noises. Subsection 17.24.100.A.3 of the noise ordinance limits construction and landscaping activities. Unless otherwise provided pursuant to a duly-issued permit or a condition of approval of a land use entitlement, the construction, alteration, or repair of structures and any landscaping activities, occurring between the hours of 10:00 a.m. and 6:00 p.m. on Sundays and holidays, and 7:00 a.m. and 7:00 p.m. on other days, shall be subject to the following:

a. No individual device or piece of equipment shall produce a noise level exceeding 83 dBA at a distance of twenty-five feet from the source. If the device or equipment is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close as possible to twenty-five feet from the equipment.
b. The noise level at any point outside of the property plane shall not exceed 86 dBA. During all other times, the dB levels set forth in Subsection 17.24.100.A.2, Noise Restriction by Decibel, control.

Subsection 17.24.100.A.2: Noise Restriction by Decibel.

a. Residential Property Noise Limits.

i. No person shall produce or allow to be produced by human voice, machine, device, or any combination of same, on residential property, a noise level at any point outside of the property plane that exceeds 70 dBA between the hours of 7:00 a.m. and 9:00 p.m. or 60 dBA between the hours of 9:00 p.m. and 7:00 a.m.

ii. No person shall produce or allow to be produced by human voice, machine, device, or any combinations of same, on multifamily residential property, a noise level more than 60 dBA three feet from any wall, floor, or ceiling inside any dwelling unit on the same property, when the windows and doors of the dwelling unit are closed, except within the dwelling unit in which the noise source or sources may be located.

Concerning vibration, the City of Newark General Plan includes the following action:

- Action EH -7.D: Vibration-Intensive Construction. Implement a standard operating procedure that requires the evaluation of vibration impacts for individual projects which use vibration-intensive construction activities, such as pile drivers, jackhammers, and vibratory rollers, near sensitive receptors. If construction-related vibration is determined to be perceptible (i.e., in excess of Federal Transit Administration's vibration annoyance criterion) at vibration-sensitive uses, then additional requirements, such as the use of less-vibration-intensive equipment or construction techniques, shall be implemented during construction.

3.9.2 Environmental Setting

ACOUSTIC FUNDAMENTALS

Prior to discussing the noise setting for the project, background information about sound, noise, and vibration is needed to provide context and a better understanding of the complex topic of noise and acoustics discussed throughout this section.

Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a human ear. Noise is defined as loud, unexpected, annoying, or unwanted sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz, or thousands of hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this large range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels.

Addition of Decibels

Because decibels are logarithmic units, SPLs cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness at the same time, the resulting sound level at a given distance would be 3 dB higher than if only one of the sound sources was producing sound under the same conditions. For example, if one idling truck generates an SPL of 70 dB, two trucks idling simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level approximately 5 dB louder than one source.

A-Weighted Decibels

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies, as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within this range better than sounds of the same amplitude with frequencies outside of this range. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an "A-weighted" sound level (expressed in units of A-weighted decibels [dBA]) can be computed based on this information.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgment correlates well with the A-scale sound levels of those sounds. Thus, noise levels are typically reported in terms of dBA. All sound levels discussed in this section are expressed in dBA. Table 3.9-6 describes typical A-weighted noise levels for various noise sources.

Table 3.9-6 Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1,000 feet	— 100 —	
Gas lawn mower at 3 feet	— 90 —	
Diesel truck at 50 feet at 50 miles per hour	— 80 —	Food blender at 3 feet, garbage disposal at 3 feet
Noisy urban area, daytime, gas lawn mower at 100 feet	— 70 —	Vacuum cleaner at 10 feet, normal speech at 3 feet
Commercial area, heavy traffic at 300 feet	— 60 —	
Quiet urban daytime	— 50 —	Large business office, dishwasher in next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime	— 30 —	Library, bedroom at night
Quiet rural nighttime	— 20 —	
	— 10 —	Broadcast/recording studio
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: Caltrans 2013: Table 2-5.

Human Response to Changes in Noise Levels

The doubling of sound energy results in a 3-dB increase in the sound level. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different from what is measured.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear can discern 1-dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the midfrequency (1,000–8,000 Hz) range. In general, the healthy human ear is most sensitive to sounds between 1,000 and 5,000 Hz and perceives both higher and lower frequency sounds of the same magnitude with less intensity (Caltrans 2013: 2-44). In typical noisy environments, changes in noise of 1–2 dB are generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness (Caltrans 2013: 6-5). Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dB increase in sound would generally be perceived as barely detectable.

Vibration

Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery) or transient in nature (e.g., explosions). Vibration levels can be depicted in terms of amplitude and frequency, relative to displacement, velocity, or acceleration.

Vibration amplitudes are commonly expressed in PPV or root-mean-square (RMS) vibration velocity. PPV and RMS vibration velocity are normally described in in/sec or in millimeters per second. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (FTA 2018: 110, Caltrans 2020: 6).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as VdB, which serves to compress the range of numbers required to describe vibration (FTA 2018: 111; Caltrans 2020: 7). This is based on a reference value of 1 micro inch per second.

The typical background vibration-velocity level in residential areas is approximately 50 VdB. Ground 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 (FTA 2018: 113).

Typical outdoor sources of perceptible ground vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground 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 to fragile buildings. Construction activities can generate ground vibrations sufficient to pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (Caltrans 2020: 19).

Vibrations generated by construction activity can be transient, random, or continuous. Transient construction vibrations are generated by blasting and wrecking balls. Continuous vibrations are generated by vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment. Table 3.9-7 presents vibration levels for typical pieces of equipment used during construction.

Table 3.9-7 Vibration Reference Levels for Construction Equipment

Equipment		PPV at 25 Feet, in/sec	Approximate Lv * at 25 Feet
Pile driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	Typical	0.17	93
Clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Vibratory roller		0.21	94
Hoe ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Notes: in/sec = inches per second; Lv = vibration velocity level; PPV = peak particle velocity; RMS = root-mean-square: VdB = vibration decibels.

*RMS velocity in decibels, VdB re 1 micro-in/sec.

Source: FTA 2018: 184.

Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which a noise level decreases with distance depends on the following factors.

Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Roads and highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources, thus propagating at a slower rate in comparison to a point source. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

Ground Absorption

The propagation path of noise from a source to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling provides additional attenuation associated with geometric spreading. Traditionally, this additional attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an additional ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the attenuation rate associated with cylindrical spreading, the additional ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance. This would hold true for point sources, resulting in an overall drop-off rate of up to 7.5 dB per doubling of distance.

Atmospheric Effects

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels, as wind can carry sound. Sound levels can be increased over large distances (e.g., more than 500 feet) from the source because of atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also affect sound attenuation.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver attenuates noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction (Caltrans 2013: 2-41; FTA 2018: 16). Barriers higher than the line of sight provide increased noise reduction (FTA 2018: 16). Vegetation between the source and receiver is rarely effective in reducing noise because it does not create a solid barrier unless there are multiple rows of vegetation (FTA 2018: 106).

EXISTING NOISE ENVIRONMENT

Existing Noise- and Vibration-Sensitive Land Uses

Noise-sensitive land uses generally consist of those uses where noise exposure would result in adverse effects on uses for which quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise. Other examples of noise-sensitive land uses include nursing homes, schools, hospitals, libraries, childcare facilities, and places of worship.

The Solar Salt Facility is in the City of Newark, and the MSS brine transport pipeline alignment passes through the Cities of Hayward, Fremont, Newark, and Union City, and the unincorporated community of San Lorenzo within Alameda County. Noise-sensitive land uses in the project area include residences, offices, commercial uses, places of worship, and parks, including on both the east and west sides of the pipeline alignment. The noise-sensitive land uses nearest to the proposed project facilities are residential communities as close as 56 feet from the pipeline alignment within all the aforementioned jurisdictions.

Existing Noise Sources and Ambient Levels

The principal noise sources in the project area are vehicular traffic on nearby roadways and train pass-bys. Intermittent noise from Cargill's Solar Salt Facility operations and noise from aircraft flyovers also contribute, to a lesser extent, to the existing noise environment.

The ambient noise environment in the project vicinity is defined primarily by vehicle traffic on local roadways and on SR 84 and SR 92, which pass through the project site; by vehicle traffic on Interstate 880, which is located approximately 1.0 mile to the east of the project site; and by train traffic on Union Pacific Railroad tracks located approximately 1,500 feet to the east of the project site.

The primary sources of stationary noise in the project vicinity are urban- and rural-related activities (i.e., mechanical equipment, loading and unloading areas, parking lots, landscape maintenance, conversations [normal to loud], and recreational areas) and residential activities (i.e., air conditioners, pool and spa equipment, landscape maintenance, and conversations). Noise associated with these sources may represent a single event noise occurrence, short-term noise, or long-term/continuous noise. Also, industrial and commercial activities near the Dumbarton Bridge/SR 84 junction and Interstate 880 generate additional noise from these sources.

Existing ground-borne vibration in the vicinity of the project site is caused by passing trains and trucks on local roads and highways.

To characterize existing ambient noise levels, 11 long-term noise measurements were conducted from June 8, 2021 through June 10, 2021, and an additional long-term measurement was conducted from November 17, 2022 to

November 18, 2022. Traffic noise modeling, based on published annual average daily traffic volume for Highway 92, was conducted to supplement ambient noise measurement data. Ambient noise measurements were conducted near existing noise-sensitive uses along the MSS brine transport pipeline alignment (see Figure 3.9-1). As shown in Table 3.9-8, measured ambient noise levels at the noise-sensitive land uses closest to the project site range from 39 to 71 dBA L_{eq}, and 53 to 76 dBA L_{dn}.

Table 3.9-8 Noise Measurement Summary

Measurement Location Number	Location Description	Date/Time	A-Weighted Sound Level (dBA)				
			CNEL/L_{dn}	Daytime (7:00 a.m.-7:00 p.m.		Nighttime (7:00 p.m.-7:00 a.m.)	
				L_{eq}	L_{max}	L_{eq}	L_{max}
LT-01	Northern project site, along Whipple Road by residence at 4477 Horner Street, Union City	June 8, 2021/12:00	67.8	64.1	85.7	60.8	78.1
LT-02	Parking lot of the Mark Green Sports Center at 31224 Union City Boulevard, Union City	June 9, 2021/14:00	70.3	68.2	83.2	62.4	79.2
LT-03	Ponderosa Landing Park, along Union City Boulevard, Union City	June 8, 2021/15:00	62.7	62.5	81.0	53.0	67.9
LT-04	Behind soundwall along Union City Boulevard, by residence at 4732 Ashley Court, Union City	June 9, 2021/17:00	58.8	57.0	72.2	50.7	67.2
LT-05	Behind the field of Delaine Eastin Elementary School, along Union City Boulevard, by residence at 5048 Anaheim Loop, Union City	June 8, 2021/17:00	73.0	70.9	88.5	65.2	82.1
LT-06	By Patterson Ranch Community Center at 5298 Rancho Del Norte Drive, Fremont	June 9, 2021/15:00	61.0	59.7	76.2	52.5	65.7
LT-07	Along the Union Pacific Railroad tracks near Paseo Padre Parkway by 6530 Paseo Padre Parkway, Fremont	June 9, 2021/16:00	62.2	60.9	72.7	53.8	68.2
LT-08	Marsh area east of Thornton Avenue south of Gateway Boulevard, Newark	June 9, 2021/19:00	56.7	54.8	67.4	48.7	61.9
LT-09	By 8588 Peachtree Avenue along Thornton Avenue, Newark	June 10, 2021/16:00	70.4	66.4	84.8	63.5	84.9
LT-10	By 8510 Bayshores Avenue along Willow Street, Newark	June 10, 2021/18:00	58.7	56.8	74.2	50.7	68.4
LT-11	By 37983 Harbor Light Road along Central Avenue, Newark	June 10, 2021/20:00	52.8	53.9	65.7	39.7	56.8
LT-12	Adjacent to a residential neighborhood along Bandoni Avenue in San Lorenzo, within the San Lorenzo Park. Union Pacific Railroad train tracks are located approximately 65 feet from noise meter location.	Nov 17-18, 2022/10:00	63.3	55.7	68.6	50.8	69.7
LT-13	100 feet from the Centerline of Highway 92	NA	75.9	NA	NA	NA	NA

Notes: CNEL = community noise equivalent level; dBA = A-weighted decibels; L_{eq} = equivalent continuous sound level; L_{dn} = day-night level; L_{max} = maximum sound level; NA= not applicable/not available

Refer to Figure 3.9-1 for ambient noise level measurement locations.

See Appendix D for detailed noise measurement data.

Source: Data provided by AECOM in 2021.

Source: Data received from AECOM and Jacobs in 2021 and 2022; adapted by Ascent Environmental in 2022.

Figure 3.9-1 Noise Measurement Locations

3.9.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

Construction Noise and Vibration

To assess potential short-term (construction-related) noise and vibration impacts, sensitive receptors and their relative exposure were identified. Project-generated construction source noise and vibration levels were determined based on methodologies, reference emission levels, and usage factors from FTA's *Transit Noise and Vibration Impact Assessment* methodology (FTA 2018) and FHWA's *Roadway Construction Noise Model User's Guide* (FHWA 2006). Reference levels for noise and vibration emissions for specific equipment or activity types are well documented, and the usage thereof is common practice in the field of acoustics.

Operational Noise and Vibration

With respect to nontransportation (i.e., stationary) noise sources associated with project implementation, the assessment of long-term (operation-related) impacts was based on reconnaissance data, reference noise emission levels, and measured noise levels for activities and equipment associated with project operation (e.g., pumps), and standard attenuation rates and modeling techniques.

THRESHOLDS OF SIGNIFICANCE

A noise impact would be significant if implementation of the proposed project would:

- generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the applicable local general plan or noise ordinance, or applicable standards of other agencies, or result in a substantial temporary or permanent increase in noise that could adversely affect sensitive land uses;
- generate excessive groundborne vibration or groundborne noise levels that would exceed the guidelines set by FTA;
- for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; or
- for a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

ISSUES NOT DISCUSSED FURTHER

No aviation facilities are located within 2 miles of the Solar Salt Facility; however, two such facilities—Hayward Executive Airport, a public use airport, and the St. Rose Hospital Helistop, a private facility—are located within 2 miles of the MSS brine transport pipeline alignment. At its closest point, the pipeline alignment is located less than 0.25-mile from the airport on the west and approximately 1 mile from the heliport on the southwest, and the alignment extends through the airport influence area for the Hayward Executive Airport as identified in the *Hayward Executive Airport - Airport Land Use Compatibility Plan* (Alameda County ALUC 2012). Although portions of the project would be within 2 miles of an airport and within the Hayward Executive Airport's influence area, the project does not propose any new sensitive receptors (e.g., residences, schools) that could be adversely impacted from noise associated with aircraft flyovers. It should be noted that temporary construction workers would not be adversely affected by aircraft flyover as noise generated from construction equipment would be the dominant noise exposure to them, which is generally dealt with by wearing ear plugs to prevent hearing damage. Furthermore, long-term maintenance workers would not sleep onsite; thus, would not be exposed to potential sleep disturbance from aircraft flyovers. The potential to result in noise exposure to people residing or working near an airport to excessive noise is not discussed further in this EIR.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.9-1: Potential to Expose Existing Receptors to Short-Term Construction Noise

Based on the construction activities and associated construction equipment likely to be required, construction noise levels were modeled and could reach up to 93.6 dB L_{eq} and 97.6 dB $L_{max.}$ at 50 feet, and 24-hour CNEL levels could be as high as 84.9 dBA L_{dn} under worst case conditions (several pieces of equipment operating simultaneously). These noise levels would exceed noise standards in jurisdictions with requirements that construction-related noise levels not exceed 86 dBA L_{eq} at adjacent land uses or not exceed 83 dBA L_{eq} at 25 feet from individual pieces of equipment. Thus, construction activities could result in a substantial temporary and periodic increase in noise during daytime hours at existing and future sensitive land uses. This impact would be **significant**.

Construction activities for the proposed project are anticipated to begin in 2023 and take approximately 12–18 months to complete. As summarized above in the Regulatory Setting, all local jurisdictions where construction activities would occur specify allowable daytime construction hours during the less sensitive times of the day, when noise impacts are less likely to occur. All construction activities would comply with these allowable timeframes. Construction activities would include excavation, directional drilling, pipeline installation, backfilling, grading, and repaving. The types of heavy equipment that would be used during project construction include an impact pile driver, cranes, utility trucks for watering and for tool transport/storage, concrete mix and pour trucks, dump trucks, front end loaders, excavators, ground compactors, pavers, flatbed trucks, concrete saws, and pumps. Some equipment would be specific to construction activities at the Solar Salt Facility, whereas others would be used only during construction of the MSS brine transport pipeline. Reference noise levels of the heavy equipment that would be used during project construction are summarized in Table 3.9-9.

Table 3.9-9 Noise Emission Levels from Construction Equipment

Equipment Type	Typical Noise Level (L_{max} dBA) at 50 Feet
Backhoe	80
Compactor	80
Concrete mixer	85
Concrete pump truck	82
Concrete saw	90
Crane/lift	85
Dump truck	84
Excavator	85
Flatbed truck	84
Front end loader	80
Grader	85
Impact pile driver	95
Pickup trucks	54
Pumps	77
Welder/torch	73

Notes: dBA = A-weighted decibels; L_{max} = maximum sound level.

Assumes all equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacture-specified noise levels for each piece of heavy construction equipment.

Source: FTA 2018: 176.

Construction noise can be characterized based on the type of activity and associated equipment needed and, in this analysis, was evaluated by considering noise levels associated with site preparation, construction, and site restoration

activities during all construction phases through buildout of the project and determining the specific activities that would generate the most noise.

For this analysis, construction of the Solar Salt Facility improvements and construction of the MSS brine transport pipeline were modeled separately because each of these project elements would use somewhat different mixes of construction equipment. Construction equipment that would be used for construction of facilities at the Solar Salt Facility would involve three active pumps for dewatering the site; a concrete pump and mixer truck; a crane; an impact pile driver, which would be used for the three pump stations' pipelines; a pickup truck; a backhoe; and a flatbed truck. For the MSS brine transport pipeline installation (open-cut), construction equipment would include a concrete saw, an excavator, a front end loader, a ground compactor, and welding and torch tools. Using construction equipment associated with these construction phases, reference noise levels shown in Table 3.9-9, and assuming the simultaneous use of multiple pieces (i.e., up to five for the pipeline installation work and up to five for the Solar Salt Facility improvements) of equipment for each construction phase, worst-case noise levels were modeled for each phase of construction. Because these activities and combination of equipment generate the most noise, other construction activities would result in similar or less noise levels. Also, it should be noted that when noise sources of similar noise levels combine, which is the case with most construction equipment types as many generate similar noise levels, the noise levels increase by 3 dB with each doubling of equipment used with similar noise levels. For example, two graders of 85 dB combined would result in 88 dB, but then it would take another doubling (i.e., four graders) to result in an additional 3 dB increase. Thus, different types of construction activities/methods that could occur and potentially include a different mix of equipment than what was modeled, would be anticipated to generate similar, or lower, noise levels than modeled here because the modeling accounted for the combination of the loudest equipment that could be used, operating at the same time and location.

The noise levels for construction equipment were estimated based on data from FTA's *Transit Noise and Vibration Impact Assessment Manual* and are all referenced to a distance of 50 feet from the operation of equipment. When discussing noise levels, providing a reference distance from the source is necessary to be able to calculate adjusted noise levels at various distances from the source (i.e., noise levels attenuate [decrease] with increasing distance from the source). In this analysis, the noise levels at 50 feet from operating equipment were used to calculate potential noise levels at nearby receptors at distances beyond 50 feet. In addition, it should be further clarified that these noise levels represent a conservative estimate based on the assumptions that multiple pieces of equipment would operate at the same location and time affecting the same individual receptors. However, typically, construction equipment moves about a site and individual pieces of equipment operate at varying frequencies throughout the day; thus, noise levels tend to fluctuate during the day, resulting in varying noise levels at surrounding receptors. In addition, this analysis is focused on the receptors nearest to the construction activities because these receptors would be exposed to the loudest noise levels. At receptors located farther away, noise levels would be less. The tables presented below show construction noise levels expected to occur at the sensitive receptors nearest to the construction activity in each jurisdiction for each of the modeled construction activities.

Proposed Project

Solar Salt Facility Improvements

The Solar Salt Facility improvements would include the development of three pump stations that would house two pumps of various sizes and power outputs, a rainwater decanting weir box, and pipeline installation. The sensitive receptors nearest to construction activities at the Solar Salt Facility involving the most equipment (pump station construction) are single-family residences located approximately 1,770 feet north of Pond 10 at 9568 Cape Breeze Drive. Table 3.9-10, below, presents the L_{eq} and L_{max} that would occur at this nearby sensitive receptor based on the construction equipment that would be used for pump station installation at the Solar Salt Facility, which would include three dewatering pumps, a concrete pump and mixer truck, a crane, a single impact pile driver used near the pump stations for pipe installation, a pickup truck, a backhoe, and a flatbed truck (see Appendix D for construction assumptions).

Table 3.9-10 Estimated Temporary Noise Levels during Construction

Noise-Sensitive Receptor	Estimated L_{eq} at 50 Feet, dBA	Estimated L_{eq} at Sensitive Location, dBA	Estimated L_{max} at 50 Feet, dBA	Estimated L_{max} at Sensitive Location, dBA
9568 Cape Breeze Drive (single-family residence)	92.5	51.7 (at 1,770 feet)	96.5	55.7 (at 1,770 feet)

Notes: dBA = A-weighted decibels; L_{eq} = equivalent continuous sound level; L_{max} = maximum sound level.

Source: Modeled by Ascent Environmental in 2022 (see Appendix D).

As shown in Table 3.9-10, noise levels that would be emitted during construction would be 92.5 dBA L_{eq} and 96.5 dBA L_{max} at 50 feet from operating construction equipment. Applying standard attenuation rates and accounting for distance alone, noise levels at the nearest sensitive receptor, approximately 1,770 feet north of the nearest proposed pump station at the Solar Salt Facility, would be 51.7 L_{eq} and 55.7 L_{max}.

Because the pump stations are proposed at the project's property line, the estimated L_{eq} at 50 feet shown in Table 3.9-10 would be most representative of noise levels experienced outside of the project's property line, which would be 92.5 dBA L_{eq} or greater at shorter distances. Additionally, individual pieces of equipment that would be present on the Solar Salt Facility would produce noise levels above 83 dBA at 25 feet (77 dBA at 50 feet). This equipment includes the single impact pile driver that would be used for the pump station construction, as well as some of the other equipment presented in the construction calculations for the Solar Salt Facility. Therefore, noise levels associated with construction activities at the Solar Salt Facility would exceed the City of Newark's requirement of 86 dBA at the property plane or 83 dBA at 25 feet (77 dBA at 50 feet), although sensitive receptors would not be exposed to this level of construction noise.

To determine whether construction noise levels would result in substantial increases in noise, anticipated construction noise was compared to the City of Newark's 24-hour normally acceptable noise levels for residential uses, shown in Table 3.9-11.

Table 3.9-11 Temporary Noise Change in L_{dn} Related to Construction Activity

Noise-Sensitive Receptor	Current Ambient Noise Level Present[1]	Combined Ambient and Construction Activity Noise Levels	Increase above Ambient Noise Level	Threshold	Threshold Exceeded/ Significant Impact?
	L_{dn}, dBA				
9572 Seawind Way (multifamily residence)	52.8 (at LT-11)	60.6 (at 1,770 feet, the nearest residence)	7.8	60	**Yes**

Notes: dBA = A-weighted decibels; L_{dn} = day-night level.

[1] Current ambient noise level refers to value in Table 3.9-8. Measurement locations closest to receivers were selected to represent the ambient noise level.

Source: Modeled by Ascent Environmental in 2022 (see Appendix D).

As shown in Table 3.9-11, temporary noise levels in terms of L_{dn} would be above normally acceptable noise levels for the nearby receptor identified when compared to the City of Newark's General Plan 60 dBA L_{dn} and would result in a substantial (i.e., greater than 5-db) increase in noise.

MSS Brine Transport Pipeline

In addition to the Solar Salt Facility improvements, the project would involve construction of the MSS brine transport pipeline. This pipeline would cross multiple jurisdictions, including Alameda County (in the unincorporated area of San Lorenzo), City of Hayward, City of Union City, City of Fremont, and City of Newark. Construction activities associated with the MSS brine transport pipeline would occur as close as 55 feet; in other areas, the nearest sensitive receptors are 150 feet away. Sensitive receptors were identified by referencing Figures 2-8a through 2-8h in this EIR to the latest imagery found on Google Maps and measuring the approximate distance from the pipeline installation to the nearest sensitive receptors (see Figures 2-8a through 2-8h in Chapter 2, "Project Description"). Table 3.9-12,

below, presents the L_{eq} and L_{max} calculated noise levels at these identified sensitive receptors. Construction equipment that would be used during construction of the pipeline would include a concrete saw, an excavator, a front-end loader, a ground compactor, and welding and torch tools. For purposes of this analysis, it was assumed that all these pieces of equipment would be running at the same time.

Table 3.9-12 Temporary Hourly Noise Change Related to Construction Activity

Noise-Sensitive Receptor	Jurisdiction	Estimated L_{eq} at 50 Feet	Estimated L_{eq} at Sensitive Location	Estimated L_{max} at 50 Feet	Estimated L_{max} at Sensitive Location
		L_{eq}, dBA		L_{max}, dBA	
2120 Keller Avenue (single-family residence)	Unincorporated San Lorenzo (Alameda County)	87.9	78.6 (at 145 feet)	91.9	82.6 (at 145 feet)
2608 Admiral Circle (single-family residence)	City of Hayward		81.9 (at 100 feet)		85.8 (at 100 feet)
2448 Marina Drive (single-family residence)	City of Hayward		87.1 (at 55 feet)		91.0 (at 55 feet)
31175 Union City Boulevard (single-family residence)	Union City		87.1 (at 55 feet)		91.0 (at 55 feet)
5547 Clove Hitch Loop (single-family residence)	City of Fremont		78.3 (at 150 feet)		82.3 (at 150 feet)
9572 Seawind Way (single-family residence)	City of Newark		86.3 (at 60 feet)		90.3 (at 60 feet)

Notes: dBA = A-weighted decibels; L_{eq} = equivalent continuous sound level; L_{max} = maximum sound level.

Source: Modeled by Ascent Environmental in 2022 (see Appendix D).

As shown above in Table 3.9-12, the estimated combined noise of all the construction equipment for the MSS brine transport pipeline installation would result in an estimated L_{eq} of 87.9 and an L_{max} of 91.9 dBA at 50 feet. Because development of the pipeline would occur in multiple jurisdictions and the nearest sensitive receptor varies by jurisdiction, the following analysis is presented by jurisdiction. This approach was taken to ensure that impacts were evaluated in accordance with the applicable noise ordinances and standards for each jurisdiction.

Alameda County/Unincorporated San Lorenzo

As shown in Table 3.9-12 above, noise levels resulting from the MSS brine transport pipeline installation would cause noise levels to approach 78.6 L_{eq} and 82.6 L_{max} at the nearest receptor, located approximately 145 feet northeast of the construction activity, at 2120 Keller Avenue. This noise level would exceed the Alameda County General Plan maximum exterior noise level of 70 dBA and result in a substantial increase in noise (i.e., greater than 5 dB), as shown below in Table 3.9-13.

Table 3.9-13 Temporary Noise Change in L_{dn} Related to Construction Activity in Unincorporated Alameda County

Noise-Sensitive Receptor	Current Ambient Noise Level (CNEL)[1]	Combined Ambient and Construction Activity Noise Levels	Increase above Ambient Noise Level	Threshold	Threshold Exceeded/ Significant Impact?
	L_{dn}, dBA				
2120 Keller Avenue (single-family residence)	63.3 (LT-12)	75.8 (at 145 feet)	12.4	5 dB	**Yes**

Notes: dBA= A-weighted decibels; L_{dn}= 24-hour day-night level

[1] Existing ambient levels obtained during November 17, 2022 24-hour measurement. See LT-12 on Figure 3.9-1.

Source: Modeled by Ascent Environmental in 2022 (see Appendix D).

City of Hayward

As shown in Table 3.9-12, above, construction resulting from the MSS brine transport pipeline installation would cause noise levels to approach 87.9 dBA L_{eq} and 91.9 L_{max} at 50 feet from construction activities. Within the City of Hayward, construction activities could occur as close as 55 feet from receptors (e.g., 2448 Marina Drive) or at approximately 100 feet (e.g., residences along Admiral Circle), depending on the alignment option chosen. As described in Section 2.6.5, "MSS Brine Transport Pipeline," there are two alignment options from Hesperian Boulevard to Industrial Parkway. The first alignment option would travel north on Hesperian Boulevard and turn west on Industrial Boulevard. The second alignment option would also travel north on Hesperian Boulevard, but would turn west on Eden Shores Boulevard, continue north on Marina Drive, and turn west on Industrial Boulevard. See Figure 2-8f for specific alignment locations. Considering the aforementioned range of distances to receptors from construction activities, and applying the modeled L_{eq} noise levels, construction noise within Hayward could result in noise levels of 81.9 dBA L_{eq} at 100 feet and up to 87.1 L_{eq} at 55 feet from construction activities. Based on modeled construction noise levels, the City of Hayward's municipal code limit of 83 dBA would be exceeded at distances within 60 feet, including at residential uses along Marina Drive and Eden Shores Boulevard; however, at other locations beyond 60 feet from construction activities, the municipal code limit would not be exceeded. Additionally, based on reference noise levels for excavators and concrete saws of 85 dBA and 90 dBA (Table 3.9-9), respectively, construction noise could exceed the City of Hayward's municipal code noise limit of 83 dBA at 25 feet for individual construction equipment. Regarding substantial increases in noise, as shown in Table 3.9-14, using existing noise level data and considering maximum construction noise levels of 87.1 dBA L_{eq}, construction would result in a CNEL of 85.7 dBA, representing a perceived increase in noise of 17.9 dBA CNEL, which would be considered substantial (i.e., greater than a 5-dB increase). A substantial increase in noise would occur with either alignment option, based on modeled noise levels and existing ambient noise conditions.

Table 3.9-14 Temporary Noise Change in L_{dn} Related to Construction Activity in Hayward

Existing Noise Measurement Location	Current Ambient Noise Level (CNEL)[1]	Combined Ambient and Construction Activity Noise Levels	Increase above Ambient Noise Level	Threshold	Threshold Exceeded/ Significant Impact?
	L_{dn}, dBA				
4477 Horner Street, Union City	67.8 (at LT-01)	85.7 (at 55 feet)	17.9	5 dB	**Yes**

Notes: dBA= A-weighted decibels; L_{dn}= 24-hour day-night level

[1] The current ambient noise level refers to values in Table 3.9-8 obtained during the ambient noise surveys conducted for this project. The location used as the baseline noise level was chosen based on the best available data closest to receivers being evaluated.

Source: Modeled by Ascent Environmental in 2022 (see Appendix D).

Union City

As shown in Table 3.9-12, above, noise levels resulting from the MSS brine transport pipeline installation would cause noise levels to approach 87.1 L_{eq} and 91.0 L_{max} at the nearest receptor, located approximately 55 feet west of the construction activity, at 31175 Union City Boulevard. This noise level would exceed Union City's municipal code requirement of 86 dBA at nearby sensitive land uses. Additionally, noise levels from individual pieces of construction equipment would exceed the Union City requirement of 83 dBA at 25 feet. Also, as shown in Table 3.9-15, when construction noise levels are combined with existing noise levels, a perceived increase in 15.4 dBA would occur, which would be considered substantial (i.e., greater than 5-dB).

Table 3.9-15 Temporary Noise Change in L_{dn} Related to Construction Activity in Union City

Existing Noise Measurement Location	Current Ambient Noise Level (CNEL)[1]	Combined Ambient and Construction Activity Noise Levels	Increase above Ambient Noise Level	Threshold	Threshold Exceeded/ Significant Impact?
	L_{dn}, dBA				
31175 Union City Boulevard (single-family residence)	70.3 (at LT-02)	85.7 (at 55 feet)	15.4	5 dB	Yes

Notes: dBA = A-weighted decibels; L_{dn} = day-night level.

[1] The current ambient noise level refers to values in Table 3.9-8 obtained during the ambient noise surveys conducted for this project. The location used as the baseline noise level was chosen based on the best available data closest to receivers being evaluated.

Source: Modeled by Ascent Environmental in 2022 (see Appendix D).

City of Fremont

As shown in Table 3.9-12, above, noise levels resulting from the MSS brine transport pipeline installation would cause noise levels to approach 78.3 L_{eq} and 82.3 L_{max} at the nearest receptor, located approximately 150 feet north of the construction activity, at 5547 Clove Hitch Loop. The City of Fremont does not have any specific guidelines to follow in terms of construction noise except when construction activity is allowed, which is from Monday through Friday from 7:00 a.m. to 7:00 p.m. and on Saturday from 9:00 a.m. to 6:00 p.m. However, even though the City of Fremont does not have guidelines for construction noise, the City does identify acceptable noise levels based on the land use. For residential land uses, the acceptable noise levels allowed are below 60 dBA L_{dn}. However, as shown in Table 3.9-16, the nearest long-term 24-hour measurement taken near the sensitive receptor shows that existing noise levels exceed this acceptable level. With the addition of construction activities, noise levels would approach 76.4 dBA $L_{dn,}$ which represents a substantial increase in noise (i.e., greater than 5-dB) and an exceedance of available land use noise limits.

Table 3.9-16 Temporary Noise Change in L_{dn} Related to Construction Activity in Fremont

Existing Noise Measurement Location	Current Ambient Noise Levels[1]	Combined Ambient and Construction Activity Noise Levels	Increase Above Ambient Noise Level	Threshold	Threshold Exceeded/ Significant Impact?
	L_{dn}, dBA				
5547 Clove Hitch Loop (Single-Family Residential)	61.0 (at LT-06)	76.4 (at 150 feet)	15.4	5 dB increase/60 dBA L_{dn}	Yes

Notes: dBA = A-weighted decibels; L_{dn} = day-night level.

[1] The current ambient noise level refers to values in Table 3.9-8 obtained during the ambient noise surveys conducted for this project. The location used as the baseline noise level was chosen based on the best available data closest to receivers being evaluated.

Source: Modeled by Ascent Environmental in 2022 (see Appendix D).

City of Newark

As shown in Table 3.9-12, above, noise levels resulting from the MSS brine transport pipeline installation would cause noise levels to approach 86.3 L_{eq} and 90.3 L_{max} at the nearest receptor, located approximately 60 feet north of the construction activity, at 9572 Seawind Way. This noise level would exceed the City of Newark's municipal code requirement of 86 dBA at nearby sensitive land uses. Additionally, noise levels from individual pieces of construction equipment would exceed the City of Newark requirement of 83 dBA at 25 feet. Also, when construction noise levels are combined with existing noise levels, a perceived increase in 31.4 dBA would occur, which would be considered substantial (i.e., greater than 5-dB).

Table 3.9-17 Temporary Noise Change in L_{dn} Related to Construction Activity in Newark

Existing Noise Measurement Location	Current Ambient Noise Levels Present[1]	Combined Ambient and Construction Activity Noise Levels	Increase Above Ambient Noise Level	Threshold	Threshold Exceeded/ Significant Impact?
	L_{dn}, dBA				
9572 Seawind Way (multifamily residence)	52.8 (LT-11)	84.3 (at 60 feet)	31.5	5 dB	Yes

Notes: dBA = A-weighted decibels; L_{dn} = day-night level.

[1] The current ambient noise level refers to values in Table 3.9-8 obtained during the ambient noise surveys conducted for this project. The location used as the baseline noise level was chosen based on the best available data closest to receivers being evaluated.

Source: Modeled by Ascent Environmental in 2022 (see Appendix D).

Summary

As discussed above, construction activities could occur as close as 60 feet from nearby sensitive receptors, and noise levels associated with these activities would exceed the adopted municipal code standards of the jurisdictions in which construction would occur. In addition, construction noise would result in a substantial temporary (i.e., greater than 5 dB) increase in noise. This impact would be **significant.**

Mitigation Measures

Mitigation Measure 3.9-1: Implement Construction Noise Reduction Measures

The following construction mitigation measure shall be implemented by the construction contractor for the entire construction phase of the project and within each jurisdiction that construction passes through:

- The construction contractor shall use noise-reducing operation measures, techniques, best practices, and equipment to achieve maximum practicable noise reduction (generally considered to be 10 dBA for construction noise) with the goal of achieving noise levels that do not exceed the applicable thresholds for each jurisdiction. This requirement shall be enforced through its inclusion on the construction bid specifications. The bid specifications shall require that the construction contractor provide an equipment inventory list for all equipment in the fleet with greater than 50-horsepower engines that identifies (at a minimum) make, model, and horsepower of equipment; operating noise levels at 50 feet; available noise control devices that are installed on each piece of equipment; and associated noise reduction from the installed technology. Control devices shall include high-efficiency mufflers, acoustic dampening, and protected internal noise absorption layers for vibrating components, enclosures, and electric motors. In addition, the contractor shall specify how proposed alternative construction procedures will be employed to reduce noise at sensitive receptors compared to other more traditional methods. Examples include, but are not limited to welding instead of riveting, mixing concrete off-site instead of on-site, and using thermal lances instead of drive motors and bits. In all cases, the requirement is that the best commercially available noise-reducing technology and noise-reducing alternative construction method shall be used, provided there are no safety concerns, engineering limits, or environmental constraints preventing it from being used. If a unique circumstance does exist that prevents an alternative, quieter construction method from being used, the contractor shall provide evidence to support its proposal. The noise reduction elements of construction bid submittals shall be approved by the jurisdiction in which construction will occur, in coordination with a qualified acoustical professional. The ability for a construction contractor to reduce noise from construction shall be among the criteria considered in evaluating the contractor's qualifications.

In addition to the bid-specific measures described above, the following specific measures shall be implemented to achieve the preceding measure:

- During the entire active construction period, equipment and trucks used for project construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds).

- The contractor shall be required to use impact tools (e.g., jack hammers and hoe rams) that are hydraulically or electrically powered wherever possible. Where the use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used, along with external noise jackets on the tools.
- Stationary equipment, such as generators, air compressors, and stockpiled equipment, shall be located as far away from nearby noise-sensitive uses as allowed by physical (e.g., topography, structures) constraints.
- At least 10 days before the start of construction activities, a sign shall be posted at the entrance(s) to the job site, clearly visible to the public, that identifies permitted construction days and hours, as well as the telephone numbers of city and contractor representatives who are assigned to respond in the event of a noise or vibration complaint. If the authorized contractor's representative receives a complaint, the complaint shall be investigated, appropriate corrective action shall be taken, and the action shall be reported to the city.
- Signs shall be posted at the job site entrance(s), all staging areas, starting and end points of construction headings, as well as intermittently (at least every 5 miles) between construction start and end points, and in the on-site construction zones, and along queueing lanes (if any) to reinforce the prohibition of unnecessary engine idling. All other equipment shall be turned off if not in use for more than 5 minutes.
- During the entire active construction period, noise-producing signals, including horns, whistles, alarms, and bells, shall be used for safety warning purposes only. The construction manager shall use smart backup alarms, which automatically adjust the alarm level based on the background noise level, or switch off backup alarms and replace them with human spotters in compliance with all safety requirements and laws.
- Noisy operations (e.g., riveting, cutting, hammering) shall be combined to occur in the same period (e.g., day or construction phase), such that the overall duration of these activities is reduced. The total noise level produced will not be substantially greater than the level produced if the operations were performed separately, and the total duration of sensitive receptor exposure to substantial noise levels will be reduced.

Significance after Mitigation

Implementation of Mitigation Measure 3-9-1 would minimize noise levels at adjacent land uses by ensuring that the associated equipment is properly maintained and operated only when necessary, by maximizing the distance between construction staging areas and nearby uses, to the extent feasible, and by designating a noise disturbance coordinator who will be responsible for responding to any local complaints. Effectiveness of these mitigation measures would vary from several decibels (which in general is a relatively small change) to up to 10 dB, which is perceived by receptors as a substantial change or a reduction by half, and generally considered the highest level of noise reduction that can be achieved from construction activities. Installation of more effective silencers could result in reductions ranging from several decibels to well over 10 dB. Reduction of idling equipment could reduce overall noise levels from barely any reduction to several decibels (NCHRP 1999). However, these mitigation measures would not reduce project-related construction noise levels to below the applicable thresholds or reduce the substantial temporary increase in noise that would occur, as high as 31 dBA. Therefore, this impact would be **significant and unavoidable**.

Impact 3.9-2: Potential to Expose Sensitive Receptors to Construction Vibration

Operation of construction equipment, possibly including an impact pile driver, would generate vibration during project construction. However, the resultant vibration level would not have the potential to cause structural damage to nearby structures or human annoyance at nearby residences. Therefore, this impact would be **less than significant**.

Construction activities generate varying degrees of temporary ground vibration, depending on the specific construction equipment used and activities involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels; result in low rumbling sounds and detectable vibrations at moderate levels; and, at high levels, cause annoyance, sleep disturbance, or damage to nearby structures.

Pile driving and blasting are the types of construction activities that typically generate the highest vibration levels and therefore are of greatest concern when evaluating construction-related vibration impacts. Blasting is not proposed with this project.

Based on reference vibration levels for typical construction equipment (Table 3.9-7), the piece of equipment that could generate the greatest levels of ground vibration would be an impact pile driver, which generates ground vibration levels of 1.518 in/sec PPV and 112 VdB at 25 feet (FTA 2018: 184). However, the only area where pile driving would occur is located a substantial distance (as it relates to vibration) from the nearest sensitive receptor, which is located approximately 1,850 feet north, at 9268 Cape Breeze Drive. Other typical equipment that was also evaluated includes delivery trucks, jackhammers, and hoe rams. Reference vibration levels for these pieces of equipment are included in Tables 3.9-7 and 3.9-16. Using reference vibration levels and the distance to nearby receptors, potential vibration levels were modeled and are summarized in Table 3.9-18.

Table 3.9-18 Vibration Emission Levels from Construction Equipment

Noise-Sensitive Receptor	Construction Equipment	Estimated VdB at 25 Feet	Estimated VdB at Sensitive Location	Estimated PPV at 25 Feet	Estimated PPV at Sensitive Location
9268 Cape Breeze Drive	Impact pile driver	104	47.9	1.518	0.002
31175 Union City Boulevard	Jackhammer Loaded trucks Hoe ram	79 86 87	68.7 75.7 77.0	0.035 0.076 0.089	0.011 0.023 0.027

Notes: PPV = peak particle velocity; VdB = vibration decibels.

Source: Modeled by Ascent Environmental in 2022 (see Appendix D).

When evaluating impacts from vibration-inducing activities, annoyance/disturbance to sensitive land uses and the potential for structural damage to occur are both considered. FTA's criteria of 80 VdB and 0.2 PPV in/sec were applied to evaluate disturbance to sensitive receptors and the potential for structural damage, respectively.

The sensitive receptor nearest to construction activity is a single-family residence located approximately 50 feet west of the MSS brine transport pipeline alignment in Union City, at 31175 Union City Boulevard. Given the linear nature of the project, receptors could be located at similar distances at other locations along the alignment, so this location was chosen as a proxy to conduct this analysis and does not represent the only location where vibration-generating activities could occur. At 50 feet from this receptor, the peak vibration decibel for the proposed construction equipment would be, at most, 77 VdB and 0.027 PPV in/sec. These levels are below both the 80 VdB criterion for assessing disturbance to sensitive receptors and the 0.2 PPV in/sec criterion for evaluating potential for structural damage.

Pile driving activity at the Solar Salt Facility would not be of concern because vibration levels at the receptor nearest to the pile driving activity, approximately 1,850 feet away, would also be below the FTA's 80 VdB and 0.2 PPV in/sec criteria. Additionally, since vibration levels would not be considered substantial at the nearest sensitive land uses, vibration levels would be even lower at other surrounding land uses/structures at distances beyond 50 feet.

Long-term project operation, including the pump station facilities, would not involve any major new sources of groundborne noise or vibration. Maintenance vehicles and water haul trucks would be restricted to existing public roadways, and the limited number of trips generated would not have the potential to substantially increase vibration levels at adjacent land uses. Therefore, this impact would be **less than significant.**

Mitigation Measures

No mitigation is required for this impact.

Impact 3.9-3: Potential to Generate Long-Term Substantial Stationary Noise from Pump Station Operations

Three new pump stations would be developed within the Solar Salt Facility site boundary. Each station would include two pumps varying in power and size. In addition, two backup pumps would be on standby. Based on modeling with all eight proposed pumps active, noise standards would not exceed local standards at nearby sensitive receptors. Therefore, this impact would be **less than significant.**

The improvements at the Solar Salt Facility would include the addition of three new pump stations (MSS brine pump station, dissolution water pump station, Plummer Creek Pump Station), as well as use of one to two portable pumps for liquid bittern recovery. Each pump station would have two pumps of varying size and flow rates that operate on a continuous or near-daily basis. The source of electrical power for all three pump stations would be a new service drop from an adjacent existing 12-kilovolt Pacific Gas and Electric Company powerline. These pump stations would be in the open, but electrical equipment for each pump station would be housed inside an enclosure. The nearest sensitive receptor would be approximately 1,850 feet northeast of the Plummer Creek Pump Station. Table 3.9-19 presents the possible noise levels that would be experienced by this sensitive receptor with the operation of the pump stations. Calculation of noise levels generated by the individual stationary pump stations is included in Appendix D.

Table 3.9-19 Estimated Long-Term Emitted Noise Levels from Stationary Pumps

Noise-Sensitive Receptor	Estimated L_{eq} of Equipment at 50 feet, dBA	Estimated L_{eq} of Equipment at Sensitive Location, dBA	Estimated L_{max} of Equipment at 50 feet, dBA	Estimated L_{max} of Equipment at Sensitive Location, dBA
9268 Cape Breeze Drive (single-family residence)	82.1	40.7 (at 1,850 feet)	86	44.7 (at 1,850 feet)

Notes: dBA = A-weighted decibels; L_{eq} = equivalent continuous sound level; L_{max} = maximum sound level.

Source: Modeled by Ascent Environmental in 2022 (see Appendix D).

Since the nearest receptor is in the City of Newark, the impact is determined based on the City of Newark's guidance. The operational noise from eight pumps operating at the same time was modeled to represent a worst-case scenario. As shown in Table 3.9-19, noise levels would be 40.7 dBA L_{eq} or 44.7 dBA L_{max} at 1,850 feet from the nearest receptor, at 9268 Cape Breeze Drive. These values are below the threshold set by the City of Newark Municipal Code Subsection 17.24.100.A.2 (i.e., 60 dBA). Because the noise generated by operation of the stationary pump stations would not exceed the City of Newark threshold at nearby sensitive receptors, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

3.10 RECREATION

This section describes existing recreation resources within and near the project area, applicable regulatory requirements, the methods used for assessment, and the potential impacts of project implementation related to recreation.

Comments received in response to the notice of preparation expressed concerns about interruptions in public access to and use of parks and recreation areas during construction activities for the proposed project. Comments relevant to the scope and content of this EIR are summarized as follows.

The San Francisco Bay Conservation and Development Commission (BCDC) commented that this EIR should analyze and mitigate impacts on public access to waterfront parks and recreational areas and wildlife refuges. In particular, BCDC states that the project should be designed to minimize adverse impacts to sections of the Bay Trail that would be impacted during construction activities, including use of detours or closures where necessary. Additionally, the California Department of Fish and Wildlife (CDFW) commented that this EIR should discuss impacts of construction of the MSS brine transport pipeline on Eden Landing Ecological Reserve and the surrounding area, including a segment of the Bay Trail. CDFW also commented that this EIR should discuss avoidance and minimization measures that would be implemented within or adjacent to the reserve. Section 3.10.3, "Environmental Impacts and Mitigation Measures," addresses impacts on parks, recreational areas, and wildlife refuges from implementation of the proposed project.

3.10.1 Regulatory Setting

FEDERAL

No federal plans, policies, regulations, or laws related to recreation are applicable to the proposed project.

STATE

No state plans, policies, regulations, or laws related to recreation are applicable to the proposed project.

LOCAL

Alameda County

The Recreation Plan of the *Alameda County General Plan* is the official guide for the development of various levels of parks and recreation systems, and for directing zoning and other public and private actions toward the common goal of providing adequate and appropriate parks and recreation areas to serve all the people of Alameda County (Alameda County 1994). The following objectives related to recreation are applicable to the project:

- Physical Planning Objective 4: To provide sufficient and appropriate areas for park and recreation facilities and services of county, metropolitan, or state-wide significance and use, which, in conjunction with appropriately planned local neighborhood and community parks and recreation facilities and services, will satisfy the recreation needs of the entire population of the county.
- Physical Planning Objective 5: To provide a system of public open spaces of county, metropolitan or state-wide significance and recreation use in proper relation to neighborhood, community and other recreation areas servicing cities and recreation districts, to other types of land use, to other public services and facilities, and to transportation.

City of Hayward

The *Hayward 2040 General Plan* establishes a community-based vision for the City of Hayward and establishes goals, policies, and implementation programs to help the city and greater Hayward community achieve that vision (City of Hayward 2014). The Community Health and Quality of Life Element of the *Hayward 2040 General Plan* includes goals to foster the health and well-being of the city's residents. The following goals related to recreation are applicable to the project:

GOAL HQL-10: Create and support a diverse public park system, connecting trails, and recreation facilities suited to the needs of Hayward residents and visitors.

GOAL HQL-11: Provide a continuous system of trails and open space corridors that connect local parks, regional open space areas and other destination points within and beyond the city of Hayward.

Union City

The Health and Quality of Life Element of the *Union City 2040 General Plan* provides a policy framework to promote a healthy lifestyle and improve residents' quality of life by ensuring access to parks and recreation, healthy foods, health care facilities, as well as resources and programming that enrich people's lives (Union City 2019). The following goal related to recreation is applicable to the project:

GOAL HQL-2: Maintain, expand, and improve Union City's parks and recreation facilities to meet existing and future needs.

City of Fremont

The Parks and Recreation Element of the *City of Fremont General Plan* provides a framework for meeting challenges related to securing funding for maintenance of the city's existing parks, identifying land suitable and obtainable for future park uses, and meeting the demand for parks in response to population growth and changing community demographics (City of Fremont 2011). The following goals and policy related to recreation are applicable to the project:

GOAL 8-1: A Wide Range of Parks and Recreational Facilities: Provide a wide range of parks and recreational facilities to reflect the community's desire for a variety of recreational experiences.

GOAL 8-2: Well-Maintained Parks: A park system that features landscaping, fields, equipment, and structures that are well-maintained, attractive, and functional.

- Policy 8-2.1: Park Maintenance: Ensure that the City can adequately maintain its parks and recreation facilities.

GOAL 8-3: Interagency Collaboration: Collaborate with other entities including ABAG, FUSD, and EBRPD to maintain and expand opportunities for public recreation.

City of Newark

The Parks, Recreation, and Open Space Element of the City of Newark General Plan provides a framework to manage open space for recreation, conservation, resource production, and public safety in the future (City of Newark 2013). The following goal, policy, and action related to recreation are applicable to the project:

GOAL PR-1: Protect Newark's open space for a variety of purposes, including public recreation, the managed production of natural resources, protection of environmentally sensitive areas, aesthetics, and public safety.

- Policy PR-1.1: Public Open Space. Protect and where possible enhance the public open space resources available within or near Newark.
- Action PR-1.B: Environmental Review and Open Space. Use the environmental review process to encourage new development to designate areas with unique vegetation, wildlife habitat, or natural resources as open space or to provide adequate mitigation for impacts to such areas.

San Francisco Bay Conservation and Development Commission

The *San Francisco Bay Plan* was developed and adopted by BCDC in 1968 and subsequently amended in 2019 (BCDC 2019). The *San Francisco Bay Plan* presents policies that guide future uses of the San Francisco Bay and shoreline, including policies related to recreation and public access along the shoreline of the San Francisco Bay. Polices related to recreation are intended to ensure that accessible water-oriented recreational facilities are provided to the public. Policies related to public access are intended to ensure that new developments provide equitable public access to the San Francisco Bay, while protecting natural resources and accounting for future sea level rise. The *San Francisco Bay Plan* also presents standards for the design and development of recreational facilities and public access. All projects located within the first 100 feet inland from the Bay require a permit from BCDC.

Hayward Regional Shoreline Adaptation Master Plan

The *Hayward Regional Shoreline Adaptation Master Plan* was prepared and adopted by the Hayward Area Shoreline Planning Agency, which is a joint powers authority made up of representatives from the City of Hayward, East Bay Regional Park District (EBRPD), and Hayward Area Recreation and Park District (HASPA 2021). The plan includes policies and projects necessary to plan for, mitigate against, and adapt to sea level rise along the Hayward Regional Shoreline. Additionally, the plan includes goals to protect recreational assets and enhance recreational opportunities in response to the threat of sea level rise. Ongoing projects throughout the Hayward Regional Shoreline include horizontal levee projects, which provide flood protection by utilizing vegetation on slopes to break waves and wetland basins for extra wet weather storage capacity.

3.10.2 Environmental Setting

For the purposes of this analysis, the study area for recreational resources is defined as follows:

- recreational resources that are within or immediately adjacent to the project footprint (i.e., where direct effects may occur) and
- recreational facilities that are within one-quarter mile (1,320 feet) of either side of the environmental footprint of the proposed project (i.e., where indirect effects may occur).

The MSS brine transport pipeline alignment traverses unincorporated Alameda County and the Cities of Hayward, Union City, Fremont, and Newark. Recreational resources are generally overseen by the parks and recreation departments of each jurisdiction where improvements are proposed. These municipalities generally use planning documents, such as master plans, to guide the acquisition, preservation, improvement, maintenance, and expansion of local parklands and trail networks. In addition, the general plans of each city typically include goals and policies that address recreational resources. Regional parks in the project area are managed by EBRPD. The Don Edwards San Francisco Bay National Wildlife Refuge is managed by the US Fish and Wildlife Service (USFWS), as part of the San Francisco Bay National Wildlife Refuge Complex.

Information presented in this section regarding existing recreational resources was obtained from the local and regional parks master plans, local recreation provider webpages, and reviews of aerial maps and geographic information system data from the California Protected Areas Database and California Conservation Easement Database.

Parks and recreational resources in unincorporated Alameda County and the Cities of Hayward, Union City, Fremont, and Newark are shown in Figure 3.10-1. Table 3.10-1 provides a summary of the recreational resources within 0.25 mile of the project site. See Figures 2-8a through 2-8h for the locations of these recreational resources in relationship to the project site.

Table 3.10-1 Parks and Recreation Resources in the Study Area

Resource Name	Location	Figure Reference	Owner/Operator	Size	Description
Tidewater Park	Between Alameda Creek and Tidewater Drive (near Miller Court), Union City, CA	Figure 2-8e	City of Union City	2.4 acres	Park with lawn area, playground, gazebo, walking paths
Ponderosa Park	34750 Williams Way, Union City, CA 94587	Figure 2-8d	City of Union City	0.2 acre	Park with lawn area and benches
Veteran's Memorial Park	4525 Dyer Street, Union City, CA	Figure 2-8d	City of Union City	7.2 acres	Park with tennis courts, playgrounds, lawn area, baseball/softball diamonds, and memorial
Mariner Park	3134 Dorado Drive, Union City, CA	Figure 2-8e	City of Union City	4.9 acres	Park with playgrounds, lawn areas, half basketball court, and walking paths
Christian Penke Park	At Mustang Drive and Mistletoe Drive, Hayward, CA	Figure 2-8f	Hayward Area Recreation and Park District	4.4 acres	Park with playground, basketball court, lawn areas, walking paths
Don Edwards National Wildlife Refuge/Newark Slough Trail	2 Marshlands Road, Fremont, CA	Figure 2-8b	US Fish and Wildlife Service	12,645 acres	Wildlife refuge with opportunities for recreational activities that include hiking, wildlife viewing, waterfowl hunting, and fishing
Former Skywest Golf Course	1401 Golf Course Road, Hayward, CA	Figure 2-8h	Hayward Area Recreation and Park District	117 acres	Former 18-hole golf course
Coyote Hills Regional Park	8000 Patterson Ranch Road, Fremont, CA	Figures 2-8b to 2-8d	East Bay Regional Park District	978 acres	Regional park with opportunities for recreational activities that include hiking, jogging, bicycling, bird watching, nature exploration, and picnicking
Sea Breeze Park	32600 Carmel Way, Union City, CA	Figure 2-8d	City of Union City	7.7 acres	Park with playground, lawn areas, and baseball diamonds, and walking paths
San Lorenzo Community Center Park	1970 Via Buena Vista, San Lorenzo, CA	Figure 2-8h	Hayward Area Recreation and Park District	23.8 acres	Park with playgrounds, duck pond, soccer and softball fields, community center, and gazebos with barbeque pits and picnic tables
Old Alvarado/Cesar Chavez Park	30940 Watkins Street, Union City, CA	Figure 2-8e	City of Union City	2.2 acres	Park with gazebo, playgrounds, lawn area, and farmer's market
Courthouse Landing Park	Cambridge Way and Barrons Way, Union City, CA	Figure 2-8e	City of Union City	0.2 acre	Park with playground and lawn area
Alden E. Oliver Sports Park	2580 Eden Park Place, Hayward, CA	Figure 2-8f	Hayward Area Recreation and Park District	25.0 acre	Park with barbecues, baseball/softball diamond, basketball court, outdoor fitness equipment, picnic tables, playground, restrooms, snack bar, and soccer field
Liberty Park	Amy Place, Union City, CA	Figure 2-8e	Liberty Park Homeowners Association	1.9 acres	Park with lawn area and playground
Eden Landing Ecological Reserve	Hayward and Union City, CA	Figure 2-8f	California Department of Fish and Wildlife	6,400 acres	Wildlife reserve with opportunities for recreational activities that include wildlife viewing, hiking, kayaking, and waterfowl hunting

Resource Name	Location	Figure Reference	Owner/Operator	Size	Description
Alameda Creek Regional Trail	2250 Isherwood Way, Fremont, CA	Figure 2-8d	East Bay Regional Park District	12 miles	Trail that follows the banks of Alameda Creek from the mouth of Niles Canyon to the San Francisco Bay
Hayward Regional Shoreline/Oro Loma Marsh	3010 W Winton Avenue, Hayward, CA	Figure 2-8h	California Department of Fish and Wildlife/East Bay Regional Park District/City of Hayward	1,841 acres	Regional shoreline with opportunities for recreational activities that include hiking and wildlife viewing
San Francisco Bay Trail	Along the perimeter of the San Francisco Bay	(a) Figures 2-8b to 2-8d; (b) Figures 2-8e and 2-8f; (c) Figure 2-8h	Metropolitan Transportation Commission	500 miles	Existing and planned walking and cycling path around the San Francisco Bay
Union City Boulevard Bike Lanes	Along Union City Boulevard between the Alameda Creek Flood Control Channel bridge and Alvarado Boulevard, Union City, CA	Figures 2-8d and 2-8e	City of Union City	2 miles	Planned bike lanes on Union City Boulevard

Sources: Data downloaded from the California Protected Areas Database and California Conservation Easement Database in 2021; adapted by Ascent Environmental in 2022.

Sources: Data downloaded from the California Protected Areas Database and California Conservation Easement Database in 2021; adapted by Ascent Environmental in 2022.

Figure 3.10-1 Parks and Recreational Resources within 0.25 Mile of the Project Site

3.10.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The following analysis assesses the environmental effects of each alternative with respect to the existing recreation uses in the project area and changes in public access to these recreation resources. This analysis is based on review of existing documents, policies, ordinances, and other regulations pertinent to recreation.

THRESHOLDS OF SIGNIFICANCE

An impact related to recreation would be significant if implementation of the proposed project would:

- 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,
- include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment, or
- substantially increase hazards due to incompatible uses with recreational activities during project construction.

ISSUES NOT DISCUSSED FURTHER

The project consists of the installation and operation of pipelines and pumping facilities. No new recreational facilities are proposed under the project. Furthermore, the proposed project would not generate population growth that would increase demand for recreational facilities and necessitate the construction or expansion of recreational facilities. Therefore, this issue is not discussed further.

Project operations would not increase hazards due to incompatible uses with recreational activities. Following construction, full use of all parks and recreational facilities would be restored. Disturbed pavement, displaced vegetation, and staging and laydown areas would be returned to conditions similar to existing conditions. The MSS brine transport pipeline would be buried underground and would not interfere with the use of any parks or recreational facilities. Maintenance activities would be limited to periodic inspections and occasional repair activities when necessary. This issue is not discussed further.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.10-1: Potential to Increase the Use of Existing Parks or Other Recreational Facilities during Project Construction Such That Physical Deterioration Would Occur or Be Accelerated

Construction activities would result in temporary direct (e.g., loss of access, parking, or use) and indirect (e.g., changes to visual character and quality, and increases in noise, dust, and traffic) effects on recreationists at parks and recreational facilities that intersect with or are in proximity to construction activities. Construction activities would be of a limited duration in any one location (pipeline construction would proceed at a rate of approximately 150 feet per day and most staging areas would be in use for 8 to 12 weeks). Regardless, temporary closures, reduced parking, and other disruptions could displace recreationists to other parks or recreational facilities in the region during the construction period. Therefore, physical deterioration of other parks and recreational facilities could occur or be accelerated and construction-related impacts would be **potentially significant**.

As shown in Table 3.10-1, a total of 19 existing and planned parks and recreational facilities were identified within 0.25 mile of the project area. The project's construction impacts related to these parks and recreational facilities are presented in detail in Table 3.10-2 and summarized below.

Tidewater Park, Ponderosa Park, Veteran's Memorial Park, Christian Penke Park, Sea Breeze Park, Old Alvarado/Cesar Chavez Park, and Courthouse Landing Park are located at a distance greater than 300 feet from the project site. The project would not result in direct effects on these parks, including loss of access, parking, or use of amenities because project improvements would occur outside the boundaries of these parks. The potential for project construction to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) would be limited based on the distance from these parks to project construction activities and intervening land uses. Therefore, it is not anticipated that recreationists would be displaced from these parks and recreational facilities such that physical deterioration of other parks and recreational facilities could occur or be accelerated.

Mariner Park, San Lorenzo Community Park, Alden E. Oliver Sports Park, Liberty Park, and Eden Landing Ecological Reserve are outside of the boundaries, but within approximately 300 feet of the project site. Construction activities could result in indirect effects on recreationists, such as temporary changes to visual character and quality, and increases in noise, dust, and traffic at these parks and recreational facilities. Construction activities could be considered a nuisance to some recreationists, but would not preclude the use of recreational facilities. Construction activities would be of a limited duration in any one location (pipeline construction would proceed at a rate of approximately 150 feet per day and most staging areas would be in use for approximately 8 to 12 weeks). Because of the short duration of construction activities at any one location, it is not anticipated that a substantial number of recreationists would be displaced from these parks and recreational facilities, and they would be able to return to any location temporarily disrupted once construction is completed. Therefore, it is not anticipated that physical deterioration of other parks and recreational facilities could occur or be accelerated.

A portion of the MSS brine transport pipeline would be constructed on the same roadway as the Union City Boulevard Bike Lanes Project (Bike Lanes Project), a separate project proposed by Union City. The Bike Lanes Project would entail bike lane reconstruction along Union City Boulevard between the Alameda Creek Flood Control Channel bridge and Alvarado Boulevard to improve bicycle and pedestrian access, and the installation of a 3-inch HDPE fiber optic cable conduit under the roadway for future public utility use. The Bike Lanes Project would result in extensive investment in roadwork along the affected segment of the roadway. Union City and Cargill have agreed, if the project is approved, to coordinate construction of the Bike Lanes Project, including laying of the fiber optic cable conduit, and the work including trenching and installation of the underground 14-inch MSS brine transport pipeline between the Alameda Creek Flood Control Channel bridge and Alvarado Boulevard to avoid disruption of the road multiple times over a relatively short period. Because construction of the MSS brine transport pipeline along this segment of Union City Boulevard would be timed to be constructed at the same time as the Bike Lanes Project, Union City would be responsible for managing the combined construction and implementing a traffic control plan, including bicycle and pedestrian detours. By coordinating the construction activities for these projects, displacement of recreational bicyclists on Union City Boulevard would be minimized such that physical deterioration of other parks and recreational facilities would not occur or be accelerated.

Construction activities for the project would occur within the boundaries of the Don Edwards National Wildlife Refuge/Newark Slough Trail, Coyote Hills Regional Park, Alameda Creek Regional Trail, Hayward Regional Shoreline/Oro Loma Marsh, and San Francisco Bay Trail. Construction activities would result in direct effects on recreationists at Don Edwards National Wildlife Refuge/Newark Slough Trail, Alameda Creek Regional Trail, and San Francisco Bay Trail, such as temporary trail closures, reduced parking, and other access disruptions for periods up to 8 to 12 weeks per location (see Table 3.10-2 for additional information). No direct effects (i.e., loss of access, parking, or use of amenities) are anticipated at Coyote Hills Regional Park, but construction activities would occur within 100 feet of an existing trail.

Based on current design, construction activities would be required along segments of the San Francisco Bay Trail within roadway rights-of-way on Thornton Avenue, Paseo Padre Parkway, Ardenwood Boulevard, Union City Boulevard, Hesperian Boulevard, and Eden Shores Boulevard. Construction activities on these roadways would displace bicyclists and pedestrians using the San Francisco Bay Trail. However, as discussed in Section 2.6.8, "Construction," encroachment permits would be required for work in public rights-of-way from agencies with jurisdiction over the affected routes (i.e., Cities of Hayward, Union City, Fremont, and Newark). As a condition of encroachment permit approval, EBDA and Cargill would be required to prepare and implement a traffic control plan

to minimize construction-related disruptions on affected roadways. Therefore, EBDA and Cargill would develop and implement traffic control plans, as appropriate and in coordination with the agencies with jurisdiction over the affected routes. The traffic control plans would alert bicyclists and pedestrians to any closures of nonmotorized facilities and would identify alternative routes. With implementation of traffic control plans, disruptions to bicyclists and pedestrians along segments of the San Francisco Bay Trail within roadway rights-of-way would be reduced. Therefore, it is not anticipated that recreationists would be displaced from these parks and recreational facilities such that physical deterioration of other parks and recreational facilities could occur or be accelerated.

Traffic control plans would not reduce disruptions to recreationists at Don Edwards National Wildlife Refuge/Newark Slough Trail, Coyote Hills Regional Park, Alameda Creek Regional Trail, and affected segments of the San Francisco Bay Trail that are not within roadway rights-of-way. Therefore, recreationists could be displaced to other parks and recreational facilities in the region such that physical deterioration of other parks and recreational facilities could occur or be accelerated. This impact would be **potentially significant**.

Table 3.10-2 Project Effects on Parks and Recreation Resources in the Study Area

Resource Name	Figure Reference	Approximate Distance from Pipeline Alignment	Description of Effects
Tidewater Park	Figure 2-8e	918 feet	Tidewater park is located 918 feet from the nearest point along the MSS brine transport pipeline alignment; it is separated from Union City Boulevard by industrial and residential development and a railroad corridor. Project improvements would occur outside the boundaries of Tidewater Park. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. The potential for project construction to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) would be limited based on the distance from the park to project construction activities and intervening land uses. Therefore, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
Ponderosa Park	Figure 2-8d	1,065 feet	The park is located 1,065 feet from the nearest point along the MSS brine transport pipeline alignment; it is separated from Union City Boulevard by residential development and an elementary school. Project improvements would occur outside the boundaries of Ponderosa Park. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. The potential for project construction to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) would be limited based on the distance from the park to project construction activities and intervening land uses. Therefore, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
Veteran's Memorial Park	Figure 2-8d	867 feet	Veteran's Memorial Park is located 867 feet from the nearest point along the MSS brine transport pipeline alignment; it is separated from Union City Boulevard by residential development. Project improvements would occur outside the boundaries of Veteran's Memorial Park. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. The potential for project construction to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) would be limited based on the distance from the park to project construction activities and intervening land uses. Therefore, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
Mariner Park	Figure 2-8e	301 feet	Mariner Park is located 301 feet from the nearest point along the MSS brine transport pipeline alignment; it is separated from Union City Boulevard by residential development. Project improvements would occur outside the boundaries of Mariner Park. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. However, project construction has potential to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) based on the distance

Resource Name	Figure Reference	Approximate Distance from Pipeline Alignment	Description of Effects
			from the park to project construction activities. Assuming that up to 150 feet of pipeline would be installed per day, pipeline installation along the segment of Union City Boulevard near the park would be completed within approximately 10 days. Because of the short duration of construction activities, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
Christian Penke Park	Figure 2-8f	582 feet	Christian Penke Park is located 582 feet from the nearest point along the MSS brine transport pipeline alignment; it is separated from Industrial Boulevard by residential and industrial development. Project improvements would occur outside the boundaries of Christian Penke Park. The project would not result in direct effects on this park, including loss of access, parking, or use of amenities. The potential for project construction to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) would be limited based on the distance from the park to project construction activities and intervening land uses. Therefore, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
Don Edwards National Wildlife Refuge/ Newark Slough Trail	Figure 2-8b	Intersects/ Adjacent	The Cargill Solar Salt Facility is within the Don Edwards National Wildlife Refuge. On-site improvements would be limited to areas that are reserved for Cargill's operations and are inaccessible to the public. However, sections of the MSS brine transport pipeline would be installed within a portion of the refuge that is used for recreation, including for approximately 0.5 mile along the Newark Slough Trail. Assuming that up to 150 feet of pipeline would be installed per day, pipeline installation along the Newark Slough Trail would occur for approximately 1 month. Staging and laydown areas are also proposed on portions of this trail, including the area just south of the Newark Slough at Thornton Avenue crossing and the area just north of the UPRR, SamTrans Rail Line, Hetch Hetchy Aqueduct crossing. Additionally, a staging and laydown area is proposed on Marshlands Road, just west of Thornton Avenue, in an area that is used as parking for the refuge. Staging and laydown areas would be in use for approximately 8 to 12 weeks. During construction, sections of the trail and parking area may be closed to the public. Additionally, project construction has potential to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) based on the distance from the trail to project construction activities. Because of the required closures and duration of construction activities, recreationists could be displaced to other locations such that physical deterioration of other parks and recreational facilities could occur or be accelerated.
Former Skywest Golf Course	Figure 2-8h	Adjacent (47 feet)	The MSS brine transport pipeline alignment is adjacent to the southern and western edges of the golf course. The golf course is currently closed to the public. Therefore, recreationists would not be displaced to other locations.
Coyote Hills Regional Park	Figures 2-8b to 2-8d	Adjacent (14 feet)	An approximately 2-mile portion of the MSS brine transport pipeline would be constructed in proximity to Coyote Hills Regional Park. This portion of pipeline would be installed on Paseo Padre Parkway and Ardenwood Boulevard between Alameda Creek to the north and SR 84 to the south. Two potential staging areas would be located west of Paseo Padre Parkway at Ardenwood Creek and at Dumbarton Circle. Three trenchless crossings and associated laydown areas would be located in proximity to the park: the Alameda Creek Flood Control Channel crossing, the Ardenwood Creek crossing, and the SR 84 and Thornton Avenue crossing. The crossings and laydown and staging areas would be located within roadway rights-of-way and outside of the park boundaries. The portions of Coyote Hills Regional Park that are adjacent to construction activities are largely inaccessible to the public. Access to Coyote Hills Regional Park on Patterson Ranch Road and visitor parking lots would be unaffected by construction activities. Additionally, most of the park's recreational uses, including trails, campsites, and picnic areas, are located over one mile west of construction activities. Therefore, the project would not result in direct effects to the western portion of Coyote Hills Regional Park, including loss of access, parking, or use of amenities. Additionally, the potential for project construction to result in Indirect effects (e.g., temporary changes to visual character and

Resource Name	Figure Reference	Approximate Distance from Pipeline Alignment	Description of Effects
			quality, and increases in noise, dust, and traffic) in the western portion of Coyote Hills Regional Park would be limited based on the distance from the park to project construction activities. However, project construction has potential to affect recreationists traveling on Crandall Creek Trail, which extends east toward Ardenwood Boulevard and intersects with the MSS brine transport pipeline alignment. Construction activities would not require closure of the trail because pipeline installation would occur below-ground using horizontal directional drilling at this location. The laydown area for the crossing at the Alameda Creek Flood Control Channel is within 100 feet of the Crandall Creek Trail. Therefore, project construction has potential to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) based on the distance from the park to project construction activities. The crossing at the Alameda Creek Flood Control Channel would take approximately 2 weeks to construct. During construction activities, other trails located farther from construction activities would continue to be available for recreationists visiting Coyote Hills Regional Park. Because of the short duration of construction activities near Crandall Creek Trail and other recreation opportunities available in Coyote Hills Regional Park, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
Sea Breeze Park	Figure 2-8d	448 feet	Sea Breeze Park is located 448 feet from the nearest point along the MSS brine transport pipeline alignment; it is separated from Union City Boulevard by residential development. Project improvements would occur outside the boundaries of Sea Breeze Park. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. However, project construction has potential to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) based on the distance from the park to project construction activities. Assuming that up to 150 feet of pipeline would be installed per day, pipeline installation along the segment of Union City Boulevard near the park would be completed within approximately 10 days. Because of the short duration of construction activities, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
San Lorenzo Community Center Park	Figure 2-8h	Adjacent (127 feet)	San Lorenzo Community Center Park is located 127 feet from the nearest point along the MSS brine transport pipeline alignment. The western boundary of the park is separated from the MSS brine transport pipeline alignment by railroad tracks. Project improvements would occur outside the boundaries of San Lorenzo Community Park. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. However, project construction has potential to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) based on the distance from the park to project construction activities. Assuming that up to 150 feet of pipeline would be installed per day, pipeline installation near the park would be completed within approximately 10 days. Because of the short duration of construction activities, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
Old Alvarado/ Cesar Chavez Park	Figure 2-8e	944 feet	Old Alvarado/Cesar Chavez Park is located 944 feet from the nearest point along the MSS brine transport pipeline alignment; it is separated from Union City Boulevard by residential and commercial development. Project improvements would occur outside the boundaries of Old Alvarado/Cesar Chavez Park. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. The potential for the project to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) would be limited based on the distance from the park to project construction activities and intervening land uses. Therefore, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.

Resource Name	Figure Reference	Approximate Distance from Pipeline Alignment	Description of Effects
Courthouse Landing Park	Figure 2-8e	842 feet	Courthouse Landing Park is located 842 feet from the nearest point along the MSS brine transport pipeline alignment; it is separated from Union City Boulevard by residential and commercial development. Project improvements would occur outside the boundaries of Old Alvarado/Cesar Chavez Park. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. The potential for the project to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) would be limited based on the distance from the park to project construction activities and intervening land uses. Therefore, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
Alden E. Oliver Sports Park	Figure 2-8f	Adjacent (93 feet)	Alden E. Oliver Sports Park is adjacent to the MSS brine transport pipeline alignment along Hesperian Boulevard. A staging area would potentially be located across Hesperian Boulevard, approximately 280 feet northeast of the park. Project improvements would occur outside the boundaries of Alden E. Oliver Sports Park. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. However, project construction has potential to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) based on the distance from the park to project construction activities. Assuming that up to 150 feet of pipeline would be installed per day, pipeline installation near the park would be completed within approximately 10 days. The staging area would be in use for approximately 8 to 12 weeks. Because of the short duration of construction activities, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
Liberty Park	Figure 2-8e	Adjacent (65 feet)	Liberty Park is adjacent to the MSS brine transport pipeline alignment along Union City Boulevard. Project improvements would occur outside the boundaries of Liberty Park. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. However, project construction has potential to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) based on the distance from the park to project construction activities. Assuming that up to 150 feet of pipeline would be installed per day, pipeline installation near the park would be completed within approximately 10 days. Because of the short duration of construction activities, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
Eden Landing Ecological Reserve	Figure 2-8f	243 feet	Eden Landing Ecological Reserve is located 243 feet from the nearest point along the MSS brine transport pipeline alignment; it is separated from Arden Road by commercial and industrial development. Recreational use areas, including trails, wildlife viewing areas, and kayaking areas, are located over 0.4 mile from the nearest construction areas. Project improvements would occur outside the boundaries of Eden Landing Ecological Reserve. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. The potential for the project to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) would be limited based on the distance from recreational areas in the park to project construction activities and intervening land uses. Therefore, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
Alameda Creek Regional Trail	Figure 2-8d	Intersects	The MSS brine transport pipeline alignment intersects the Alameda Creek Regional Trail near where it crosses Union City Boulevard. Construction activities would not require closure of the trail because pipeline installation would occur below-ground using horizontal directional drilling at this location. However, the staging and laydown area for the Alameda Creek Flood Control Channel crossing would be located on the access road off of Eastin Drive that leads to the parking lot and trailhead for Alameda Creek Regional Trail. This staging area would be in use for approximately 8 to 12 weeks, during which time the parking lot could be inaccessible. Alameda

Resource Name	Figure Reference	Approximate Distance from Pipeline Alignment	Description of Effects
			Creek Regional Trail would remain open for the duration of construction and would be accessible from various other locations along its 12-mile length. The staging and laydown area is approximately 485 feet from the nearest point on the Alameda Creek Trail. Therefore, the potential for the project to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) would be limited based on the distance from the trail to construction activities at the staging and laydown area. However, because of the required parking lot and trailhead closure and duration of construction activities, recreationists could be displaced to other locations such that physical deterioration of other parks and recreational facilities could occur or be accelerated.
Hayward Regional Shoreline/ Oro Loma Marsh	Figure 2-8h	Intersects	Oro Loma Marsh, which is part of the Hayward Regional Shoreline, encompasses approximately 1,841 acres. Most of the property consists of marsh habitat that is inaccessible to the public. Recreational trails, including the San Lorenzo Trail and San Francisco Bay Trail, are located in the western portion of the park along the Bay shoreline. Parking and access to these trails are from Grant Avenue to the north and Winton Avenue to the south. The MSS brine transport pipeline would be installed along the eastern and northern perimeter of the Oro Loma Marsh. Additionally, two laydown areas for the trenchless crossings at the Skywest Golf Course and railroad tracks and the crossing at Bockman Channel are within the boundaries the park. Trenching and work areas would primarily occur within an existing service road along the outer boundaries of Oro Loma Marsh that are closed to the public and where no recreational uses are present. No trail closures are anticipated within Oro Loma Marsh. Therefore, the project would not result in direct effects on this park, including loss of access, parking, or use of amenities. Most construction activities would be located at a distance greater than 300 feet from recreational trails. However, construction activities near recreational trails have potential to result in indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic). These indirect effects have potential to diminish enjoyment of recreational activities, such as hiking or wildlife viewing. Assuming that up to 150 feet of pipeline would be installed per day, pipeline installation in proximity to recreational trails within Oro Loma Marsh would be completed within approximately two weeks. Because of the short duration of construction activities in proximity to trails, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility.
San Francisco Bay Trail	(a) Figures 2-8b to 2-8d; (b) Figures 2-8e and 2-8f; (c) Figure 2-8h	Intersects	The MSS brine transport pipeline would be installed on or adjacent to the following existing portions of the San Francisco Bay Trail: (a) The MSS brine transport pipeline would be installed on an approximately 3.4-mile existing portion of the trail on Thornton Avenue, Paseo Padre Parkway, and Ardenwood Boulevard between Alameda Creek Flood Control Channel to the north and Hetch Hetchy Aqueduct to the south. Assuming that up to 150 feet of pipeline would be installed per day, construction activities in this area could last approximately 4 months. During this time, sections of the trail may be closed to the public in phases. (b) The pipeline would be installed on an approximately 1.6-mile existing portion of the trail on Union City Boulevard from north of Alvarado Boulevard and on Hesperian Boulevard to Eden Shores Boulevard. Additionally, pipeline construction may occur for approximately 0.2 mile on Eden Shores Boulevard, from Hesperian Boulevard to the Marina Drive Roundabout. Assuming that up to 150 feet of pipeline would be installed per day, construction activities in this area could last approximately 2 months. During this time, sections of the trail may be closed to the public in phases. (c) The pipeline would be installed adjacent to an approximately 0.2-mile existing portion of the trail along the western boundary of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant. Construction activities would not require trail closures at this

Resource Name	Figure Reference	Approximate Distance from Pipeline Alignment	Description of Effects
			location, but could result in indirect effects (e.g., changes to visual character and quality and increases in noise and dust) on recreationists. As a condition of encroachment permit approval, EBDA and Cargill would be required to prepare and implement a traffic control plan to minimize construction-related disruptions on affected roadways. Therefore, EBDA and Cargill would develop and implement traffic control plans, as appropriate and in coordination with the agencies with jurisdiction over the affected routes. The traffic control plans would alert bicyclists and pedestrians to any closures of nonmotorized facilities and would identify alternative routes. With implementation of traffic control plans, disruptions to bicyclists and pedestrians along segments of the San Francisco Bay Trail within roadway rights-of-way would be reduced. However, traffic control plans would not reduce disruptions on the segments of the San Francisco Bay Trail that are not within roadway rights-of-way. Because of the required closures and duration of construction activities, recreationists could be displaced to other locations such that physical deterioration of other parks and recreational facilities could occur or be accelerated.
Union City Boulevard Bike Lanes Project (Planned)	Figures 2-8d and 2-8e	Intersects	A portion of the MSS brine transport pipeline would be constructed on the same roadway as the Union City Boulevard Bike Lanes Project, a separate project proposed by Union City. The bike lanes project would entail bike lane reconstruction along Union City Boulevard between the Alameda Creek Flood Control Channel bridge and Alvarado Boulevard to improve bicycle and pedestrian access, and the installation of a 3-inch HDPE fiber optic cable conduit under the roadway for future public utility use. The bike lanes project would result in extensive investment in roadwork along the affected segment of the roadway. Union City and Cargill have agreed, if the project is approved, to coordinate construction of the bike lanes project, including laying of the fiber optic cable conduit, and the work including trenching and installation of the underground 14-inch MSS brine transport pipeline between the Alameda Creek Flood Control Channel bridge and Alvarado Boulevard to avoid disruption of the road multiple times over a relatively short period. Because construction of the MSS brine transport pipeline along this segment of Union City Boulevard would be timed to be constructed at the same time as the Bike Lanes Project, Union City would be responsible for managing the combined construction and implementing a traffic control plan, including bicycle and pedestrian detours. By coordinating the construction activities for these projects, displacement of recreational bicyclists on Union City Boulevard would be minimized such that physical deterioration of other parks and recreational facilities would not occur or be accelerated.

Mitigation Measures

Mitigation Measure 3.10-1: Prepare and Implement Detour Plans for Parks, Trails, and Recreational Facilities

EBDA and Cargill shall prepare and implement a detour plan for all recreational facilities that would experience access interruptions during project construction, including Don Edwards National Wildlife Refuge/Newark Slough Trail, Alameda Creek Regional Trail, and segments of the San Francisco Bay Trail that are not within roadway rights-of-way. Detour plans shall be developed in consultation with applicable resource agencies, including USFWS, CDFW, EBRPD, the Metropolitan Transportation Commission (MTC), and the Cities of Hayward and Union City. The plan shall be prepared at least 14 days before the start of construction activities involving disruption to a recreational facility. The detour plan shall include posted signs at major entry points for recreational facilities clearly indicating closed areas, the location of alternative facilities or access points, detour routes, and a contact number to call for questions or concerns. The construction contractor shall be required to maintain and implement the detour plan throughout construction activities affecting access to a recreational facility. The 14-day notice period shall also provide time for these agencies to post notices on their respective websites regarding closures and alternate routes.

EBDA and Cargill shall provide public information through the media regarding detours and alternative access routes for recreational facilities affected by project construction. EBDA and Cargill shall coordinate with applicable resource

agencies to make available to the public information regarding detours at least 14 days before the start of construction activities where detours or closures are required. EBDA and Cargill shall continue to provide public information regarding detours/closures throughout the project construction period.

Although closures are not anticipated at Coyote Hills Regional Park, EBDA and Cargill shall coordinate with EBRPD to ensure that the public is notified of construction activities in proximity to recreational use areas.

Although closures are not anticipated at Hayward Regional Shoreline/Oro Loma Marsh, EBDA and Cargill shall coordinate with CDFW, EBRPD, and City of Hayward to ensure that the public is notified of construction activities in proximity to recreational use areas. Additionally, EBDA and Cargill shall coordinate with the members of the Hayward Area Shoreline Planning Agency (City of Hayward, Hayward Area Recreation and Park District, and EBRPD) to ensure that construction activities do not interfere with implementation of the Hayward Regional Shoreline Adaptation Master Plan (HASPA 2021), which includes goals to protect recreational assets and enhance recreational opportunities in response to the threat of sea level rise.

Significance after Mitigation

Mitigation Measure 3.10-1 would be implemented to reduce impacts on recreationists during construction activities. In accordance with Mitigation Measure 3.10-1, EBDA and Cargill would prepare and implement a detour plan for recreational facility closures, coordinate with applicable resource agencies, and provide the public with information regarding construction period closures. With implementation of Mitigation Measure 3.10-1, recreationists would not be displaced to other locations during project construction to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility. Therefore, this impact would be reduced to **less than significant**.

Impact 3.10-2: Potential to Increase the Use of Existing Parks or Other Recreational Facilities during Project Operations Such that Physical Deterioration Would Occur or Be Accelerated

The project would not involve the construction of new residential housing and therefore would not result in direct population growth in the region. Additionally, the project would not induce unplanned population growth. Furthermore, following construction, full use of and access to all parks and recreational facilities would be restored. Project features would be primarily buried underground and maintenance would consist of limited periodic inspections and repairs. Therefore, project operations would not interfere with use or access to parks or recreational facilities such that substantial deterioration of any parks or recreational facilities would occur. This impact would be **less than significant**.

As previously stated and summarized in Table 2.10-1, a total of 19 existing and planned parks and recreational facilities were identified within 0.25 mile of the project area. The project's operational impacts related to these parks and recreational facilities are presented in detail in Table 3.10-2 and summarized below.

The proposed project would involve modifications within a limited portion of Cargill's Solar Salt Facility, including new pipelines and pumping facilities in and around ponds 12 and 13, and construction of approximately 16 miles of new underground pipeline, primarily off-site and within roadway rights-of-way, to connect the Solar Salt Facility to EBDA's outfall system on the site of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in the community of San Lorenzo. The purpose of the project is to enhance extraction of salts from the Solar Salt Facility in response to the long-term threat of sea level rise from the Bay. The project would not involve the construction of new residential housing or a substantial increase in employees at the Solar Salt Facility, and therefore, would not result in direct population growth in the region. Additionally, the project would not induce unplanned population growth, such as through the expansion of infrastructure to undeveloped areas or the creation of substantial new employment opportunities. Therefore, the project is not anticipated to result in population growth that would increase the use of existing parks or recreational facilities in the region.

Following construction, full use of and access to all parks and recreational facilities would be restored. The contractor would repair and replace damage to any pavement, landscaping, or other facilities (such as fencing and signage) caused by project construction or use of laydown and staging areas. The contractor would return all laydown and staging areas to preproject conditions at the conclusion of construction activities. The contractor would avoid

damage to existing landscaping to the maximum extent feasible, and landscaping would be replaced in-kind if any damage occurs. Natural areas would be hydroseeded with a native, weed-free, seed mix at the conclusion of construction activities. Furthermore, the MSS brine transport pipeline would be buried underground and would not interfere with the use of or access to any parks or recreational facilities. Maintenance activities would be limited to periodic inspections and occasional repair activities when necessary. Therefore, operation of the proposed project would not interfere with the use of or access to recreational facilities such that substantial deterioration would occur, and this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.10-3: Potential to Substantially Increase Hazards Due to Incompatible Uses with Recreational Activities during Project Construction

Construction of the MSS brine transport pipeline would introduce construction activities in areas that are currently used for recreation. The proximity of construction activities to areas used for recreation would increase safety hazards for recreationists due to incompatible uses. Potential hazards to recreationists would include construction vehicle collisions; slips, trips, and falls at open excavations; falling objects; and exposure to hazardous materials, elevated noise levels, and increased dust. As a condition of encroachment permit approval, EBDA and Cargill would be required to implement a traffic control plan to minimize construction-related traffic safety hazards on affected roadways. The traffic control plan would reduce safety hazards on segments of the San Francisco Bay Trail within roadway rights-of-way. However, traffic control plans would not reduce safety hazards at Don Edwards National Wildlife Refuge/Newark Slough Trail, Alameda Creek Regional Trail, and segments of the San Francisco Bay Trail that are not within roadway rights-of-way. Therefore, this impact would be **potentially significant**.

The proposed project would involve modifications within a limited portion of Cargill's Solar Salt Facility, including installation of new pipelines and pumping facilities in and around ponds 12 and 13. Construction activities at the Solar Salt Facility are limited to areas that are reserved for Cargill's salt harvesting operations and are inaccessible to the public. Therefore, on-site construction activities at the Solar Salt Facility would not substantially increase hazards to recreationists due to incompatible uses.

As discussed under Impact 3.10-1, construction activities for the MSS brine transport pipeline would occur within the boundaries of Don Edwards National Wildlife Refuge/Newark Slough Trail, Coyote Hills Regional Park, Alameda Creek Regional Trail, Hayward Regional Shoreline/Oro Loma Marsh, and San Francisco Bay Trail. Based on current project design, staging and laydown areas would be located on or adjacent to existing trails, parking lots, and access roadways at these parks and recreational facilities.

The proximity of construction activities to these recreation areas would pose a safety hazard for recreationists due to incompatible uses. Project construction would place large machinery, heavy objects, and moving vehicles (e.g., excavators, loaders, heavy-duty trucks, fusion machines, and paving and compacting equipment) in or adjacent to areas used for recreation (e.g., hiking, bicycling, and wildlife viewing). Construction vehicles entering and existing construction sites near existing trails could affect existing circulation patterns and present the risk of collision hazards to bicyclists and pedestrians. If construction areas are not property fenced and secured, recreationists could enter work sites and be exposed to slip, trip, and fall hazards associated with open excavations and trenches; falling objects; and hazardous construction materials. Recreationists could also be exposed to elevated noise levels and increased dust as they pass construction areas.

Some construction activities for the MSS brine transport pipeline would occur within roadway rights-of-way in the Cities of Hayward, Union City, Fremont, and Newark. Based on current design, construction activities would be required along segments of the San Francisco Bay Trail on Thornton Avenue, Paseo Padre Parkway, Ardenwood Boulevard, Union City Boulevard, Hesperian Boulevard, and Eden Shores Boulevard. Construction activities on these roadways would pose a safety hazard for bicyclists and pedestrians using the San Francisco Bay Trail.

As discussed in Section 2.6.8, "Construction," encroachment permits would be required for work in public rights-of-way from agencies with jurisdiction over the affected routes (i.e., Cities of Hayward, Union City, Fremont, and Newark). As a condition of encroachment permit approval, EBDA and Cargill would be required to prepare and implement a traffic control plan to minimize construction-related traffic safety hazards on affected roadways. Therefore, EBDA and Cargill would develop and implement traffic control plans, as appropriate and in coordination with the agencies with jurisdiction over the affected routes. The following components of the traffic control plans would reduce safety hazards for bicyclists and pedestrians:

- Identify work hours and haul routes, delineate work areas, and identify traffic control methods and plans for flagging.
- Determine the need to require workers to park personal vehicles at an approved staging area and take only necessary project vehicles to the worksites.
- Public noticing would include the posting of notices and installation of appropriate signage regarding construction activities. The written notification would include the construction schedule, the exact location and duration of activities on each roadway (e.g., which roads/lanes and access points/driveways will be blocked on which days and for how long), and contact information for questions and complaints.
- Notify the public regarding alternative routes that may be available to avoid delays.
- Ensure that appropriate warning signs are posted in advance of construction activities, alerting bicyclists and pedestrians to any closures of nonmotorized facilities.
- Require the repair and restoration of affected roadways to their original condition after construction is completed.

With implementation of traffic control plans, safety hazards for bicyclists and pedestrians along segments of the San Francisco Bay Trail within roadway rights-of-way would be reduced.

However, traffic control plans would not reduce safety hazards to recreationists at Don Edwards National Wildlife Refuge/Newark Slough Trail, Coyote Hills Regional Park, Alameda Creek Regional Trail, and segments of the San Francisco Bay Trail that are not within roadway rights-of-way. Therefore, the proposed project has potential to substantially increase hazards due to incompatible uses with recreational activities during project construction. This impact would be **potentially significant**.

Mitigation Measures

Implement Mitigation Measure 3.10-1, "Prepare and Implement Detour Plans for Parks, Trails, and Recreational Facilities."

Significance after Mitigation

Mitigation Measure 3.8-1 would ensure that construction areas within existing trails, parks, and recreation areas are clearly identified and closed off to prohibit unauthorized entry. Adequate detour routes would be provided, in consultation with applicable resource agencies, to direct recreationists away from construction areas and associated hazards. Therefore, this impact would be reduced to **less than significant**.

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4 CUMULATIVE IMPACTS

4.1 INTRODUCTION TO THE CUMULATIVE ANALYSIS

This Draft EIR provides an analysis of cumulative impacts of the project, taken together with other past, present, and probable future projects producing related impacts, as required by Section 15130 of the State CEQA Guidelines. The goal of such an exercise is twofold: first, to determine whether the overall long-term impacts of all such projects would be cumulatively significant; and second, to determine whether the incremental contribution to any such cumulatively significant impacts by the project would be "cumulatively considerable" (and thus significant). (See State CEQA Guidelines Sections 15130[a]–[b], Section 15355[b], Section 15064[h], and Section 15065[c]; and *Communities for a Better Environment v. California Resources Agency* [2002] 103 Cal. App. 4th 98, 120.) In other words, the required analysis intends first to create a broad context in which to assess cumulative impacts, viewed on a geographic scale beyond the project site itself, and then to determine whether the project's incremental contribution to any significant cumulative impacts from all projects is itself significant (i.e., "cumulatively considerable").

Cumulative impacts are defined in State CEQA Guidelines Section 15355 as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." A cumulative impact occurs from "the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (State CEQA Guidelines Section 15355[b]).

Consistent with State CEQA Guidelines Section 15130, the discussion of cumulative impacts in this Draft EIR focuses on significant and potentially significant cumulative impacts. Section 15130(b) of the State CEQA Guidelines provides, in part, the following:

> The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

A proposed project is considered to have a significant cumulative effect if:

- the cumulative effects of development without the project are not significant and the project's additional impact is substantial enough, when added to the cumulative effects, to result in a significant impact; or
- the cumulative effects of development without the project are already significant and the project contributes measurably to the effect.

The term "measurably" is subject to interpretation. The standards used herein to determine measurability are that the impact must be noticeable to a reasonable person, or must exceed an established threshold of significance (defined throughout the resource sections in Chapter 3 of this Draft EIR).

4.2 GEOGRAPHIC CONTEXT

The geographic area that could be affected by implementation of the project varies depending on the type of environmental resource being considered. The geographic area associated with different types of environmental effects defines the scope of the areas considered in the cumulative impact analysis, as presented in Table 4-1.

Table 4-1 Geographic Scope of Cumulative Impacts

Resource Topic	Geographic Area
Air Quality	Regional (pollutant emissions that affect the San Francisco Bay Area Air Basin) and immediate project vicinity (pollutant emissions that are highly localized)
Biological Resources	Study area consists of the project footprint and a 1-mile buffer, with implications to tidal channels and wetlands in the watershed.
Cultural and Tribal Cultural Resources	Regional (San Francisco Bay Area)
Geology, Soils, Mineral Resources, and Paleontological Resources	Local (project site where ground-disturbing activities would occur and where new infrastructure would be installed)
Greenhouse Gas Emissions and Climate Change	Global
Hazards and Hazardous Materials	Local (areas within 0.25 mile of the project site)
Hydrology and Water Quality	The watersheds including the creeks, sloughs, and other waterways within the project area that feed into the South Bay
Noise and Vibration	Local (immediate project vicinity where project-generated noise could be heard concurrently with noise from other sources)
Recreation	Local (areas within 0.25 mile of the project site)

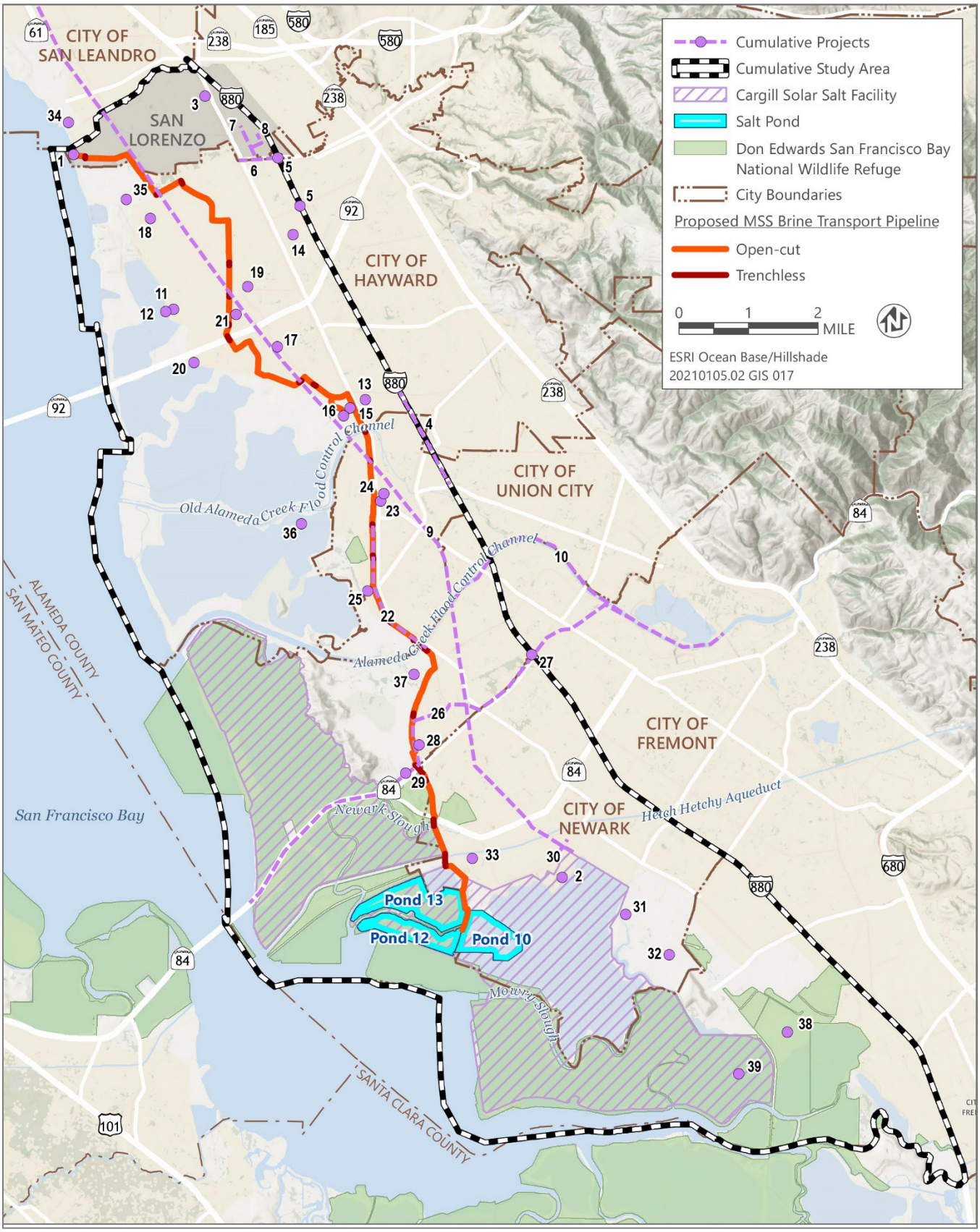
Source: Compiled by Ascent Environmental in 2022.

4.3 RELATED PROJECTS

A list of present and reasonably foreseeable future projects is included in Table 4-2 and shown in Figure 4-1. Table 4-2 does not include a list of past projects because the environmental effects of these actions are already considered as part of the existing cumulative baseline conditions.

The study area for cumulative projects (cumulative study area) is generally bounded by the San Francisco Bay to the west, Interstate 880 to the east, the community of San Lorenzo limits to the north, and the City of Newark limits to the south. The projects listed in Table 4-2 may not be an exhaustive list of every planned project within the study area. However, these projects were selected because they have the greatest possibility of contributing a cumulative effect based on proximity to the project area (including at the Solar Salt Facility and along the MSS brine transport pipeline alignment) and timing of implementation. Table 4-2 includes projects from the following sources:

- other actions proposed at EBDA's and Cargill's existing facilities that were listed on EBDA's and Cargill's websites or were identified by staff;
- projects that are currently undergoing development review in the cumulative study area by the planning departments for Alameda County and the Cities of Hayward, Union City, Fremont, and Newark;
- transportation and infrastructure improvement projects that are currently planned, being designed, or under construction in the cumulative study area;
- projects undergoing environmental review (i.e., projects included on the Governor's Office of Planning and Research CEQAnet database for which a Negative Declaration, EIR, or Notice of Preparation of a Draft EIR was released in the last five years) in the cumulative study area; and
- restoration projects along the eastern shore of the San Francisco Bay within the cumulative study area that are planned or in-progress.



Source: Compiled by Ascent Environmental in 2022.

Figure 4-1 Cumulative Projects

Table 4-2 Present and Reasonably Foreseeable Future Projects

Map ID	Project Name	Project Type	Location	Description	Status
	EBDA Projects				
1	First Mile Horizontal Levee Project	Infrastructure Improvements	Within EBDA service area just south of Oro Loma, Alameda County	EBDA is proposing to implement a horizontal levee to provide sea level rise resilience, water quality improvement, and habitat protection south of the Oro Loma Wastewater Treatment Plant at the Oro Loma Marsh	Design
	Cargill Projects				
2	Cargill, Incorporated Solar Sea Salt System Maintenance and Operations Activities	Infrastructure Improvements	7220 Central Ave, City of Newark	Cargill is proposing to continue annual maintenance and operations activities at its Solar Salt Facility over the next 10 years, which include earthen berm maintenance, lock access/egress, materials stockpiles, sediment removal from intake structures, and other infrastructure maintenance.	The Environmental Assessment was released in August 2021
	Alameda County				
3	Village Green Mixed-Use Multi-Family Housing	Mixed-Use	Hesperian Blvd at Paseo Grande in San Lorenzo	The project includes development of a mixed-use multi-family project with 138 rental housing units, 11,049 SF of indoor retail, 983 SF of outdoor retail seating	Application Pending
4	I-880 Interchange Improvements (Whipple Road/Industrial Parkway Southwest and Industrial Parkway)	Transportation	Along I-880 at the Whipple Rd/Industrial Pkwy Southwest and Industrial Parkway West interchanges, Cities of Hayward and Union City	ACTC is proposing interchange on-and off-ramp reconfigurations, modifications and/or replacement of bridge structures, local roadway realignments and restriping, and bicycle and pedestrian improvements	The Draft IS/EA was released for public review in January 2021
5	I-880 Interchange Improvements (Winton Avenue/A Street)	Transportation	Along I-880 at the Winton Ave and A St interchanges, City of Hayward	ACTC is proposing to reconfigure the I-880 interchange at Winton Avenue to provide direct access to the Southland Mall and implement Complete Streets features, and reconstruct the I-880/A Street interchange to widen A Street from five to six lanes and provide additional lane capacity for potential future freeway widening. Improvements will also involve modifying signals and reconfiguring intersections to improve truck turning maneuvers.	Design Phase
6	Hesperian Boulevard Corridor Improvement Project	Transportation	On Hesperian Blvd between the I-880 overcrossing and A St, unincorporated Alameda County	The Alameda County PWA is implementing improvements, which include widened sidewalks with aesthetic elements, class II buffered bicycle lanes with green pavement treatments, community gateway features, high visibility crosswalk treatments, fiber optic conduit, roadway and pedestrian lighting, pavement rehabilitation, transit priority system, adaptive traffic signal control technology, and artwork.	Under Construction
7	Royal Avenue Sidewalk Improvement Project	Transportation	On Royal Ave from Perkins Dr to West A St, unincorporated Alameda County	The project includes construction of sidewalks with features such as enhanced crosswalks and new pedestrian ramps.	Under Construction

Map ID	Project Name	Project Type	Location	Description	Status
8	West Sunset Boulevard and Garden Avenue Sidewalk Improvement Project	Transportation	On West Sunset Blvd, from Royal Ave to Garden Ave, and on Garden Ave, from West Sunset Blvd to Bartlett Ave, unincorporated Alameda County	The project includes construction of new concrete sidewalks.	Design Phase
9	South Bay Connect Project	Transportation	Between the Capitol Corridor Oakland Coliseum Station to the north and Newark Junction to the south, Alameda County	The project includes improvements to the existing rail network and operations, including re-routing of existing services and development of a new passenger rail station at the Ardenwood Park-and-Ride and potentially one additional passenger rail station along the Coast Subdivision.	An EIR is currently being prepared.
10	Lower Alameda Creek Fish Passage Restoration in Flood Control District Zone 5	Restoration	Lower Alameda Creek between 600 feet below the UPRR crossing to the BART Weir fish ladder, Cities of Fremont and Union City	ACFCD is proposing modifications to the existing channel to remove migratory impediments and habitat restoration to improve the migratory corridor, which would allow fish within the flood control channel to access upstream spawning grounds. The project would also facilitate sediment transport downstream.	The project was completed in early 2022.
	City of Hayward				
11	Water Pollution Control Facility Phase II Facilities Plan and Nutrient Management Projects	Infrastructure Improvements	3700 Enterprise Ave, City of Hayward	The city has identified infrastructure needs to address future regulatory requirements restricting discharge of nutrients to the San Francisco Bay. In addition to upgrades, the project includes a new administration building and laboratory.	Design Phase
12	WPCF Solar Power Design and Construction Phase II Project	Solar	West of 3700 Enterprise Ave, City of Hayward	The city is expanding its existing solar photovoltaic system.	The first phase was completed in February 2020 and the second phase will be completed following WPCF upgrades.
13	Hall Road	Industrial	Southeast of the Hall Rd and Industrial Pkwy intersection, City of Hayward	The project includes developing a 68,500-SF industrial facility.	Under Construction
14	Southland Mall – Cinema	Commercial	One Southland Mall Dr, City of Hayward	The project includes developing a 36,600-SF commercial development.	Under Construction
15	Eden Shores	Commercial	28899 Hesperian Blvd, City of Hayward	The project includes developing a 50,000-SF commercial development.	Under Construction
16	Shea Industrial	Industrial	28803 Marina Dr, City of Hayward	The project includes developing a 274,998-SF industrial development.	Under Construction
17	Steelwave Industrial Park	Industrial	2580-2582 Industrial Blvd, City of Hayward	The project includes developing a 93,345-SF industrial park.	Approved by City Council

Map ID	Project Name	Project Type	Location	Description	Status
18	West Winton Commerce Center	Industrial	2655-2893 W Winton Ave, City of Hayward	The project includes developing a 507,500-SF industrial development.	Approved by City Council
19	Allied Housing Depot Road Project	Residential	2595 Depot Rd, City of Hayward	The project includes permanent supportive housing, consisting of 125 studio apartments with on-site supportive services.	Application Pending
20	4150 Point Eden Way Industrial Development Project	Industrial	4150 Point Eden Way, City of Hayward	The project includes demolishing historic structures and constructing a new 116,884-SF industrial building, including a warehouse building and office building. The project also includes relocating a portion of the Bay Trail, establishing a 32-acre preserve.	The Draft EIR was released in April 2021.
21	25450-25550 Clawiter Road Industrial Project	Industrial	25550 Clawiter Rd, City of Hayward	The project includes development of a new industrial campus with new 232,653-SF and 154,618-SF buildings, employee amenities, landscaping, circulation, stormwater retention, and parking.	Approved by City Council
	Union City				
22	Union City Blvd Class II Bike Lanes Project	Transportation	Union City Blvd from 600 ft south of Alvarado Blvd to the southerly City limits at Ardenwood Bridge, Union City	The city is planning to construct approximately two miles of Class II buffered bicycle lanes in each direction on Union City Blvd.	Planned for construction in 2023, with construction anticipated to last for approximately 2 years
23	Homer Street Mixed-Use Project	Mixed-Use	31603 Watkins St, Union City	The applicant proposes to construct a mixed-use development consisting of 25 multi-family residential units and approximately 6,943 square feet of retail use.	Environmental document was released in February 2019.
24	Old Alvarado/Cesar Chavez Park Improvements	Recreation	30940 Watkins St, Union City	The city is proposing improvements at the two parks, which include rehabilitating walkway paths, replacing playground equipment, installing new park furnishings, installing a half basketball and full volleyball court, and improving ADA access.	The project is out to bid.
25	Turk Island Landfill Consolidation and Residential Subdivision Project	Residential	Near the intersection of Carmel Way and Westport Way, Union City	The project involves relocating landfill debris from a parcel adjacent to the Turk Island Landfill and backfilling with clean imported soil. The site would be subsequently developed as a 33-unit residential subdivision. Off-site improvements to the adjacent Sea Breeze Park are also proposed, including a new play structure, an interpretive trail adjacent to the existing stormwater retention ponds, expansion of the parking lot, and improvements to/refurbishment of some existing facilities.	Environmental document was released in October 2018.
	City of Fremont				
26	Dumbarton Bridge to Quarry Lakes Trail Project	Recreation	Between Dumbarton Bridge and the Quarry Lakes Regional	The city is proposing an 8-mile regional trail that connects Dumbarton Bridge to the Quarry Lakes Regional Recreation Area. The proposed	Design Phase

Map ID	Project Name	Project Type	Location	Description	Status
			Recreation Area, City of Fremont	trail would generally consist of paved Class I multiuse pathways, Class IV separated bikeways, protected intersections, and wide sidewalks.	
27	I-880/Decoto Road Interchange Modernization Project	Transportation	I-880/Decoto Rd interchange, City of Fremont	The city is proposing upgrades to this interchange, which include transit priority treatments and safe biking and walking facilities.	Design Phase
28	Ardenwood IV-I Office Park	Industrial	7650 Dumbarton Cir, City of Fremont	The project would include four office buildings totaling approximately 802,340 SF, including two five-story office buildings and two six-story office buildings, in addition to two five-level parking structures and additional surface parking on four vacant parcels totaling 25 acres in the Ardenwood Technology Park.	Application Pending
29	Dumbarton Quarry Reclamation Plan Amendment	Institutional	9600 Quarry Rd, City of Fremont	The project would include importing up to an additional 3.5 million cubic yards of fill to be placed atop a former quarry pit with elevations that more closely resemble pre-mining conditions on a 91-acre site.	Application Pending
	City of Newark				
30	Dumbarton Corridor Improvements (Central Avenue Overpass)	Transportation	On Central Ave between Sycamore St and Morton Ave, City of Newark	The City of Newark is proposing to construct a four-lane grade separation structure (bridge overpass including sidewalks and bicycle lanes) at the railroad crossing on Central Avenue.	Design Phase
31	Mowry Village Project	Residential	Southwest of the intersection of Mowry Ave and the UPRR tracks, west of Cherry St, City of Newark	The project includes demolishing existing on-site structures and site remediation to construct 203 single-family homes. The project also includes parking, under-ground utilities, drainage improvements and stormwater treatment areas, lighting, sidewalks, landscaping, and widening of Mowry Avenue.	An EIR is currently being prepared.
32	Sanctuary West	Residential	West of the intersection of Stevenson Blvd and the UPRR tracks, City of Newark	The project includes 469 single-family detached homes in four "villages" and three park parcels.	The project was approved in 2019
33	FMC Willow	Residential	On Enterprise Drive, between Willow and Hickory Street, City of Newark	The project includes development of 192 medium to medium-high density residential units on 17.4 acres. The project also includes a trail, parking, parks and recreational areas, drive aisles, underground utilities, Low Impact Development drainage and water quality treatment structures, lighting, sidewalks, and landscaping.	The project was approved in 2019 and construction is anticipated to begin in early 2023.
	San Francisco Bay				
34	Long Beach Restoration Project	Restoration	Long Beach, City of San Leandro	The project would include restoring habitat and improving public access at Long Beach.	Planning
35	Hayward Shoreline Restoration	Restoration	Hayward Marsh, Alameda County	The project would include restoring 350 acres of habitat restoration to plan for sea level rise and habitat resiliency; enhancing wildlife	Planning

Map ID	Project Name	Project Type	Location	Description	Status
				habitat; and restoring portions of Hayward Marsh to seasonal wetlands, muted tidal marsh, fully tidal marsh, or a combination. The project would also provide adequate hydrology to minimize silting and stagnant water and would enhance public access and wildlife viewing.	
36	South Bay Salt Ponds Restoration: Eden Landing	Restoration	Eden Landing, Alameda County	The project would include restoring over 1,375 acres of tidal wetlands between Old Alameda Creek and the Alameda Creek Flood Control Channel, possibly adding 400 acres of enhanced pond habitat, constructing innovative flood protection elements, and around 4 miles of new Bay Trail.	Planning
37	Coyote Hills Regional Park - Restoration and Public Access Project	Restoration	Coyote Hills Regional Park, Alameda County	This project would include restoring marsh, seasonal wetlands, and coastal prairie; improving water circulation and quality; enhancing habitat for the endangered Salt Marsh Harvest Mouse and Ridgway's Rail; and acquiring lands to protect wildlife and develop public access to restored areas.	Planning
38	South Bay Salt Ponds Restoration: A22, A23	Restoration	Alameda County	This project would include restoring and enhancing 727.6 acres of habitat within two salt ponds.	Planning
39	South Bay Salt Ponds Restoration: Alviso	Restoration	Alameda County	The project includes enhancing and accelerating marsh development in three ponds by doing additional breaching and lowering of levees.	In-Progress

Notes: ACFCD = Alameda County Flood Control and Water Conservation District; ACTC = Alameda County Transportation Commission; EBDA = East Bay Dischargers Authority; IS/EA = Initial Study/Environmental Assessment; PWA = Public Works Agency; SF = square feet; UPRR = Union Pacific Railroad; WPCF = Water Pollution Control Facility.

Source: Compiled by Ascent Environmental in 2022.

4.4 ANALYSIS OF CUMULATIVE IMPACTS BY RESOURCE TOPIC

The following sections contain a discussion of the cumulative effects anticipated from implementation of the project, together with related projects and planned development in unincorporated Alameda County and the cities of Hayward, Union City, Fremont, and Newark, for each environmental issue area evaluated in this Draft EIR. The analysis conforms with Section 15130(b) of the State CEQA Guidelines, which specifies that the "discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact."

When considered in relation to other reasonably foreseeable projects, cumulative impacts to some resources would be significant and more severe than those caused by the proposed project alone.

For purposes of this EIR, the project would result in a significant cumulative effect if:

- the cumulative effects of related projects (past, current, and probable future projects) are not significant, but the incremental impact of implementing the project is substantial enough, when added to the cumulative effects of related projects, to result in a new cumulatively significant impact; or

- the cumulative effects of related projects (past, current, and probable future projects) are already significant and implementation of the project makes a considerable contribution to the effect. The standards used herein to determine a considerable contribution are that either the impact must be substantial or must exceed an established threshold of significance.

This cumulative analysis assumes that all mitigation measures identified in Chapter 3 to mitigate project impacts are adopted and implemented, and all elements of the design build performance criteria that would minimize environmental effects are implemented. The analysis herein analyzes whether, after implementation of project-specific mitigation and performance criteria that minimize environmental effects, the residual impacts of the project would cause a cumulatively significant impact or would contribute considerably to existing/anticipated (without the project) cumulatively significant effects.

4.4.1 Air Quality

CRITERIA AIR POLLUTANTS

Construction of the project would result in emissions of criteria air pollutants (e.g., particulate matter [PM_{10} and $PM_{2.5}$]) and ozone precursors (e.g., oxides of reactive organic gases [ROG] and nitrogen [NO_X]) in Alameda County, and the Cities of Hayward, Union City, Fremont, and Newark, which are within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). Alameda County is currently in nonattainment for PM_{10} in regards to the California ambient air quality standard (CAAQS), while ozone and $PM_{2.5}$ are classified as being in nonattainment with respect to both the CAAQS and the national ambient air quality standards (NAAQS).

Ozone concentrations result from the cumulative emissions from numerous sources in the region and transport from outside the region. Ozone is formed in chemical reactions involving ROG, NO_X, and sunlight. All but the largest individual sources emit ROG and NO_X in amounts too small to have a measurable effect on ambient ozone concentrations by themselves. However, when all sources throughout the region are combined, they result in severe ozone problems. Similarly, ambient concentrations of PM_{10} in the San Francisco Bay Area Air Basin (SFBAAB) are the result of the combination of regional PM_{10} emissions sources. Therefore, emissions of ROG, NO_X, and PM_{10} from cumulative development are significant in the SFBAAB.

Air districts in California develop air quality attainment plans, which include a multitude of air pollution control strategies to attain the federal ozone standard by the earliest practicable date. In developing air quality attainment plans, air districts account for the emissions from all present and future development in the region by relying on city and county general plans. Because the project would be consistent with existing uses and with the land use designations in the applicable general plans, emissions associated with implementation of the project are accounted for in BAAQMD's air quality attainment plan (see Section 3.2, "Air Quality," for a detailed discussion of BAAQMD's air quality attainment plans, as well as the applicable local general plans). In addition, as described in Impact 3.2-1 (in Table 3.2-3), with implementation of Mitigation Measure 3.2-1, estimated emissions of ozone precursors associated with project construction activities would not exceed the BAAQMD-recommended daily mass emission thresholds of significance. Project operation would also not generate substantial new vehicle trips (approximately 1 trip per day) or require a level of ground disturbance that would produce operational emissions that could contribute to a violation of an air quality standard. Therefore, because construction-related emissions would not result in a violation of an ambient air quality standard and the project would not result in substantial operations-related emissions, the contribution of short-term construction and long-term operational emissions of criteria air pollutants by the project **would not result in a considerable contribution to the existing significant cumulative impact related to emissions of criteria air pollutants**, and no additional mitigation is necessary.

TOXIC AIR CONTAMINANTS

The primary toxic air contaminant (TAC) of concern within this analysis is diesel PM which would result almost entirely from heavy-duty equipment during construction, as operational emissions would be generated from occasional

maintenance trips along the proposed alignment. While some overlap may occur between construction of the project and other nearby projects, it is unlikely that a considerable cumulative impact would occur due to the highly dispersive properties of diesel PM paired with the linear path of construction (occurring at a rate of approximately 150 feet per day). Additionally, the California Air Resources Board has adopted diesel control measures and more stringent emissions standards for transportation-related mobile sources, which include off-road equipment commonly used in construction activities such as tractors and generators. It has also been stated by the client that a significant number of Tier 4 construction equipment would be used during construction, further mitigating diesel PM emissions. Going forward, it can be reasonably assumed that nearby projects would similarly use construction equipment held to higher emissions standards, further lessening the potential for a cumulative impact of diesel PM in the region.

As discussed under Impact 3.2-3, the project would not result in significant health risks associated with TACs because it would not expose any single receptor to a level of cancer risk that exceeds an incremental increase of 10 in one million, or to a noncarcinogenic hazard index of 1. Additionally, the BAAQMD CEQA guide provides a more lenient cumulative TAC threshold of 100 in one million for cancer due to the compact nature of development within the SFBAAB. Furthermore, the cancer and non-cancer risk is calculated using site specific meteorological and topographical conditions, which would differ along the alignment, therefore affecting the dispersion of TACs. For these reasons, the increases in health risk attributable to the project **would not result in a considerable contribution to a significant cumulative impact related to TACs**.

4.4.2 Biological Resources

As discussed in Section 3.3, with implementation of Mitigation Measures 3.3-1 through 3.3-17, the project is anticipated to have less than significant impacts on biological resources. Long-term operations and maintenance activities at the Solar Salt Facility would be consistent with current operating procedures on site, except for increased diversions from Plummer Creek and Mowry Slough which are not anticipated to result in substantial adverse effects to special status species or habitats. Long-term maintenance activities for the pipelines, consisting of periodic inspections, cleaning, and appurtenance servicing, is not anticipated to substantially affect biological resources. Impacts to terrestrial habitats, waters, wetlands, other sensitive habitats, and associated special-status species would be temporary and less than significant with the incorporation of mitigation measures.

The project's increased diversions from Plummer Creek and Mowry Slough are not anticipated to result in cumulatively significant impacts when combined with present and foreseeable future projects in the contributing watersheds. As described in Section 3.3, increased diversions would be a small proportion of daily inflow and would therefore be unlikely to adversely affect biological resources such as special status fish. Plummer Creek drains the Plummer Creek watershed, which drains a portion of the adjacent flatlands of Newark and Fremont (USFWS 2013). Mowry Slough is a 5.8-mile-long slough in the Don Edwards San Francisco Bay National Wildlife Refuge that drains a 12.8-acre watershed occurring in Newark and Fremont (Alameda County Flood Control and Water Conservation District 2022). A discussion of the project diversions in combination with Cargill's existing operations and maintenance diversions from Plummer Creek and Mowry Slough is provided in Section 3.3 and the present and reasonably foreseeable future projects listed in Table 4-2 occurring in Newark and Fremont entail transportation, residential, industrial, institutional, and recreation projects occurring in uplands; these projects do not include diversions that would affect flows in Plummer Creek or Mowry Slough. Therefore, cumulatively significant impacts to biological resources from Plummer Creek and Mowry Slough diversions are not anticipated.

The project primarily entails construction in upland habitats with minimal habitat value and impacts to terrestrial biological resources are not anticipated to be significant when considered individually or combined with present and foreseeable future projects.

As discussed in Section 3.3, most of the MSS brine transport pipeline alignment would occur in developed urban uplands which provide only minimal habitat value to special status terrestrial species. This primarily includes potential nesting or foraging habitat for pallid bat and special-status bird species associated with urban environments. The project also includes several mitigation measures, as detailed in Section 3.3, to minimize or avoid impacts to

terrestrial special-status species and resources. These measures include surveys, no-disturbance construction buffers, constructing timing and seasonal restrictions, and monitoring to avoid or minimize impacts. While some species typically associated with wetland habitats may use grassland or other upland habitats, such as salt-marsh harvest mouse, the project includes species-specific mitigation measures to avoid or minimize impacts to wetland species and habitats from construction throughout the study area.

The related development projects listed in Table 4-2 would largely occur in uplands with similar terrestrial habitat and low likelihood for sensitive terrestrial biological resources. Terrestrial areas within the study area and project region are largely developed and disturbed, and infrastructure projects include infill development with minimal encroachment of undeveloped areas. Per CVEG mapping, most of the study area (project footprint and 1-mile buffer) consists of (in descending order) urban, grassland, cropland, dryland grain crop, and other agricultural habitats. These areas likely have species associations similar to those of the project, including limited potential as habitat for special-status species such as birds, bats, and plants. Each of the projects listed in Table 4-2 would be subject to regulations pertaining to protection of biological resources including avoidance and minimization measures required during project environmental review and project approval.

The project may result in direct or indirect impacts to special status species and habitats from construction within or adjacent to sensitive areas including tidal flat and marsh panne, tidal marsh, ponds, tidal and fluvial channels, and subtidal waters. While the project footprint and construction methods would largely avoid impacts to these resources, there remains limited potential for direct and indirect impacts to these protected habitats and associated species from project construction. This may include direct disturbance of protected wetlands; injury or mortality of terrestrial mammals, birds, fish, or plants; wildlife disturbance such as nest abandonment; or habitat degradation from spills or erosion if construction is improperly managed. Upland habitats such as annual grasslands or ornamental trees may also provide habitat of marginal value to select associated special-status species, which may be similarly affected. As described, the project includes Mitigation Measures 3.3-1 through 3.3-15 to reduce these potential special-status species and habitat impacts to less than significant. The project design and mitigation measures would also ensure compliance with applicable biological resource related plans and regulations.

Most of the projects listed in Table 4-2 entail upland developments that are anticipated to result in minimal impacts to biological resources associated with urban environments. This could include common construction impacts such as nesting bird disturbance or small areas of jurisdictional wetland fill within isolated swales or drainage features. Projects listed in Table 4-2 that would occur along the San Francisco Bay entail habitat restoration, which is anticipated to result in a long-term benefit to biological resources but could result in short-term construction impacts to sensitive resources. These restoration project-related impacts would likely be similar in nature to the proposed project, limited to minimal direct or indirect impacts to shoreline associated species from unavoidable encroachment on wetland or aquatic habitats. Neither upland urban development nor shoreline restoration projects are anticipated to result in impacts that are cumulatively significant when considered with the project.

An environmental assessment (EA) was prepared for the Cargill, Incorporated Solar Sea Salt System Maintenance and Operations Activities project, which would also be located at the Solar Salt Facility. The EA identifies several mitigation measures to ensure that the operations and maintenance project would result in less-than-significant impacts to biological resources. The EA also concludes that the operations and maintenance project would not result in cumulatively significant impacts to biological resources, including in consideration of the proposed project (GAIA Consulting 2021).

Other infrastructure projects in Table 4-2 that are geographically close to the proposed project include EBDA's First Mile Horizontal Levee Project (First Mile Project) and the Union City Blvd Class II Bike Lanes Project (Bike Lanes Project). The First Mile Project would occur in and near Oro Loma Marsh and would include construction of a horizontal levee to provide sea level rise resilience, water quality improvement, and habitat protection in the marsh. The Bike Lanes Project would entail bike lane reconstruction along Union City Boulevard between the Alameda Creek Flood Control Channel bridge and Alvarado Boulevard, planned for construction in 2023.

The proposed project and First Mile Project are unlikely to occur concurrently, and cumulative impacts directly related to construction are therefore not anticipated. While Oro Loma Marsh would be affected by both projects, the First

Mile Project remains in the design phase, with construction scheduled to occur in 2025. The proposed project is scheduled for construction to start in summer of 2023 and would require approximately 12-18 months to complete. Hence, there is anticipated to be little or no overlap in the construction schedules, and cumulative biological resource impacts related to concurrent construction are therefore unlikely to occur (e.g., increased potential for nest disturbance, injury or mortality of individual species, or other cumulative effects from concurrent construction).

The proposed project is not anticipated to result in permanent loss of water, wetlands, or other sensitive habitats in Oro Loma Marsh, though minor temporal loss of these features could occur within the vicinity of the First Mile Project. The area of impacts to sensitive habitats from the proposed project is expected to be minimal; per the preliminary project design and CARI mapping, the proposed project would result in no loss of waters or wetlands in Oro Loma Marsh. The First Mile Project would increase the height of the eastside Oro Loma berm and provide a permanent horizontal levee that extends into the marsh. Construction of the horizontal levee would require permanent fill in Oro Loma Marsh. Although the horizontal levee would be revegetated, upland transition habitat is expected to replace the lower-lying habitat near the existing berm (including the area that corresponds with the proposed project's temporary work area). Due to the sequencing of the projects, cumulatively significant impacts from temporary loss of water, wetlands, or other sensitive habitats are therefore unlikely.

The Bike Lanes Project would largely occur in developed uplands and would be timed to occur concurrently (if possible) with the proposed project to minimize potential environmental effects, including effects to biological resources. The Bike Lanes Project alignment occurs almost entirely along the urban developed Union City Boulevard roadway, where biological resource value is minimal, likely consisting of only ornamental trees and structures that could provide marginal nesting habitat for special status birds or bats associated with urban areas. While some disturbance of nests or removal of trees could occur, the Bike Lanes Project would be subject to regulations pertaining to protection of such resources (e.g., Migratory Bird Treaty Act, tree ordinances). Given these conditions, there is minimal potential for the Bike Lanes Project to result in significant impacts to biological resources. Concurrent construction of the two projects, if possible, would lessen the duration of construction and further reduce the potential for impacts to biological resources associated with urban environments. Therefore, cumulatively significant biological resource impacts from the proposed project and Bike Lanes Project are not anticipated.

The general plans for Fremont, Newark, Union City, and Hayward each provide long-term goals and policies for development and conservation based on existing and foreseeable conditions, including anticipated regional growth and development (City of Fremont 2011; City of Newark 2013; City of Union City 2019; City of Hayward 2014). The respective CEQA analyses for each of these general plans identify potentially significant cumulative impacts to biological resources from plan implementation (City of Fremont 2011; City of Newark 2013; City of Union City 2019; City of Hayward 2014). These impacts include but are not limited to direct and indirect impacts to special-status species or their habitat; significant impacts to riparian, wetland, or other sensitive natural communities; interference with wildlife movement; or reductions in local population size, habitat fragmentation, or lower reproductive success. However, each of these CEQA analyses conclude that general plan implementation will not result in cumulatively considerable impacts when considering policies and implementation programs to protect biological resources, mitigation measures, or project-level environmental review. Existing cumulatively significant impacts for the region are not identified in any of the aforementioned general plans or their respective CEQA analyses. Therefore, the proposed project is not anticipated to contribute to an existing cumulatively significant impact.

In consideration of the analysis presented above, the proposed project, when combined with past, present, and reasonably foreseeable projects, **would not result in a considerable contribution to a significant cumulative impact related to biological resources** with respect to permanent diversions in Plummer Creek or Mowry Slough; permanent or temporary impacts to upland terrestrial habitats; temporary impacts to waters, wetlands, or sensitive habitats; or contribution to an existing cumulatively significant impact.

4.4.3 Cultural and Tribal Cultural Resources

The geographic scope for the analysis of cumulative impacts to archaeological resources, tribal cultural resources, and human remains is the historic lands of the Ohlone (Costanoan) people. The Ohlone inhabited the San Francisco Bay Area, from the coast of San Francisco through Monterey Bay to the lower Salinas Valley.

Because all significant cultural resources are unique and nonrenewable members of finite classes, meaning there are a limited number of significant cultural resources, all adverse effects erode a dwindling resource base. The loss of any one archaeological site could affect the scientific value of others in a region because these resources are best understood in the context of the entirety of the cultural system of which they are a part. The cultural system is represented archaeologically by the total inventory of all sites and other cultural remains in the region. As a result, a meaningful approach to preserving and managing cultural resources must focus on the likely distribution of cultural resources, rather than on a single project or parcel boundary.

The historic lands of the Ohlone people have been affected by development since the arrival of the first Spanish settlers in 1769 when Gaspar de Portolá and Franciscan Father Junípero Serra established Mission San Diego de Alcalá. Agricultural development soon evolved into railroad and commercial development. Development of the Ohlone lands continued with residential growth which increased after World War I and then greatly intensified after World War II. These activities have resulted in an existing significant adverse effect on archaeological resources, tribal cultural resources, and human remains. Cumulative development, including projects described in Table 4-2, continues to contribute to the disturbance of cultural resources.

No known tribal cultural resources or human remains are located within the boundaries of the project area; known archaeological sites would not be disturbed by construction of the project. Nonetheless, project-related earth-disturbing activities could damage undiscovered archaeological resources, tribal cultural resources, or human remains. The proposed project, in combination with other development in the region, could contribute to ongoing substantial adverse changes in the significance of archaeological resources, tribal cultural resources, or human remains.

Implementation of Mitigation Measures 3.4-2a and 3.4-2b would ensure that the proposed project's contribution to cumulatively significant archeological resource impacts would not be considerable by implementing a worker awareness training program and requiring construction work to cease in the event of an accidental find and the appropriate treatment of discovered resources, in accordance with pertinent laws and regulations. With implementation of this mitigation measure, the project's contribution to these impacts would be offset. Similarly, Mitigation Measure 3.4-3 would ensure that the project's contribution to cumulatively significant tribal cultural resource impacts would not be considerable by requiring preservation options and proper care of significant artifacts if they are recovered. **[Note: may need to be revised as consultation continues.]** Further, cumulative development would be required to implement similar mitigation to avoid/reduce impacts to archaeological resources and tribal cultural resources. Compliance with California Health and Safety Code Section 7050.5 and PRC Section 5097 would ensure that treatment and disposition of the remains occurs in a manner consistent with state guidelines and California Native American Heritage Commission guidance. Therefore, the proposed project **would not result in a considerable contribution to a significant cumulative impact related to archaeological resources and Tribal Cultural Resources**.

4.4.4 Geology, Soils, Mineral Resources, and Paleontological Resources

The cumulative setting for geology and soils is the project site, which includes all areas where ground-disturbing activities would occur and where new infrastructure would be installed. The potential for the project, to result in cumulative impacts related to seismic and geologic hazards, erosion and loss of topsoil, and mineral resources is discussed in the following sections.

SEISMIC AND GEOLOGIC HAZARDS

As described in Section 3.5, "Geology, Soils, Mineral Resources, and Paleontological Resources," the project is within a seismically active region, which could be susceptible to strong seismic ground shaking, liquefaction, and lateral spreading. Impacts related to seismic and geologic hazards would not be cumulatively considerable because the geographic context is generally site-specific, rather than cumulative in nature. Notwithstanding, past development within the cumulative setting has been regulated by the California Building Code (CBC) and local building codes, which ensure that structures are designed and engineered to site-specific conditions. Each site where present and reasonably foreseeable projects would occur has unique geologic considerations that would also be subject to uniform site development and construction standards consistent with the CBC and local building codes. As discussed in Section 3.5, a site-specific geotechnical report would be prepared for the project. The project would incorporate the design and engineering recommendations contained in the site-specific geotechnical report, which would account for the unique geotechnical factors affecting the project site and conform to the requirements of the CBC and local building code requirements. Therefore, the project would not result in a considerable contribution to a significant cumulative impact related to seismic and geologic hazards.

EROSION AND LOSS OF TOPSOIL

Soils within the cumulative setting generally consist of a thin layer of compacted artificial fill underlain by native geologic units, composed of Bay mud and/or fine-grained alluvium. As described in Section 3.5, most of the native soils underlying the cumulative setting have no or slight hazard of erosion. Past construction activities within the cumulative setting have been regulated by the National Pollutant Discharge Elimination System (NPDES) Program, which includes requirements to minimize erosion from construction sites and from operational activities associated with past development. Therefore, the contribution of past projects to cumulative erosion impacts has been negligible.

The present and reasonably foreseeable projects listed in Table 4-2 include development, transportation, infrastructure, restoration, and public works projects. These types of projects generally require temporary construction activities involving ground disturbance, which may contribute to erosion and loss of topsoil throughout the cumulative setting. Under the NPDES Program, projects that disturb more than 1 acre of land are required to prepare a Storm Water Pollution Prevention Plan (SWPPP) and implement associated best management practices (BMPs) that are specifically designed to reduce construction-related erosion. The SWPPP and BMPs would be submitted to the San Francisco Bay Regional Water Quality Control Board in compliance with the statewide *National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit) (Order 2009-009-DWQ as amended by Order 2012-0006-DWQ). Once operational, the potential for erosion would be reduced because areas of bare ground would be landscaped or hardscaped and projects would be designed to meet low impact development requirements for erosion control. Therefore, the contribution to cumulative erosion impacts from present and reasonably foreseeable projects would be negligible.

In combination with past, present, and reasonably foreseeable projects discussed above, the proposed project would not exacerbate the potential for erosion and loss of topsoil within the cumulative setting. Impacts related to erosion and loss of topsoil would be negligible because the proposed project would be subject to the NPDES Program requirements described above. Specifically, the proposed project would include preparation of a SWPPP and implementation of BMPs to reduce the potential for construction-related erosion. The project would not involve operational activities with potential to result in erosion or loss of topsoil. Therefore, the project would not result in a considerable contribution to a significant cumulative impact related to erosion and loss of topsoil.

MINERAL RESOURCES

There are no active mining operations occurring within the cumulative setting and no future mining operations are anticipated to occur in the cumulative setting. Impacts related to mineral resources would not be cumulatively considerable because the project would not interfere with active mining operations and would not prevent the

recovery of aggregate resources from the cumulative setting in the future. Rather, the project would enhance MSS brine processing to assist Cargill with its ongoing salt production operations and would result in a benefit to the harvesting of this resource. Therefore, the project **would not result in a considerable contribution to a significant cumulative effect related to mineral resources**.

4.4.5 Greenhouse Gas Emissions and Climate Change

Section 3.6, "Greenhouse Gas Emissions and Climate Change," contains the cumulative global climate change analysis. It provides estimates and analyzes the greenhouse gas (GHG) emissions associated with project-related construction activities and operation of the project. The potential effects of global climate change on the project are also identified based on available scientific data.

As reported in Section 3.6, the project's combined amortized construction and operation GHG emissions would be 308 metric tons of carbon dioxide equivalent ($MTCO_{2e}$) per year. Because the project's GHG emissions would be below the applicable threshold of 10,000 $MTCO_{2e}$ per year that was applied to the project, the proposed project **would not result in a considerable contribution to a significant cumulative impact** related to GHG emissions and global climate change.

4.4.6 Hazards and Hazardous Materials

The cumulative setting for hazards and hazardous materials is areas within 0.25 mile of the project site. Impacts associated with hazards and hazardous materials related to implementation of the proposed project are analyzed in Section 3.7 of this Draft EIR. These impacts may be related to the transport, use, or disposal of hazardous materials; reasonably foreseeable upset or accidental conditions involving the release of hazardous materials; emission of hazardous materials within one-quarter mile of a school; location on a known hazardous materials site; airport-related hazards; and impaired implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan. Most of these effects occur independently of one another, related to site-specific and project-specific characteristics and conditions. Furthermore, existing regulations specify mandatory actions that must occur during project implementation, including the transport, use, and disposal of hazardous materials, which would adequately address most issues pertaining to hazards and hazardous materials, as noted in the impact discussion in Section 3.7. The one potentially significant impact identified for hazards and hazardous materials relates to the possible disturbance of hazardous materials sites during construction. Implementation of Mitigation Measures 3.7-4a through 3.7-4g would reduce this impact to less than significant. Therefore, implementing the proposed project **would not result in a considerable contribution to a significant cumulative impact** related to hazards and hazardous materials.

4.4.7 Hydrology and Water Quality

The geographic scope for the cumulative impacts analysis for hydrology and water quality encompasses the watersheds including the creeks, sloughs, and other waterways within the project area that feed into the South Bay and the central Bay in the vicinity of the EBDA outfall.

FLOOD HAZARD

The project area includes mapped flood hazard areas including the 100-year floodplain, areas at risk of inundation from sea level rise, areas at risk of seiche and tsunami, and areas located within dam failure inundation zones. Some of the cumulative projects listed in Table 4-2 are also located within these flood hazard areas. Flood protection efforts in the watersheds in the project area are primarily handled by the Alameda County Flood Control and Water Conservation District (ACFCWCD). ACFCWCD operates and maintains a system of water control infrastructure including a series of 22 pump stations; erosion control structures; dams; and over 500 miles of pipelines, channels, levees, and creeks—that protect western Alameda County from flooding. Most of the project would be constructed below ground or within salt

ponds that would be protected from flooding by the surrounding berms. If a flood were to occur during project construction, sediment and pollutants temporarily stockpiled or stored in staging areas could be released. However, with implementation of Mitigation Measure 3.8-5: Locate Staging Areas Outside of the Flood Zone or Install a Protective Barrier around Pollutants Stored within the Staging Area, the proposed project **would not result in a considerable contribution to a significant cumulative impact related to release of pollutants due to flooding**.

SURFACE WATER AND GROUNDWATER QUALITY

The project would cause soil disturbance during construction and maintenance of the MSS brine transport pipeline and infrastructure at the Solar Salt Facility which, like other construction projects that involve earthmoving activities, would have the potential to impact surface and groundwater quality through increased potential of erosion and sedimentation. Additionally, the use of equipment during construction could cause spills or leaks of fuel, oil, and other fluids which could degrade water quality. Manufacturing of salt and brine also has the potential to affect surrounding water quality if salt pond berms were breached and the salt and brine were to flow out to adjacent water. The pipeline would also include several directional drills under Wetlands and Waters of the US. Directional drilling has the potential to release drilling fluid (bentonite clay-water mix) to the surface which could impact adjacent wetlands and waters.

Under the NPDES Program, projects that disturb more than 1 acre of land and all industrial facilities are required to prepare a SWPPP and implement associated BMPs that are specifically designed to reduce construction-related pollution. This is achieved through adherence with the California Construction General Permit Order 2009-0009-DWQ, California Industrial General Permit Order 2014-0057-DWQ, as well as city and county codes which require the implementation of construction related and operational BMPs to reduce impacts to water quality. Therefore, with adherence to these permits, cumulative surface and ground water quality impacts from present and reasonably foreseeable projects would be negligible. The project would adhere to California Construction General Permit Order 2009-0009-DWQ, California Industrial General Permit Order 2014-0057-DWQ, as well as city and county Codes. Due to the possibility of accidental spills of directional drilling fluid to adjacent wetlands and waters during project construction, impacts from drilling fluids to surface and ground water quality would be potentially significant. However, with implementation of Mitigation Measure 3.8-1: Implement Directional Drilling Fluid Containment Measures, this impact would be reduced to less than significant and the proposed project **would not result in a considerable contribution to a significant cumulative impact related to surface and ground water quality**.

The brine transport pipeline would tie into EBDA's existing combined effluent conveyance system on the site of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. The brine would be blended with secondary treated wastewater effluents from the other agencies that discharge into the EBDA system before discharge to the Bay through EBDA's outfall. This could impact water quality of the San Francisco Bay. Constituents in the MSS brine have been closely analyzed to determine if any water quality objectives set for the San Francisco Bay would be violated when blended with EBDA effluent and discharged to the San Francisco Bay. None of the constituents in the MSS brine mix would violate Water Quality Objectives (LWA 2022). Additionally, in the event of any system upset or other reasons that may affect EBDA system capacity or water quality, brine discharges would be suspended. Therefore, the project **would not result in a considerable contribution to a significant cumulative impact**.

4.4.8 Noise and Vibration

CONSTRUCTION NOISE

Noise dissipates rapidly from its source; however, cumulative impacts from construction-generated noise could result if construction activities of multiple projects occur within close proximity of each other. The project's contribution of noise could combine with other projects resulting in substantial increases in noise at nearby sensitive receptors. Several developments are planned in the region. See Section 4.3, "Related Projects," for a list of reasonably foreseeable projects in the project area. Several projects, such as the Union City Boulevard Class II Bike Lanes Project,

the Old Alvarado/Cesar Chavez Park Improvements Project, and the Hall Road, Southland Mall Cinema, Eden Shores, and Shea Industrial project, could have construction periods that overlap with construction of the proposed project. At the time of writing this Draft EIR, the construction periods for these projects are subject to change based on factors that could impact the timing of construction, or prolong construction phasing. Nevertheless, given that the project would result in a significant construction-related noise impact, it is foreseeable that the project's contribution of construction noise could combine with other construction activity within the project vicinity to create a cumulatively considerable impact. Thus, it can be assumed that the proposed project, along with certain future projects, **would result in a considerable contribution to a significant cumulative impact related to construction noise.**

CONSTRUCTION VIBRATION

Cumulative impacts from construction-generated vibration could result if the construction activities of multiple projects within close proximity would occur. No new long-term operational vibration sources would result from the proposed project; therefore, construction-related vibration impacts are the focus of this analysis.

Adverse vibration impacts occur from construction activities if receptors or structures are located in close proximity to a construction site (typically within 100 feet) or if nighttime vibration-inducing activities were to occur near sensitive land uses such as residences or hotels. At increasing distances from the source, vibration levels dissipate rapidly and have less potential to cause disturbance to people or damage to structures. In addition, vibration generated from construction is typically associated with pile-driving activities that only occur during discrete phases of construction and for intermittent and brief periods at a time. The project would require the use of a pile driver; however, as identified under Impact 3.9-2, the ground-born vibration generated from the use of this equipment would result in a maximum vibration of 77 vibration decibels (VdB) and 0.027 peak particle velocity inches per second (PPV in/sec) at the nearest receptor at 31175 Union City Boulevard. This level of vibration would be below the Federal Transit Administration's significance criteria of 80 VdB and 0.2 PPV in/sec for vibration impact. Therefore, this impact was deemed less than significant.

For these reasons, even with additional large development projects and plans anticipated for future development, vibration impacts would dissipate rapidly and remain localized; it is not foreseeable that the project's less-than-significant contribution of vibration would combine with vibration sources from other construction activities even if construction activities at other future developments were to occur simultaneously with the project's construction activities. Because vibration levels generated by the cumulative projects would be limited to the vicinity of construction activities for the projects listed in Table 4-2, "Related Projects," and because vibration levels of the proposed project would not result in any off-site impacts, the proposed project's incremental construction vibration levels would not be cumulatively considerable, and the proposed project **would not result in a considerable contribution to a significant cumulative impact related to construction vibration**.

OPERATIONAL NOISE (STATIONARY)

Cumulative noise levels could be affected by operation of stationary equipment from the proposed project in the city along with cumulative projects. Regarding stationary noise increases, the proposed project would result in land use development that typically includes stationary noise sources such as noise from generators and pumps. As discussed in Impact 3.9-3 in Section 3.9, "Noise and Vibration," stationary noise sources would be below applicable standards based on distance from nearest sensitive receptor; thus, noise from these sources would not combine from other off-site stationary sources to result in considerable increases in noise. Therefore, the proposed project's stationary noise levels would not be cumulatively considerable, and the proposed project **would not result in a considerable contribution to a significant cumulative impact.**

4.4.9 Recreation

The cumulative setting for recreation includes the project site and areas within 0.25 mile of the project site. As described in Section 3.10, "Recreation," the cumulative setting includes several local and regional parks, a community

center, a national wildlife refuge, an ecological preserve, and trails. Various local, state, and federal agencies are responsible for operating and maintaining these parks and recreational resources.

The present and reasonably foreseeable projects listed in Table 4-2 include development, transportation, infrastructure, restoration, and public works projects. Residential and commercial development and infrastructure expansion projects can contribute to population growth within the cumulative setting, which could increase the use of existing parks and recreational facilities. Local jurisdictions are responsible for ensuring that adequate recreational opportunities are provided to the public as their populations grow over time, such as through parkland dedication requirements and Quimby Act in-lieu fees imposed on new development.

In combination with past, present, and reasonably foreseeable projects discussed above, the proposed project would not contribute to population growth that would increase the use of existing parks or recreational facilities within the cumulative setting. However, construction activities would result in direct (e.g., loss of access, parking, or use) and indirect effects (e.g., changes to visual character and quality, and increases in noise, dust, and traffic) on recreationists at parks and recreational facilities that are adjacent or in proximity to construction activities. Additionally, the proximity of construction activities to areas used for recreation would increase safety hazards for recreationists due to incompatible uses. These effects would be short-term and temporary. Construction activities would be of a limited duration in any one location (pipeline construction would proceed at a rate of approximately 150 feet per day and most staging areas would be in use for 8 to 12 weeks). As a condition of encroachment permit approval, EBDA and Cargill would be required to implement a traffic control plan to minimize construction-related traffic disruptions and safety hazards on affected roadways. Mitigation Measure 3.10-1 would also require that Cargill and EBDA coordinate with the owners and operators of all parks that would be directly affected by construction activities to ensure that adequate access, parking, and detours are provided throughout the duration of construction. Recreationists would not be displaced to other locations to the extent that the project, in combination with past, present, and reasonably foreseeable projects, would increase the use of existing recreational facilities resulting in physical deterioration of any facility. Additionally, the proposed project, in combination with past, present, and reasonably foreseeable projects, would not substantially increase hazards due to incompatible uses with recreational activities during construction. Therefore, the proposed project would not result in a considerable contribution to a significant cumulative impact related to recreation.

5 ALTERNATIVES

5.1 INTRODUCTION

CCR Section 15126.6(a) (State CEQA Guidelines) requires EIRs to 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 range of potentially feasible alternatives that will avoid or substantially lessen the significant adverse impacts of a project and foster informed decision making and public participation. An EIR is not required to consider alternatives that are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason." This section of the State CEQA Guidelines also provides guidance regarding what the alternatives analysis should consider. Subsection (b) further states the purpose of the alternatives analysis is as follows:

> 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 State CEQA Guidelines require that the EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative must be discussed, but in less detail than the significant effects of the project as proposed (CCR Section 15126.6[d]).

The State CEQA Guidelines further require that the "no project" alternative be considered (CCR Section 15126.6[e]). The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving a proposed project with the impacts of not approving the proposed project. If the no project alternative is the environmentally superior alternative, CEQA requires that the EIR "…shall also identify an environmentally superior alternative among the other alternatives." (CCR Section 15126[e][2]).

In defining "feasibility" (e.g., "… feasibly attain most of the basic objectives of the project …"), CCR Section 15126.6(f) (1) states, in part:

> Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

In determining what alternatives should be considered in the EIR, it is important to consider the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in Section 15126.6(a). Although, as noted above, EIRs must contain a discussion of "potentially feasible" alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by the lead agency's decision-making body, here the EBDA Commission. (See PRC Sections 21081.5, 21081[a] [3].)

5.2 CONSIDERATIONS FOR SELECTION OF ALTERNATIVES

5.2.1 Attainment of Project Objectives

One of the key factors in considering alternatives is whether they can feasibly attain most of the objectives of the project. Section 2.2, "Project Objectives," in Chapter 2, "Project Description," states the project objectives, which are repeated here for reference:

- Provide wastewater disposal capacity and services to Cargill in a manner that provides economic advantage to EBDA Member Agencies, with emphasis on offsetting and reducing expenses to EBDA and its ratepayers, and furthers the purpose and goals of EBDA's Joint Powers Agreement.
- Further EBDA's sustainability objectives, including those in support of reclamation and reuse of wastewater, by creating or facilitating the creation of permanent infrastructure available for future regional water recycling efforts by EBDA and/or EBDA Member Agencies.
- Balance any impacts due to disruption to local jurisdictions with impacts to sensitive environments.
- Develop new infrastructure to process MSS brine with minimal exposure to disruptions, including connecting with and optimizing existing EBDA infrastructure to use EBDA's excess capacity for processing and blending MSS brine.
- Utilize strategic connection to an existing deep water outfall to minimize impacts to water quality and aquatic resources in receiving waters associated with the discharge of residual MSS brine.
- Facilitate the timely harvest of liquid bittern from the MSS in Cargill's Solar Salt Facility on-site ponds and ensure that MSS brine is efficiently, sustainably, and responsibly handled at all stages, including collection, transmission, and disposal.
- Prevent operational and environmental impacts of Bay water overtopping the berms surrounding MSS ponds due to sea level rise.

5.2.2 Environmental Impacts of the Project

Sections 3.1 through 3.9 of this Draft EIR address the environmental impacts of implementation of the Cargill MSS Processing and Brine Discharge Project. Potentially feasible alternatives were developed with consideration of avoiding or lessening the significant, and potentially significant, adverse impacts of the project, as identified in Chapter 3 of this Draft EIR and summarized below. If an environmental issue area analyzed in this Draft EIR is not addressed below, it is because no significant impacts were identified for that issue area. As identified, below, one significant and unavoidable environmental impact resulting from the project was identified.

- Air Quality:
  - Impact 3.2-1: Potential to Generate Emissions of Criteria Air Pollutants and Precursors during Project Construction. *Less than significant with mitigation incorporated.*
- Biological Resources:
  - Impact 3.3-1: Potential 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. *Less than significant with mitigation incorporated.*
  - Impact 3.3-2: Potential Substantial Adverse Effect on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS. *Less than significant with mitigation incorporated.*

- Impact 3.3-3: Potential Substantial Adverse Effect on State or Federally Protected Wetlands (including, but Not Limited to, Marshes, Vernal Pools, Coastal Wetlands, etc.) through Direct Removal, Filling, Hydrological Interruption, or Other Means. *Less than significant with mitigation incorporated.*
- Impact 3.3-4: Potential Substantial Interference with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors, or Impediment to the Use of Native Wildlife Nursery Sites. *Less than significant with mitigation incorporated.*
- Impact 3.3-5: Potential Conflict with Any Local Policies or Ordinances Protecting Biological Resources, Such as a Tree Preservation Policy or Ordinance. *Less than significant with mitigation incorporated.*
- Impact 3.3-6: Potential Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan. *Less than significant with mitigation incorporated.*

- Cultural and Tribal Cultural Resources:
  - Impact 3.4-2: Cause a Substantial Adverse Change in the Significance of Unique Archaeological Resources. *Less than significant with mitigation incorporated.*
  - Impact 3.4-3: Cause a Substantial Adverse Change in the Significance of a Tribal Cultural Resource. *Less than significant with mitigation incorporated.*
- Hazards and Hazardous Materials:
  - Impact 3.7-4: Potential to Result in or Create a Significant Hazard to the Public or the Environment Due to Being Located on a Site Which Is Included on a List of Hazardous Materials Sites Compiled Pursuant to Government Code Section 65962.5. *Less than significant with mitigation incorporated.*
- Hydrology and Water Quality:
  - Impact 3.8-1: Potential to Violate Any Water Quality Standards or Waste Discharge Requirements or Substantially Degrade Surface Water or Groundwater Quality during Construction. *Less than significant with mitigation incorporated.*
  - Impact 3.8-3: Potential to Substantially Decrease Groundwater Supplies or Interfere Substantially with Groundwater Recharge Such That the Project May Impede Sustainable Groundwater Management of the Basin. *Less than significant with mitigation incorporated.*
  - Impact 3.8-5: Potential to Risk Release of Pollutants Due to Project Inundation from Flood Hazard, Dam Failure, Tsunami, Seiche, or Sea Level Rise. *Less than significant with mitigation incorporated.*
  - Impact 3.8-6: Potential to Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan. *Less than significant with mitigation incorporated.*
- Noise and Vibration:
  - Impact 3.9-1: Potential to Expose Existing Receptors to Short-Term Construction Noise. *Significant and unavoidable.*
- Recreation:
  - Impact 3.10-1: Potential to Increase the Use of Existing Parks or Recreational Facilities During Project Construction Such That Physical Deterioration Would Occur or Be Accelerated. *Less than significant with mitigation incorporated.*
  - Impact 3.10-3: Potential to Substantially Increase Hazards Due to Incompatible Uses with Recreational Activities during Project Construction. *Less than significant with mitigation incorporated.*

5.3 ALTERNATIVES CONSIDERED BUT NOT EVALUATED FURTHER

As described above, State CEQA Guidelines Section 15126.6(c) provides that the range of potential alternatives for the project shall include those that could feasibly accomplish most of the basic objectives of the project, and could avoid or substantially lessen one or more of the significant effects. Alternatives that fail to meet the fundamental project purpose need not be addressed in detail in an EIR. (*In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143, 1165-1167.)

In determining what alternatives should be considered in the EIR, it is important to acknowledge the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in Section 15126.6(a). Although, as noted above, EIRs must contain a discussion of "potentially feasible" alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by lead agency decision-maker(s). (See Pub. Resources Code, § 21081(a)(3).) At the time of action on the project, the decision-maker(s) may consider evidence beyond that found in this EIR in addressing such determinations. The decision-maker(s), for example, may conclude that a particular alternative is infeasible (i.e., undesirable) from a policy standpoint, and may reject an alternative on that basis provided that the decision-maker(s) adopts a finding, supported by substantial evidence, to that effect, and provided that such a finding reflects a reasonable balancing of the relevant economic, environmental, social, and other considerations supported by substantial evidence. (*City of Del Mar v. City of San Diego* (1982) 133 Cal.App.3d 401, 417; *California Native Plant Society v. City of Santa Cruz* (2009) 177 Cal.App.4th 957, 998.)

The EIR should also identify any alternatives that were considered by the lead agency but were rejected during the planning or scoping process and briefly explain the reasons underlying the lead agency's determination.

Cargill considered two alternatives in which excess MSS would be transported from the Solar Salt Facility to off-site land-based locations, instead of being discharged into the Bay. These alternatives, which are not evaluated further in this Draft EIR, include the following:

- Truck to Landfill Alternative: Under this alternative, haul trucks would be used to transport excess MSS from the Solar Salt Facility to multiple nearby landfills. This alternative would require approximately 120 truck trips per day over 10 years to transport the approximately 6 million tons of MSS currently stored at the Solar Salt Facility (assuming trucks with a capacity for 18 tons would haul MSS brine 10 hours per day and 5 days per week). These vehicle trips would contribute to traffic congestion on local roadways contributing high levels of air pollution and greenhouse gas emissions, and excessive energy use over the 10-year period. Because of the adverse effects associated with the substantial number of vehicle trips, this alternative is not evaluated further in this Draft EIR.
- Underground Injection Control Well Alternative: This alternative would consist of using haul trucks or trains to transport excess MSS brine to an off-site location where it could be injected into a groundwater well. Cargill identified five permitted injection sites within 100 miles of the Solar Salt Facility. The permitted disposal rate for these sites is approximately 1,000 gallons per minute; however, a disposal rate of 1,200 gpm would be required for 24 hours per day over 10 years to accommodate the approximately 6 million tons of MSS currently stored at the Solar Salt Facility. This alternative would require approximately 360 truck trips per day over 10 years to transport the MSS brine. Similar to the Truck to Landfill Alternative described above, this alternative would contribute to traffic congestion contributing high levels of air pollutant and greenhouse gas emissions, and excessive energy use from the vehicle trips needed to transport MSS brine. Additionally, this alternative could result in environmental impacts in the event of well failure or leaks, such as groundwater contamination from the highly saline brine. Therefore, this alternative is not evaluated further in this Draft EIR.

Cargill also considered two alternatives in which MSS would be returned to the Bay without the need to connect to EBDA's system. These alternatives, which are not evaluated further in this Draft EIR, include the following:

- Barge to Deep-Water Ocean Alternative: This alternative would require the use of a barge to transport excess MSS brine to a deep-water location in the Pacific Ocean (e.g., the San Francisco Channel Bar Ocean Dredged Material Disposal Site). However, the alternative would require constructing substantial new infrastructure and a lengthy administrative approval process involving some or all of the following agencies: US Army Corps of

Engineers, National Marine Fisheries Service, California Department of Fish and Wildlife, California State Lands Commission, the California Coastal Commission, the San Francisco Bay Conservation and Development Commission, the San Francisco Bay Regional Water Quality Control Board (RWQCB), the City of Newark, Redwood City, and/or the Port of Redwood City, Alameda Flood Control District, and possibly the US Environmental Protection Agency. First and foremost, however, an act of Congress would be needed to revise the Disposal Site authorization to allow for the deposit of salt (currently authorized for dredged soil). The use of a barge would also result in high levels of air pollutant and greenhouse gas emissions and excessive energy use. Therefore, this alternative is not evaluated further in this Draft EIR.

- Direct Discharge to the Bay Alternative: Under this alternative, MSS brine would be discharged to the Bay directly from Cargill's Solar Salt Facility. This alternative would require improvements to the Solar Salt Facility, including construction of on-site pumps, pipelines, and a new outfall. Cargill determined that this alternative would be potentially infeasible because it would require lengthy coordination with the San Francisco Bay RWQCB to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges to the Bay. This alternative would not have the advantage of utilizing EBDA's existing freshwater effluent to dilute the MSS brine to levels that are at or below Bay salinity levels before being discharged. Rather, this alternative would require substantial Bay water intake in order to dilute the MSS brine to salinity levels that would meet the RWQCB's waste discharge requirements (i.e., approximately 200 million gallons per day would be required over a period of 10 years). Therefore, this alternative is not evaluated further in this Draft EIR.

Cargill, in consultation with EBDA, also considered two other alternatives that are similar to the project and in which MSS brine would be transferred to EBDA's combined effluent conveyance system through an MSS transport pipeline for discharge to the Bay under EBDA's NPDES permit. These alternatives would include the same Solar Salt Facility improvements as the project (i.e., on-site pipelines and pumping facilities), which are described in Sections 2.6.1 through 2.6.4 of this Draft EIR. However, these alternatives differ from the project with respect to the MSS transport pipeline alignment from Cargill's Solar Salt Facility to EBDA's Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant. Under these alternatives, the MSS transport pipeline alignment would largely avoid city street rights-of-way. These alternatives, which are not evaluated further in this Draft EIR, include the following:

- Bayside Parallel Pipe Alternative – Landfill Route Option: Under this alternative, the MSS transport pipeline alignment would skirt the edges of existing or former Cargill-owned or operated salt ponds. This alignment would be similar to the alignment proposed under the Bayside Parallel Pipe Alternative (Alternative 2), which is described in Section 5.4.3 of this Draft EIR. However, the alignment would differ for the segment of pipeline between Enterprise Avenue and Oro Loma Marsh (also known as the Hayward Regional Shoreline). For this segment of pipeline, the alignment would travel through the West Winton Landfill, a closed landfill owned by the City of Hayward, and the All Cities Landfill, a former landfill owned and operated by Alameda County Flood Control and Water Conservation District (ACFCWCD). Similar to Alternative 2, this alignment would avoid disruptions on city streets, but would pass through wetlands and sensitive habitat and landfills containing waste materials. Additionally, this alternative was dismissed because it would require the approval of several agencies and private companies, including ACFCWCD, the City of Hayward, the East Bay Regional Park District, the San Francisco RWQCB, the California Department of Resources, Recycling and Recovery, the Alameda County Department of Environmental Health, the State Water Resources Control Board, Waste Management of Alameda County, and HBF Enterprises. Any one of these entities could withhold approval of this alternative and the approval process would be lengthy and uncertain. Therefore, this alternative is not evaluated further in this Draft EIR.
- Union Pacific Railroad (UPRR) Route Alternative: Under this alternative, the MSS brine transport pipeline alignment would be routed within and adjacent to UPRR rights-of-way to avoid disruptions on city streets. However, Cargill determined that this alternative would be infeasible because it would require extensive coordination with UPRR and there would be insufficient space to install the pipeline in some segments. Therefore, this alternative is not evaluated further in this Draft EIR.

5.4 ALTERNATIVES SELECTED FOR DETAILED ANALYSIS

The following alternatives are evaluated in this Draft EIR:

- **No Project–No Development Alternative** assumes no changes to existing facilities and operations at Cargill's Solar Salt Facility. The project site would remain in its current condition and Cargill would continue to produce salt products consistent with existing operations. The approximately 6 million tons of existing residual MSS would continue to be stored in Ponds 12 and 13 and more would accumulate. Over the next 20 to 50 years, rising sea levels would increase the risk of Bay water overtopping the containment berms and releasing MSS brine into the Bay.
- **Alternative 1: In-Pipe Alternative** uses a combination of new pipeline and the existing EBDA pipeline. It assumes a shorter route for the MSS brine transport pipeline (7.5 miles) compared to the project (15.6 miles), because the pipeline would connect to EBDA's system just downstream of the Alvarado Treatment Plant in Union City, rather than downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. This alternative would require the installation of 4 miles of liner within EBDA's existing combined effluent pipeline to prevent corrosion in EBDA's system. See Figure 5-1.
- **Alternative 2: Bayside Parallel Pipe Alternative** assumes an approximately 17-mile route for the MSS brine transport pipeline that travels along the edges of Cargill's salt ponds, instead of the approximately 16-mile route along roadway rights-of-way under the project. See Figure 5-1.

Further details on these alternatives and an evaluation of environmental effects relative to the project are provided below.

5.4.1 No Project–No Development Alternative

Under Alternative 1, the No Project–No Development Alternative, Cargill would not take actions to modify its Solar Salt Facility. The project site would remain unchanged from current conditions. No new on-site pipelines and pumping facilities or off-site underground pipeline connecting to EBDA's existing outfall system would be constructed. The No Project–No Development Alternative would not meet the project objectives listed in Section 5.2.1, "Attainment of Project Objectives." MSS would continue to be stored in existing ponds at the Solar Salt Facility, and the high salinity brine in these ponds would be susceptible to potential release into the Bay in the event of a future berm failure from increased wind and wave action triggered by sea level rise. However, as required by CEQA, the No Project – No Development Alternative is evaluated in this Draft EIR.

Although it is acknowledged that with the No Project–No Development Alternative, there would be no discretionary action by the state, and thus no impact, for purposes of comparison with the other action alternatives, conclusions for each technical area are characterized as "impacts" that are greater, similar, or less, to describe conditions that are worse than, similar to, or better than those of the project.

AIR QUALITY

The No Project–No Development Alternative would not entail the construction of on-site pipelines and pumping facilities at Cargill's Solar Salt Facility or off-site pipelines connecting to EBDA's existing outfall system. As such, no criteria air pollutants, toxic air contaminants (TACs), such as diesel PM, or odors would be emitted from the operation of heavy-duty construction equipment or vehicle trips associated with construction worker commutes. Additionally, no changes would occur to the existing operations of the Cargill Solar Salt Facility. No additional vehicle trips would be introduced to the Cargill Solar Salt Facility. Because air pollution would be generated from construction and operation of the project but not under the No Project-No Development Alternative, the impacts of the No Project-No Development Alternative on air quality would be less compared to those of the project. *[Less]*

Source: Data received from AECOM and Jacobs in 2021 and 2022; adapted by Ascent in 2022.

Figure 5-1 Alternatives

BIOLOGICAL RESOURCES

Sensitive species or their habitats would not be adversely affected by the No Project-No Development Alternative because construction and construction-related impacts would not occur. Solar Salt Facility operating conditions would continue, consistent with applicable plans pertaining to biological resources including the *Don Edwards San Francisco Bay National Wildlife Refuge: Final Comprehensive Conservation Plan and Environmental Assessment* and the Newark General Plan, each of which acknowledge Cargill's perpetual right to use salt evaporator ponds for solar salt production.

The long-term potential for berm failure at the Solar Salt Facility due to sea level rise would continue to be a concern. Under the No Project-No Development Alternative, MSS would continue to be accumulated and stored in Ponds 12 and 13. Therefore, under the No Project-No Development Alternative, the potential exists for higher salinity brine and more total MSS to be released into the Bay during a berm failure as compared to project. This could result in greater biological resource impacts in the Bay compared to the project. A release of high salinity brine could create habitat conditions within the Bay and tributaries such as Plummer Creek which would be unsuitable for special-status fish species or other aquatic communities that provide foraging resources. The extent of potential salinity impacts is unknown, but they would likely be minimized by mixing and tidal action with distance from the Solar Salt Facility. The extent of special-status fish impacts would also be affected by the low to moderate potential for transitory, and often seasonal, occurrence. Additional impacts to adjoining tidal marsh habitat and associated species may also occur as a result of hypersaline conditions and as brine is deposited and accumulates in the intertidal zone, potentially creating salinity conditions unsuitable for marsh vegetation.

In consideration of the analysis presented above, the No Project-No Development Alternative would have greater impacts than the project. While construction impacts to biological resources from the project would be avoided under the No Project-No Development Alternative, there would remain potential for uncertain impacts to special-status species and habitats resulting from the potential for greater brine release from berm failure associated with sea level rise into aquatic and wetland communities relative to the project. *[Greater]*

CULTURAL AND TRIBAL CULTURAL RESOURCES

The No Project–No Development Alternative would not involve the construction of on-site pipelines and pumping facilities at Cargill's Solar Salt Facility or an off-site pipeline connecting to EBDA's existing outfall system. This would avoid impacts related to the disturbance, destruction, or alteration of any known or as-yet-undiscovered/unrecorded prehistoric or historic-era archaeological resources, tribal cultural resources, human remains, or historical resources. In comparison, implementation of the project would result in ground-disturbing activities that could cause potentially significant impacts related to disturbance of undiscovered/unrecorded subsurface archaeological and tribal cultural resources. These impacts would be reduced to less-than-significant levels with implementation of mitigation measures. Because the No Project–No Development Alternative would not include any ground disturbance, it has a lesser potential to result in the disturbance of as-yet-undiscovered subsurface tribal cultural resources. *[Less]*

GEOLOGY AND SOILS

The No Project–No Development Alternative would not involve the construction of on-site pipelines and pumping facilities at Cargill's Solar Salt Facility or an off-site pipeline connecting to EBDA's existing outfall system. Therefore, the No Project–No Development Alternative would not result in ground disturbance with potential to cause erosion or loss of topsoil. Additionally, no new facilities with potential to exacerbate geologic hazards or increase risks to life or property from geologic hazards would be constructed. Furthermore, the No Project–No Development Alternative would not include any activities that would interfere with existing mining operations or result in the loss of availability of mineral resources. Because ground disturbance and construction of new pipelines and pumping facilities would occur under the project, but not under the No Project–No Development Alternative, the impacts of the No Project–No Development Alternative on geology and soils would be less compared to those of the project. *[Less]*

GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

The No Project-No Development Alternative would not entail the construction of on-site pipelines and pumping facilities at Cargill's Solar Salt Facility or off-site pipelines connecting to EBDA's existing outfall system. As such, no GHG emissions would be emitted from the operation of heavy-duty construction equipment or vehicle trips associated with construction worker commutes. Additionally, no changes would occur to the existing operations of the Cargill Solar Salt Facility. No additional vehicle trips would be introduced to the Cargill Solar Salt Facility nor would there be additional electricity demand associated with operation of new pumps. Because GHG emissions would be generated from construction and operation of the project but not under the No Project-No Development Alternative, the impacts of the No Project-No Development Alternative on climate change would be less compared to those of the project. *[Less]*

HAZARDS AND HAZARDOUS MATERIALS

Under the No Project–No Development Alternative, Cargill would not modify its Solar Salt Facility, and no new on-site pipelines and pumping facilities or off-site underground pipeline connecting to EBDA's existing outfall system would be constructed. Without construction, there would be no impact associated with the transport, storage, use, or disposal of hazardous materials related to the fueling and servicing of construction equipment, such as transportation fuels, lubricating fluids, and solvents. Consequently, there would be no risk of upset or accident conditions that could release hazardous materials and endanger the public or the environment, including children and employees at nearby schools. In addition, none of the earthmoving activities that would take place under the project would occur; therefore, there would be no hazard to the public or the environment related to the possible disturbance of hazardous materials sites during construction. Finally, without pipeline installation, no temporary lane closures would be required; therefore, the flow of traffic, including emergency vehicles, on local roadways would not be affected. Because impacts related to hazardous materials used during construction, disturbance of hazardous materials sites, and hazards associated with lane closures on local roadways would occur under the project but not under the No Project–No Development Alternative, the impacts of the No Project–No Development Alternative related to hazards and hazardous materials would be less compared to those of the project. *[Less]*

HYDROLOGY AND WATER QUALITY

The No Project–No Development Alternative would not result in activities with the potential to release pollutants during flood events or have the potential to impact surface or groundwater quality. Because potential hydrological and water quality impacts could occur with the construction of new pipelines, pumping facilities, and discharge of MSS brine under the project, but not under the No Project–No Development Alternative, the impacts of the No Project–No Development Alternative on hydrology and water quality would be less compared to those of the project. *[Less]*

NOISE AND VIBRATION

The No Project-No Development Alternative would not entail the construction of on-site pipelines and pumping facilities at Cargill's Solar Salt Facility or off-site pipelines connecting to EBDA's existing outfall system. As such, no noise and vibration emissions would be emitted from the operation of heavy-duty construction equipment or from vehicle trips associated with construction worker commutes. Additionally, no changes would occur to the existing operations of the Cargill Solar Salt Facility. No additional vehicle trips would be introduced to the Cargill Solar Salt Facility, nor would there be additional stationary noise associated with the operation of new pumps. Because noise and vibration would be generated from construction and operation of the project but not under the No Project-No Development Alternative, the impacts of the No Project-No Development Alternative on noise and vibration would be less compared to those of the project. *[Less]*

RECREATION

The No Project–No Development Alternative would not involve the construction of on-site pipelines and pumping facilities at Cargill's Solar Salt Facility or an off-site pipeline connecting to EBDA's existing outfall system. Therefore, the No Project–No Development Alternative would not result in direct effects (e.g., loss of access, parking, or use of amenities) or indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) on parks and recreational facilities. Additionally, the No-Project-No Development Alternative would not require construction activities that would increase safety hazards for recreationists. Because recreationists would experience temporary disruptions in use and access, as well as nuisances and safety hazards from construction activities at parks and recreational facilities during construction of the project, but not under the No Project–No Development Alternative, the impacts of the No Project–No Development Alternative on recreation would be less compared to those of the project. ***[Less]***

SUMMARY OF NO PROJECT-NO DEVELOPMENT ALTERNATIVE EVALUATION

Based on the discussion above, the No Project–No Development Alternative would result in greater impacts than the project with respect to biological resources and less impacts than the project with respect to air quality, cultural and tribal cultural resources, geology and soils, greenhouse gas emissions and climate change, hazards and hazardous materials, hydrology and water quality, noise and vibration, and recreation. Table 5-3 in Section 5.5, "Comparison of Alternatives," includes a comparison of the environmental impacts from the No Project–No Development Alternative relative to those of the project.

The No Project–No Development Alternative would not achieve the objectives of the project. MSS would continue to be accumulated and stored in existing ponds at the Solar Salt Facility, and the high salinity brine in these ponds would be susceptible to potential release into the Bay in the event of a future berm failure from increased wind and wave action triggered by sea level rise.

5.4.2 Alternative 1: In-Pipe Alternative

Similar to the project, the In-Pipe Alternative would involve transporting excess MSS brine to EBDA's combined effluent conveyance system for discharge to the Bay under EBDA's NPDES permit. This alternative would include the same on-site pipelines and pumping facilities at the Solar Salt Facility as those described for the project in Sections 2.6.1 through 2.6.4 of this Draft EIR.

Alternative 1 would differ from the project with respect to the MSS brine transport pipeline route. This alternative proposes the construction of a 7.5-mile MSS brine transport pipeline plus excavation of access pits along an additional 4 miles of the existing EBDA combined effluent conveyance system (see Figure 5-1). The MSS brine transport pipeline would follow the same alignment as the project from the Solar Salt Facility to the intersection of Union City Boulevard and Horner Street in the City of Union City. From that intersection, the pipeline would diverge from the proposed alignment and would continue west along Horner Street for approximately 0.3 mile to Whipple Road. At Whipple Road, the transport pipeline would connect with EBDA's combined effluent conveyance system just downstream of the Union Sanitary District Alvarado Treatment Plant in Union City. MSS brine would then be transported to EBDA's outfall using EBDA's combined effluent conveyance pipeline from the Alvarado Treatment Plant.

Under this alternative, Cargill would need to construct only 7.5 miles of new underground pipeline instead of up to 16 miles of pipeline that would be needed for the project. However, approximately 3.3 miles downstream of the Alvarado Treatment Plant at Station 108+26 within the EBDA combined effluent pipeline and continuing for approximately 4 miles to just downstream of the Oro Loma/Castro Valley Facility, the EBDA combined effluent pipeline does not consistently flow full, nor would it flow full with the addition of the MSS brine (see Figure 5-1). The addition of chlorides from the MSS brine within this segment of pipe would increase the pipe's susceptibility to corrosion. To prevent corrosion, the 4-mile segment of pipeline would be lined. The liner would be installed using the sliplining method, which would involve inserting a new pipeline of smaller diameter into the existing pipe and then grouting the annular space between the existing pipe and the new pipe. This would reduce the diameter of the

existing EBDA combined effluent pipeline in the affected segment by potentially up to 5 inches. The liner is expected to provide corrosion protection over a span of approximately 50 years.

Estimates of the area of ground disturbance, excavation quantity, and maximum excavation depth anticipated for each of the components for Alternative 1 are summarized in Table 5-1. In addition to laydown areas along the 7.5-mile route, this alternative would require approximately 24 access pits at periodic intervals along the 4-mile section of EBDA's combined effluent pipeline to install the liner in segments. Bypass pumping would also be required during sliplining of each segment to route effluent within the EBDA system around the work area and thereby support continued operation of the EBDA system during construction. A pipe would be laid along the ground surface adjacent to the work area and portable pumps would be used to bypass flows in the EBDA system around the work area.

Similar to the project, construction is estimated to start in summer of 2023 and would take up to approximately 18 months to complete. Following construction, operations and maintenance activities would be similar to those of the project, as described in Section 2.6.8 of this Draft EIR.

Table 5-1 Comparison of the Area of Ground Disturbance, Excavation Quantity, and Maximum Excavation Depth Estimates between the Proposed Project and Alternative 1

Components	Area of Ground Disturbance [a]	Excavation Quantity [b]	Maximum Excavation Depth
Proposed Project			
Solar Salt Facility	145,988 sf (3.4 acres)	162,088 cy	35 ft bgs
MSS Brine Transport Pipeline	2,374,020 sf (54.5 acres)	62,797 cy	8 ft bgs for open-cut trenching; 40 ft bgs for trenchless crossings
Total	2,520,008 sf (57.9 acres)	224,885 cy	N/A
Alternative 1			
Solar Salt Facility	145,988 sf (3.4 acres)	162,088 cy	35 ft bgs
MSS Brine Transport Pipeline	1,777,248 sf (40.8 acres)	51,369 cy	8 ft bgs for open-cut trenching; 10 ft bgs for trenchless crossings and sliplining
Total	1,923,236 sf (44.2 acres)	213,457 cy	N/A

Notes: sf = square feet; cy = cubic yards; ft bgs = feet below the ground surface.

[a] The area of ground disturbance conservatively assumes corridor widths of 30 feet along the open-cut segments, 30 feet along sliplined segments of EBDA's existing combined effluent pipeline, and 6 feet along trenchless crossing segments. This estimate does not include the area of ground disturbance in staging and laydown areas outside these corridors.

[b] Includes excavation of shafts/pits needed for horizontal directional drilling, microtunneling, and auger boring.

Source: Data provided by Jacobs and Brown and Caldwell in 2022.

AIR QUALITY

Alternative 1 would require approximately 41 acres of ground disturbance for installation of the MSS brine transport pipeline and sliplining of the EBDA Combined Effluent Pipeline, while the MSS brine transport pipeline alignment for the project would require approximately 55 acres of ground disturbance. The pipeline under Alternative 1 would also be shorter at approximately 11.5 miles (7.5 miles of new pipeline and 4 miles of slip lining) rather than up to 16 miles for the project. This smaller area of disturbance paired with a shorter total length of disturbance would reduce the total number of worker and vendor trips and therefore the total VMT of the construction of the project. This would lead to a reduction of the emission of criteria air pollutants and diesel particulate matter associated with construction activities. This alternative would also involve a shallower excavation depth and less overall earthmoving (51,369 cubic yards of excavated material for Alternative 1 compared to 62,797 cubic yards for the project). The subsequent reduction in total necessary excavation would result in fewer hauling trips for dirt removal, as well as fewer pieces of

excavation equipment and shorter durations of operation of this equipment. Alternative 1 includes mitigation to offset construction-related emissions, as described below. In regard to operation of Alternative 1, the shorter length of the pipeline would require fewer miles to be traveled per year for maintenance along the pipeline, reducing operational emissions of criteria pollutants. Overall, Alternative 1 would consist of a smaller area of disturbance, a shorter total pipeline length, and less material to be excavated. Therefore, air quality impacts would be less than those of the project. *[Less]*

Mitigation Measures

Mitigation Measure 3.2-1 is referenced below and was previously described in Section 3.2, "Air Quality."

Mitigation Measure 3.2-1: Contribute Funding to an Off-Site Mitigation Program

BIOLOGICAL RESOURCES

Alternative 1 would entail identical construction and operation activities as the project at the Solar Salt Facility and along the MSS brine transport pipeline alignment to the intersection of Union City Boulevard and Horner Street, and therefore would result in the same potential biological resource impacts as the project associated with construction and operation of these project components. This principally includes limited direct and indirect impacts to special-status species and habitats that would be less than significant with mitigation.

While Alternative 1 would result in a relatively shorter length of new MSS brine transport pipeline installation than the project, work areas would be required for excavation of access pits and for the surface bypass pipeline along the 4-mile length where sliplining of the existing EBDA combined effluent conveyance system is required. This includes an approximate 1.5-mile segment that would traverse sensitive playa, tidal marsh, and tidal channel habitats; and two segments (approximately 0.6-mile and 500 feet) through CDFW mapped northern coastal salt marsh, a sensitive natural community. Affected areas may contain additional sensitive natural communities if vegetation meets membership rules and sensitive natural community requirements. Construction activities in these sensitive areas would directly affect protected habitats and could directly or indirectly affect associated special-status wildlife and plants.

From the start of Alternative 1 sliplining at Station 108+26 to approximately West Winton Avenue, sliplining construction would occur in urban developed habitats where biological resource impacts would likely be minimal. From north of West Winton Avenue to immediately southwest of the Oro Loma Effluent Pump Station, excavation, construction of a temporary bypass pipeline, and bypass pumping for slipline construction would occur within playa habitat, Sulphur Creek, Oro Loma Marsh tidal marsh, and within Bockman Channel. Playa may provide habitat to special-status birds including black skimmer (*Rynchops nigerI*, state species of special concern) and plants including San Joaquin spearscale. Tidal marsh may provide habitat to special-status terrestrial mammals including salt-marsh harvest mouse and salt-marsh wandering shrew; birds such as Alameda song sparrow, California Ridgway's rail, California black rail, and saltmarsh common yellowthroat; and special-status plants such as long-styled sand-spurrey, Point Reyes salty bird's-beak, saline clover, and San Joaquin spearscale. Tidal channels may provide transitory habitat to anadromous special-status fish species such as green and white sturgeon, salmonids, longfin smelt, or Pacific lamprey. These wetland and tidal channel features are also protected by applicable regulations including but not limited to Section 404 of the Clean Water Act.

Alternative 1 includes construction of a temporary surface bypass pipeline at Sulphur Creek and Oro Loma Marsh, which may require in-water work that could result in additional special-status fish species impacts compared to the project. In addition, access pits (requiring excavation) and bypass pumping could occur anywhere along the route north of Station 108+26, if required for the slipline construction. The temporary bypass pipeline is expected to cross the Sulphur Creek channel, which could be closed off using cofferdams around the work area, and temporary pumping of water from the work site could be used to establish a dry area between the cofferdams. During these activities, special-status fish species may experience injury, mortality, or behavioral effects. During cofferdam construction, any special-status fish species in the work site could become trapped behind the cofferdams, which could cause asphyxiation from increased levels of suspended sediment or from reduced oxygen levels as the water

level decreases and water temperature increases. Alternately, special-status fish species could be injured from the hose and pump used to dewater the cofferdams.

If fish become trapped in the temporary work area, a rescue and relocation effort would be undertaken. Fish rescue and relocation activities pose a small risk of injury or mortality because any fish-collecting gear has some associated risk to fish, including stress, disease transmission, or mechanical injury. Seine and dip-netting are typically preferred fish relocation methods, as they minimize the risk of injury to fish compared to alternatives such as use of an electrofisher (WSDOT 2021). Seine relocation entails use of a surrounding net, called a seine, that hangs vertically in the water with its bottom edge held down by weights and its top edge buoyed by floats. Dip-netting is accomplished by using a net to scoop fish out of the waterbody. The effects of seining and dip-netting on fish include stress, scale loss, physical damage, suffocation, and desiccation.

Installation of the cofferdams and/or construction of the temporary bypass piping would result in increases in underwater noise and human activity in Sulphur Creek and in tidal marsh channels in Oro Loma Marsh. Although these activities could potentially result in injury or mortality of fish, they are more likely to result in behavioral effects on fish, such as fleeing or avoiding the work area, and/or temporary cessation of feeding behaviors. These altered behaviors also could expose fish to increased predation risk from predatory fish or birds.

Construction in Oro Loma Marsh could result in injury, mortality, or disturbance of special-status terrestrial mammals and birds and could result in indirect behavioral disturbance such as nest abandonment. Adverse effects (e.g., injury, mortality) on associated plant species, if present, could also occur. These impacts could also occur from construction in playa habitat. Construction could result in spills or erosion that could degrade sensitive habitats. Additionally, construction within playa and tidal marsh would entail direct disturbance of protected wetland habitats; and in water work at Sulphur Creek (if needed) would disturb waters of the United States and state.

Per the CNDDB, two additional special-status bird species are present in the 1-mile search radius area from the Alternative 1 alignment which could potentially be affected by construction. This includes the California least tern (*Sternula antillarum browni*; federally and state listed as endangered and fully protected under California Fish and Game Code) and black skimmer (*Rynchops nigerI;* state species of special concern). The California least tern is generally associated with bare or sparsely vegetated flat substrates, sand beaches, alkali flats, landfills, or paved areas. The nearest recorded occurrence of the tern is within the shoreline vegetated pond complex approximately 0.8 miles west of the proposed Alternative 1 alignment near Whitesell Street. There is also potential foraging and nesting habitat for the tern in the vicinity of Oro Loma Marsh. The black skimmer is generally associated with gravel bars, low islets, and sandy beaches, in unvegetated sites such as alkali playa. There is one extant occurrence of black skimmer in the study area from the 1990s, just east of Johnson Landing approximately 0.9 miles west of the proposed Alternative 1 alignment near Whitesell Street. There is also nesting habitat in the form of unvegetated wetlands in Oro Loma Marsh and playa habitat south of Oro Loma Marsh.

As noted for other special-status bird species in the project analysis, the use of construction equipment or presence of workers in habitats directly affected by the MSS brine transport pipeline has the potential to harass or harm special-status bird species, their broods, or their nests. Indirect disturbance of special-status bird foraging or nesting could also occur from construction noise, vibration, or visual disturbance of areas surrounding the pipeline alignment. These impacts would be avoided or minimized through the implementation of mitigation measures described in Section 3.3 or listed later in this section.

Alternative 1 includes additional work within or near managed sensitive habitat areas compared to the project, including work adjacent to the northern perimeter of Eden Landing Ecological Reserve and, as noted, through Oro Loma Marsh within the Hayward Regional Shoreline area. While direct disturbance (e.g., access pits) would not be constructed in Eden Landing Ecological Reserve, work along this segment would result in increased potential for accidental spills or erosion that could adversely affect the Reserve, as compared to the project. Although some of the work in the Oro Loma Marsh area of Hayward Regional Shoreline would occur on upland berms, temporary, surface bypass piping would be required through the majority of the marsh (as described above) likely using construction mats, and access pits may be required in tidal marsh or other sensitive habitats. This would represent a greater potential for conflict with the Hayward Regional Shoreline Adaptation Master Plan goal of fostering stewardship of

the shoreline's ecological resources compared to the project. Alternative 1 includes mitigation measures such as implementation of standard construction best management practices (BMPs), special-status species avoidance measures, and mitigating for wetland impacts, as described later in this section.

While it is anticipated that mitigation measures could substantially reduce Alternative 1 impacts to special-status species and habitats, impacts to biological resources would likely be greater than under the project. Alternative 1 would result in substantially greater areas of direct impact to protected and sensitive playa, tidal marsh, and tidal channel habitats from construction compared to the project. This would be principally related to sliplining within Oro Loma Marsh and adjoining sensitive habitats. While post-project restoration and compensatory mitigation may minimize the impacts, temporary impacts would be unavoidable. Similarly, while impacts to associated species may be avoided or minimized through mitigation measures, the residual potential for impacts with mitigation would likely be greater than the project due to the extent of construction in sensitive habitats. The additional direct disturbance in Oro Loma Marsh and adjoining sensitive habitats is anticipated to more than offset any reduction in potential impacts from the reduced pipe length compared to the project, since most of the project pipeline would be constructed in developed uplands, with use of low-impact HDD and microtunneling construction techniques in sensitive areas. Alternative 1 would entail less work in urban areas compared to the project, and therefore would have commensurate reduced likelihood of adversely affecting pallid bat roosting in buildings or other urban structures. Alternative 1 also avoids disturbance of the berm adjacent to the former Skywest Golf Course which includes a CNDDB recorded occurrence of monarch butterfly. However, the decreased work in urban areas and avoidance of the former Skywest Golf Course berm are not anticipated to offset the additional sensitive habitat impacts associated with Alternative 1.

Relative to the project, Alternative 1 may introduce additional potential conflicts with BCDC policies pertaining to minimizing impacts to the Bay, Shoreline Band, wetlands, and other ecological resources. Alternative 1 would include mitigation measures to address potential conflicts with BCDC policies.

In summary, Alternative 1 would have similar direct and indirect impacts as the project on special-status species and habitats. The potential for these impacts would likely be greater than the project due to additional work within sensitive habitat areas. Alternative 1 also has potential to result in injury, mortality, or behavioral impacts to special-status fish species during establishment of a temporary work area that crosses Sulphur Creek and extends through Oro Loma Marsh; and potential harm or harassment of California least tern and black skimmer individuals, or broods. These would be considered potentially significant impacts. Associated mitigation measures pertaining to Alternative 1 are described below. ***[Greater]***

Mitigation Measures

Mitigation Measures 3.3-1 through 3.3-17 are referenced below and were previously described in Section 3.3. Additional mitigation measures would be required under Alternative 1 because different biological resources would be affected by this alternative. Full descriptions are provided below for Mitigation Measures 3.3-18 through 3.3-21. Mitigation Measures 3.3-18 through 3.3-20 apply only to Alternative 1 crossings directly affecting tidal channels (anticipated to include Sulphur Creek and Oro Loma Marsh), and Mitigation Measure 3.3-21 applies only to potential California least tern and black skimmer habitat that may be affected by Alternatives 1 and 2.

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-3: Conduct Focused Surveys for Nesting Special-Status Bird Species, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers

Mitigation Measure 3.3-4: Conduct Protocol-level Surveys and Implement Protective Buffers for California Ridgway's Rail

Mitigation Measure 3.3-5: Avoid and Minimize Impacts to Western Snowy Plover

Mitigation Measure 3.3-6: Perform Biological Monitoring

Mitigation Measure 3.3-7: Prevent Special-Status Wildlife Entrapment

Mitigation Measure 3.3-8: Avoid Impacts to Salt-marsh Harvest Mouse and Salt-marsh Wandering Shrew

Mitigation Measure 3.3-9: Conduct Botanical Surveys and Implement Avoidance Measures and Mitigation

Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures

Mitigation Measure 3.3-11: Avoid Impacts to Pallid Bat

Mitigation Measure 3.3-12: Implement Avoidance Measures for Monarch Overwintering Colonies

Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/State

Mitigation Measure 3.3-14: Compensate for Unavoidable Loss of Sensitive Natural Communities

Mitigation Measure 3.3-15: Mitigate for Unavoidable Riparian Habitat Removal

Mitigation Measure 3.3-16: Retain Wildlife Nursery Habitat and Implement Buffers to Avoid Wildlife Nursey Sites

Mitigation Measure 3.3-17: Comply with City and County Tree Ordinances

Mitigation Measure 3.3-18: Adhere to In-Water Work Window

In-water work areas that have potential to support anadromous or estuarine fish (such as tidal waters or streams) will be scheduled to occur between June 1 and November 30. Work in salt production ponds is not limited by this work window. This measure only applies to project components directly within tidal channels, including the crossings at Sulphur Creek and Oro Loma Marsh.

Mitigation Measure 3.3-19: Perform Fish Relocation

If fish are to be located within a project work area without a means of egress, develop a fish relocation plan to minimize or avoid potential adverse effects to fish. The plan will identify preferred methods for removing, storing, and reintroducing fish; procedures for handling fish; sanitation methods; required worker qualifications; and methods for recording and reporting fish relocation activities. The plan will be submitted to CDFW and NMFS for approval prior to work that could disturb fish habitat. Prior to work that could disturb fish habitat, a qualified fisheries biologist with expertise in special-status fish species and habitats with potential to occur in the project area will be retained. The qualified fisheries biologist will be on site to observe dewatering activities in fish habitat and to capture/rescue any fish that are observed in isolated areas during dewatering activities. Fish collections and relocations will be conducted in a manner that minimizes potential risks to listed fish. Relocations of listed fish species will be reported to NMFS and/or CDFW within 24 hours. This measure only applies to the crossings at Sulphur Creek and Oro Loma Marsh.

Mitigation Measure 3.3-20: Install In-water Piles Via Vibratory Pile Driving or Direct Push Methods

If installation of a temporary cofferdam is required, all in-water piles will be installed and removed using a vibratory driver or direct push/pull methods to reduce and minimize underwater noise and pressure associated with more impactful pile-driving methods. This measure does not apply to piles installed in salt production ponds. This measure only applies to the crossings at Sulphur Creek and Oro Loma Marsh.

Mitigation Measure 3.3-21: Avoid and Minimize Impacts to Black Skimmer and California Least Tern

Mitigation Measure 3.3-5, which entails pre-construction nesting bird surveys and as-needed buffer establishment, will additionally include surveys and as-needed buffer establishment for black skimmer and California least terns. This

measure only applies to components within or near potential habitat for black skimmer (gravel bars, low islets, and sandy beaches, in unvegetated sites such as alkali playa) or California least tern (sparsely vegetated flat substrates, sand beaches, alkali flats, landfills, or paved areas).

CULTURAL AND TRIBAL CULTURAL RESOURCES

Alternative 1 would require approximately 41 acres of ground disturbance for installation of the MSS brine transport pipeline and sliplining of the EBDA Combined Effluent Pipeline, while the MSS brine transport pipeline alignment for the project would require approximately 55 acres of ground disturbance. The smaller area of ground disturbance associated with Alternative 1 would reduce the potential to encounter previously unknown tribal cultural resources compared to the project. However, three additional archaeological sites located along Alternative 1 have been identified. While two of these sites have been evaluated and determined ineligible for listing in the NRHP, it is possible they could still be eligible for the CRHR and therefore a resource under CEQA. The third site has been determined eligible for the CRHR. Impacts related to archaeological sites P-01-000239 and P-01-000170 would be similar to those impacts described for the project; the project and this alternative are not expected to affect the highly-disturbed sites. Alternative 1 includes mitigation to protect cultural resources, as described below. Alternative 1 would result in similar types of impacts related to historical resources compared to the project because no additional historical resources were identified for this alternative; however, impacts from Alternative 1 would be greater due to potential impacts to a known CRHR-eligible archaeological resource that is not included in the MSS brine transport pipeline alignment for the project. *[Greater]*

Mitigation Measures

Mitigation Measures 3.4-2a, 3.4-2b, and 3.4-3 are referenced below and were previously described in Section 3.4, "Cultural and Tribal Cultural Resources."

Mitigation Measure 3.4-2a: Develop and Implement a Worker Environmental Awareness Program

Mitigation Measure 3.4-2b: Halt Ground-Disturbing Activity upon Discovery of Subsurface Archaeological Features

Mitigation Measure 3.4-3: Protect Unidentified Tribal Cultural Resources

GEOLOGY AND SOILS

Similar to the project, the facilities proposed under Alternative 1 would be designed and constructed in accordance with local ordinances, the California Building Code (CBC), standard engineering practices, and the recommendations outlined in a site-specific geotechnical report. In addition, Cargill would coordinate with the Cities of Hayward, Union City, Fremont, and Newark, and Alameda County for grading and site plan review and review of geotechnical hazards. Therefore, adverse effects from seismic or geologic hazards form implementation of Alternative 1 would be minimized.

Alternative 1 would have an area of ground disturbance of approximately 41 acres, which is less than the construction footprint for the project (55 acres). Because Alternative 1 would disturb more than 1 acre of land, preparation of a Storm Water Pollution Prevention Plan (SWPPP) and implementation of the associated BMPs specifically designed to reduce construction-related erosion would be required, similar to the project. The SWPPP would be submitted to the San Francisco Bay RWQCB in compliance with the statewide National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) Order 2009-009-DWQ, as amended. BMPs implemented to reduce erosion may include silt fences, staked straw bales/wattles, silt fences, geofabric, trench plugs, terraces, water bars, soil stabilizers, application of mulches, and revegetation of disturbed areas. Construction techniques implemented to reduce the potential for stormwater runoff could include minimizing site disturbance, controlling water flow over the construction site, stabilizing bare soil, and ensuring proper site cleanup. Because project proponents would prepare

and implement a SWPPP and implement BMPs designed to control stormwater runoff and reduce erosion (as required by the San Francisco Bay RWQCB), substantial soil erosion would not result during project construction.

Although the proposed MSS brine transport pipeline would pass through an area that contains regionally significant mineral deposits, there are no active mining operations in this area. In addition, Alternative 1 would not prevent the recovery of aggregate resources from this area in the future.

Based on the discussion above, Alternative 1 would result in similar types of impacts related to geology and soils compared to the project because of compliance with applicable engineering practices and permit requirements. *[Similar]*

Mitigation Measures

No mitigation is required.

GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

Alternative 1 would require approximately 41 acres of ground disturbance for the MSS transport pipeline and EBDA combined effluent pipeline, while the MSS brine transport pipeline alignment for the project would require approximately 55 acres. The total linear disturbance for new MSS brine pipeline construction and existing EBDA pipeline sliplining under Alternative 1 would also be shorter at approximately 11.5 miles rather than up to 16 miles of linear disturbance for the project. The smaller disturbance area would reduce the total number of worker and vendor trips and therefore reduce mobile-source greenhouse gas (GHG) emissions. A shorter pipeline length to the EBDA system connection (7.5 miles) may also require less energy for pumping, as well as require shorter maintenance trips along the pipeline, also resulting in less fewer GHG emissions compared to the project. For these reasons, impacts related to GHG emissions from Alternative 1 would be less than those from the project. *[Less]*

Mitigation Measures

No mitigation is required.

HAZARDS AND HAZARDOUS MATERIALS

Under Alternative 1, the off-site underground pipeline would be 7.5 miles long, and a 4-mile portion of the existing EBDA combined effluent conveyance pipeline would require sliplining to prevent corrosion. Alternative 1 would have an area of ground disturbance of approximately 41 acres, which is less than the construction footprint for the project (approximately 55 acres). Because Alternative 1 would have a smaller construction footprint, the impact related to the transport, storage, use, or disposal of hazardous materials used to fuel and service construction equipment, such as transportation fuels, lubricating fluids, and solvents, would be less than the project. Additionally, because the northern portion of the pipeline route largely avoids urban areas, the risk of upset or accident conditions that could release hazardous materials and endanger the public or the environment, including children and employees at nearby schools, would be less than that under the project, and even under the project, these types of materials, which are not acutely hazardous, would be used in small amounts. Because the extent of area related to the off-site pipeline that would be disturbed by earthmoving activities would be less under Alternative 1, the hazard to the environment related to the possible disturbance of hazardous materials sites during construction also would be less. Because a substantial portion of the alignment avoids urban areas, there would not be a similar increase in hazard to the public. Finally, although the duration of pipeline construction would be similar for Alternative 1 and the project, the impact of lane closures on the flow of traffic, including emergency vehicles, on local roadways would be less under Alternative 1 because less of the alignment is located in urban areas compared to the project. Alternative 1 includes mitigation to reduce hazards to the public and the environment, as described below. Because the northern portion of the pipeline route under Alternative 1 largely avoids urban areas and because the construction footprint for Alternative 1 is smaller than that of the project, the impacts of Alternative 1 related to hazards and hazardous materials would be less compared to those of the project. *[Less]*

Mitigation Measures

Mitigation Measures 3.7-4a through 3.7-4g are referenced below and were previously described in Section 3.7, "Hazards and Hazardous Materials."

Mitigation Measure 3.7-4a: Prepare a Phase I ESA for the Project

Mitigation Measure 3.7-4b: Prepare a Phase II ESA in the Ground Disturbance Areas in Locations Where Contamination May Be Present

Mitigation Measure 3.7-4c: Coordinate with Regulatory Agencies and Implement Appropriate Remedies

Mitigation Measure 3.7-4d: Incorporate Standards for Proper Excavation and Staging Activities, for Handling, Transport, and Disposal of Excavated Soils, and for Construction-Related Dewatering into the Project's Construction Specifications

Mitigation Measure 3.7-4e: Prepare and Implement a Site-Specific Health and Safety Plan

Mitigation Measure 3.7-4f: Locate and Avoid Underground Utilities in Areas Where Excavation Is Proposed, and Prepare a Response Plan to Be Implemented If Accidental Rupture Occurs

Mitigation Measure 3.7-4g: Safely Remove, Handle, and Dispose of Pavement Containing Yellow Paint

HYDROLOGY AND WATER QUALITY

Alternative 1 would be designed and constructed in accordance with the same ordinances, codes, permits, and standard engineering practices as the project.

Alternative 1 includes construction in mapped flood hazard areas including the 100-year floodplain, areas at risk of inundation from sea level rise (SLR), areas at risk of seiche and tsunami, and areas located within dam failure inundation zones. Alternative 1 has 15,612 more linear feet of construction activity located in the 100-year flood zone and 3,069 more linear feet of construction activity in the 500-year flood zone than the project. Alternative 1 also includes 20,758 more linear feet of construction activity proposed in the 12-inch SLR inundation area versus the project. Alternative 1 includes 19,734 more linear feet of construction activity in the tsunami inundation zone than the project. Alternative 1 contains 21,700 more linear feet of construction activity in the dam inundation zone then the project. Staging areas have not been defined for Alternative 1, but some staging areas would be located in flood hazard areas. Therefore, Mitigation Measure 3.8-5, Locate staging areas outside of the flood zone or install a protective barrier around pollutants within the staging area, would be required to reduce the risk of release of pollutants during flood events. Because there would be more construction activity in the flood hazard zone under Alternative 1, the impacts related to the potential release of pollutants due to flooding would be greater compared to those of the project. *[Greater]*

As with the project, Alternative 1 would cause soil disturbance during construction and maintenance of the MSS brine transport pipeline and infrastructure at the Solar Salt Facility, which has the potential to impact surface and groundwater quality through increased potential of erosion and sedimentation, and spills or leaks of fuel, oil, and other fluids. The manufacturing and transport of salt and brine could also impact water quality. The pipeline construction would also include several directional drills under Wetlands and Waters of the US. Directional drilling has the potential to release drilling fluid (bentonite clay-water mix). The construction footprint associated with Alternative 1 would be approximately 14 acres smaller than the construction footprint of the project which would result in a lower potential to impact water quality than the project. Under Alternative 1, construction activity would be adjacent to 10,475 less linear feet of wetlands than the project because much of the MSS brine transport pipeline would utilize EBDA's existing pipeline which does not require trenching which would result in less potential impact to water quality. Alternative 1 proposes 4,231 linear feet of directional bores under or near wetlands which is 1,596 less than the project. Due to the possibility of accidental spills of directional drilling fluid to adjacent wetlands and waters, impacts from drilling fluids to surface and ground water quality would require the implementation of Mitigation Measure 3.8-

1, Directional drilling fluid containment measures. This would reduce the potential impact to water quality in the event of an accidental spill. Due the smaller construction footprint and smaller area adjacent to wetlands and waters and the shorter directional bores, the impacts to water quality would be less than the project. *[Less]*

The water quality impact to the San Francisco Bay due to the discharge of brine blended with secondary treated wastewater effluents would be the same as the project. *[Same]*

Mitigation Measures

Mitigation Measures 3.8-1, 3.8-2, and 3.8-5 are referenced below and were previously described in Section 3.8, "Hydrology and Water Quality."

Mitigation Measure 3.8-1: Implement Mitigation Measure 3.3-10: "Implement Directional Drilling Fluid Containment Measures"

Mitigation Measure 3.8-2: Minimize Groundwater Loss Due to Dewatering during Construction of the MSS Brine Transport Pipeline

Mitigation Measure 3.8-5: Locate Staging Areas Outside of the Flood Zone or Install a Protective Barrier around Potential Sources of Pollutants Stored within the Staging Area

NOISE AND VIBRATION

Similar to the project, the facilities proposed under Alternative 1 would be designed and constructed in accordance with local ordinances. In addition, Cargill would coordinate with the Cities of Hayward, Union City, Fremont, and Newark, and Alameda County for grading and site plan review and review of noise and vibration impacts. Therefore, adverse effects from noise and vibration from implementation of Alternative 1 would be minimized.

With Alternative 1, MSS brine transport pipeline installation would follow the same installation route as the project up to the intersection of Union City Boulevard and Horner Street in the City of Union City. From there it would diverge from the MSS brine transport pipeline alignment for the project as shown in Figure 5-1. Construction activities would generally be constructed in the same manner as the project, but a portion would involve sliplining. However, sliplining would require the same type of equipment (e.g., excavators, pumps) as the project; thus, noise levels from this construction activity would be similar to those described for the project. Since the MSS brine transport pipeline alignment under Alternative 1 partially follows the same pipeline alignment as for the project, similar receptors that were impacted by noise and vibration emissions from construction would be impacted under Alternative 1. However, because of the linear nature of this Alternative similar to the proposed project, construction activities would move along the alignment and not result in noise exposure at any one location for extended periods of time. Thus, individual receptors would not be exposed to noise levels for longer periods of time compared to the proposed project. In addition, under this alternative, the proposed alignment would likely result in noise exposure to fewer residences because the alignment would be much further away from the residential community in San Lorenzo, along Bandoni Avenue. Mitigation Measure 3.9-1 provides methods available to reduce the noise emissions to nearby sensitive receptors. However, it would be uncertain whether the mitigation measures would be enough to reduce the noise levels to the applicable jurisdictions' standards where the construction would occur. Therefore, the same mitigation measure and uncertainty to reduce noise levels to acceptable standards would also apply to Alternative 1.

Thus, although noise levels from construction of the MSS brine transport pipeline under Alternative 1 would be similar to those of the project, fewer receptors would be affected by construction noise. *[Less]*

Mitigation Measures

Mitigation Measure 3.9-1 is referenced below and was previously described in Section 3.9, "Noise and Vibration."

Mitigation Measure 3.9-1: Implement Construction Noise Reduction Measures

RECREATION

Similar to the project, Alternative 1 would not involve the construction or expansion of recreational facilities. Additionally, Alternative 1 would not result in population growth that would increase the demand for parks and recreational facilities in the region. However, construction activities would result in direct (e.g., loss of access, parking, or use) and indirect (e.g., changes to visual character and quality, and increases in noise, dust, and traffic) effects on recreationists at parks and recreational facilities that are adjacent or in proximity to construction activities. Additionally, the proximity of construction activities to areas used for recreation would increase safety hazards for recreationists due to incompatible uses. These effects would be short-term and temporary. Construction activities would be of a limited duration in any one location (pipeline construction would proceed at a rate of approximately 150 feet per day and most staging areas would be in use for 8 to 12 weeks). Following construction, full use of and access to all parks and recreational facilities would be restored. A summary of impacts on parks and recreational facilities from Alternative 1 is presented in the following sections, with emphasis on the primary differences between Alternative 1 and the project.

Eden Landing Ecological Reserve

The construction activities for Alternative 1 would be located closer to recreational areas within the Eden Landing Ecological Reserve than the project. An access pit would be located near the main entrance and parking lot for the reserve off of Eden Landing Road. Construction activities would occur within approximately 100 feet of the nearest wildlife viewing areas in the reserve. Therefore, Alternative 1 would have greater potential than the project for indirect effects (e.g., changes to visual character and quality, and increases in noise, dust, and traffic) and safety hazards to recreationists on trails within the refuge.

San Francisco Bay Trail

Alternative 1 would impact the same sections of the San Francisco Bay Trail as the project. However, Alternative 1 would require additional trenching along a 0.5-mile section of the trail along the northern boundary of Eden Landing Ecological Reserve that would be avoided by the project. Therefore, Alternative 1 would have greater disruptions and safety hazards to recreationists on this trail than the project.

Hayward Regional Shoreline

Alternative 1 would require sliplining of an approximately 3.4-mile segment of EBDA's combined effluent pipeline adjacent to the Hayward Regional Shoreline, including a segment that would go under Oro Loma Marsh. Several access pits would be located within the boundaries of the park. Although most access pits would not be located within areas used for recreation, one access pit for the crossing at Sulphur Creek would be located along an existing trail. Alternative 1 would have greater disruptions to the Hayward Regional Shoreline and safety hazards to recreationists than the project.

Union City Bike Lanes Project

Similar to the project, Alternative 1 would require coordination of construction activities with the Union City Boulevard Bike Lanes Project but would disrupt a smaller segment of the roadway (approximately 1 mile shorter).

Other Parks and Recreational Facilities

Alternative 1 would result in the same direct effects (i.e., temporary loss of use and access) and safety hazards as the project on Don Edwards National Wildlife Refuge, Coyote Hills Regional Park, and Alameda Creek Regional Trail. Similar to the project, the potential to affect other parks within 0.25-mile of the MSS brine transport pipeline and sliplined segments of EBDA's combine effluent pipeline would be limited based on the distance from the parks to project construction activities, intervening land uses, and short duration of construction activities. Therefore, these parks and recreational resources are not discussed further.

Summary

As with the project, temporary disruptions to recreational activities and safety hazards to recreationists would occur under Alternative 1. However, as with the project, EBDA and Cargill would be required to implement traffic control

plans as a condition of encroachment permit approval and would be required to implement detour plans for parks, trails, and recreational facilities as a requirement of Mitigation Measure 3.10-1. Therefore, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility under Alternative 1. Additionally, construction-related hazards due to incompatible uses with recreational activities would be reduced under Alternative 1. Based on the discussion above, both Alternative 1 and the project would result in disruptions and safety hazards to recreationists during the construction period; however, the magnitude of these impacts would be greater under Alternative 1 because construction activities would affect a greater number of recreationists. *[Greater]*

Mitigation Measures

Mitigation Measure 3.10-1 is referenced below and is previously described in Section 3.10, "Recreation."

Mitigation Measure 3.10-1: Prepare and Implement Detour Plans for Parks, Trails, and Recreational Facilities

SUMMARY OF IN-PIPE ALTERNATIVE EVALUATION

Based on the discussion above, Alternative 1 would result in less impacts than the project with respect to air quality, fish and wildlife migration, tribal cultural resources and human remains, greenhouse gas emissions, water quality during operation, hazards and hazardous materials, and construction-related noise and vibration. Alternative 1 would have similar impacts as the project with respect to historical resources, geology and soils, water quality during construction, groundwater supplies, drainage patterns, conflicts with water quality control and groundwater management plans, use of recreational facilities during operation, and operational noise. Alternative 1 would have greater impacts than the project with respect to adverse effects on special-status species, sensitive natural communities, and wetlands; conflicts with local policies or ordinances protecting biological resources; conflicts with conservation plans; adverse effects on archaeological resources; release of pollutants due to inundation; and safety hazards and use of recreational facilities during construction. Overall, Alternative 1 would have fewer impacts than the project. Table 5-3 in Section 5.5, "Comparison of Alternatives," includes a comparison of the environmental impacts from Alternative 1 relative to those of the project.

Alternative 1 would achieve most of the objectives of the project. Like the project, Alternative 1 would provide brine disposal services to Cargill and economic benefits to EBDA, create infrastructure to further EBDA's sustainability objectives, optimize use of existing EBDA infrastructure and excess capacity, minimize impacts to water quality and aquatic resources from MSS brine discharge by using EBDA's existing outfall, facilitate liquid bittern harvest and MSS brine disposal, and prevent operational and environmental impacts of Bay water overtopping the berms surrounding MSS ponds due to sea level rise. However, Alternative 1 would not achieve the project objective of balancing impacts to sensitive environments because Alternative 1 would require greater disturbance to environmentally-sensitive areas, including the Eden Landing Ecological Reserve and Oro Loma Marsh in the Hayward Regional Shoreline. In addition, Alternative 1 would not achieve the project objective of minimizing disruptions to EBDA's existing system. Alternative 1 would require greater disruption to EBDA's existing operations during installation of the liner in segments of EBDA's combined effluent pipeline. Extensive bypass pumping would be required during sliplining of each segment to route effluent within the EBDA system around the work area and thereby support continued operations of the EBDA system during construction. Lastly, Alternative 1 would involve sliplining of only the most vulnerable sections of EBDA's existing combined effluent pipeline. Therefore, unlined sections could potentially be susceptible to corrosion risks and could result in the need for additional maintenance over the lifetime of the project.

5.4.3 Alternative 2: Bayside Parallel Pipe Alternative

Similar to the project, the Bayside Parallel Pipe Alternative would involve transporting excess MSS brine to EBDA's combined effluent pipeline conveyance system for discharge to the Bay under EBDA's NPDES permit. This alternative would include the same on-site pipelines and pumping facilities at the Solar Salt Facility as those of the project and described in Sections 2.6.1 through 2.6.4 of this Draft EIR.

This alternative would differ from the project with respect to the MSS brine transport pipeline route. The brine transport pipeline would extend in a northerly direction from the Solar Salt Facility to the EBDA force main at the Oro Loma Facility along a route with a total length of approximately 17 miles, as shown in Figure 5-1. The brine transport pipeline would start in the south at the proposed MSS brine pump station (as described in Section 2.6.3 of this EIR), and continue along the same route as described for the project for approximately 1.7 miles until it reaches the crossing for Newark Slough. From here, the Bayside Pipeline alignment diverges from the MSS brine transport pipeline alignment. It would cross under Newark Slough at a slightly different angle than for the project and then travel northwest along Marshlands Road into the City of Fremont, cross SR 84, and continue north and northwest along approximately 3 miles of Cargill's "Plant 1" berms. The MSS brine transport pipeline would then cross the Alameda Creek Flood Control Channel pursuant to a pipeline easement held by Cargill and into the City of Hayward. The alignment would then continue approximately 2 miles along berms through the Eden Landing Ecological Reserve in Southern Eden Landing (or Baumberg South), owned by the State of California, until it reaches the Union Sanitary District (USD) Alvarado Treatment Facility in the City of Union City.

From USD's Alvarado Treatment Facility, the alignment would run parallel to and within EBDA's existing combined effluent conveyance pipeline easement north along Benson Road and Whipple Road within the City of Union City, before turning west to cross Old Alameda Creek Flood Control Channel and back into the City of Hayward. Approximately 0.5 miles west of the crossing under Old Alameda Creek Flood Control Channel, the transport pipeline would diverge from the EBDA conveyance pipeline alignment continue north and northwest along unpaved roads/berms in Northern Eden Landing (Baumberg North) on land owned by the State, including along a segment of the San Francisco Bay Trail. The alignment would then continue north along Eden Landing Road and west along Point Eden Way within Hayward before crossing SR 92 from a parcel privately owned and encumbered by an existing EBDA pipeline easement or from nearby areas, such as Research Road, due to engineering constraints at the crossing. From SR 92, the pipeline alignment would again travel parallel to and within EBDA's existing combined effluent pipeline easements over private property, pursuant to an agreement between EBDA and Cargill, crossing Johnson Landing Canal to the northwest, an engineered stormwater conveyance channel owned and operated by the East Bay Regional Park District (EBRPD), until it reaches Enterprise Avenue near the Hayward Treatment Plant.

Between Enterprise Avenue and Oro Loma Marsh (also known as the Hayward Regional Shoreline), the MSS brine transport pipeline would travel on the east side of the ditches, following EBDA's easement which encumbers several private commercial properties, a private gravel frontage road (marked on some maps as an extension of Depot Road) owned by the City of Hayward, and berms before crossing West Winton Avenue. The MSS brine transport pipeline would then continue north across Frank's East, a former salt pond now consisting primarily of playa habitat owned by the Hayward Area Recreation and Park District, and Sulphur Creek. At Sulphur Creek, the MSS brine transport pipeline would briefly follow EBDA's easement through the marsh just north of the creek. The transport pipeline would then connect with a berm/unpaved road within the Oro Loma Marsh and would continue to the Oro Loma biosolid drying beds before reaching the Oro Loma Facility. Discharge to the EBDA system would occur in the same manner as the project, as described in Section 2.6.6 of the Draft EIR.

Similar to the project, construction is estimated to start in summer of 2023 and would take approximately 18 months to complete. Estimates of the area of ground disturbance, excavation quantity, and maximum excavation depth anticipated for each of the components for Alternative 2 are summarized in Table 5-2. Following construction, operations and maintenance activities would be similar to those of the project, as described in Section 2.6.8 of this Draft EIR.

Like the project, this alternative would avoid the section of EBDA's system that would be susceptible to corrosion from introduction of the MSS brine. This alternative would require work in environmentally sensitive areas, including Oro Loma Marsh and Eden Landing. As such, directional drilling would be required in several areas to minimize impacts to wetlands and sensitive habitat. This alternative would also require temporary closures of the Bay Trail. Consequently, this alternative would require extensive coordination with various resource agencies, including the EBRPD, US Army Corps of Engineers, San Francisco Regional Water Quality Control Board, National Marine Fisheries Service, US Fish and Wildlife Service, ACFCWCD, and San Francisco Bay Conservation and Development Commission. Additional time for obtaining permits and conducting environmental review would be needed.

Table 5-2 Comparison of the Area of Ground Disturbance, Excavation Quantity, and Maximum Excavation Depth Estimates between the Proposed Project and Alternative 2

Components	Area of Ground Disturbance [a]	Excavation Quantity [b]	Maximum Excavation Depth
Proposed Project			
Solar Salt Facility	145,988 sf (3.4 acres)	162,088 cy	35 ft bgs
MSS Brine Transport Pipeline	2,374,020 sf (54.5 acres)	62,797 cy	8 ft bgs for open-cut trenching; 40 ft bgs for trenchless crossings
Total	2,520,008 sf (57.9 acres)	224,885 cy	N/A
Alternative 2			
Solar Salt Facility	145,988 sf (3.4 acres)	162,088 cy	35 ft bgs
MSS Brine Transport Pipeline	2,500,344 sf (57.4 acres)	74,292 cy	8 ft bgs for open-cut trenching; 10 ft bgs for trenchless crossings
Total	2,646,332 sf (60.8 acres)	236,380 cy	N/A

Notes: sf = square feet; cy = cubic yards; ft bgs = feet below the ground surface.

[a] The area of ground disturbance for the MSS Brine Transport Pipeline conservatively assumes corridor widths of 30 feet along open-cut segments, 12 feet along trenchless crossings segments in the City of Hayward, and 6 feet along the remaining trenchless crossing segments. The estimate does not include the area of ground disturbance in staging and laydown areas outside these corridors.

[b] Includes excavation of shafts/pits needed for horizontal directional drilling, microtunneling, and auger boring.

Source: Data provided by Jacobs and Brown and Caldwell in 2022.

AIR QUALITY

Alternative 2 would require a slightly longer total pipeline length of 17 miles compared to the 16 miles required for the project. Alternative 2 would also require a slightly larger area of ground disturbance (57 acres under Alternative 2 compared to 55 acres under the project) as well as a larger excavation quantity of approximately 74,000 cubic yards compared to the approximately 53,000 cubic yards for the project. These increases would result in a greater amount of construction equipment needed as well as longer durations of operation of the equipment. Additionally, more vendor, pipeline delivery, and worker trips would be necessary. A longer pipeline length would also require longer distances traveled for pipeline maintenance. As a result, a greater total quantity of criteria air pollutants and diesel particulate matter would occur. Alternative 2 includes mitigation to offset construction-related emissions, as described below. Overall, Alternative 2 would consist of a larger area of disturbance, a longer total pipeline length, and greater material to be excavated. Therefore, Alternative 2 would result in a greater impact to air quality than the project. *[Greater]*

Mitigation Measures

Mitigation Measure 3.2-1 is referenced below and is previously described in Section 3.2, "Air Quality."

Mitigation Measure 3.2-1: Contribute Funding to an Off-Site Mitigation Program

BIOLOGICAL RESOURCES

Alternative 2 would entail construction and operation activities at the Solar Salt Facility identical to those of the project and an MSS brine transport pipeline alignment nearly identical to the sliplining segment of Alternative 1 from Station 108+26 to the Oro Loma Facility. Slight deviations between Alternatives 1 and 2 in this area (Station 108+26 to the Oro Loma Facility) include additional Alternative 2 segments in urban developed habitats from Horner Street and Whipple Road and along Eden Landing Road through Point Eden Way; a shorter Alternative 2 segment along the Oro Loma Marsh northern perimeter; and an Alternative 2 Bockman Channel crossing located slightly eastward of the Alternative 1 alignment. Potential impacts from Alternative 2 within the Solar Salt Facility and from Station 108+26 to

the Oro Loma Facility would therefore be very similar to the project and Alternative 1. Potential adverse effects would primarily consist of limited direct (e.g., potential for injury or mortality of individual wildlife, removal of wetland vegetation) and indirect (e.g., potential for nest disturbance, habitat degradation) impacts to special-status species and habitats; these impacts would be less than significant with mitigation.

Most of the remaining Alternative 2 pipeline alignment, including the segment from the Newark Slough crossing to Horner Street at Whipple Road, would occur in areas of greater environmental sensitivity compared to the project and would therefore likely result in greater potential for biological resource impacts. As noted in the Alternative 2 description, this includes traversing Eden Landing Ecological Reserve, which is managed for resident and migratory waterbirds and tidal marsh habitats and species. While Alternative 2 would primarily follow upland levees and berms, the alignment would be bordered by extensive areas of sensitive and protected habitats including tidal marsh, vegetated and non-vegetated ponds, tidal flat and marsh panne, and playa habitats. Further, in areas where berms are not available, additional trenchless crossings, such as HDD or microtunnel crossings, would be required. While these construction techniques minimize the potential for direct impacts to waters and wetlands, they still require work areas, construction pits, and pipe string laydown areas that could impact sensitive habitats and associated species. Berm and levee trenching also has the potential to encroach on adjoining wetlands, particularly in confined areas. Several of the potentially affected habitats along the Alternative 2 alignment are protected resources (e.g., jurisdictional waters or wetlands and/or potential sensitive natural communities such as northern coastal marsh), and they may provide habitat to a variety of special-status species. This includes special-status fish, bird, terrestrial mammals, and plant species with habitat associations described in Appendix C. Of note, a segment of the alignment that is unique to Alternative 2 (i.e., from the Newark Slough crossing to Horner Street at Whipple Road) occurs in proximity to extant populations of California least tern, Point Reyes salty bird's-beak, Alameda song sparrow, within mapped habitat ranges of Western snowy plover and salt-marsh harvest mouse (in the vicinity of Eden Landing), and includes an HDD or microtunnel crossing of Northern Coastal Salt Marsh (a CDFW managed Sensitive Natural Community).

While it is anticipated that mitigation measures could substantially reduce Alternative 2 impacts to special-status species and habitats, impacts to biological resources would likely be greater compared to the project. The project MSS brine transport pipeline alignment would primarily occur on roadways in developed urban uplands lacking protected status or substantial habitat value. While the project does entail some work on levees and berms adjacent to sensitive habitats, and limited HDD or micotunneling in sensitive areas, these would occur over a substantially smaller area compared to Alternative 2. Alternative 2 would therefore likely result in proportionally greater potential for direct and indirect impacts to biological resources. This may include direct disturbance of protected waters and wetlands, direct mortality or injury of special-status terrestrial mammals or birds, nest disturbance, or indirect habitat impacts from construction spills or erosion. Further, the Alternative 2 alignment would occur along several berms and levees between large expanses of tidal marsh, playa, or vegetated pond habitat, which could also result in greater risk for direct injury and mortality, or localized movement impacts, to salt-marsh harvest mouse and salt-marsh wandering shrews as they move between suitable habitat areas. As with Alternative 1, Alternative 2 may also require temporary construction at or near tidal marsh channels in Oro Loma Marsh which could result in additional impacts to special-status fish species. Unlike Alternative 1, these temporary impacts would be limited to the HDD work area near the berm/unpaved road that extends into Oro Loma Marsh. The potential for increased impacts compared to the project may also result in commensurate increased potential for conflicts with applicable plans, such as the Hayward Regional Shoreline Adaptation Master Plan and BCDC Bay Plan.

Alternative 2 would, however, avoid some work near or adjoining sensitive habitats compared to the project; this includes project trenching within playa habitat adjacent to Quarry Road, within the roadway adjacent to tidal marsh along Thornton Avenue, and on the former Skywest Golf Course berm. Impacts to some annual grasslands, ornamental upland vegetation, or developed uplands from the project may also be avoided. This includes reduced construction affecting urban structures that could provide pallid bat nesting habitat compared to the project. However, the increased construction within or near larger areas of sensitive habitat under Alternative 2 would likely more than offset any benefits from avoiding these select areas.

In summary, the implementation of Alternative 2 could result in direct and indirect impacts on special-status species and habitats that would be similar to the project and Alternative 1. Alternative 2 has greater potential for these impacts than the project due to additional work within sensitive habitat areas. Alternative 2 (like Alternative 1) could result in injury, mortality, or behavioral impacts to special-status fish species during establishment of a temporary work area that crosses Sulphur Creek and extends through Oro Loma Marsh; and has potential to disturb or cause injury or mortality of California least tern and black skimmer individuals, or broods. Associated mitigation measures pertaining to Alternative 2 are described below. *[Greater]*

Mitigation Measures

Mitigation Measures 3.3-1 through 3.3-17 are referenced below and are previously described in Section 3.3. Additional mitigation measures would be required under Alternative 1 because different resources would be affected by this alternative. Full descriptions of Mitigation Measures 3.3-18 through 3.3-21 are provided in the preceding Section 5.4.2. Mitigation Measures 3.3-18 through 3.3-20 apply to crossings directly affecting tidal channels (anticipated to include Sulphur Creek and Oro Loma Marsh), and Mitigation Measure 3.3.-21 would apply only to work that could affect California least tern or black skimmer habitat.

Mitigation Measure 3.3-1: Implement Standard Avoidance and Minimization Measures for Biological Resources

Mitigation Measure 3.3-2: Provide Worker Environmental Awareness Training

Mitigation Measure 3.3-3: Conduct Focused Surveys for Nesting Special-Status Bird Species, Nesting Raptors, and Other Native Nesting Birds and Implement Protective Buffers

Mitigation Measure 3.3-4: Conduct Protocol-level Surveys and Implement Protective Buffers for California Ridgway's Rail

Mitigation Measure 3.3-5: Avoid and Minimize Impacts to Western Snowy Plover

Mitigation Measure 3.3-6: Perform Biological Monitoring

Mitigation Measure 3.3-7: Prevent Special-Status Wildlife Entrapment

Mitigation Measure 3.3-8: Avoid Impacts to Salt-marsh Harvest Mouse and Salt-marsh Wandering Shrew

Mitigation Measure 3.3-9: Conduct Botanical Surveys and Implement Avoidance Measures and Mitigation

Mitigation Measure 3.3-10: Implement Directional Drilling Fluid Containment Measures

Mitigation Measure 3.3-11: Avoid Impacts to Pallid Bat

Mitigation Measure 3.3-12: Implement Avoidance Measures for Monarch Overwintering Colonies

Mitigation Measure 3.3-13: Mitigate for Unavoidable Impacts to Wetlands and Other Waters of the United States/ State

Mitigation Measure 3.3-14: Compensate for Unavoidable Loss of Sensitive Natural Communities

Mitigation Measure 3.3-15: Mitigate for Unavoidable Riparian Habitat Removal

Mitigation Measure 3.3-16: Retain Wildlife Nursery Habitat and Implement Buffers to Avoid Wildlife Nursey Sites

Mitigation Measure 3.3-17: Comply with City and County Tree Ordinances

Mitigation Measure 3.3-18: Adhere to In-Water Work Window

Mitigation Measure 3.3-19: Perform Fish Relocation

Mitigation Measure 3.3-20: Install In-water Piles Via Vibratory Pile Driving or Direct Push Methods

Mitigation Measure 3.3-21: Avoid and Minimize Impacts to Black Skimmer and California Least Tern

CULTURAL AND TRIBAL CULTURAL RESOURCES

Ground disturbance associated with the MSS brine transport pipeline installation under Alternative 2 would be approximately 57 acres, which is greater than for the project (55 acres). The larger area of ground disturbance would increase the potential to encounter previously unknown tribal cultural resources. Archaeological site P-01-000170 is not located along this alternative and therefore would not be impacted; impacts related to archaeological sites P-01-000239 would be similar to those impacts described for the project. Seven additional archaeological sites located along the Alternative 2 alignment have been identified. Two have been evaluated as eligible for the NRHP/CRHR and are therefore resources under CEQA, and two have not been evaluated. The remaining three sites have been evaluated and determined ineligible for listing in the NRHP, however it is possible they could still be eligible for the CRHR and therefore a resource under CEQA. Alternative 2 includes mitigation to protect cultural resources, as described below. Alternative 2 would result in similar types of impacts related to historical resources compared to the project because no additional historical resources were identified for this alternative; however, impacts from Alternative 2 would be greater due to potential impacts to archaeological resources. *[Greater]*

Mitigation Measures

Mitigation Measures 3.4-2a, 3.4-2b, and 3.4-3 are referenced below and are previously described in Section 3.4, "Cultural and Tribal Cultural Resources."

Mitigation Measure 3.4-2a: Develop and Implement a Worker Environmental Awareness Program

Mitigation Measure 3.4-2b: Halt Ground-Disturbing Activity upon Discovery of Subsurface Archaeological Features

Mitigation Measure 3.4-3: Protect Unidentified Tribal Cultural Resources

GEOLOGY AND SOILS

Similar to the project, the proposed facilities under Alternative 2 would be designed and constructed in accordance with local ordinances, the CBC, standard engineering practices, and the recommendations outlined in a site-specific geotechnical report. In addition, Cargill would coordinate with the Cities of Hayward, Union City, Fremont, and Newark, and Alameda County for grading and site plan review and review of geotechnical hazards. Therefore, adverse effects from seismic or geologic hazards from implementation of Alternative 2 would be minimized.

Ground disturbance associated with the MSS brine transport pipeline installation under Alternative 2 would be approximately 57 acres, which is greater than for the project (55 acres). Because Alternative 2 would disturb more than 1 acre of land, preparation of a SWPPP and implementation of the associated BMPs specifically designed to reduce construction-related erosion would be required similar to the project. The SWPPP would be submitted to the San Francisco Bay RWQCB in compliance with the statewide NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) Order 2009-009-DWQ, as amended. BMPs implemented to reduce erosion may include silt fences, staked straw bales/wattles, silt fences, geofabric, trench plugs, terraces, water bars, soil stabilizers, application of mulches, and revegetation of disturbed areas. Construction techniques implemented to reduce the potential for stormwater runoff could include minimizing site disturbance, controlling water flow over the construction site, stabilizing bare soil, and ensuring proper site

cleanup. Because project proponents would prepare and implement a SWPPP and implement BMPs designed to control stormwater runoff and reduce erosion (as required by the San Francisco Bay RWQCB), substantial soil erosion would not result during project construction.

Although the proposed MSS brine transport pipeline would pass through an area that contains regionally significant mineral deposits, there are no active mining operations in this area. In addition, Alternative 2 would not prevent the recovery of aggregate resources from this area in the future.

Based on the discussion above, Alternative 1 would result in similar types of impacts related to geology and soils compared to the project because of compliance with applicable engineering practices and permit requirements. *[Similar]*

Mitigation Measures

No mitigation is required.

GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

Alternative 2 would require a slightly longer total pipeline length of 17 miles compared to the 16 miles required for the project. Alternative 2 would also require a slightly larger area of ground disturbance for installation of the MSS brine transport pipeline (57 acres for Alternative 2 compared to 55 acres for the project) as well as a larger excavation quantity of approximately 74,000 cubic yards compared to the approximately 53,000 cubic yards for the project. These increases would result in a greater amount of construction equipment needed as well as longer durations of operation of the equipment. Additionally, more vendor, pipeline delivery, and worker trips would be necessary. A longer pipeline length would also require longer distances traveled for pipeline maintenance. As a result, a greater total quantity of GHG emissions from mobile sources would occur. Additionally, more energy would be required to transport the MSS brine a longer distance to the EBDA system, resulting in greater GHG emissions from stationary sources. For these reasons, impacts related to climate change from Alternative 1 would be greater than those from the project. *[Greater]*

Mitigation Measures

No mitigation is required.

HAZARDS AND HAZARDOUS MATERIALS

The off-site pipeline alignment under Alternative 2 is approximately 17 miles long, more than a mile longer than the MSS brine transport pipeline alignment for the project. Ground disturbance associated with the MSS brine transport pipeline installation under Alternative 2 would be approximately 57 acres, which is greater than for the project (55 acres). Because Alternative 2 would have a larger construction footprint, the impact related to the transport, storage, use, or disposal of hazardous materials used to fuel and service construction equipment, such as transportation fuels, lubricating fluids, and solvents, would be greater than the project, though like under the project, these types of materials, which are not acutely hazardous, would be used in small amounts. Consequently, the risk of upset or accident conditions that could release hazardous materials and endanger the environment would be slightly greater. Much of the Alternative 2 alignment is located closer to the Bay than the MSS brine transport pipeline alignment for the project, with a substantial portion of the alignment running through the Don Edwards San Francisco Bay National Wildlife Refuge and Eden Landing Ecological Reserve. A much shorter portion of the pipeline would be constructed in roadway rights-of-way under this alternative than under the project. Because far less of the alignment runs through or adjacent to urban areas, the route is further from populated areas and from schools. Thus, the hazard to people, including children and employees at area schools, would be reduced. In addition, far fewer open or closed hazardous materials sites are located near the Alternative 2 alignment compared to the MSS brine transport pipeline alignment for the project. Because fewer hazardous materials sites are located near the Alternative 2 alignment compared to the proposed alignment, the hazard to the public or the environment related to the possible disturbance of these sites during construction would be less than under the project. The length of time anticipated to construct the off-site

pipeline under Alternative 2 would be approximately the same as that anticipated for the project, but because far less of the pipeline would be installed in roadway rights-of-way, the need for temporary lane closures during construction would be reduced; therefore, the impact on the flow of traffic, including emergency vehicles, on local roadways would be reduced. Alternative 2 includes mitigation to reduce hazards to the public and the environment, as described below. Although Alternative 2 has a larger construction footprint, the overall impacts of Alternative 2 related to hazards and hazardous materials would be less compared to those of the project due to the pipeline alignment. *[Less]*

Mitigation Measures

Mitigation Measures 3.7-4a through 3.7-4g are referenced below and were previously described in Section 3.7, "Hazards and Hazardous Materials."

Mitigation Measure 3.7-4a: Prepare a Phase I ESA for the Project

Mitigation Measure 3.7-4b: Prepare a Phase II ESA in the Ground Disturbance Areas in Locations Where Contamination May Be Present

Mitigation Measure 3.7-4c: Coordinate with Regulatory Agencies and Implement Appropriate Remedies

Mitigation Measure 3.7-4d: Incorporate Standards for Proper Excavation and Staging Activities, for Handling, Transport, and Disposal of Excavated Soils, and for Construction-Related Dewatering into the Project's Construction Specifications

Mitigation Measure 3.7-4e: Prepare and Implement a Site-Specific Health and Safety Plan

Mitigation Measure 3.7-4f: Locate and Avoid Underground Utilities in Areas Where Excavation Is Proposed, and Prepare a Response Plan to Be Implemented If Accidental Rupture Occurs

Mitigation Measure 3.7-4g: Safely Remove, Handle, and Dispose of Pavement Containing Yellow Paint

HYDROLOGY AND WATER QUALITY

Alternative 2 would be designed and constructed in accordance with the same ordinances, codes, permits, and standard engineering practices as the project.

Alternative 2 includes construction in mapped flood hazard areas including the 100-year floodplain, areas at risk of inundation from sea level rise (SLR), areas at risk of seiche and tsunami, and areas located within dam failure inundation zones. Alternative 1 has 44,279 more linear feet of construction activity located in the 100-year flood zone but 3,192 less linear feet of construction activity in the 500-year flood zone than the project. Alternative 2 also includes 10,360 more linear feet of construction activity proposed in the 12-inch SLR inundation area versus the project. Alternative 2 includes 59,192 more linear feet of construction activity in the tsunami inundation zone than the project. Alternative 2 contains 24,208 less linear feet of construction activity in the dam inundation zone than the project because a lot of the alignment is located on berms just above the inundation zone. Staging areas have not been defined for Alternative 2, but some would be located in the flood hazard areas. Therefore, Mitigation Measure 3.8-5, Locate staging areas outside of the flood zone or install a protective barrier around pollutants within the staging area, would be required to reduce the risk of release of pollutants during flood events. Because there would be overall more construction activity in the flood hazard zone under Alternative 2, the impacts related to the potential release of pollutants due to flooding would be greater compared to those of the project. *[Greater]*

As with the project, Alternative 2 would cause soil disturbance during construction and maintenance of the MSS brine transport pipeline and infrastructure at the Solar Salt Facility which have the potential to impact surface and groundwater quality through increased potential of erosion and sedimentation, spills or leaks of fuel, oil, and other fluids. The manufacturing and transport of salt and brine could also impact water quality. The pipeline construction

would also include several directional drills under Wetlands and Waters of the US. Directional drilling has the potential to release drilling fluid (bentonite clay-water mix). The construction footprint associated with Alternative 2 would be approximately 2.9 acre larger than the construction footprint of the project which would result in a slightly greater potential to impact water quality than the project. Under Alternative 2, construction activity would also be adjacent to 37,652 more linear feet of wetlands than the project, which would also have the potential to cause a greater impact to water quality. Alternative 2 proposes 9,596 linear feet of directional bores which is 3,769 more than the project. Due to the possibility of accidental spills of directional drilling fluid to adjacent wetlands and waters, impacts from drilling fluids to surface and ground water quality would require the implementation of Mitigation Measure 3.8-1, Directional drilling fluid containment measures. This would reduce the potential impact to water quality in the event of an accidental spill. Due to the larger construction footprint, larger area adjacent to wetlands and waters, and the longer directional bores, the impacts to water quality would be greater under Alternative 2 than the project. *[Greater]*

The water quality impact to the San Francisco Bay due to the discharge of brine blended with secondary treated wastewater effluents would be the same as the project. *[Same]*

Mitigation Measures

Mitigation Measures 3.8-1, 3.8-2, and 3.8-5 are referenced below and were previously described in Section 3.8, "Hydrology and Water Quality."

Mitigation Measure 3.8-1: Implement Mitigation Measure 3.3-10: "Implement Directional Drilling Fluid Containment Measures"

Mitigation Measure 3.8-2: Minimize Groundwater Loss Due to Dewatering during Construction of the MSS Brine Transport Pipeline

Mitigation Measure 3.8-5: Locate Staging Areas Outside of the Flood Zone or Install a Protective Barrier around Potential Sources of Pollutants Stored within the Staging Area

NOISE AND VIBRATION

Similar to the project, the facilities proposed under Alternative 2 would be designed and constructed in accordance with local ordinances. In addition, Cargill would coordinate with the Cities of Hayward, Union City, Fremont, and Newark and Alameda County for grading and site plan review and review of noise and vibration impacts. Therefore, adverse effects from noise and vibration from implementation of Alternative 2 would be minimized.

As shown in Figure 5-1, the alignment for Alternative 2 mostly would be within the reserves closer to the Bay along the outskirts of the jurisdictions and then the alignment follows a similar route as the project. Considering that similar construction equipment and activities would be required as compared to the project, construction noise and vibration levels would be similar to those described for the project. Because a majority of the alignment would be at much further distances from receptors compared to the project, fewer sensitive receptors would be affected, as noise levels reduce with increasing distance from the source. Under the project, Mitigation Measure 3.9-1 would be required to reduce noise levels at nearby sensitive receptors. However, it would be uncertain whether the mitigation measures would be enough to reduce the noise levels to the jurisdiction's standard. However, under Alternative 2, if an impact were to occur; the mitigation measures presented for the project would most likely reduce the noise levels to acceptable levels for the jurisdiction because the distance to sensitive receptors is greater and resultant noise levels from construction at sensitive receptors would therefore be less. Nonetheless, noise level standards exist (i.e., in the City of Union City) that specify maximum noise limits of 83 dBA at 25 feet from the source, which would likely continue to be exceeded as construction equipment generates higher noise levels than this. Thus, impacts related to noise from construction of the MSS brine transport pipeline under Alternative 2 would be less than that of the project. *[Less]*

Mitigation Measures

Mitigation Measure 3.9-1 is referenced below and was previously described in Section 3.9, "Noise and Vibration."

Mitigation Measure 3.9-1: Implement Construction Noise Reduction Measures

RECREATION

Similar to the project, Alternative 2 would not involve the construction or expansion of recreational facilities. Additionally, Alternative 2 would not result in population growth that would increase the demand for parks and recreational facilities in the region. However, construction activities would result in direct (e.g., loss of access, parking, or use) and indirect (e.g., changes to visual character and quality, and increases in noise, dust, and traffic) effects on recreationists at parks and recreational facilities that are adjacent or in proximity to construction activities. Additionally, the proximity of construction activities to areas used for recreation would increase safety hazards for recreationists due to incompatible uses. These effects would be short-term and temporary. Construction activities would be of a limited duration in any one location (pipeline construction would proceed at a rate of approximately 150 feet per day and most staging areas would be in use for 8 to 12 weeks). Following construction, full use of and access to all parks and recreational facilities would be restored. A summary of impacts on parks and recreational facilities from Alternative 2 is presented in the following sections, with emphasis on the primary differences between Alternative 2 and the project.

Don Edwards National Wildlife Refuge

Within Don Edwards National Wildlife Refuge, Alternative 2 would result in the same direct effects (i.e., temporary loss of use and access) as the project on the Newark Slough Trail and parking lot for the refuge on Marshlands Road. Trenching for the MSS brine transport pipeline on Marshlands Road would occur within approximately 70 feet of the nearest trail (Pumphouse Marsh Trail). Therefore, Alternative 2 would have greater potential than the project for indirect effects (e.g., changes to visual character and quality, and increases in noise, dust, and traffic) and safety hazards to recreationists on trails within the refuge.

Eden Landing Ecological Reserve

The construction activities for Alternative 2 would be located closer to recreational areas within the Eden Landing Ecological Reserve than the project. Trenching for the MSS brine transport pipeline would be located at the main entrance and adjacent to the parking lot for the reserve off Eden Landing Road. These activities would occur within approximately 100 feet of the nearest wildlife viewing areas in the reserve. As described below, trenching would occur along a 1.9-mile segment of the San Francisco Bay Trail that skirts the boundaries of Eden Landing Ecological Reserve.

San Francisco Bay Trail

Alternative 2 would avoid the 3.4-mile section of the San Francisco Bay Trail on Thornton Ave, Paseo Padre Parkway, and Ardenwood Boulevard and the 1.6-mile section of the trail on Union City Boulevard that would be disrupted by the project. However, Alternative 2 would require trenching along a 0.8-mile section of the San Francisco Bay Trail on Marshlands Road and a 0.4-mile segment of the No Name Trail. Additionally, Alternative 2 would involve trenching of a 1.9-mile segment of the San Francisco Bay Trail along the northern and eastern boundaries of Eden Landing Ecological Reserve that would be avoided by the project. Similar to the project, Alternative 2 would require trenching along the same 0.2-mile section of the San Francisco Bay Trail along the western boundary of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant.

Coyote Hills Regional Park and Alameda Creek Regional Trail

Within Coyote Hills Regional Park, Alternative 2 would avoid the indirect effects (e.g., temporary changes to visual character and quality, and increases in noise, dust, and traffic) that the project would have on Crandall Creek Trail. However, Alternative 2 would result in direct effects (e.g., loss of use and access) on other trails within the park, including a 0.4-mile segment of the No Name Trail (part of the San Francisco Bay Trail) and a 1.3-mile segment of an unnamed trail that skirts the edges of existing or former Cargill-owned or operated salt ponds.

Alternative 2 would have similar effects on Alameda Creek Regional Trail, but would cross the trail at a different location, approximately 2.2 miles west of the crossing for the project.

Comments received in response to the notice of preparation from EBRPD expressed concerns that construction and maintenance of the MSS brine transport pipeline within EBRPD-owned parcels under Alternative 2 could have the potential to interfere with ongoing and planned adaptation projects and restoration activities within these parcels. The traffic control plans that would be implemented for the project, as described in Section 2.6.7, "Construction," would also apply to Alternative 2. As with the project, EBDA and Cargill would prepare and implement a detour plan for all recreational facilities that would experience access interruptions during project construction, in consultation with EBRPD. Additionally, EBDA and Cargill would coordinate with EBRPD to ensure that construction and maintenance activities do not interfere with ongoing and planned activities within EBRPD-owned parcels (Mitigation Measure 3.10-1).

Hayward Regional Shoreline

Under Alternative 2, the MSS brine transport pipeline would be installed along an approximately 3.4-mile section adjacent to the Hayward Regional Shoreline, including a segment that would go under Oro Loma Marsh. Trenching activities would occur within existing roads and the trenchless crossing at Sulphur Creek would avoid recreational trails and wetland habitat.

As discussed in the section above, EBRPD expressed concerns that construction and maintenance of the MSS brine transport pipeline within EBRPD-owned parcels under Alternative 2 could have the potential to interfere with ongoing and planned adaptation projects and restoration activities within these parcels. The traffic control plans that would be implemented for the project, as described in Section 2.6.7, "Construction," would also apply to Alternative 2. As with the project, EBDA and Cargill would prepare and implement a detour plan for all recreational facilities that would experience access interruptions during project construction, in consultation with EBRPD, City of Hayward, and California Department of Fish and Wildlife. Additionally, EBDA and Cargill would coordinate with the members of the Hayward Area Shoreline Planning Agency (City of Hayward, Hayward Area Recreation and Park District, and EBRPD) to ensure that construction and maintenance activities do not interfere with implementation of the Hayward Regional Shoreline Adaptation Master Plan, which includes goals to protect recreational assets and enhance recreational opportunities in response to the threat of sea level rise (Mitigation Measure 3.10-1).

Union City Bike Lanes Project

Alternative 2 would avoid the disruptions to the Union City Boulevard Bike Lanes Project that would occur under the project.

Other Parks and Recreational Facilities

Similar to the project, the potential to affect other parks and recreational facilities greater than 300 feet from the project site would be limited based on the distance from the parks to project construction activities, intervening land uses, and short duration of construction activities. Therefore, these parks and recreational resources are not discussed further.

Summary

As with the project, temporary disruptions to recreational activities and safety hazards to recreationists would occur under Alternative 2. However, EBDA and Cargill would be required to implement traffic control plans as a condition of encroachment permit approval and would be required to implement detour plans for parks, trails, and recreational facilities as a requirement of Mitigation Measure 3.10-1. Therefore, recreationists would not be displaced to other locations to the extent that an increased use of existing recreational facilities would result in physical deterioration of any facility. Additionally, construction-related hazards due to incompatible uses with recreational activities would be reduced. Based on the discussion above, both Alternative 2 and the project would result in disruptions and safety hazards to recreationists during the construction period; however, the magnitude of these impacts would be greater under Alternative 2 because construction activities could affect a greater number of recreationists due to the proximity of recreational facilities to construction activities. . *[Greater]*

Mitigation Measures

Mitigation Measure 3.10-1 is referenced below and is previously described in Section 3.10, "Recreation."

Mitigation Measure 3.10-1: Prepare and Implement Detour Plans for Parks, Trails, and Recreational Facilities

SUMMARY OF BAYSIDE PARALLEL PIPE ALTERNATIVE EVALUATION

Based on the discussion above, Alternative 2 would result in less impacts than the project with respect to fish and wildlife movement, hazardous emissions near schools, hazardous materials sites, emergency response and evacuation, and construction-related noise and vibration. Alternative 2 would have similar impacts as the project with respect to historical resources, geology and soils, drainage patterns, conflicts with water quality control and groundwater management plans, stationary equipment noise, and use of recreational facilities during operation. Alternative 2 would have greater impacts than the project with respect to air quality; adverse effects on special-status species, sensitive natural communities, and wetlands; conflicts with local policies or ordinances protecting biological resources; conflicts with conservation plans; archaeological resources, tribal cultural resources, and human remains; greenhouse gas emissions; water quality during construction and operation, groundwater supplies, and release of pollutants due to inundation; the transport, use, or disposal of hazardous materials; release of hazardous materials; and safety hazards and use of recreational facilities during construction. Overall, Alternative 2 would have greater impacts than the project. Table 5-3 in Section 5.5, "Comparison of Alternatives," includes a comparison of the environmental impacts from Alternative 2 relative to those of the project.

Alternative 2 would achieve most of the objectives of the project. Like the project, Alternative 2 would provide brine disposal services to Cargill and economic benefits to EBDA, create infrastructure to further EBDA's sustainability objectives, minimize disruptions to EBDA's existing system, optimize use of existing EBDA infrastructure and excess capacity, minimize impacts to water quality and aquatic resources from MSS brine discharge by using EBDA's existing outfall, facilitate liquid bittern harvest and MSS brine disposal, and prevent operational and environmental impacts of Bay water overtopping the berms surrounding MSS ponds due to sea level rise. However, Alternative 2 would not achieve the project objective of balancing impacts to sensitive environments because Alternative 2 would require greater disturbance to environmentally-sensitive areas, including wetland habitat in Oro Loma Marsh and Eden Landing Ecological Reserve.

5.5 COMPARISON OF ALTERNATIVES

Table 5-3 summarizes the environmental analyses provided above for the project alternatives.

Table 5-3 Summary of Environmental Effects of the Alternatives Relative to the Project

Environmental Topic	Project	No Project – No Development Alternative	Alternative 1: In-Pipe Alternative	Alternative 2: Bayside Parallel Pipe Alternative
Air Quality				
Impact 3.2-1: Potential to Generate Emissions of Criteria Air Pollutants and Precursors during Project Construction	Less than significant with mitigation incorporated	Less	Less	Greater
Impact 3.2-2: Potential to Generate Long-Term Operational Emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ in Exceedance of Thresholds	Less than significant	Less	Less	Greater
Impact 3.2-3: Potential to Expose Sensitive Receptors to TACs	Less than significant	Less	Less	Greater

Environmental Topic	Project	No Project – No Development Alternative	Alternative 1: In-Pipe Alternative	Alternative 2: Bayside Parallel Pipe Alternative
Biological Resources				
Impact 3.3-1: Potential 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	Less than significant with mitigation incorporated	Greater	Greater	Greater
Impact 3.3-2: Potential Substantial Adverse Effect on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS	Less than significant with mitigation incorporated	Greater	Greater	Greater
Impact 3.3-3: Potential Substantial Adverse Effect on State or Federally Protected Wetlands (including, but Not Limited to, Marshes, Vernal Pools, Coastal Wetlands, etc.) through Direct Removal, Filling, Hydrological Interruption, or Other Means	Less than significant with mitigation incorporated	Greater	Greater	Greater
Impact 3.3-4: Potential Substantial Interference with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors, or Impediment to the Use of Native Wildlife Nursery Sites	Less than significant with mitigation incorporated	Less	Less	Less
Impact 3.3-5: Potential Conflict with Any Local Policies or Ordinances Protecting Biological Resources, Such as a Tree Preservation Policy or Ordinance	Less than significant with mitigation incorporated	Less	Greater	Greater
Impact 3.3-6: Potential Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan	Less than significant with mitigation incorporated	Greater	Greater	Greater
Cultural and Tribal Cultural Resources				
Impact 3.4-1: Cause a Substantial Adverse Change in the Significance of a Historical Resource	Less than significant	Less	Similar	Similar
Impact 3.4-2: Cause a Substantial Adverse Change in the Significance of Unique Archaeological Resources	Less than significant with mitigation incorporated	Less	Greater	Greater
Impact 3.4-3: Cause a Substantial Adverse Change in the Significance of a Tribal Cultural Resource	Less than significant with mitigation incorporated	Less	Less	Greater
Impact 3.4-4: Disturb Human Remains	Less than significant	Less	Less	Greater
Geology and Soils				
Impact 3.5-1: Potential to Expose People or Structures to Substantial Adverse Impacts from Seismic or Geologic Hazards	Less than significant	Less	Similar	Similar
Impact 3.5-2: Potential to Result in Substantial Soil Erosion or the Loss of Topsoil	Less than significant	Less	Similar	Similar
Impact 3.5-3: Potential to Result in Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse	Less than significant	Less	Similar	Similar
Impact 3.5-4: Potential to Locate Project Facilities on Expansive Soil, Creating Substantial Direct or Indirect Risks to Life or Property	Less than significant	Less	Similar	Similar

Environmental Topic	Project	No Project – No Development Alternative	Alternative 1: In-Pipe Alternative	Alternative 2: Bayside Parallel Pipe Alternative
Impact 3.5-5: Potential to Result in the Loss of Availability of Regionally Significant Mineral Resources or a Locally Important Mineral Resource Recovery Site	Less than Significant	Less	Similar	Similar
Greenhouse Gas Emissions and Climate Change				
Impact 3.6-1: Potential to Generate GHG Emissions During Construction and Operation of the Proposed Project	Less than significant	Less	Less	Greater
Hazards and Hazardous Materials				
Impact 3.7-1: Potential to Create a Significant Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials	Less than significant	Less	Less	Greater
Impact 3.7-2: Potential to Create a Significant Hazard to the Public or the Environment through Reasonably Foreseeable Upset and/or Accident Conditions Involving the Release of Hazardous Materials into the Environment	Less than significant	Less	Less	Greater
Impact 3.7-3: 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	Less than significant	Less	Less	Less
Impact 3.7-4: Potential to Result in or Create a Significant Hazard to the Public or the Environment Due to Being Located on a Site Which Is Included on a List of Hazardous Materials Sites Compiled Pursuant to Government Code Section 65962.5	Less than significant with mitigation incorporated	Less	Less	Less
Impact 3.7-5: For a Project Located in an Airport Land Use Plan or, Where Such a Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Potential to Result in a Safety Hazard or Excessive Noise for People Residing or Working in the Project Area	Less than significant	Less	Less	Less
Impact 3.7-6: Potential to Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan	Less than significant	Less	Less	Less
Hydrology and Water Quality				
Impact 3.8-1: Potential to Violate Any Water Quality Standards or Waste Discharge Requirements or Substantially Degrade Surface Water or Groundwater Quality during Construction	Less than significant with mitigation incorporated	Less	Similar	Greater
Impact 3.8-2: Potential to Violate Any Water Quality Standards or Waste Discharge Requirements or Substantially Degrade Surface Water or Groundwater Quality during Operation	Less than significant	Less	Less	Greater
Impact 3.8-3: Potential to Substantially Decrease Groundwater Supplies or Interfere Substantially with Groundwater Recharge Such That the Project May Impede Sustainable Groundwater Management of the Basin	Less than significant with mitigation incorporated	Less	Similar	Greater

Environmental Topic	Project	No Project – No Development Alternative	Alternative 1: In-Pipe Alternative	Alternative 2: Bayside Parallel Pipe Alternative
Impact 3.8-4: Potential to Substantially Alter the Existing Drainage Pattern of the Area, Including through the Alteration of the Course of a Stream or River, in a Manner That Would Result in Substantial Erosion or Siltation On- or Off-Site, Result in Flooding On- or Off-Site, Create or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Storm Water Drainage Systems or Provide Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows	Less than significant	Less	Similar	Similar
Impact 3.8-5: Potential to Risk Release of Pollutants Due to Project Inundation from Flood Hazard, Dam Failure, Tsunami, Seiche, or Sea Level Rise	Less than significant with mitigation incorporated	Less	Greater	Greater
Impact 3.8-6: Potential to Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan	Less than significant with mitigation incorporated	Less	Similar	Similar
Noise				
Impact 3.9-1: Potential to Expose Existing Receptors to Short-Term Construction Noise	Significant and unavoidable	Less	Less, but would remain significant and unavoidable	Less, but would remain significant and unavoidable
Impact 3.9-2: Potential to Expose Sensitive Receptors to Construction Vibration	Less than significant	Less	Less	Less
Impact 3.9-3: Potential to Generate Long-Term Substantial Stationary Noise from Pump Station Operations	Less than significant	Less	Similar	Similar
Recreation				
Impact 3.10-1: Potential to Increase the Use of Existing Parks or Recreational Facilities During Project Construction Such That Physical Deterioration Would Occur or Be Accelerated	Less than significant with mitigation incorporated	Less	Greater	Greater
Impact 3.10-2: Potential to Increase the Use of Existing Parks or Recreational Facilities During Project Operations Such That Physical Deterioration Would Occur or Be Accelerated	Less than significant	Less	Similar	Similar
Impact 3.10-3: Potential to Substantially Increase Hazards Due to Incompatible Uses with Recreational Activities during Project Construction	Less than significant with mitigation incorporated	Less	Greater	Greater

5.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Because the No Project–No Development Alternative (described above in Section 5.4.1) would avoid all adverse impacts resulting from construction and operation of the project analyzed in Chapter 3 and Alternatives 1 and 2, it is the environmentally superior alternative. However, the No Project–No Development Alternative would not meet the objectives of the project, as presented above in Section 5.2.

When the environmentally superior alternative is the No Project Alternative, the State CEQA Guidelines (Section 15126[d][2]) require selection of an environmentally superior alternative from among the other alternatives that were evaluated. As illustrated in Table 5-1, Alternative 1 would result in some impacts that are greater than those of the project, including greater potential to disturb known archaeological resources, greater potential to adversely affect special-status species and habitats, greater potential to release pollutants from project site inundation, and greater disruptions to parks and recreational facilities and greater safety hazards to recreationists. However, most of the

impacts under Alternative 1 would be reduced compared to those of the project. For example, the reduced degree of construction and excavation would reduce the potential to encounter native soils that could contain cultural resources, reduce the area of ground disturbance resulting in water quality impacts, reduce the potential for the release of hazardous materials to the public and the environment, and reduce the emissions of criteria air pollutants and GHGs generated by the construction and operation of the project. Alternative 1 would also have reduced construction-related noise impacts than the proposed project, but the impact would remain significant and unavoidable under Alternative 1. Because overall impacts would be less under Alternative 1, Alternative 1 would be the environmentally superior alternative.

Although Alternative 1 is the environmentally superior alternative, this alternative presents several challenges associated with the installation of 4 miles of liner within EBDA's existing combined effluent pipeline to prevent corrosion in EBDA's system. First, Alternative 1 would require greater disruption to EBDA's existing operations during sliplining activities. Extensive bypass pumping would be required during sliplining of each segment to route effluent within the EBDA system around the work area and thereby support continued operations of the EBDA system during construction. Additionally, Alternative 1 would require greater disturbance to environmentally-sensitive areas, including the Eden Landing Ecological Reserve and Oro Loma Marsh in the Hayward Regional Shoreline. Lastly, Alternative 1 would involve sliplining of only the most vulnerable sections of EBDA's existing combined effluent pipeline. Therefore, unlined sections could potentially be susceptible to corrosion risks and could result in the need for additional maintenance over the lifetime of the project. Based on the above discussion, the project would better attain the project objectives of balancing impacts to sensitive environments and minimizing disruptions to EBDA's existing system.

Alternative 2 would not be the environmentally superior alternative because, although some impacts would be reduced compared to the project, this alternative would result in greater impacts than the project overall. Because the pipeline alignment would be located farther away from urban areas under Alternative 2 than under the project, fewer sensitive receptors would be exposed to increases in construction-related noise and vibration levels and the public would be exposed to fewer safety hazards related to potential release of hazardous materials. Even with mitigation, the construction-related noise and vibration impact would remain significant and unavoidable under Alternative 2. Additionally, the higher degree of construction and excavation required under Alternative 2 would increase the potential to encounter native soils that could contain cultural resources, increase the area of ground disturbance resulting in water quality impacts, increase the emissions of criteria air pollutants and GHGs generated by the construction and operation of the project, and increase access disruptions and safety hazards to recreationists. Furthermore, the pipeline alignment would be located in more environmentally-sensitive areas than the project, including wetland habitat in Oro Loma Marsh and Eden Landing Ecological Reserve. Work within these areas would require extensive coordination with applicable resource agencies and permitting.

6 OTHER CEQA SECTIONS

6.1 GROWTH INDUCEMENT

6.1.1 CEQA Requirements

CEQA Section 21100(b)(5) specifies that the growth-inducing impacts of a project must be addressed in an EIR. Section 15126.2(e) of the State CEQA Guidelines provides the following guidance for assessing growth-inducing impacts of a project:

> Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

A project can induce growth directly, indirectly, or both. Direct growth inducement would result if a project involved construction of new housing. Indirect growth inducement would result, for instance, if implementing a project resulted in:

- substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises);
- substantial short-term employment opportunities (e.g., construction employment) that indirectly stimulates the need for additional housing and services to support the new temporary employment demand; or
- removal of an obstacle to additional growth and development, such as removal of a constraint on a required public utility or service (e.g., construction of a major sewer line with excess capacity through an undeveloped area).

The State CEQA Guidelines do not distinguish between planned and unplanned growth for purposes of considering whether a project would foster additional growth. Therefore, for purposes of this EIR, to reach the conclusion that a project is growth-inducing as defined by CEQA, the EIR must find that it would foster (i.e., promote, encourage, allow) additional growth in economic activity, population, or housing, regardless of whether the growth is already approved by and consistent with local plans. The conclusion does not determine that induced growth is beneficial or detrimental, consistent with Section 15126.2(e) of the State CEQA Guidelines.

If the analysis conducted for the EIR results in a determination that a project is growth-inducing, the next question is whether that growth may cause adverse effects on the environment. Environmental effects resulting from induced growth (i.e., growth-induced effects) fit the CEQA definition of "indirect" effects in Section 15358(a)(2) of the State CEQA Guidelines. These indirect or secondary effects of growth may result in significant environmental impacts. CEQA does not require that the EIR speculate unduly about the precise location and site-specific characteristics of significant, indirect effects caused by induced growth, but a good-faith effort is required to disclose what is feasible to assess. Potential secondary effects of growth could include consequences—such as conversion of open space to developed uses, increased demand on community and public services and infrastructure, increased traffic and noise, degradation of air and water quality, or degradation or loss of plant and wildlife habitat—that are the result of growth fostered by the project.

The decision to allow those projects that result from induced growth is the subject of separate decision making by the lead agency responsible for considering such projects. Because the decision to allow growth is subject to separate discretionary decision making, and such decision making is itself subject to CEQA, the analysis of growth-inducing effects is not intended to determine site-specific environmental impacts and specific mitigation for the potentially induced growth. Rather, the discussion is intended to disclose the potential for environmental effects to occur more generally, such that decision makers are aware that additional environmental effects are a possibility if growth-inducing projects are approved. The decisions regarding whether impacts would occur, what their extent would be, and whether the impacts could be mitigated are appropriately left to consideration by the agency responsible for approving such projects at such times as complete applications for development are submitted.

The timing, magnitude, and location of land development and population growth in a community or region are based on various interrelated land use and economic variables. Key variables include regional economic trends, market demand for residential and nonresidential uses, land availability and cost, the availability and quality of transportation facilities and public services, proximity to employment centers, the supply and cost of housing, and regulatory policies or conditions. Because the general plan of a community defines the location, type, and intensity of growth, it is the primary means of regulating development and growth in California.

6.1.2 Growth-Inducing Impacts of the Project

Mechanisms by which a project may directly induce growth include (1) creating jobs that attract economic or population growth to the area, (2) promoting the construction of homes that would bring new residents to the area, and (3) removing an obstacle that impedes growth in the area. The Cargill MSS Processing and Brine Discharge Project would not directly induce growth for the following reasons:

- As described in Chapter 2, "Project Description," project construction is expected to last approximately 12–18 months with an average of 10–15 workers anticipated at the project site for the duration of construction. Operation and maintenance of the on-site and off-site facilities would require up to four new dedicated staff. The project would not generate a number of jobs, either temporarily during construction or during operation and maintenance, sufficient to attract appreciable economic or population growth to unincorporated Alameda County or the Cities of Hayward, Union City, Fremont, and Newark. Furthermore, the unemployment rate for the San Francisco-Oakland-Hayward metropolitan area (3.4 percent as of February 2022) suggests an available labor pool (US Bureau of Labor Statistics 2022), even if unemployment is low.
- The project would not involve the construction of any new residential units that could bring new residents to unincorporated Alameda County or the Cities of Hayward, Union City, Fremont, and Newark.
- The project, including the MSS brine transport pipeline, would not increase the capacity of EBDA's combined effluent conveyance system. Therefore, the project would not remove a limitation on growth related to wastewater treatment or conveyance capacity.
- As discussed in Chapter 2, "Project Description," it is anticipated that other uses for the on-site infrastructure and the off-site pipeline would emerge after completing the processing of MSS in both Ponds 12 and 13 and/or termination of the agreement between Cargill and EBDA. Cargill may consider renegotiating its agreement with EBDA and continuing the existing operations or finding other uses related to ongoing operations of the Solar Salt Facility. EBDA may also find other customers that could benefit from the pipeline. For example, future water recycling projects developed by EBDA, its member agencies, and/or partners, may yield reverse osmosis concentrate brine streams that could be conveyed to the Bay via the MSS brine transport pipeline. These future uses would be available to customers within EBDA's existing service area. Therefore, implementing the project would not allow new areas to be served.

6.2 SIGNIFICANT AND UNAVOIDABLE ADVERSE IMPACTS

The State CEQA Guidelines Section 15126.2(c) requires EIRs to include a discussion of the significant environmental effects that cannot be avoided if the proposed project is implemented. As documented throughout Chapter 3 (project-level impacts) and Chapter 4, "Cumulative Impacts," of this Draft EIR, after implementation of the recommended mitigation measures, most of the impacts associated with the project would be reduced to a less-than-significant level. The following impacts are considered significant and unavoidable; that is, no feasible mitigation is available to reduce the project's impacts to a less-than-significant level:

- Impact 3.9-1: Potential to Expose Existing Receptors to Short-Term Construction Noise

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7 REFERENCES

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No references were used in this chapter.

Chapter 1 Introduction

No references were used in this chapter.

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Chapter 3 Environmental Impacts and Mitigation Measures

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8 REPORT PREPARERS

East Bay Dischargers Authority (Lead Agency)

Jackie Zipkin, PE ..... General Manager
Howard Cin ..... Operations and Maintenance Manager

Cargill (Project Applicant)

Tim Oolman ..... Project Manager/Engineering Fellow
Don Brown ..... Government Relations Lead
Drew Heise, PE, PMP ..... Build Project Manager
Connie Lee ..... Land Management Engineer

Ascent Environmental (CEQA Compliance)

Gary Jakobs, AICP ..... Principal
Andrea Shephard, PhD ..... Senior Project Manager
Nicole Greenfield ..... Geology and Soils, Recreation, Assistant Project Manager
Brenda Hom ..... Senior Air Quality and Climate Change Specialist
Julia Wilson ..... Air Quality, Greenhouse Gas Emissions and Climate Change
Matthew Brehmer ..... Air Quality, Greenhouse Gas Emissions and Climate Change
Dimitri Antoniou, AICP ..... Senior Noise Specialist
Shaurya Johari ..... Noise
Abdul Khan ..... Noise
Lara Rachowicz, PhD ..... Senior Biologist
Alta Cunningham ..... Archaeological, Historical, and Tribal Cultural Resources
Emilie Zelazo, RPA ..... Archaeological and Historical Resources
Jim Merk ..... Hazards and Hazardous Materials, Technical Editor
Kelley Kelso (CPESC, QSD, QSP, QISP) ..... Hydrology and Water Quality
Lisa Merry ..... GIS Specialist
Brian Perry ..... Graphic Specialist
Corey Alling ..... Graphic Specialist
Michele Mattei ..... Publishing Specialist
Gayiety Lane ..... Publishing Specialist

AECOM (CEQA Support – Biological and Cultural Resources)

Elizabeth Nielsen, PE ..... Environmental Engineer
Nick Duffort ..... Biologist/Environmental Planner
Dillon Lennebacker ..... Environmental Planner
Karin G. Beck, RPA, RPH ..... Archaeologist/Historian

Larry Walker Associates (Water Quality Technical Memorandum)

Mike Trouchon ..... Associate Scientist
Denise Conners ..... Associate Engineer

Meyers Nave (EBDA's Legal Counsel)

Shaye Diveley ..... Principal
Greg Newmark ..... Principal
Edward Grutzmacher ..... Attorney
Viviana Heger ..... Attorney

Jacobs (Proposed Project and Bayside Parallel Pipeline Alternative Design)

Makarand Pendse, PMP ..... Senior Project Manager
Nancy Maschke, PE ..... Conveyance Engineer

Brown and Caldwell (In-Pipe Alternative Design)

Rachel Philipson, PE ..... Engineer

Garney (Construction Management)

Bill Williams ..... Vice President
Matt Roberts ..... Estimator/Project Manager

Appendix A

Notice of Preparation and Scoping Comments

EAST BAY DISCHARGERS AUTHORITY

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT AND PUBLIC SCOPING MEETING FOR THE CARGILL MIXED SEA SALT PROCESSING AND BRINE DISCHARGE PROJECT

Date: May 20, 2022

To: Responsible Agencies, Trustee Agencies, and Interested Persons

RE: Notice of Preparation of a Draft Environmental Impact Report for the Cargill Mixed Sea Salt Processing and Brine Discharge Project

The East Bay Dischargers Authority (EBDA) is a Joint Powers Public Agency (JPA) consisting of five local agencies (City of San Leandro, Oro Loma Sanitary District, Castro Valley Sanitary District, City of Hayward, and Union Sanitary District). EBDA owns and operates three effluent pump stations, a dechlorination facility, and combined effluent pipeline/force main and outfall system to manage treated effluent from its member agencies' wastewater treatment plants and discharge the effluent through its common outfall and diffuser into a deep-water portion of the central San Francisco Bay (Bay) under a National Pollutant Discharge Elimination System (NPDES) permit.

Cargill, Incorporated (Cargill) operates a solar sea salt production facility (Solar Salt Facility) in Newark, California. The Solar Salt Facility produces sodium chloride (NaCl, i.e., table salt) and liquid bittern (concentrated magnesium chloride brine) through solar evaporation of Bay water in a series of salt ponds along the margin of the Bay. After the majority of the NaCl is precipitated through a process of concentration and evaporation, it is moved to Cargill's adjacent salt refinery, where it is further processed and packaged to individual customer's specifications. The remaining brine and precipitated salt crystals, which primarily contain salts that are more soluble than NaCl, are referred to as mixed sea salts (MSS). The MSS remain in the salt production process, where further NaCl may be recovered and liquid bittern is harvested to produce additional commercial products used for road de-icing and dust suppression, animal feed, and other products.

The liquid bittern, which is entrained in the MSS inventory, is stored in ponds adjacent to the Bay at the Solar Salt Facility until the liquid bittern is harvested for commercial sale. The remaining excess MSS that is not sold as an alternative salt product is stored in those same ponds. Currently, there are approximately 6 million tons of MSS stored in ponds adjacent to the Bay at the Solar Salt Facility.

Facing the potential long-term threat of sea level rise from the Bay, Cargill is proposing to implement innovative technology to enhance extraction of additional salts from the MSS inventory and then dissolve residual MSS in Bay water to produce a brine that could be pumped into EBDA's combined effluent conveyance system. Once in EBDA's conveyance system, the brine would be blended with and further diluted by EBDA Member Agency effluent and then discharged back into the Bay in accordance with EBDA's NPDES permit. Through this process, the volume of brine and precipitated salts stored in ponds closest to the Bay at the Solar Salt Facility in Newark would be reduced. Therefore, with implementation of the proposed project, Cargill would be accelerating and enhancing the recovery of commercial product from MSS and proactively addressing the threat of sea level rise at the same time.

The proposed project would involve modifications within Cargill's Solar Salt Facility, including new pipelines and pumping facilities, and construction of approximately 16 miles of new underground pipeline, primarily within roadway rights-of-way, to connect the Solar Salt Facility to EBDA's outfall system on the site of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in the community of San Lorenzo.

It is anticipated that the MSS brine would be discharged to the EBDA system at an average rate ranging from 0.9 million gallons per day (MGD) to 2 MGD (taking approximately 20 to 10 years respectively). Discharge of the MSS brine by Cargill to the EBDA system would be subject to an agreement between EBDA and Cargill. The EBDA JPA term expires on June 30, 2040. Therefore, the proposed project would either terminate on or before that date or could continue under a renegotiated agreement.

In accordance with the provisions of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.), EBDA has determined that the proposed project will require preparation of an Environmental Impact Report (EIR). EBDA will serve as the lead agency for CEQA compliance. The purpose of this Notice of Preparation (NOP) is to provide an opportunity for the public, interested parties, and public agencies to comment on the scope and proposed content of the EIR. This NOP initiates the 30-day CEQA scoping process. A hard-copy of the NOP is available for public review at:

East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580

The NOP is also available for public review online at: https://ebda.org/projects/cargill-partnership/

PROVIDING COMMENTS ON THIS NOTICE OF PREPARATION

Agencies and interested parties may provide EBDA with written and/or email comments on topics to be addressed in the EIR. Because of time limits mandated by State law, comments must be received by 5:00 p.m. on June 15, 2022. Please send all comments on the NOP by mail or email to:

East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580

Attn: Jacqueline Zipkin, General Manager
Phone: (510) 278-5910
E-mail: jzipkin@ebda.org

Comments provided by email should include "Cargill MSS Processing and Brine Discharge Project NOP Scoping Comment" in the subject line, and the name and physical address of the commenter in the body of the email. If you are from an agency that will need to consider the EIR when deciding whether to issue permits or other approvals for the project, please provide the name of a contact person.

All comments on environmental issues received during the public comment period will be considered and addressed in the Draft EIR, which is anticipated to be available for public review in summer 2022.

Focus of Input

EBDA relies on responsible and trustee agencies to provide information relevant to the analysis of resources falling within their jurisdiction. EBDA encourages input for the proposed EIR, with a focus on the following topics:

- Scope of Environmental Analysis. Guidance on the scope of analysis for this EIR, including identification of specific issues that will require closer study due to the location, scale, and character of the proposed project.
- Mitigation Measures. Ideas for feasible mitigation, including mitigation that could potentially be imposed by EBDA and that would avoid, eliminate, or reduce potentially significant or significant impacts.

- **Alternatives.** Suggestions for alternatives to the proposed project that could potentially reduce or avoid potentially significant or significant impacts.
- **Interested Parties.** Identification of public agencies, public and private groups, and individuals that EBDA should notice regarding the proposed project and associated EIR.

PUBLIC SCOPING MEETING

EBDA will conduct a public scoping meeting to inform interested parties about the project, and to provide agencies and the public with an opportunity to provide comments on the scope and content of the EIR. The public scoping meeting will be conducted online and is scheduled for the following date and time:

Date and Time

Wednesday, June 1, 2022; 6:00 p.m.; Presentation at 6:00 p.m.

Logistics

To join the scoping meeting, click on the link below or copy and paste it into your browser.

https://us02web.zoom.us/j/89391935978

Or, on Zoom go to "Join a Meeting" and enter the Meeting ID: 893 9193 5978. To access the scoping meeting via phone, please call US: +1 669 900 6833 and enter the Meeting ID.

Accessibility

The meeting will be offered in English. To request other language interpretation or other accommodation, please submit your request at least 7 business days before the meeting (by May 25, 2022) by contacting Juanita Villaseñor at (510) 278-5910.

PROJECT LOCATION

Proposed project features are located in the eastern San Francisco Bay Area, including portions of San Lorenzo, an unincorporated community in Alameda County, and portions of the Cities of Hayward, Union City, Fremont, and Newark. Specifically, project improvements would be constructed at Cargill's Solar Salt Facility, located at 7220 Central Avenue in Newark, California, and primarily within roadway rights-of-way between the Solar Salt Facility and the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. The MSS are primarily situated in Ponds 12 and 13 of Cargill's Solar Salt Facility, which are located within the United States Fish and Wildlife Service's (USFWS) Don Edwards San Francisco Bay National Wildlife Refuge. In 1979, Cargill transferred this real property, along with additional acreage, through a condemnation process and retained perpetual rights to continue sea salt operations within 8,000 acres of the refuge, including Ponds 12 and 13. The project location and proposed features are shown in Figure 1 below.

PROJECT DESCRIPTION

The proposed project would enable the enhanced processing and removal of MSS in existing Cargill ponds by harvesting additional liquid bittern, a concentrated magnesium chloride brine, from the MSS matrices in these ponds as commercial product, dissolving the residual MSS solids in the ponds using Bay water, and transferring the resulting brine to EBDA's combined effluent pipeline for discharge into the Bay under EBDA's NPDES permit. Harvesting the liquid bittern and final disposition of the residual MSS brine would not require the use of any chemicals. It is anticipated that the MSS brine would be discharged to the EBDA system at an average rate ranging from 0.9 million gallons per day (MGD) to 1.8 MGD.

The proposed project has an onsite component of pipelines and pumping facilities within the existing Solar Salt Facility and an offsite component that would involve construction of approximately 16 miles of new underground pipeline primarily within roadway rights-of-way to connect the Solar Salt Facility into EBDA's system just downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo.

The proposed project consists of the following components:

- Dissolution Water Pond and Plummer Creek Pump Station. A new pump station would be installed to pump water indirectly from Plummer Creek to a new dissolution water pond.
- Dissolution Water Pump Station and Distribution System. A new dissolution water pump station would be constructed as a cast-in-place slab-on-grade facility located at the Dissolution Water Pond and connected to an onsite high-density polyethylene piping distribution system installed above grade along the internal slope of the existing berms to deliver dissolution water to micro-trenches excavated in the crystallized salt layer above the Bay mud in Ponds 12 and 13 for MSS processing.
- Two MSS Brine Pump Stations. New MSS brine pump stations would be constructed at Ponds 12 and 13 consisting of cast-in-place concrete wet wells connected to cast-in-place slab-on-grade pump stations to pump the resultant brine out of the processing ponds and into the offsite brine discharge pipeline.
- MSS Liquid Brine Recovery. During the processing of Pond 12, sections of the pond would be temporarily isolated using vinyl sheet piling to enable liquid bittern recovery. Two new pipelines would be installed along the internal slope of the berm on the northern shore of Pond 12: (1) a 12-inch header pipe to deliver dissolution water to Pond 12; and (2) a 4-inch pipe to transfer liquid bittern from Pond 12 to Pond 13, where it would be further processed and harvested as commercial product.
- Rainwater Decanting. A new weir box structure, which includes a weir plate (barrier) to control the flow of water, and a pipe would be installed at the northeastern corner of Pond 13 to enable decanting of rainwater from the surface of Pond 13 to supplement dissolution water for Pond 12.
- MSS Brine Transport Pipeline. A MSS brine transport pipeline, 14 to 16 inches in diameter, would be constructed and extend north primarily along roadway rights-of-way for approximately 16 miles from the Solar Salt Facility to the Oro Loma Effluent Pump Station (OLEPS), located at the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. A proposed pipeline alignment and two optional alignments have been identified for evaluation at a detailed level in the EIR (*see* Figure 1). The two optional alignments would follow the proposed alignment from the Solar Salt Facility to just north of where the pipeline would cross the Old Alameda Creek Flood Control Channel and Union City Boulevard transitions to Hesperian Boulevard. From here, the proposed alignment continues north on Hesperian Boulevard to Grant Avenue and then west to the OLEPS. The optional alignments diverge from the proposed alignment at the intersection of Hesperian Boulevard and Industrial Boulevard and then the two options diverge from each other at the intersection of Whitesell Street and Depot Road before converging again on the north side of Oro Loma Marsh and continuing to the OLEPS.
- Discharge to the EBDA System. The MSS brine transport pipeline would tie into EBDA's combined effluent conveyance system immediately downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo, either by connection directly to the OLEPS, or to the pump discharge manhole approximately 75 feet north of the OLEPS. The MSS brine would then be combined with the treated wastewater effluents from the other agencies that discharge into the EBDA system before being discharged back to the Bay.

POTENTIAL ENVIRONMENTAL EFFECTS

As required by CEQA, the EIR will describe existing conditions and evaluate the potential environmental effects of the proposed project and a reasonable range of alternatives, including the no-project alternative. It will address direct, indirect, and cumulative effects. The EIR will identify feasible mitigation measures, if available, to reduce potentially significant impacts. At this time, EBDA has identified a potential for environmental effects in the areas identified below:

- Air Quality;
- Biological Resources;
- Cultural and Tribal Cultural Resources;
- Geology and Soils;
- Greenhouse Gas Emissions and Climate Change
- Hazards and Hazardous Materials;
- Hydrology and Water Quality; and
- Noise and Vibration.

The EIR will evaluate all environmental topic areas included in State CEQA Guidelines, including the topics identified above. Feasible and practicable mitigation measures will be recommended to reduce any identified potentially significant and significant impacts.

ALTERNATIVES TO BE EVALUATED IN THE EIR

In accordance with the State CEQA Guidelines (14 CCR Section 15126.6), the EIR will evaluate a range of reasonable alternatives to the proposed project that are capable of meeting most of the objectives and would avoid or substantially lessen one or more significant effects of the project. The EIR will also identify any alternatives that were considered but rejected by the lead agency as infeasible and briefly explain the reasons why.

Two action alternatives are currently under consideration by EBDA and Cargill. The first action alternative, referred to as the "In-Pipe Alternative" would involve the same improvements at the Solar Salt Facility as those included in the proposed project, but instead of constructing 16 miles of new underground pipeline along the proposed MSS brine transport pipeline alignment or optional alignments shown in Figure 1, the In-Pipe Alternative would involve construction of approximately 7.5 miles of new underground pipeline connecting the Solar Salt Facility to EBDA's system just downstream of the Union Sanitary District Alvarado Wastewater Treatment Plant in Union City and then installation of approximately 4 miles of slip-liner within EBDA's existing combined conveyance pipeline to prevent corrosion in EBDA's system. The 4 miles of slip-liner within the EBDA combined conveyance pipeline would start approximately 3 miles downstream of the MSS brine transport pipeline connection to the EBDA system and extend to the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. In addition to laydown areas along the 7.5-mile new underground pipeline route, this alternative would require access pits periodically along the 4-mile slip-liner section of EBDA's system. The second action alternative under consideration by EBDA and Cargill, referred to as the "Bayside Parallel Pipe Alternative," also would involve the same improvements at the Solar Salt Facility as those included in the proposed project, but under this alternative, the MSS brine transport pipeline would consist of approximately 17 miles of new underground pipeline that would skirt the edges of existing or former Cargill-owned or operated salt ponds and then run almost parallel to EBDA's existing pipeline until connecting into EBDA's system downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. This alternative would rely on directional drilling in several areas to minimize impacts to wetlands and sensitive habitat. The EIR will also provide an analysis of the No Project Alternative and will identify the environmentally superior alternative from among the alternatives evaluated in the EIR.

Source: Data provided by AECOM and Jacobs in 2021 and 2022, adapted by Ascent Environmental, Inc. in 2022

Figure 1 Project Location and Proposed Project Features

NATIVE AMERICAN HERITAGE COMMISSION

May 20, 2022

Jackie Zipkin, General Manager
East Bay Dischargers Authority (EBDA)
2651 Grant Avenue
San Lorenzo, CA 94580-1841

Re: 2022050436, Cargill Mixed Sea Salts Processing and Brine Discharge Project, Alameda County

Dear Ms. Zipkin:

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).

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.

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
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

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.

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) 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, subds. (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: Cody.Campagne@nahc.ca.gov.

Sincerely,

Cody Campagne

Cody Campagne
Cultural Resources Analyst

cc: State Clearinghouse

From:	Jacqueline Zipkin
To:	Andrea Shephard; Nicole Greenfield; Gary Jakobs
Cc:	Diveley, Shaye; Grutzmacher, Edward
Subject:	FW: Cargill MSS Processing and Brine Discharge Project NOP Scoping Comment
Date:	Wednesday, June 8, 2022 2:45:02 PM
Attachments:	image001.png Cargil Proposed Project Site Map.pdf FINAL Interim Water Pipeline Right of Way Policy.pdf FINAL-Amended Right of Way Integrated Vegetation Management Policy.pdf

FYI

From: Wilson, Joanne <jwilson@sfwater.org>
Sent: Tuesday, June 7, 2022 7:31 PM
To: Jacqueline Zipkin <JZipkin@ebda.org>
Cc: Natesan, Ellen <ENatesan@sfwater.org>; Read, Emily <ERead@sfwater.org>; Herman, Jane <jherman@sfwater.org>; Rando, Casey <crando@sfwater.org>; Ramirez, Tim <TRamirez@sfwater.org>; Revelli, Lindsay <LRevelli@sfwater.org>; Fedman, Anna <AFedman@sfwater.org>; Lemire, Jeff <JeLemire@sfwater.org>; Feng, Stacie <SFeng@sfwater.org>; Rodgers, Heather <HeRodgers@sfwater.org>; Wong, Christopher J <CJWong@sfwater.org>; Mendoza, Jonathan S <JSMendoza@sfwater.org>; Russell, Rosanna S <RSRussell@sfwater.org>
Subject: Cargill MSS Processing and Brine Discharge Project NOP Scoping Comment

To: East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580
Attn: Jacqueline Zipkin, General Manager
Phone: (510) 278-5910

Sent Via E-mail: jzipkin@ebda.org

Hello Ms. Zipkin: Thank you for this opportunity to provide comments on behalf of the San Francisco Public Utilities Commission (SFPUC) on the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the above-referenced project pursuant to the California Environmental Quality Act (CEQA).

The Cargill Mixed Sea Salt (MSS) Processing and Brine Discharge Project includes the construction of a Brine Transport Pipeline. The proposed Brine Transport Pipeline, 14 to 16 inches in diameter, would extend approximately 16 miles from San Lorenzo to Newark. The site map included with the NOP correctly shows that this proposed pipeline, along with the two optional alignments, would cross SFPUC infrastructure ("Hetch Hetchy Aqueduct"). Specifically, it appears that the proposed Brine Transport Pipeline would cross the right-of-way (ROW) for several SFPUC high pressure, large capacity, water transmission pipelines and the Bay Tunnel. Most of the SFPUC pipeline ROW in this area is owned in fee, and land uses within the SFPUC's Bay Tunnel ROW are restricted to those allowed under the SFPUC easement.

Land Use

SFPUC land use policies should be included in the land use analysis of the EIR. Land use and planning analyses under CEQA generally consider the compatibility of a project with neighboring areas, change to or displacement of existing uses, and consistency of a project with relevant local land use policies. The magnitude of land use conflicts or compatibility issues depends on the extent to which a project physically divides an established community or conflicts with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect such that an adverse impact on the environmental occurs.

The SFPUC maintains policies to help inform how and in which instances its ROW can serve the needs of public agencies, private parties, nonprofit organizations, and developers while maintaining the safety and security of the pipelines that run underneath the ROW. SFPUC policies pertain to land use and structures, recreational use, utilities, vegetation, and water efficiency. Construction of structures on the ROW is generally prohibited and no structures may be placed directly on top of a pipeline or within 20 feet of the edge of a pipeline. No utilities may be installed on the ROW running parallel to SFPUC's pipelines; utilities may run perpendicular to pipelines with adequate vertical clearances with SFPUC review and approval.

According to SFPUC's Interim Water Pipeline Right of Way Use Policy for San Mateo, Santa Clara, and Alameda Counties (copy attached), the SFPUC typically issues 5-year licenses for use of its property, with a form of rent and insurance required upon signing.
These licenses are revocable, meaning that SFPUC can revoke them prior to the 5-year expiration. The licensee (user of SFPUC property) is to maintain landscaping and equipment to ensure that water is used efficiently. Water runoff leaving a landscaped area due to low head drainage, overspray, broken irrigation hardware, or other similar conditions is prohibited.

The SFPUC's Right of Way Integrated Vegetation Management Policy (copy attached) was established to manage vegetation on the transmission, distribution, and collection systems within SFPUC's ROW so that it does not pose a threat or hazard to the system's integrity and infrastructure or impede utility maintenance and operations. These policies include regulations on the types of plantings that are permitted to occur within each zone of the ROW, regulations on annual grass and weed management, and policies pertaining to vegetation removal.

A written agreement for a secondary use on SFPUC property may occur only if the SFPUC determines that the secondary use does not in any way interfere with, endanger, or damage existing or future SFPUC operations, security, or facilities.

The SFPUC prohibits any use on its ROW property that:
1. Would conflict with the SFPUC's ability to construct, maintain, operate, or conduct emergency repairs of its facilities.

2. Would conflict with SFPUC legal obligations related to SFPUC parcels subject to easements or other agreements held by adjoining landowners or third parties. Further research by the SFPUC's Real Estate Services is needed, but it is possible that certain SFPUC parcels may not be available for the proposed use.

3. Would conflict with the resolution of unauthorized third-party encroachments that currently exist on some SFPUC ROW parcels.

4. Would create an unreasonable burden for the SFPUC (or its ratepayers) in the use of its property for utility purposes. The SFPUC reasonably anticipates that its property will be available for future utility infrastructure and capital projects. Revocable licenses and leases issued by the SFPUC contain standard language requiring any lessee or licensee of SFPUC lands to mitigate the effects for the disruption of its land uses, including recreational use, on SFPUC lands, even if the SFPUC is causing the disruption of
these land uses. This includes required mitigation under the California Environmental Quality Act (CEQA).

5. Is otherwise inconsistent with SFPUC plans and policies (see attached).

This list is not exhaustive. The SFPUC retains the right to disallow any use that, at the SFPUC's sole discretion, may interfere with, endanger or damage existing or future SFPUC operations, security, or facilities.

In addition to the above comments, please add the SFPUC (on behalf of the City and County of San Francisco) as a responsible agency under CEQA. Any improvements proposed on SFPUC property would require written authorization (a discretionary action), and if the proposed project were to go forward on SFPUC property, the SFPUC would be required to draft responsible agency findings pursuant to CEQA.

SFPUC Project Review Process

Proposed projects and other activities on any San Francisco property must undergo the Project Review Process if the project will include construction; digging or earth moving; clearing; installation; the use of hazardous materials; other disturbance to watershed
and ROW resources; or the issuance of new or revised leases, licenses and permits. This review is done by the SFPUC's Project Review Committee (Committee).

The Committee is a multidisciplinary team with expertise in natural resources management, environmental regulatory compliance, engineering, water quality and real estate. Projects and activities are vetted by the Committee for consistency with SFPUC plans
and policies.

In reviewing a proposed project, the Committee may conclude that modifications or avoidance and minimization measures are necessary. Large and/or complex projects may require several project review sessions to review the project at significant planning and
design stages.

To initiate the Project Review process, please download and fill out a Project Review application at Project Review and Land Use - Bay Area | SFPUC. Please submit the completed application to projectreview@sfwater.org and it will be scheduled for the next available Project Review meeting.

Thank you for considering these comments. If you have any questions or require more information, please contact me.

Sincerely,

Joanne Wilson

Joanne Wilson
Senior Land and Resources Planner
Natural Resources and Lands Management Division
Water Enterprise
1657 Rollilns Road
Burlingame, CA 94010

Hetch Hetchy Regional Water System
Operated by San Francisco Water, Power and Sewer | Services of the San Francisco Public Utilities Commission

California Department of Transportation

DISTRICT 4
OFFICE OF TRANSIT AND COMMUNITY PLANNING
P.O. BOX 23660, MS–10D | OAKLAND, CA 94623-0660
www.dot.ca.gov

June 14, 2022

SCH #: 2022050436
GTS #: 04-ALA-2022-00656
GTS ID: 26602
Co/Rt/Pm: ALA/VAR/VAR

Jacqueline Zipkin, General Manager
East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580-1841

Re: Cargill Mixed Sea Salts Processing and Brine Discharge Project – Notice of Preparation of a Draft Environmental Impact Report (DEIR)

Dear Jacqueline Zipkin,

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for this project. We are committed to ensuring that impacts to the State's multimodal transportation system and to our natural environment are identified and mitigated to support a safe, sustainable, integrated and efficient transportation system. The following comments are based on our review of the May 2022 NOP.

Project Understanding
The proposed project would involve construction of new pipelines and pumping facilities within Cargill's Solar Salt Facility and construction of approximately 16 miles of new underground pipeline. The proposed pipeline alignment would cross State Route (SR)-92 and SR-84.

Hydrology
Any floodplain impacts must be documented and mitigated. Any additional floodplain impacts on existing adjacent properties must be explained. Provide a floodplain analysis report and drainage report detailing assumptions and calculations used in the design of the drainage system.

Biological Resources
Provide the proposed jacking and receiving pit locations where the proposed pipeline alignments cross SR-92 and SR-84 within Caltrans' Right-of-Way (ROW) for the Office of Biological Sciences and Permits, Biology Branch, to review. Caltrans should also review all crossings at locations with potential to encounter protected species and habitats.

Construction-Related Impacts
Construction work for the proposed pipeline must not disrupt the traffic operations of both SR-92 and SR-84. The risk of pipe failures during an earthquake that may potentially impact the State highway traffic operations should be considered and discussed. Mitigation for significant impacts due to construction and noise should be identified. Project work that requires movement of oversized or excessive load vehicles on State roadways requires a transportation permit that is issued by Caltrans. To apply, visit: https://dot.ca.gov/programs/traffic-operations/transportation-permits

Potential impacts to Caltrans' ROW from project-related temporary access points should be analyzed. If an access from within Caltrans' ROW is needed for maintenance, any lane closures needed to perform the maintenance would be allowed only during periods in which traffic impacts are minimized.

Prior to construction, coordination may be required with Caltrans to develop a Transportation Management Plan (TMP) to reduce construction traffic impacts to the State Transportation Network (STN).

Lead Agency
As the Lead Agency, the East Bay Dischargers Authority is responsible for all project mitigation, including any needed improvements to the STN. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures.

Equitable Access
If any Caltrans facilities are impacted by the project, those facilities must meet American Disabilities Act (ADA) Standards after project completion. As well, the project must maintain bicycle and pedestrian access during construction. These access considerations support Caltrans' equity mission to provide a safe, sustainable, and equitable transportation network for all users.

Encroachment Permit
Please be advised that any permanent work or temporary traffic control that encroaches onto Caltrans' ROW requires a Caltrans-issued encroachment permit. As part of the encroachment permit submittal process, you may be asked by the Office of Encroachment Permits to submit a completed encroachment permit application package, digital set of plans clearly delineating Caltrans' ROW, digital copy of signed,

dated and stamped (include stamp expiration date) traffic control plans, this comment letter, your response to the comment letter, and where applicable, the following items: new or amended Maintenance Agreement (MA), approved Design Standard Decision Document (DSDD), approved encroachment exception request, and/or airspace lease agreement. Your application package may be emailed to D4Permits@dot.ca.gov.

Please note that Caltrans is in the process of implementing an online, automated, and milestone-based Caltrans Encroachment Permit System (CEPS) to replace the current permit application submittal process with a fully electronic system, including online payments. The new system is expected to be available during 2022. To obtain information about the most current encroachment permit process and to download the permit application, please visit https://dot.ca.gov/programs/traffic-operations/ep/applications.

Thank you again for including Caltrans in the environmental review process. Should you have any questions regarding this letter, or for future notifications and requests for review of new projects, please email LDR-D4@dot.ca.gov.

Sincerely,

Mark Leong

MARK LEONG
District Branch Chief
Local Development Review

c: State Clearinghouse

ALAMEDA COUNTY WATER DISTRICT

BOARD MEMBERS

AZIZ AKBARI
JAMES G. GUNTHER
JUDY C. HUANG
PAUL SETHY
JOHN H. WEED

43885 SOUTH GRIMMER BOULEVARD • FREMONT, CALIFORNIA 94538
(510) 668-4200 • www.acwd.org

MANAGEMENT

ED STEVENSON
General Manager
KURT ARENDS
Operations and Maintenance
GIRUM AWOKE
Engineering and Technology
LAURA J. HIDAS
Water Resources
JONATHAN WUNDERLICH
Finance and Administration

June 15, 2022

VIA ELECTRONIC MAIL
Jacqueline Zipkin (jzipkin@ebda.org)
General Manager
East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580

Dear Ms. Zipkin:

Subject: Notice of Preparation (NOP) of a Draft Environmental Impact Report for the Cargill Mixed Sea Salt (MSS) Processing and Brine Discharge Project NOP Scoping Comments

Alameda County Water District (ACWD) has reviewed the NOP of a Draft Environmental Impact Report (EIR) for the Cargill MSS Processing and Brine Discharge Project (Project) and would appreciate your consideration of the following comments while developing the EIR:

1. Groundwater: ACWD manages the Niles Cone Groundwater Basin (Niles Cone Subbasin 2-09.001 or Niles Cone) located within the cities of Fremont, Newark, Union City, and the southern portion of the City of Hayward. In addition, ACWD primarily provides retail water service to approximately 345,000 people in the cities of Fremont, Newark, and Union City. The Niles Cone represents a major source of ACWD's water supply; therefore, it is imperative that the Niles Cone be protected. ACWD requests that the following potentially significant impacts to groundwater resources be addressed by the EIR:

    a. *Groundwater Well Protection/Destruction*: ACWD has identified a number of water wells and monitoring wells located within or in close proximity of the proposed pipeline alignments. In order to protect the groundwater basin, each well located within and adjacent to the Project area must be identified by Project Proponents and either be protected or properly destroyed prior to, or during construction activities. If the well(s) are to remain, a letter indicating so must be sent to ACWD. If the well(s) are: 1) no longer required by any regulatory agency; 2) no longer monitored on a regular basis; or 3) damaged, lost, or the surface seal is jeopardized in any way during the construction process, the wells must be destroyed in accordance with ACWD requirements.

b. *Drilling Permits*: As required by ACWD Ordinance No. 2010-01, drilling permits are required prior to the start of any subsurface drilling activities for wells, exploratory holes, and other excavations (including the installation of shaft, tunnel or directional boreholes, support piers, piles, or caissons) within the cities of Fremont, Newark and Union City. All permitted work requires scheduling for inspection; therefore, all drilling activities must be coordinated with ACWD prior to the start of any field work.

c. *Dewatering:* Since groundwater is shallow within most of the Project area, ACWD requests that the EIR address the following potentially significant impacts related to dewatering activities:

   i. The amount of water that may be extracted by either temporary or permanent dewatering must be evaluated and documented. Alternative designs should be considered that would minimize the amount of dewatering required during and subsequent to construction. Measurement of groundwater losses due to dewatering may be required and may be subject to a replenishment assessment fee. Mitigation measures should be identified to replace all significant losses of ACWD's groundwater supplies.

   ii. The EIR should also address the potential impacts that dewatering activities and construction may have on existing groundwater contamination and potential plume migration.

   iii. ACWD permits are required for the installation and destruction of dewatering wells.

d. *Existing Hazardous Material Contamination:* The EIR should acknowledge that as part of ACWD's Groundwater Protection Program, ACWD entered into Cooperative Agreements with the California Regional Water Quality Control Board – San Francisco Bay Region (Regional Board), and the cities, which allows ACWD to provide technical oversight for the investigation and remediation of Leaking Underground Fuel Tank (LUFT) sites and sites where the pollution is attributed to spills or leaks from structures other than underground fuel tanks now referred to as Site Cleanup Program sites or SCP (formerly known as Spills, Leaks, Investigation, and Cleanup sites or SLIC) sites within the Niles Cone.

   The EIR should also identify known open and closed cleanup sites within and adjacent to the Project area (including the pipeline alignments) and include appropriate mitigation measures to ensure construction activities such as excavation, grading, dewatering, etc., will not adversely impact the cleanup and remediation of those sites, result in any potential health risks, and as previously mentioned, will not result in plume migration. The contractor performing the subsurface activities may also encounter soil and/or groundwater contamination that is unknown or is not associated with an identified or known cleanup site. The EIR should also address such scenarios and include a provision notifying the appropriate agencies, including ACWD.

2. Existing ACWD Infrastructure within the Project Area: ACWD requests that the following potentially significant impacts to existing ACWD facilities and infrastructure be addressed by the EIR:

    a. The category of "Utilities" was not included under Potential Environment Effects in the NOP to be mitigated. Although this section does state that "the EIR will evaluate all environmental topic areas included in State CEQA Guidelines," due to the nature and length of this project, ACWD requests that "Utilities" be added to the list and evaluated as the Project may generate a potentially significant or significant impacts.

    b. ACWD has water system infrastructure, including but not limited to, water pipelines and associated appurtenances, monitoring stations, etc., located within the limits of the proposed alignment and option 1 and 2 alignments as described in the NOP dated May 20, 2022. The Project could have potential impacts to existing water facilities which will require very close coordination between Project Proponents and ACWD. ACWD expects the Project will include accommodations for protection in place or relocation of ACWD facilities. The Project should maintain required minimum clearances from the proposed improvements to ACWD's existing infrastructure in accordance with ACWD Standards (see ACWD's Standard Specifications for Water Main Installation on ACWD's website) and Regional Water Quality Control Board requirements. Access to ACWD facilities must be maintained at all times. The EIR should include mitigation measures to protect this important infrastructure. In addition, this infrastructure should be included on the plans for the Proposed Project and protected during any construction activities.

    c. ACWD has no plans to relocate existing facilities or infrastructure for this Project. The alignment and depth of the brine discharge line should consider existing ACWD facilities and may have significant impacts to ACWD infrastructure which must be coordinated with ACWD and fully mitigated. Particular attention should be paid to any proposed work near or underneath existing ACWD asbestos cement pipe (ACP) water mains within the limits of the Project. No excavations or crossings under the ACP are allowed. If utility installations below the ACP are required for Project, ACWD may replace a portion of the existing main with PVC or steel pipe. Such replacement must be done by District forces at the Project Proponent's expense. The EIR should reflect the potential need for such utility replacement work to occur.

    d. ACWD recommends the Project Proponent submit a request for available records pertaining to ACWD facilities located within the limits of the proposed Project alignments. In addition, Project Proponent should pothole existing ACWD facilities to confirm the exact depth and location.

3. ACWD Contacts: The following ACWD contacts are provided so that the East Bay Dischargers Authority (EBDA) can coordinate with ACWD as needed during the CEQA process:

a. Michelle Myers, Groundwater Resources Manager, at (510) 668-4454, or by email at michelle.myers@acwd.com, for coordination regarding ACWD's groundwater resources, groundwater wells, and drilling permits.

b. Juniet Rotter, Development Services Manager, at (510) 668-4472, or by email at juniet.rotter@acwd.com, for coordination regarding public water systems and water service.

Again, thank you again for the opportunity to comment on the on the Notice of Preparation of a Draft Environmental Impact Report for the Cargill Mixed Sea Salt Processing and Brine Discharge Project.

Sincerely,

Ed Stevenson
General Manager

jr/jrs
cc: Laura Hidas, ACWD
Girum Awoke, ACWD
Michelle Myers, ACWD
Juniet Rotter, ACWD

East Bay Regional Park District

2950 PERALTA OAKS COURT • OAKLAND • CALIFORNIA • 94605-0381 • T: 1-888-EBPARKS • F: 510-569-4319 • TRS RELAY: 711 • EBPARKS.ORG

June 15, 2022

East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580

RE: East Bay Regional Park District Comment Letter - Cargill Mixed Sea Salt Processing and Brine Discharge Project Notice of Preparation

Dear Jaqueline Zipkin,

The East Bay Regional Park District (Park District) appreciates the opportunity to comment on the Notice of Preparation (NOP) for the Cargill Mixed Sea Salt Processing and Brine Discharge Project (project). As a member of the Hayward Area Shoreline Planning Agency (HASPA) and as a land-owning agency in the area where the project would be built, the Park District is concerned about the potential impacts to natural and recreational resources in the Hayward Shoreline area that could result from the project. The Park District owns and operates 1,841 acres of salt, fresh, and brackish water marshes, seasonal wetlands, and public trails along the Hayward Shoreline, including the 250-acre Cogswell Marsh and the 145-acre Hayward Marsh, and over five miles of public trails along the shoreline which are important segments of the San Francisco Bay Trail. Additionally, the Park District participates in HASPA to help plan for sea level rise along the shoreline and protects numerous endangered and protected species in the shoreline area, including the California Ridgway's rail, California black rail, western snowy plover, California least tern, and salt marsh harvest mouse.

The project's objective is to build new pipeline to transport brine leftover from the manufacturing of salt at Cargill's facility in the City of Newark that would be blended and diluted with the East Bay Dischargers Authority (EBDA) Member Agency effluent and then discharged back into the Bay west of San Leandro in accordance with EBDA's National Pollutant Discharge Elimination System (NPDES) permit. The proposed project's alternative could include new pipeline construction within Park District-owned parcels. The Park District is ready to continue to work with shoreline stakeholders such as EBDA and Cargill to ensure that project impacts are avoided and minimized, and that implementation of the capital projects identified in the recently completed Hayward Shoreline Adaptation Master Plan (SAMP) are not impacted by the Cargill project. However, the Park District is concerned with the proposed alternative that will be evaluated in the EIR. Alternative Two, referred to as the Bayside Parallel Pipe Alternative, is the second action alternative under consideration by EBDA and Cargill. Under this alternative, the brine transport pipeline would consist of approximately 17 miles of new underground pipeline that would skirt the edges of existing or former Cargill-owned or operated salt ponds and then run almost parallel to EBDA's existing pipeline until connecting into EBDA's system. Potentially 1.20 miles of this pipeline would be located within Park District property. While this alternative would rely on directional drilling in several areas to minimize impacts to wetlands and sensitive habitat, it is unknown which specific parcels and recreational alignments may be impacted as a result of implementation of this alternative, including Park District-owned Russel Energy and the Fluor parcels.

Additional analysis is required prior to confirming the feasibility of this alternative through these parcels and recreational resources in the area. The Park District would like to request that Recreation and Transportation are evaluated in the EIR. Further, the Park District is also requesting EBDA present feasibility of the Bayside

Alternative and evaluate in detail any restrictions and easements on the potentially impacted parcels under the Bayside Alternative, including the aforementioned parcels owned by the Park District. This as a critical step in project planning to ensure that the project would result in no impact to biological or recreational resources that the Park District and HASPA partner agencies manage and protect along the Hayward Shoreline.

The Park District's concerns are not with the project, but specifically with project Alternative Two, the Bayside Alternative, and in that alternative, the concern is the areas of Park District-owned lands that would have new pipeline construction. We are also concerned with the Bayside Alternative because it could impact EBDA's First Mile Horizontal Levee Project that is currently being designed along the eastern edge of Oro Loma Marsh. It is the Park District's preference that the brine transport pipeline be constructed in existing roads, away from sensitive biological resources. Much of the habitat within the project area (Oro Loma, Hayward Marsh and Eden Landing, Coyote Hills, and Don Edwards) is currently being restored, which will serve to connect existing habitat for tidal marsh and upland species. These areas are particularly vulnerable to future sea level rise. Would the pipeline be designed to withstand the climatic and oceanic conditions that may impact the shoreline? Please consider anticipated maintenance activities that may be necessary over the life of the project, with particular attention towards impacts to sensitive and newly restored habitats.

The Park District looks forward to working together with EBDA to protect important natural and recreational assets in the Hayward Shoreline area. Thank you for your consideration.

Sincerely,

Brian Holt
Chief of Planning, Trails, and GIS - Acquisition | Stewardship | Development Division

cc: Kristina Kelchner, Assistant General Manager - Acquisition | Stewardship | Development Division
Matt Graul, Chief of Stewardship - Acquisition | Stewardship | Development Division

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Marine Region
1933 Cliff Drive, Suite 9
Santa Barbara, CA 93109
wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

June 16, 2022

Jacqueline Zipkin
East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580
jzipkin@ebda.org

Cargill Mixed Sea Salt Processing and Brine Discharge Project (PROJECT)
Notice of Preparation (NOP)
SCH# 2022050436

Dear Ms. Zipkin:

The California Department of Fish and Wildlife (Department) received a NOP from the East Bay Dischargers Authority (EBDA) for the Project pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that the Department, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

DEPARTMENT ROLE

The Department is California's Trustee Agency for fish and wildlife resources and holds those resources in trust by statute for all the people of the state. (Fish & G. Code, Section 711.7, subd. (a) & 1802; Pub. Resources Code, Section 21070; CEQA Guidelines Section 15386, subd. (a).) The Department, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (*Id.*, Section 1802.) Similarly for purposes of CEQA, the Department is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources. The Department is also responsible for marine biodiversity protection under the Marine Life Protection Act in coastal marine waters of California, and ensuring fisheries are sustainably managed under the Marline Life Management Act. The Department is also submitting comments as a Responsible Agency under CEQA. (Pub. Resources Code, Section 21069; CEQA Guidelines, Section 15381.). The Department expects that it may need to exercise regulatory

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

authority as provided by the Fish and Game Code. As proposed, the Project may be subject to the Department's lake and streambed alteration regulatory authority (Fish & G. Code, Section 1600 et seq.). Likewise, to the extent implementation of the Project as proposed may result in take as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, Section 2050 et seq.), related authorization as provided by the Fish and Game Code will be required. Pursuant to our jurisdiction, the Department has the following comments and recommendations regarding the Project.

REGULATORY REQUIREMENTS

California Endangered Species Act: Please be advised that a CESA Incidental Take Permit (ITP) should be obtained if the Project has the potential to result in "take" of plants or animals listed under CESA, either during construction or over the life of the Project. Issuance of a CESA Permit is subject to CEQA documentation; the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the Project will impact CESA listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain a CESA Permit.

CEQA requires a Mandatory Finding of Significance if a project is likely to substantially restrict the range or reduce the population of a threatened, rare, or endangered species (Pub. Resources Code, Section 21001, subd. (c), 21083; CEQA Guidelines, Sections 15380, 15064, and 15065). Impacts must be avoided or mitigated to less-than-significant levels unless the CEQA Lead Agency makes and supports Findings of Overriding Consideration (FOC). The CEQA Lead Agency's FOC does not eliminate the Project proponent's obligation to comply with Fish and Game Code Section 2080.

Lake and Streambed Alteration (LSA): The Department requires an LSA Notification, pursuant to Fish and Game Code Section 1600 et. seq., for Project activities affecting lakes or streams and associated riparian habitat. Notification is required for any activity that may substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank including associated riparian or wetland resources; or deposit or dispose of material where it may pass into a river, lake, or stream. Work within ephemeral streams, washes, watercourses with a subsurface flow, and floodplains are subject to notification requirements. The Department, as a Responsible Agency under CEQA, will consider the CEQA document for the Project and may issue an LSA Agreement. The Department may not execute the final LSA Agreement (or ITP) until it has complied with CEQA as a Responsible Agency.

PROJECT DESCRIPTION SUMMARY

Proponent: Cargill, Incorporated

Objective: Cargill is proposing to enhance extraction of additional salts from the mixed sea salts (MSS) inventory stored at its Solar Salt Facility in Newark, CA. After

harvesting additional product, the residual MSS would be dissolved in San Francisco Bay (Bay) water to produce a brine that would be pumped into EBDA's combined effluent conveyance system. Once in EBDA's conveyance system, the brine would be blended with and further diluted by additional effluent and then discharged back into the Bay at an average rate ranging from 0.9 million gallons per day (MGD) to 2 MGD, (taking approximately 20 to 10 years, respectively), in accordance with EBDA's National Pollutant Discharge Elimination System (NPDES) permit. Through this process, the volume of brine and precipitated salts stored in ponds adjacent to the Bay at the Solar Salt Facility would be reduced. The proposed project would involve construction of new pipelines and pumping facilities within Cargill's Solar Salt Facility and construction of approximately 16 miles of new underground pipeline, primarily within roadway rights-of-way, to connect the Solar Salt Facility to EBDA's outfall system on the site of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in the community of San Lorenzo.

Location: The Project is located in the eastern San Francisco Bay Area, including portions of San Lorenzo, an unincorporated community in Alameda County, and portions of the cities of Hayward, Union City, Fremont, and Newark. Specifically, project improvements would be constructed at Cargill's Solar Salt Facility, located at 7220 Central Avenue in Newark, California, and primarily within roadway rights-of-way between the Solar Salt Facility and the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. The MSS are primarily situated in Ponds 12 and 13 of Cargill's Solar Salt Facility, which are located within the United States Fish and Wildlife Service's (USFWS) Don Edwards San Francisco Bay National Wildlife Refuge.

Timeframe: Up to the year 2040 with the potential termination before that date or potentially continuing beyond 2040 under a renegotiated agreement between Cargill and EBDA.

MARINE BIOLOGICAL SIGNIFICANCE

The Bay-Delta is the second largest estuary in the United States and supports numerous aquatic habitats and biological communities. It encompasses 479 square miles, including shallow mudflats. This ecologically significant ecosystem supports both state and federally threatened and endangered species and sustains important commercial and recreational fisheries.

STATE AND FEDERALLY LISTED AND COMMERCIALLY/RECREATIONALLY IMPORTANT SPECIES

Protected species under the State and Federal Endangered Species Acts that could potentially be present near Project activities include:

- White-tailed kite (*Elanus leucurus*; State fully protected)
- California least tern (*Sternula antillarum browni*; federal and State endangered and State fully protected)
- Brown pelican (*Pelecanus occidentalis californicus*; State fully protected)
- Salt-marsh wandering shrew (*Sorex vagrans halicoetes*; SSC)
- Northern harrier (*Circus hudsonius*; SSC)
- Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*; SSC)
- Alameda song sparrow (*Melospiza melodia pusillula*; SSC)
- Yellow rail (*Coturnicops noveboracensis*; SSC)
- Longfin smelt (*Spirinchus thaleichthys*; federal candidate and State threatened)
- Central California Coast steelhead (*Oncorhynchus mykiss*; federal threatened; Central California Coast and Central Valley ESUs)
- Green sturgeon (*Acipenser medirostris*; federal threatened; southern DPS)
- White Sturgeon (*A. transmontanus*; SSC)

Several species with important commercial/recreational fisheries value and habitat value for spawning and rearing could potentially be present near Project activities. These include:

- Pacific herring (*Clupea pallasii*)
- Crangon shrimp (*Crangon* spp.)
- Surfperches (Embiotocidae)
- Eelgrass (*Zostera marina*).

COMMENTS AND RECOMMENDATIONS

The Department offers the comments and recommendations below to assist EBDA in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the document.

I. Project Level Impacts and Other Considerations

Brine Discharge

Comment: Brine disposal through the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant outfall will increase salinity at and around the discharge point and could also release contaminants into the marine environment. If brine disposal is inconsistent, this will cause salinity at the discharge to fluctuate. Changes in salinity and release of contaminants in brine from desalination plants have been observed to impact a range of marine fauna and

communities (Jenkins et al. 2012). Larvae and other small organisms may also become entrained in the jets arising from diffusers (Foster et al. 2013).

Recommendation: The Department recommends the draft Environmental Impact Report (DEIR) discuss the timing of when discharges into the Bay will occur. In addition, the DEIR should include modeling of the Zone of Initial Dilution (ZID) under all proposed discharge scenarios as well as what proposed future modeling of the ZID will occur. Additionally, the DEIR, as recommended below, should describe how the discharge may affect marine species, larval fish, water temperature, and salinity levels in the vicinity of the brine discharge at these times.

Recommendation: The Department recommends the DEIR discuss the brine salinity and how much higher salinity levels could be, above ambient, under the various discharge rates proposed.

Recommendation: The Department recommends the DEIR discuss the potential impacts to aquatic species and habitats, specifically eelgrass, from the potentially elevated salinity levels in the area surrounding the discharge into the Bay.

Recommendation: The Department recommends the DEIR discuss any potential upgrades that may be needed to the existing outfall at the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant to handle and diffuse the brine discharge and the potential impacts caused by these construction activities.

Pump Station Construction

Comment: The NOP describes the potential need for additional pump stations to be constructed at the southern end of the Project. Water intakes within the Bay have shown the potential to entrain and/or impinge listed species, specifically the longfin smelt. Impacts such as entrainment and/or impingement of listed species would be considered take under Fish and Game Code Section 2080.

Recommendation: The Department recommends that the DEIR discuss the potential marine and terrestrial species and habitat impacts from water intake structures being constructed for the Project and whether the potential for take of state listed species may occur.

Project Alternatives

Comment: The NOP listed three Project alternatives that have different alignments of the pipeline to bring brine to the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant. These alignments could all pose different impacts depending on the exact location, methods used to place the pipeline, and habitats that it may traverse. Additionally, the use of directional drilling under

sensitive habitats poses the potential for impacts on the surface in the event of a frac-out event.

Recommendation: The Department recommends that the DEIR describe in detail the potential impacts to species and habitats from each of the proposed alternative pipeline alignments.

Recommendation: The Department recommends that the DEIR describe measures taken to avoid a potential frac-out during directional drilling activities and measures that would be taken in the event of a frac-out occurring.

Construction Adjacent to Eden Landing Ecological Reserve

Comment: Under the Project alternatives the alignment of the brine pipeline appears to be adjacent to or within Eden Landing Ecological Reserve which is a Department-managed property. From the map provided in the NOP it appears that the alignment is in the vicinity of the Bay Trail and supporting levee along Mt. Eden Creek. If the trail were to be affected by construction of one of these pipeline alignments, it could impact recreational use and the Department's ability to use the trail for operations and access.

Recommendation: The Department recommends the DEIR discuss the proposed pipeline and alternative alignments and whether there would be any anticipated impacts to Eden Landing Ecological Reserve or the surrounding area. Avoidance and/or minimization measures that would be adhered to during construction adjacent to or within the reserve should also be discussed.

II. Editorial Comments and/or Suggestions

Brine Discharge Amount

Location in Document: On p. 2, the NOP states that the brine discharge rate would range from 0.9 MGD to 2 MGD. On p. 3, under Project Description, it is stated that the brine discharge would range from 0.9 MGD to 1.8 MGD.

The DEIR should be consistent in discussing the volume of brine to be discharged for agencies and the public to adequately review the potential impacts to habitats and species in the Bay from this portion of the Project.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, Section 21003, subd. (e).). Accordingly, please report any special status species and

natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be found at the following link: https://wildlife.ca.gov/Data/CNDDB/SubmittingData#44524420-pdf-field-survey-form. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: https://wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by the Department. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final (Cal. Code Regs, tit. 14, Section 753.5; Fish & G. Code, Section 711.4; Pub. Resources Code, Section 21089.).

CONCLUSION

The Department appreciates the opportunity to comment on NOP to assist EBDA in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Arn Aarreberg, Environmental Scientist, Marine Region at (707) 791-4195 or Arn.Aarreberg@wildlife.ca.gov and Marcia Grefsrud, Environmental Scientist, Bay-Delta Region, at (707) 644-2812 or Marcia.Grefsrud@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Kirsten Ramey
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Kirsten Ramey for
Craig Shuman, D. Env
Marine Regional Manager

ec: Becky Ota, Environmental Program Manager
Department of Fish and Wildlife
Becky.Ota@wildlife.ca.gov

Eric Wilkins, Senior Environmental Scientist
Department of Fish and Wildlife
Eric.Wilkins@wildlife.ca.gov

Arn Aarreberg, Environmental Scientist
Department of Fish and Wildlife
Arn.Aarreberg@wildlife.ca.gov

Craig Weightman, Environmental Program Manager
Department of Fish and Wildlife
Craig.Weightman@wildlife.ca.gov

Brenda Blinn, Senior Environmental Scientist
Department of Fish and Wildlife
Brenda.Blinn@wildlife.ca.gov

John Krause, Senior Environmental Scientist
Department of Fish and Wildlife
John.Krause@wildlife.ca.gov

Marcia Grefsrud, Environmental Scientist
Department of Fish and Wildlife
Marcia.Grefsrud@wildlife.ca.gov

Rebecca Carniello, Environmental Scientist
Department of Fish and Wildlife
Rebecca.Carniello@wildlife.ca.gov

State Clearinghouse (SCH No. 2022050436)
State.clearinghouse@opr.ca.gov

REFERENCES

Foster, M.S., G.M. Cailliet, J. Callaway, K.M. Vetter, P. Raimondi, and P.J.W. Roberts. 2013. Desalination plant entrainment impacts and mitigation. Final Report in fulfillment of SWRCB Contract No. 11-074-270, Work Order SJSURF 11-11-019. Available at https://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/docs/erp_final.pdf

Jenkins, S., J. Paduan, P. Roberts, D. Schlenk, and J. Weis. 2012. Management of brine discharges to coastal waters – Recommendations of a science advisory panel. Technical Report 694, Southern California Coastal Water Research Project, Costa Mesa, CA. Available at https://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/docs/dpr.pdf

San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510, San Francisco, California 94105 tel 415 352 3600 fax 888 348-5190
State of California | Gavin Newsom – Governor | info@bcdc.ca.gov | www.bcdc.ca.gov

Transmitted Via Electronic Mail

June 20, 2022

Jacqueline Zipkin
General Manager
East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580
Via email: < jzipkin@ebda.org >

SUBJECT: Notice of Preparation of a Draft Environmental Impact Report for the *Cargill Mixed Sea Salt Processing and Brine Discharge Project*, in San Lorenzo, an unincorporated community in Alameda County, City of Hayward, Union City, Fremont and Newark, Alameda County (BCDC Inquiry File No. MC.MC.7415.026; SCH # 2022050436)

Dear Ms. Zipkin:

Thank you for the opportunity to comment on the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the *Cargill Mixed Sea Salt Processing and Brine Discharge Project* (project), received in our office on May 19, 2022. The proposed project is located along approximately 16 miles of San Francisco Bay shoreline in portions of the cities of San Lorenzo, an unincorporated community in Alameda County, City of Hayward, Union City, Fremont, and Newark in Alameda County. The project includes installation of additional infrastructure at the Cargill Solar Salt Facility and a new pipeline to transport the concentrated Mixed Sea Salts (MSS) brine currently stored in Ponds 12 and 13 to the East Bay Discharger Authority (EBDA) Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant where it will be diluted, mixed with the effluent, and discharged to the Bay consistent with EBDA NPDES permit requirements. The Cargill Ponds 12 and 13 currently store approximately 6 million tons of MSS adjacent to the Bay and these ponds are facing a potential long-term threat of sea level rise from the Bay. The discharge of the MSS from these ponds via the pipeline is anticipated to take approximately 10-20 years based upon the estimated discharge rate. The project is intended to remove the MSS and reduce the potential for impacts from sea level rise.

The San Francisco Bay Conservation and Development Commission (Commission) is a responsible agency for this project and will rely on the DEIR when it considers the project. Our staff has prepared comments outlining specific Commission issues or policies that should be addressed either in the DEIR or through the Commission permitting process as appropriate, based on the

project details in the NOP. As we receive additional details on the project, we will be able to provide more detailed responses and can work closely with the project proponents to ensure the project is consistent with Commission laws and policies.

The comments below are based on the McAteer-Petris Act and the Commission's San Francisco Bay Plan (Bay Plan). Commission staff has initially identified and summarized several policies and policy areas that are likely to apply to the project, however we also encourage you to review the McAteer-Petris Act and Bay Plan directly to ensure the project design complies with all relevant sections of these documents.

Commission Jurisdiction

Portions of the project would likely be located within the Commission's jurisdiction. In the proposed project area, there are four distinct jurisdiction types, defined in detail in the McAteer-Petris Act (Section 66610) and summarized as follows:

a. San Francisco Bay, being all areas that are subject to tidal action, including all sloughs, and specifically, the marshlands lying between mean high tide and five feet above mean sea level; tidelands (land lying between mean high tide and mean low tide); and submerged lands (land lying below mean low tide);

b. A shoreline band consisting of all territory located between the shoreline of San Francisco Bay (as defined above) and a line 100 feet landward of and parallel with that line, but excluding any portions of salt ponds as described below;

c. Salt ponds, consisting of all areas which have been diked off from the bay and have been used during the three years from [approximately 1966 to November 11, 1969] for the solar evaporation of bay water in the course of salt production; and

d. Certain waterways, consisting of all areas subject to tidal action, including submerged lands, tidelands, and marshlands up to five feet above mean sea level, on, or tributary to Plummer Creek to the eastern limit of the salt ponds.

The Commission's jurisdiction also includes all areas formerly subject to tidal action that have been filled since September 17, 1965. Within its jurisdiction, Commission permits are required for activities that involve placing fill, extracting materials, or making any substantial change in use of any water, land, or structure. Permits are issued if the Commission finds the activities to be consistent with the McAteer-Petris Act and the policies of the Bay Plan.

The DEIR should provide a detailed and complete project description, clarify where the project would occur within the Commission's Bay, 100-foot shoreline band, salt ponds, and certain waterways jurisdictions, and identify the Commission's permitting role.

Priority Use Areas

Section 66602 of the McAteer-Petris Act states, in part, that certain water-oriented land uses along the bay shoreline are essential to the public welfare of the Bay Area; these priority use areas are designated on the Bay Plan Maps. The project and alternative alignments appear to be covered by two Bay Plan Maps. As shown on Map 6 and 7, there are multiple areas of the project site or near the project site that are classified as a "Wildlife Refuge" Priority Use Area, including Eden Landing Ecological, the Cargill Salt Ponds, a portion of Oro Loma Marsh and perhaps other areas as indicated on the Map. Additionally, the Bay Plan Maps 6 and 7 indicate that there are also a few different areas in or near the project site that are classified as "Waterfront Park, Beach" Priority Use Area, including a few areas of the Hayward Regional Shoreline and the Coyote Hills Regional Park,

Pursuant to the Commission's authority under the McAteer-Petris Act and the Bay Plan, these areas mentioned above must be reserved for wildlife refuge and waterfront park purposes, and any activities therein must be consistent with Bay Plan policies describing appropriate uses and other considerations for wildlife protection, wildlife refuges, and recreation, including policies related to Public Access; Recreation; and Fish, Other Aquatic Organisms, and Wildlife, as described further below, unless the activity or project is interim, easily displaceable, and/or will not interfere with the priority use. The DEIR should discuss those areas of the project site that are designated for wildlife refuge and waterfront park priority uses, the consistency of any proposed uses with this designation and, if there are inconsistencies, how the project proponents plan to resolve them. There are also other planning documents relevant to this project area, including the Hayward Marsh Master Plan. The DEIR should also provide additional information about how the project aligns with other local and regional plans.

Commission Law and Bay Plan Policies Relevant to the Project

Fill within the Bay and Salt Ponds

Section 66605 of the McAteer-Petris Act sets forth the criteria necessary to authorize placing fill in the Bay and certain waterways. It states, among other things, that further filling of the Bay should only be authorized if it is the minimum necessary to achieve the purpose of the fill and if harmful effects associated with its placement are minimized. The McAteer-Petris Act requires that fill be limited to water-oriented uses or minor fill for improving shoreline appearance or public access, and should be authorized only when no alternative upland location is available for such purpose. Such projects must be designed to: (a) minimize near-term adverse impacts to and loss of existing Bay habitat and native species; (b) provide substantial net benefits for Bay habitats and native species; and (c) be designed in accordance with sounds safety standards and protect persons and property against unstable geologic soils or flood and storm waters.

Additionally, Section 66602.1 says that any development within the salt ponds should provide the maximum public access to the Bay consistent with the project and should retain maximum amount of water surface area consistent with the proposed project.

The DEIR should indicate the amount of fill that would be placed and extracted in the Commission's jurisdictions for the project overall and for each specific project area. Depending on the amount of net total fill proposed and the uses proposed for the fill, the Commission may require fill removal or habitat mitigation elsewhere, in accordance with Bay Plan policies related to mitigation (described further below).

Public Access and Recreation

Section 66602 of the McAteer-Petris Act states, in part, "that maximum feasible public access, consistent with a proposed project, should be provided." In addition, the Bay Plan includes a number of relevant policies related to Public Access and Recreation. The Public Access policies provide that maximum feasible public access to and along the waterfront, and on permitted fills, should be provided in and through every new development in the Bay or on the shoreline, whether it be for housing, industry, port, airport, public facility, wildlife area, or other use for wildlife and restoration areas, unless there would be public safety considerations or significant use conflicts.

To allow the Commission to evaluate consistency of the project with the laws and policies, the DEIR should analyze the impacts to public access and/or how to mitigate for any public access impacts; providing this information will help the Commission determine whether the project is providing the maximum feasible public access consistent with the proposed project. If any public access areas are proposed as part of the project, the DEIR should describe in detail the existing and proposed (i.e., new or enhanced) public access areas, amenities, and recreation areas within the project site, and how these project components have been designed to conform with our laws and policies.

Please note that there are a few Commission-required public access areas that the proposed pipeline alternatives may run through, as well as some existing sections of the Bay Trail that appear to occur along some of the routes for the pipeline alternatives. The project should be designed to minimize adverse impacts to these areas during construction, and should include use of well-managed, phased public access detours or closures where necessary. Commission staff will be happy to help you identify these areas and existing permit requirements, and review proposed detour or closure plans. Please contact our staff if there are any questions about where the Commission-required public access areas are located. Depending upon the scope of the project and potential impacts, the Commission may require minimization measures or mitigation for impacts to public access areas.

If public access improvements are included with the project, there may be additional public access policies relevant for the project. Such policies focus on minimizing impacts from public access on wildlife; avoiding significant adverse impacts from sea level rise and flooding; ensuring the access is accessible, inclusive, and appropriate for the local community culture and environment; consulting the Public Access Design Guidelines in design of the public access area; and other important considerations. Furthermore, the policies provide that the Design Review Board, composed of design and planning professionals, should advise the Commission on the

design and adequacy of proposed public access. There are also Recreation policies related specifically to waterfront parks and wildlife refuges, including that interpretive information should be provided about wildlife, habitat, and related elements; that where feasible and appropriate, opportunities for environmental education, community service, volunteer, and related programs should be provided; and that historic buildings in waterfront parks and wildlife refuges should be preserved and made accessible to the public where appropriate.

Appearance Design, and Scenic Views

The Bay Plan includes policies related to Appearance, Design, and Scenic Views that may be applicable to the project. These policies provide, among other requirements, that maximum effort should be made to provide, enhance, or preserve views of the Bay and shoreline, especially from public areas; that planning waterfront development should include participation by professionals knowledgeable of the Commission's concerns, such as landscape architects, urban designers, or architects; and that vista points should be provided and made accessible to the public.

The DEIR should describe how the project would maximize views to the Bay and take maximum advantage of the shoreline setting. Proposed structures, including any shoreline protection, pipeline facilities, and fencing, should be designed to avoid or minimize visual barriers to the Bay. If there are areas where unavoidable and significant adverse impacts to existing Bay views would occur, the project should include proposed alternative enhancements to public access and/or views to the Bay to mitigate for this loss.

Salt Ponds

Based on the project description in the NOP, we understand that the project is likely to include some construction through existing salt ponds and restored tidal marsh areas, depending upon the alignment chosen. Additionally, the goal of the project is to remove the MSS from the existing salt ponds (Ponds 12 and 13) near the Bay. The Bay Plan includes policies on both Salt Ponds that are relevant for this activity, including policies related to the use of the salt ponds and potential for future restoration.

The DEIR should describe the intended use for Ponds 12 and 13 following the project and after the MSS have been discharged from these areas. Please explain whether the ponds will continue to be used in production of salt and how they will fit in the overall operations for salt making at the facility. Depending upon the future use of these ponds, additional policies within the Bay Plan may apply.

Fish, Other Aquatic Organisms and Wildlife

The policies in this Bay Plan section address the benefits of fish, other aquatic organisms and wildlife, and the importance of protecting the Bay’s subtidal and tidal marsh habitats, native, threatened, or endangered species, and species that are candidates for listing as endangered or threatened. Policy No. 1 requires that the Bay’s tidal marshes, tidal flats and subtidal habitat be

conserved, restored, and increased "to the greatest extent feasible." The DEIR should address how the construction and use of the proposed project would meet these policies and avoid or minimize impacts to special-status species and habitats in the Bay. The DEIR should also quantify any impacts to the species and their habitat areas and discuss any proposed mitigation to offset unavoidable impacts. The project proponents should continue coordinating with appropriate wildlife resource agencies, including the California Department of Fish and Wildlife, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service. Additionally, the DEIR should evaluate whether any of the alternatives considered, or new alternatives, would allow for the removal of the MSS from the Bay fronting ponds more quickly to eliminate the potential for environmental impacts (i.e., leakage or spilling of the MSS into the Bay) to water quality, species, and habitats sooner than other alternatives.

Tidal Marshes and Tidal Flats

The policies in this Bay Plan section provide limitations on projects that would substantially harm tidal marshes or tidal flats and give guidance on the restoration of these habitats. Among these policies, Policy No. 1 requires that projects occurring within tidal marshes and tidal flats should only be allowed if they provide substantial public benefits and there is no feasible alternative. Policy No. 2 and 3 requires that projects avoid or minimize impacts to tidal marshes and tidal flats and transition zones between tidal and upland habitats. Additionally, this section contains specific policies related to tidal marsh restoration projects, which may be applicable if any restoration is being considered following the removal of the MSS from Ponds 12 and 13. If restoration is being considered following the removal of the MSS, please read through this Bay Plan policy section for the specific requirements for restoration projects. Additionally, Policy No. 10 states that based on scientific ecological analysis, project need, and consultation with the relevant federal and state resource agencies, fill may be authorized for habitat enhancement, restoration, or sea level rise adaptation of habitat.

The DEIR should discuss in detail any filling or other construction activities that would occur in tidal marshes or tidal flats; the anticipated effects on these habitats, how the impacts will be avoided, minimized, and mitigated for; and analysis of the potential impacts and benefits of project alternatives that may involve more or less fill in wetland areas. Any fill for habitat proposed as part of the project should be designed with a balance that will minimize near-term adverse impacts to, and maximize long-term net benefits for, Bay habitats and native species.

Water Quality

The policies in this Bay Plan section address water quality and require Bay water pollution to be prevented to the greatest extent feasible. New projects are required to be sited, designed, constructed, and maintained to prevent or minimize the discharge of pollutants in the Bay by controlling pollutant sources at the project site, using appropriate construction materials, and applying best management practices. Bay Plan Policy No. 2 requires that water quality in all parts of the Bay be maintained at a level that will support and promote the beneficial uses of the Bay as identified by the San Francisco Bay Regional Water Quality Control Board.

We understand that the MSS ponds contain highly concentrated salts with an estimated salinity between 350 to 600 parts per thousand. Leakage or emptying of the brines to the Bay or sensitive habitats, either from the ponds or the conveyance facility, could result in significant water quality impacts and toxicity. The DEIR should discuss the potential for releases of brine during construction and over the life of the project and what measures will be taken to prevent such releases, including shoreline protection as discussed below. The DEIR should further identify whether any portions of the project site are polluted with other toxic or hazardous substances. This discussion should include any anticipated effects associated with such contaminants including with future sea level rise anticipated through the life of the project, how these risks would be addressed, and the role other agencies will take in the review. The DEIR should also address how the construction and use of the proposed project would be designed to control stormwater runoff and pollution to the Bay and is complying with the requirements of the Water Board, such as through the NPDES permit for the EBDA outfall.

Finally, if any shoreline protection is being considered, Policy No. 7 requires that, whenever practicable, native vegetation buffer areas should be used in place of hard shoreline and bank erosion control methods where appropriate and practicable. The DEIR should identify the approach the project will take in terms of shoreline protection at the site and discuss where the use of nature-based shoreline protection would be appropriate and feasible.

Mitigation

The Bay Plan has policies related to mitigation that may apply to the project, depending upon the impact areas and the extent of the project that is within the Commission's jurisdiction. Policy No. 1 says that projects should be designed to avoid adverse impacts to Bay resources. Whenever adverse impacts cannot be avoided, they should be minimized to the greatest extent practicable. Finally, measures to compensate for unavoidable adverse impacts should be required. Mitigation is not a substitute for meeting the other requirements of the McAteer-Petris Act.

The remaining policies provide additional requirements for projects that require compensatory mitigation, among them that "…mitigation projects should be sited and designed within a Baywide ecological context, as close to the impact site as practicable," that "communities surrounding both the project and the compensatory mitigation site should be meaningfully involved in an equitable and culturally-relevant manner," that "resource restoration should be selected over creation where practicable" and that "transition zones and buffers should be included in mitigation projects where feasible and appropriate."

Mitigation Policy No. 8 requires, in part, that any proposed mitigation projects include clear project goals; clear and measurable performance standards; a monitoring and reporting plan designed to identify potential problems early and determine appropriate remedial actions; a contingency plan to ensure the success of the mitigation project; and provisions for the long-term maintenance, management and protection of the mitigation site. The DEIR should describe and analyze in detail any alternatives for the compensatory mitigation that are being considered for any project impacts that may occur, taking into account the policies summarized above.

Safety of Fills and Climate Change

The NOP mentions that there is a long-term threat of sea level rise from the Bay in the project area and to the Solar Salt Facility. Additionally, Bay Plan Map No. 7 contains a note on subsidence for this area of the Bay that says "[a]rea subject to possible subsidence. Construction in or near Bay should be carefully planned, taking into account effects of future subsidence and sea level rise." We understand that AECOM also prepared a memo in 2021 that discusses the sea level rise and flooding vulnerability of different ponds within Cargill facilities. However, this memo does not appear to address the issue of subsidence or the seismic stability of the current berms protecting the ponds. The Bay Plan has several policies relevant for the project related to climate change, sea level rise, and safety of fills. Climate Change Policy No. 2 requires, in part, that "a risk assessment should be prepared by a qualified engineer,…based on the estimated 100-year flood elevation that takes into account the best estimates of future sea level rise and current flood protection and planned flood protection….A range of sea level rise projections for mid-century and end of century based on the best scientific data available should be used...[the] assessment should identify all types of potential flooding, degrees of uncertainty, consequences of defense failure, and risks to existing habitat from proposed flood protection devices." Policy No. 3 states that where such risk assessments show vulnerability to public safety, projects should be designed to be resilient to a mid-century sea level rise projection, and an adaptive management plan should be developed to address sea level rise impacts beyond mid-century through the life of the project.

In addition, Policy No. 4 in the Bay Plan Safety of Fills section states that structures on fill or near the shoreline should have adequate flood protection, including consideration of future relative sea level rise as determined by engineers. The policy states that, "adequate measure should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project…New projects on fill or near the shoreline should either be set back from the edge of the shore so that the project will not be subject to dynamic wave energy, …be specifically designed to tolerate periodic flooding, or employ other effective means of addressing the impacts of future sea level rise and storm activity."

It appears that the AECOM memo was commissioned to help assess the sea level rise vulnerability of the existing Solar Salt Facilities. The DEIR should include a summary of the results of this memo and include additional sea level rise vulnerability analysis for the new infrastructure proposed as part of the project. This analysis should include the expected life of the project, a preliminary assessment of the project's vulnerability to future flooding from extreme storms and sea level rise using mid- and end-of-century sea level projections, and include anticipated site-specific storm surge effects. In addition, the DEIR should also include an assessment of the potential for subsidence in the project area and how this may impact potential flooding of the infrastructure. The DEIR should also describe how the project has been designed for adapting to, tolerating, and managing sea level rise and shoreline flooding at the site over the life of the project to ensure the project is resilient to mid-century sea level rise projections, and how the

infrastructure may be adaptable after that, if necessary. For example, the DEIR should indicate whether the infrastructure for the new pipeline could be raised in the future if needed, taking into account spatial constraints, whether the underlying soils would support additional fill, and other limitations. We also recommend that the DEIR discuss the seismic stability of the berms around Ponds 12 and 13 and how they will remain intact over the life of the project to ensure there will not be spilling of the MSS into the Bay following a strong earthquake. In addition, the DEIR should include a discussion of groundwater at the site, how it is expected to impact the MSS ponds and the pipeline infrastructure both during construction and with future sea level rise, and how any risks from groundwater rise would be addressed.

The project may need to go before the Commission's Engineering Criteria Review Board (ECRB), which reviews projects "for the adequacy of their specific safety provisions, and make[s] recommendations concerning these provisions [and] prescribe[s] an inspection system to assure placement and maintenance of fill according to approved designs." Our staff will work with the project proponent to determine whether ECRB review and early guidance is necessary.

Shoreline Protection

The NOP mentions that the liquid bittern in Ponds 12 and 13 is stored adjacent to the Bay at the Solar Salt Facility and that there are currently 6 million tons of the MSS stored in these ponds. As mentioned above, the NOP mentions that the proposed project is being considered in light of the potential long-term threat of sea level rise from the Bay. The Bay Plan policies on Shoreline Protection establish criteria by which new shoreline protection projects may be authorized and by which existing shoreline protection may be maintained or reconstructed. Policy No. 1 describes important technical requirements for shoreline protection projects, including issues related to flooding, erosion, and sea level rise. Policy No. 5 requires that "all shoreline protection projects should evaluate the use of natural and nature-based features such as marsh vegetation, levees with transitional ecotone habitat, mudflats, beaches, and oyster reefs, and should incorporate these features to the greatest extent practicable…Ecosystem benefits, including habitat and water quality improvement, should be considered in determining the amount of fill necessary for the project purpose." Shoreline protection projects should also avoid adverse impacts to natural resources and public access, and mitigation or alternative public access must be provided when avoidance is not possible.

The DEIR should further detail the risk from rising sea levels, subsidence, and potential seismic safety of the existing, unengineered berms surrounding Ponds 12 and 13 and include details of any project elements, such as shoreline protection, that may be included around these ponds to ensure that there is no release of the MSS to the Bay over the life of this project. We recommend that Cargill consider design options for the Ponds 12 and 13 berms that can increase the stability of the berms against a strong earthquake that may occur over the life of the project. The DEIR should also describe in detail all existing and proposed shoreline protection features at the site, including an analysis of their potential to adversely impact natural resources and public access,

and how the impacts would be avoided, minimized, or mitigated for. In any areas where shoreline protection may be needed as part of the project, the DEIR should describe and analyze the feasibility of using natural or nature-based alternatives as described in the policies above.

Environmental Justice and Social Equity

The proposed project would take place adjacent to communities classified as having moderate to high levels of vulnerability based on social and environmental factors, according to BCDC's Community Vulnerability Mapping Tool and the CalEnviroScreen tool. As such, relevant Bay Plan policies on Environmental Justice and Social Equity will likely apply to the project. These policies require, in part, that equitable, culturally-relevant community outreach and engagement be conducted by project applicants to meaningfully involve potentially impacted communities for major projects and appropriate minor projects in underrepresented and/or identified vulnerable and/or disadvantaged communities. The policies also state that potential disproportionate impacts on vulnerable communities should be identified and addressed in collaboration with the potentially impacted communities. In addition, Shoreline Protection Policy No. 2, Public Access Policy No. 5, and Mitigation Policy No. 3 require appropriate and meaningful community outreach for these portions of the project.

The project proponents should conduct meaningful community engagement throughout the project planning, design, and permitting, and should describe these efforts in detail in the DEIR and associated permit application materials. In the Commission permit application process, we will require a detailed description of all community engagement that occurred during design, including the following information:

- the number and types of outreach activities, including a description of how the activities were designed to be accessible and relevant for local communities;
- the estimated number of groups and individuals reached, including a description of how those groups and individuals represent relevant local community interests;
- a description of any potential disproportionate impacts on local communities identified during project design, and how these impacts have been or will be addressed; and
- any concerns raised during outreach activities, including a description of whether and how those concerns have been (or will be) addressed, and a description and rationale for any community concerns you do not currently plan to address.

You may also wish to consult our Frequently Asked Questions webpage on these policies here. In addition, please see mapping resources of community vulnerability and community-based organizations here.

Public Trust

The public trust doctrine holds that navigable waters and tidal lands are the property of the state and must be protected for public use and enjoyment. The Bay Plan policies on public trust lands states, in part, that when taking actions on such land, the Commission "should assure that the action is consistent with the public trust needs for the area and, in the case of lands subject to

legislative grants, would also assure that the terms of the grant are satisfied and the project is in furtherance of statewide purposes." Public trust uses cited in the Bay Plan include commerce, navigation, fisheries, wildlife habitat, recreation, and open space. The DEIR should indicate where the State's public trust requirements might apply to the proposed project and discuss how the project would be consistent with the public trust.

Thank you for providing the staff with an opportunity to review the NOP for the DEIR for the *Cargill Mixed Sea Salt Processing and Brine Discharge Project*. We recognize the importance and scope of this project to protect the Bay and habitats from the MSS brine and hope these comments aid you in preparation of the DEIR. We look forward to working with you and the project sponsors as the project is developed and through the permitting stage. If you have any questions regarding this letter or the Commission's policies and permitting process, please do not hesitate to contact me at 415-352-3624 or anniken.lydon@bcdc.ca.gov.

Sincerely,

Anniken Lydon

ANNIKEN LYDON
Bay Resources Program Manager

San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510, San Francisco, California 94105
Tel: 415-352-3600 | Fax: 888 348 5190
Email: info@bcdc.ca.gov | Website: www.bcdc.ca.gov

AL/ra

cc: State Clearinghouse, <state.clearinghouse@opr.ca.gov>

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

Established in 1938

JENNIFER LUCCHESI, *Executive Officer*
916.574.1800
TTY CA Relay Service: **711** *or Phone* **800.735.2922**
from Voice Phone **800.735.2929**
or for Spanish **800.855.3000**

***Contact Phone:* 916.574.0990**

June 27, 2022

File Ref. Inquiry I 3431
SCH No. 2022050436

Sent Via Electronic Mail Only
JZipkin@ebda.org

Jacqueline Zipkin
General Manager
East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580-1841

Subject: Notice of Preparation for an Environmental Impact Report (EIR) for the Proposed Cargill Mixed Sea Salt Processing and Brine Discharge Project in San Francisco Bay, Alameda County

Dear Ms. Zipkin:

This letter responds to your request for a determination by the California State Lands Commission (Commission) as to whether it asserts a sovereign title interest in San Francisco Bay in the area of the subject Project.

Staff understands that Cargill, Inc. (Cargill), is proposing a project to construct new pipelines and pumping facilities within Cargill's Solar Salt Facility, and approximately 16 miles of new underground pipeline primarily within roadway rights-of-way. The new pipelines would connect the Solar Salt Facility to the East Bay Dischargers Authority outfall system on the site of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in the community of San Lorenzo.

Based on information contained in the NOP and a review of in-house records, Commission staff has determined that portions of the proposed Project may cross State-owned sovereign land in San Francsico Bay, which is under

Commission leasing jurisdiction. Therefore, a lease from the Commission will be required for any portion of the Project encroaching onto State-owned lands.

As a trustee and possible responsible agency under the California Environmental Quality Act (CEQA), staff requests that you consult[i] with the Commission on this Project and keep staff advised of changes to the Project Description and all other important developments. Please ensure that the Commission is included in the mailing list for the Draft EIR and provide any other relevant additional information on the Project to the Commission staff listed below. Staff also requests that EIR development include early environmental justice outreach.

Environmental justice is defined by California law as "the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." (Gov. Code § 65040.12) This definition is consistent with the Public Trust Doctrine's principle that management of trust lands is for the benefit of all people.

The Commission adopted an updated Environmental Justice Policy and Implementation Blueprint in December 2018 to ensure that environmental justice is an essential consideration in the agency's processes, decisions, and programs. The twelve goals outlined in the Policy reflect an urgent need to address the inequities of the past, so they do not continue. Through its policy, the Commission reaffirms its commitment to an informed and open process in which all people are treated equitably and with dignity, and in which its decisions are tempered by environmental justice considerations.

Although not legally required in a CEQA document, Commission staff suggests that the East Bay Dischargers Authority include a section describing the environmental justice community outreach and engagement undertaken in developing the EIR and the results of such outreach. The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen mapping tool to assist agencies with locating census tracts near proposed projects and identifying the environmental burdens, should there be any, that disproportionately impact those communities. Environmental justice communities often lack access to the decision-making process and experience barriers to becoming involved in that process. It is crucial that these communities

are consulted as early as possible in the project planning process. Commission staff also strongly recommends using the BCDC Community Vulnerability Tool and the map developed by the Delta Stewardship Council, Vulnerability to Climate Change in the Delta, and then, as applicable, reaching out through local community organizations, such as the California Environmental Justice Alliance. Engaging in early outreach will facilitate more equitable access for all community members. In this manner, the CEQA public comment process can improve and provide an opportunity for more members of the public to provide input related to environmental justice. Commission staff also recommends incorporating or addressing opportunities for community engagement in mitigation measures. Commission staff will review the environmental justice outreach and associated results as part of any future Commission action.

Please refer questions about EIR consultation and environmental justice outreach to Alexandra Borack, Senior Environmental Scientist, at 916.574.2399 or via email at Alexandra.Borack@slc.ca.gov. For questions concerning Commission leasing jurisdiction, please contact George Asimakopoulos, Public Land Management Specialist, at 916.574.0990, or via email at George.Asimakopoulos@slc.ca.gov.

Sincerely,

DocuSigned by:
1A3ED67325F8492...

Kenneth Foster,
Public Land Manager
Land Management Division

cc: George Asimakopoulos,
Land Management Division
California State Lands Commission

Alexandra Borack,
Division of Environmental Planning & Management
California State Lands Commission

[i] See CEQA section 21153, subdivision (a), and the State CEQA Guidelines section 15086, subdivisions (a)(1) and (a)(2).

EAST BAY DISCHARGERS AUTHORITY

REVISED

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE CARGILL MIXED SEA SALT PROCESSING AND BRINE DISCHARGE PROJECT

SCH NO. 2022050436

Date: July 8, 2022

To: Responsible Agencies, Trustee Agencies, and Interested Persons

RE: Notice of Preparation of a Draft Environmental Impact Report for the Cargill Mixed Sea Salt Processing and Brine Discharge Project, SCH No. 2022050436

INTRODUCTION

On May 20, 2022 the East Bay Dischargers Authority (EBDA) issued a Notice of Preparation (NOP) for the proposed project described below (State Clearinghouse [SCH] No. 2022050436). A scoping meeting was conducted on June 1, 2022. This NOP is being re-issued due to a change in the location of part of the project (specifically, a portion of the pipeline alignment). All comments on the original NOP will be considered; if you already commented and have no new comments as a result of the change in the project, you need not comment again.

PROJECT BACKGROUND AND SUMMARY

EBDA is a Joint Powers Public Agency (JPA) consisting of five local agencies (City of San Leandro, Oro Loma Sanitary District, Castro Valley Sanitary District, City of Hayward, and Union Sanitary District). EBDA owns and operates three effluent pump stations, a dechlorination facility, and combined effluent pipeline/force main and outfall system to manage treated effluent from its member agencies' wastewater treatment plants and discharge the effluent through its common outfall and diffuser into a deep-water portion of the central San Francisco Bay (Bay) under a National Pollutant Discharge Elimination System (NPDES) permit.

Cargill, Incorporated (Cargill) operates a solar sea salt production facility (Solar Salt Facility) in Newark, California. The facility commercially harvests two salts from Bay water, sodium chloride (NaCl) and magnesium chloride ($MgCl_2$). No additives or chemicals are used to produce these salts; evaporation through solar and wind energy drive the process. Water from the Bay is introduced into concentrator ponds, where most of the water evaporates, creating a concentrated brine. Once this brine achieves saturation, it is transferred into crystallizers, where additional evaporation results in the production of NaCl crystals (table salt). The harvested NaCl is further processed and packaged to individual customer's specifications. The brine exiting the NaCl crystallizers is further evaporated through a series of ponds to achieve a concentrated magnesium chloride brine product, also known as liquid bittern,

which is harvested to produce additional commercial products used for road de-icing and dust suppressant. Within the intermediate ponds a variety of salt compounds are crystallized and settle in the ponds. Some additional NaCl is recovered and recycled in the process. Salts that have not yet been recovered as commercial products are referred to as mixed sea salts (MSS); they include small residues of unharvested sodium chloride and magnesium chloride, as well as other salts that naturally exist at lower concentrations in sea water. The remaining excess MSS that is not sold as an alternative salt product is stored in ponds adjacent to the Bay at the Solar Salt Facility. Currently, there are approximately 6 million tons of MSS stored in these ponds.

Facing the potential long-term threat of sea level rise from the Bay, Cargill is proposing to implement innovative technology to enhance extraction of additional salts from the MSS inventory. The proposed project exclusively involves the construction and operation of new infrastructure to facilitate the enhanced harvesting method, tailored to the MSS in ponds 12 and 13 at the Solar Salt Facility, and to dissolve the residual MSS in Bay water to produce a brine that could be pumped into EBDA's combined effluent conveyance system. Once in EBDA's conveyance system, the brine would be blended with and further diluted by EBDA Member Agency effluent and then discharged back into the Bay in accordance with EBDA's NPDES permit. Through this process, the volume of brine and precipitated salts stored in ponds closest to the Bay at the Solar Salt Facility in Newark would be reduced. Therefore, with implementation of the proposed project, Cargill would be accelerating and enhancing the recovery of commercial product from MSS and, as an ancillary benefit, proactively addressing threats associated with sea level rise by reducing the amount of concentrated salts stored in close proximity to the Bay.

The proposed project would involve modifications within a limited portion of Cargill's Solar Salt Facility, including new pipelines and pumping facilities in and around ponds 12 and 13, and construction of approximately 16 miles of new underground pipeline, primarily off site and within roadway rights-of-way, to connect the Solar Salt Facility to EBDA's outfall system on the site of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in the community of San Lorenzo.

It is anticipated that the MSS brine would be discharged to the EBDA system at an average rate ranging from 0.9 million gallons per day (MGD) to up to 2 MGD (taking approximately 20 to 10 years respectively). Discharge of the MSS brine by Cargill to the EBDA system would be subject to an agreement between EBDA and Cargill. The EBDA JPA term expires on June 30, 2040. Therefore, the proposed project would either terminate on or before that date or could continue under a renegotiated agreement.

In accordance with the provisions of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.), EBDA has determined that the proposed project will require preparation of an Environmental Impact Report (EIR). EBDA will serve as the lead agency for CEQA compliance.

SECOND NOTICE OF PREPARATION AVAILABILITY AND REVIEW PERIOD

EBDA has prepared this second NOP to provide the public, interested parties, and public agencies with updated information about the proposed project and its potential environmental effects, and solicit comments on the scope and proposed content of the EIR, including any additional comments resulting from the change in the project pipeline route.

This second NOP initiates a 30-day CEQA scoping process. A hard copy of the NOP is available for public review at:

East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580

The NOP is also available for public review online at: https://ebda.org/projects/cargill-partnership/

EBDA welcomes public and agency input during this review. However, if you or your agency has already provided written comments in response to the previous NOP, and none of those comments would change considering the

proposed changes to the project, those comments do not need to be resubmitted. All comments received on the original NOP have been reviewed and will be considered and addressed in the Draft EIR.

PROVIDING COMMENTS ON THIS SECOND NOTICE OF PREPARATION

Agencies and interested parties may provide EBDA with written and/or email comments on topics to be addressed in the EIR. Because of time limits mandated by State law, comments must be received by **5:00 p.m.** on **August 9, 2022**. Please send all comments on the NOP by mail or email to:

East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580

Attn: Jacqueline Zipkin, General Manager
Phone: (510) 278-5910
E-mail: jzipkin@ebda.org

Comments provided by email should include "Cargill MSS Processing and Brine Discharge Project NOP Scoping Comment" in the subject line, and the name and physical address of the commenter in the body of the email. If you are from an agency that will need to consider the EIR when deciding whether to issue permits or other approvals for the project, please provide the name of a contact person. A new scooping meeting will not be held.

All comments on environmental issues received during the public comment period will be considered and addressed in the Draft EIR, which is anticipated to be available for public review in summer 2022.

Focus of Input

EBDA relies on responsible and trustee agencies to provide information relevant to the analysis of resources falling within their jurisdiction. EBDA encourages input for the proposed EIR, with a focus on the following topics:

- **Scope of Environmental Analysis.** Guidance on the scope of analysis for this EIR, including identification of specific issues that will require closer study due to the location, scale, and character of the proposed project.
- **Mitigation Measures.** Ideas for feasible mitigation, including mitigation that could potentially be imposed by EBDA and that would avoid, eliminate, or reduce potentially significant or significant impacts.
- **Alternatives.** Suggestions for alternatives to the proposed project that could potentially reduce or avoid potentially significant or significant impacts.
- **Interested Parties.** Identification of public agencies, public and private groups, and individuals that EBDA should notice regarding the proposed project and associated EIR.

PROJECT LOCATION

Proposed project features are located in the eastern San Francisco Bay Area, including portions of San Lorenzo, an unincorporated community in Alameda County, and portions of the Cities of Hayward, Union City, Fremont, and Newark. Specifically, project improvements would be constructed at Cargill's Solar Salt Facility, located at 7220 Central Avenue in Newark, California, and primarily within roadway rights-of-way between the Solar Salt Facility and the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. The MSS are primarily situated in Ponds 12 and 13 of Cargill's Solar Salt Facility, which are located within the United States Fish and Wildlife Service's (USFWS) Don Edwards San Francisco Bay National Wildlife Refuge. In 1979, Cargill transferred this real property, along with additional acreage, through a condemnation process and retained perpetual rights to continue sea salt manufacturing operations within 8,000 acres of the Refuge, including Ponds 12 and 13. The project location and proposed features are shown in Figure 1 below.

PROJECT DESCRIPTION

The proposed project would enable the enhanced processing and removal of MSS in existing Cargill ponds by harvesting additional liquid bittern, a concentrated magnesium chloride brine, from the MSS matrices in these ponds as commercial product, dissolving the residual MSS solids in the ponds using Bay water, and transferring the resulting brine to EBDA's combined effluent pipeline for discharge into the Bay under EBDA's NPDES permit. Harvesting the liquid bittern and final disposition of the residual MSS brine would not require the use of any chemicals. It is anticipated that the MSS brine would be discharged to the EBDA system at an average rate ranging from 0.9 million gallons per day (MGD) up to 2.0 MGD.

The change in the project pertains to the alignment of the pipeline transporting the MSS brine, as described below.

The proposed project has an onsite component of pipelines and pumping facilities within the existing Solar Salt Facility and an offsite component that would involve construction of approximately 16 miles of new underground pipeline primarily within roadway rights-of-way to connect the Solar Salt Facility into EBDA's system just downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo.

The proposed project consists of the following components, as shown in Figure 1:

- Dissolution Water Pond and Plummer Creek Pump Station. A new pump station would be installed to pump water indirectly from Plummer Creek to a new dissolution water pond.
- Dissolution Water Pump Station and Distribution System. A new dissolution water pump station would be constructed as a cast-in-place slab-on-grade facility located at the Dissolution Water Pond and connected to an onsite high-density polyethylene piping distribution system installed above grade along the internal slope of the existing berms to deliver dissolution water to micro-trenches excavated in the crystallized salt layer above the Bay mud in Ponds 12 and 13 for MSS processing.
- Two MSS Brine Pump Stations. New MSS brine pump stations would be constructed at Ponds 12 and 13 consisting of cast-in-place concrete wet wells connected to cast-in-place slab-on-grade pump stations to pump the resultant brine out of the processing ponds and into the offsite brine discharge pipeline.
- MSS Liquid Brine Recovery. During the processing of Pond 12, sections of the pond would be temporarily isolated using vinyl sheet piling to enable liquid bittern recovery. Two new pipelines would be installed along the internal slope of the berm on the northern shore of Pond 12: (1) a 12-inch header pipe to deliver dissolution water to Pond 12; and (2) a 4-inch pipe to transfer liquid bittern from Pond 12 to Pond 13, where it would be further processed and harvested as commercial product.
- Rainwater Decanting. A new weir box structure, which includes a weir plate (barrier) to control the flow of water, and a pipe would be installed at the northeastern corner of Pond 13 to enable decanting of rainwater from the surface of Pond 13 to supplement dissolution water for Pond 12.
- MSS Brine Transport Pipeline. A MSS brine transport pipeline, up to 16 inches in diameter, would extend north primarily along roadway rights-of-way for approximately 16 miles from the Solar Salt Facility to the Oro Loma Effluent Pump Station (OLEPS), located adjacent to and immediately downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. Figure 1 shows the location of the proposed pipeline, as well as the previously proposed alignment and two options through the City of Hayward that were identified in the original NOP. The proposed pipeline alignment is the same as described in the previous NOP except within the City of Hayward. The proposed alignment through the City of Hayward has been moved to the east to avoid a large segment of Hesperian Blvd, and the two optional alignments in Hayward have been eliminated from consideration.

  The MSS brine transport pipeline would be constructed primarily using open-cut methods, except where the pipeline would cross creeks, channels, canals, drains, rail lines, and major roadways. In these locations, trenchless construction methods (i.e., horizontal directional drilling, micro-tunneling) would be used.

Pipeline appurtenances would include isolation valves, air release/vacuum valves, blowoff valves, tracer wire, and a "pig" delivery system. Pigs, or pipeline inspection gauges, are maintenance projectiles used for cleaning and inspecting pipelines.

Construction of the pipeline would affect portions of the following roadways and public facilities in Newark, Fremont, Union City, Hayward, and San Lorenzo: Newark Slough Trail (San Francisco Bay Trail), Thornton Ave, Paseo Padre Pkwy, Ardenwood Blvd, Union City Blvd, Hesperian Blvd, Industrial Blvd, Arden Rd, Corporate Ave, Investment Blvd, Production Ave, Clawiter Rd, W. Winton Ave, Corsair Blvd, Skywest Golf Course, and the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant.

To minimize future disruption to the streets in the City of Hayward, an agreement to install a 4-inch HDPE fiber optic cable conduit and 12-inch HDPE recycled water pipeline ("purple pipe") at the same time trenching and installation of the underground MSS brine transport pipeline would occur, along the segment of pipeline alignment within the City of Hayward, is also being explored.

- Discharge to the EBDA System. The MSS brine transport pipeline would tie into EBDA's combined effluent conveyance system immediately downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo, either by connection directly to the OLEPS, or to the pump discharge manhole approximately 75 feet north of the OLEPS. The MSS brine would then be combined with the treated wastewater effluents from the other agencies that discharge into the EBDA system before being discharged back to the Bay.

Project construction is estimated to start in summer of 2023 and would take approximately 12-18 months to complete. Pump station construction would occur concurrently with pipeline construction and would require approximately 8 months to complete. Construction of the on-site Pond 12 and Pond 13 processing facilities would be phased, with the facilities required for Pond 12 processing being completed in the first year and facilities for Pond 13 processing being installed approximately 6 years later.

Staging areas would be provided on Cargill property and along the MSS Brine Transport Pipeline alignment at locations approved by the local jurisdiction.

POTENTIAL ENVIRONMENTAL EFFECTS

As required by CEQA, the EIR will describe existing conditions and evaluate the potential environmental effects of the proposed project and a reasonable range of alternatives, including the no-project alternative. It will address direct, indirect, and cumulative effects. The EIR will identify feasible mitigation measures, if available, to reduce potentially significant impacts. At this time, EBDA has identified a potential for environmental effects in the areas identified below:

- Air Quality;
- Biological Resources;
- Cultural and Tribal Cultural Resources;
- Geology and Soils;
- Greenhouse Gas Emissions and Climate Change
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Noise and Vibration, and
- Recreation.

The EIR will evaluate all environmental topic areas included in the State CEQA Guidelines, including the topics identified above. Feasible and practicable mitigation measures will be recommended to reduce any identified potentially significant and significant impacts.

ALTERNATIVES TO BE EVALUATED IN THE EIR

In accordance with the State CEQA Guidelines (14 CCR Section 15126.6), the EIR will evaluate a range of reasonable alternatives to the proposed project that are capable of meeting most of the objectives and would avoid or

substantially lessen one or more significant effects of the project. The EIR will also identify any alternatives that were considered but rejected by the lead agency as infeasible and briefly explain the reasons why.

Two action alternatives are currently under consideration by EBDA and Cargill (Figure 2). The first action alternative, referred to as the "In-Pipe Alternative" would involve the same improvements at the Solar Salt Facility as those included in the proposed project, but instead of constructing 16 miles of new underground pipeline along the proposed MSS brine transport pipeline alignment shown in Figure 1, the In-Pipe Alternative would involve construction of approximately 7.5 miles of new underground pipeline connecting the Solar Salt Facility to EBDA's system just downstream of the Union Sanitary District Alvarado Wastewater Treatment Plant in Union City and then installation of approximately 4 miles of slip-liner within EBDA's existing combined conveyance pipeline to prevent corrosion in EBDA's system. The 4 miles of slip-liner within the EBDA combined conveyance pipeline would start approximately 3 miles downstream of the MSS brine transport pipeline connection to the EBDA system and extend to the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. In addition to laydown areas along the 7.5-mile new underground pipeline route, this alternative would require access pits periodically along the 4-mile slip-liner section of EBDA's system. The second action alternative under consideration by EBDA and Cargill, referred to as the "Bayside Parallel Pipe Alternative," also would involve the same improvements at the Solar Salt Facility as those included in the proposed project, but under this alternative, the MSS brine transport pipeline would consist of approximately 17 miles of new underground pipeline that would skirt the edges of existing or former Cargill-owned or operated salt ponds and then run almost parallel to EBDA's existing pipeline until connecting into EBDA's system downstream of the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant in San Lorenzo. This alternative would rely on directional drilling in several areas to minimize impacts to wetlands and sensitive habitat. The EIR will also provide an analysis of the No Project Alternative and will identify the environmentally superior alternative from among the alternatives evaluated in the EIR.

Source: Data provided by AECOM and Jacobs in 2021 and 2022, adapted by Ascent Environmental, Inc. in 2022

Figure 1 Project Location and Proposed Project Features

Source: Data provided by Jacobs in 2022, adapted by Ascent Environmental, Inc. in 2022

Figure 2 Project Alternatives

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

July 8, 2022

Jackie Zipkin, General Manager
East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580-1841

Re: 2022050436, Cargill Mixed Sea Salts Processing and Brine Discharge Project, Alameda County

Dear Jackie Zipkin:

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).

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.

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.

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

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.

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) 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, subds. (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: Cody.Campagne@nahc.ca.gov.

Sincerely,

Cody Campagne

Cody Campagne
Cultural Resources Analyst

cc: State Clearinghouse

PAUL
HASTINGS

1(415) 856-7230
jillyung@paulhastings.com

August 9, 2022

VIA E-MAIL: JZIPKIN@EBDA.ORG

Jacqueline Zipkin
General Manager
East Bay Dischargers Authority
2651 Grant Avenue
San Lorenzo, CA 94580

Re: Notice of Preparation of a Draft Environmental Impact Report for the Cargill Mixed Sea Salt Processing and Brine Discharge Project, in San Lorenzo, an unincorporated community in Alameda County, City of Hayward, Union City, Fremont and Newark, Alameda County (SCH # 2022050436)

Dear Ms. Zipkin:

On behalf of Cargill, Incorporated, ("Cargill"), we are providing the following comments on the Notice of Preparation ("NOP") of a Draft Environmental Impact Report ("EIR") for the Cargill Mixed Sea Salt Processing and Brine Discharge Project (the "Project"). The East Bay Dischargers Authority ("EBDA") published the NOP on July 11, 2022 and provided a 30-day public comment period that closes on August 9, 2022. These comments therefore are timely filed.

EBDA previously released and accepted public comments on an NOP from May 20, 2022, to June 20, 2022. The current NOP addresses changes made to the proposed route of a brine discharge pipeline in light of discussions with the surrounding cities that could be impacted by construction activities. As a result of this NOP process, EBDA has already received a batch of scoping comments, some of which recommended that the Draft EIR consider impacts that are not attributable to the proposed Project. As explained in more detail below, many of the issues raised relate to the ongoing maintenance and operation of Cargill's solar sea salt production facility ("Solar Salt Facility") in general. Cargill is working with several agencies to renew its existing maintenance and operating permits and, in that context, will be addressing matters involving overall maintenance of the broader Solar Salt Facility. We write, therefore, to clarify the scope of EBDA's and Cargill's undertaking in this Project, which involves a stand-alone proposal to create new on-site, but largely off-site, facilities to enhance salt harvesting capabilities and remove salt from the Solar Salt Facility.

PROJECT DESCRIPTION

As explained in the NOP, Cargill operates its Solar Salt Facility in Newark, California. The salt-making process involves the movement of increasingly saline brine through a network of ponds. Specifically, water from the Bay is introduced into concentrator ponds, where most of the water evaporates, creating a concentrated brine. Once this brine achieves saturation, it is transferred into crystallizers, where additional evaporation results in the production of sodium chloride ("NaCl") crystals (table salt). The brine exiting the NaCl crystallizers is further evaporated through a series of ponds to achieve a concentrated magnesium chloride ("$MgCl_2$") brine product, also known as liquid bittern, which is harvested to produce additional products used for road de-icing and dust suppressant. Salts that have not yet been recovered as commercial products are referred to as mixed sea salts ("MSS"); they include small amounts of

unharvested NaCl and $MgCl_2$, as well as other salts that naturally exist at lower concentrations in sea water.

Cargill has historically maintained its inventory of MSS in Ponds 12 and 13 at the Solar Salt Facility. These ponds are among those closest to the San Francisco Bay and currently hold approximately six million tons of MSS. In light of this MSS inventory and the potential for sea level rise to eventually create a connection between the MSS ponds and the Bay, Cargill has proposed an additional enhanced process to accelerate harvest of the commercial product and return the remaining salts to the Bay.

The proposed Project will require only minimal changes to the existing and ongoing Solar Salt Facility operations. Between Ponds 12 and 10, on the Pond 12 side of the berm separating these two ponds, Cargill will install sheet piles to reinforce the side of the berm and create space for an MSS brine pump station, electrical equipment, a transformer pad, and brine collection pipes. Similar infrastructure would be placed on the berm that separates Pond 10 from the FMC ditch and, farther down, a portion of Plummer Creek. Improvements would be made to the Plummer Creek intake facilities connected to Pond 10 and siphons and piping would be added to facilitate bay water dissolution and harvesting of salts.

Although the Project will have ancillary benefits that include reducing the inventory of salts from ponds that are potentially vulnerable to being overtopped by rising seas in 50-80 years, the primary purpose of the Project is to harvest commercial salts from the MSS and then remove the salts that do not have current and sufficient market demand through EBDA's wastewater discharge system. Cargill does not intend to retire or cease operations in Ponds 12 and 13, but rather, to process the current inventory of salts. Within the Solar Salt Facility, the Project involves minimal changes to the existing infrastructure and to the extent new facilities are constructed, they will be similar to those already in use throughout the Facility (e.g., pipes, pumps, and power supplies). The proposed uses are furthermore consistent with Cargill's reserved rights to continue salt making operations on lands transferred to the United States Fish and Wildlife Service ("USFWS" or the "Service"), which later became part of the Don Edwards National Wildlife Refuge.

ROLE AND SCOPE OF CEQA

Some comments submitted to EBDA during the initial scoping process suggested that the Draft EIR should involve a sweeping review of the risks from rising sea levels, groundwater intrusion, subsidence, and seismic activity on the existing Solar Salt Facility. It was further suggested that the Project should include measures to prevent a release of the MSS from Ponds 12 and 13 to the Bay while the harvesting is underway. These comments misconstrue the scope of the Project as well as CEQA's requirements.

CEQA does not work in reverse. The EIR need only discuss impacts of the Project on the environment, although that does include impacts associated with exacerbating existing environmental hazards. Applying this principle, courts have recognized that sea level rise specifically is not an impact on the environment caused by a project. (*California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369, 386, 377 (*CBIA*); *Ballona Wetlands Land Trust v. City of Los Angeles* (2011) 201 Cal.App.4th 455, 472–474 (*Ballona Wetlands*).) Likewise, the California Supreme Court has struck down CEQA regulations that claimed "an EIR on a subdivision astride an active fault line should identify as a significant effect the seismic hazard to future occupants of the subdivision." (*CBIA*, *supra*, 201 Cal.App.4th at pp. 388-389.) Furthermore, because "[m]itigation is defined as an action that minimizes, reduces, or avoids a significant environmental impact or that rectifies or compensates for the impact",

CEQA cannot be used to require adaptive responses to conditions not caused by the project, such as rising sea levels. (*King & Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814, 851.)

More generally, "CEQA does not require an EIR to discuss future developments which are unspecified or uncertain." (*Environmental Council of Sacramento v. County of Sacramento* (2020) 45 Cal.App.5th 1020, 1031 ["'Such an analysis would be based on speculation about future environmental impact'"].) Consequently, a project cannot be required to plan and account for modifications that may or may not be required at some yet unknown time in the future to address impacts of the environment on a project.

CEQA additionally measures the potential for an adverse change in the environment against the "baseline" environmental conditions. These "are the physical conditions existing at the time the agency makes its CEQA determination and/or approves the project." (*N. Coast Rivers Alliance v. Westlands Water Dist.* (2014) 227 Cal.App.4th 832, 872; see also *Communities for a Better Envt. v. South Coast Air Quality Mgmt. Dist.* (2010) 48 Cal.4th 310, 321-322 ["the impacts of a proposed project are ordinarily to be compared to the actual environmental conditions existing at the time of CEQA analysis..."]; *Citizens for East Shore Parks v. State Lands Com.* (2011) 202 Cal.App.4th 549, 558-559 [same]; *Riverwatch v. County of San Diego* (1999) 76 Cal.App.4th 1428, 1453 ["environmental impacts should be examined in light of the environment as it exists when a project is approved"].) When an applicant proposes a project in the context of an existing, permitted operation, the EIR need only consider the changes associated with the project (e.g., the construction and operation of new infrastructure). (*Lighthouse Field Beach Rescue v. City of Santa Cruz* (2005) 131 Cal.App.4th 1170, 1196 [noting "the physical impacts of established levels of a particular use have been considered part of the existing environmental baseline"].)

PRIMARY PURPOSE AND SCOPE OF THE PROJECT

The approximately six million tons of MSS inventory in Ponds 12 and 13 is not attributable to the proposed Project; it is part of the environmental baseline. Likewise, the Project does not propose changes to the existing facility infrastructure that could exacerbate the impacts of existing environmental conditions. The proposed Project first and foremost involves the development of new infrastructure to support new salt harvesting activities and the removal of salts that will remain after these new harvesting activities are complete. This new salt making process will have the added benefit of reducing the MSS inventory in Ponds 12 and 13 well in advance of anticipated increases in sea levels, but Cargill has not proposed the Project out of concern that sea level rise, or any other factors, pose an immediate threat to the integrity of the berms, which have stood the test of time, including significant seismic events. In short, the primary purpose of the Project is to process salt and manage the salt inventory. The primary purpose is not to fortify the ponds in which MSS is held, which would only create incentives for more accumulation.

Cargill's installation of new infrastructure to harvest and manage MSS is further not part of a larger project to decommission Ponds 12 and 13. The Solar Salt Facility process flow requires that Cargill continue to add MSS created during its upstream salt making activities to the ponds. The ponds are not being taken out of service. Accordingly, suggestions that Cargill should investigate the condition of the soils are not warranted. If and when Cargill does decommission these ponds, it will be in accordance with the contractual terms agreed to by Cargill and the USFWS when Cargill transferred this property to the Service.

If the proposed Project is selected, the bulk of the Project impacts will be in urbanized areas already impacted by construction. The additional infrastructure required within the Solar Salt Facility would be

minimal, as explained above. Accordingly, concerns about public access, views, and even wetlands impacts are largely misplaced. Even if Cargill must accept the "Bayside" alternative route for the offsite portions of the pipeline, the impacts to protected and sensitive habitats will be minimal because this design would lay the pipe within existing berms and roadways to the maximum extent possible and, like the proposed Project, will largely involve an underground pipeline.

As will explained later in the process, Cargill has been exploring and pursuing commercial options for MSS and the final disposition of any salts that remain after further processing for over three decades. As commercial harvest continues, Cargill has reviewed parallel removal options that have included disposal by barge outside the Bay, direct permitted discharge from the Solar Salt Facility, transportation by rail or truck to a local landfill, onsite landfilling, injection into offsite underground wells, and more. The economic, environmental, and practical challenges associated with these alternatives will be addressed. After careful and considerable evaluation of the options, however, the proposed Project is one of the few feasible options for further processing the inventory of MSS.

CONCLUSION

We appreciate the opportunity to provide comments on the Notice of Preparation and to clarify the scope of the Project in light of public comments already received. We would also like to thank EBDA for their careful and comprehensive review of the Project to date. Please let us know if you have any questions about these comments or require further information to evaluate the Project.

Sincerely,

Jill E.C. Yung
of PAUL HASTINGS LLP

JECY

Appendix B

Air Quality and Greenhouse Gas Modeling Assumptions and Results

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

EBDA Cargill MSS Transport Pipeline Construction

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	123.71	1000sqft	2.84	123,707.00	0
Parking Lot	883.61	1000sqft	20.28	883,610.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - ------Need to adjust intensity factors---------. Start of construction set to beginning of summer 2023 according to PD

Land Use - Asphalt Surface = Pipelines and Paving. General Heavy Industry = On-site facilities (pumps, etc).

Construction Phase - Onsite paving time split equally btwn pipeline and pump station. Total days sourced from PD and Data Response

Off-road Equipment - Use Equipment from Micro Slip tab. rows 46 to 71

Off-road Equipment - slurry seperation/solids control units modeled as additional pumps. Tool van modeled as additional vendor trip. Drill rig modeled as excavator (drill attachment assumed)

Off-road Equipment - hrs/day from client-provided data response

Off-road Equipment - Data from client data response and PD

Off-road Equipment - Avg equipment / hours per day used

Off-road Equipment - eqpt number and hours sourced from client data response

Off-road Equipment - Sourced from client provided data response

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment - 2 utility trucks modeled as additional vendor trip

Off-road Equipment - concrete truck modeled as additional vendor trips. mixer added to modeling to account for cement truck mixer

Off-road Equipment - "pile-driving truck" identified in PD modeled as off-highway truck

Trips and VMT - Micro Slip hauling trips asmd. same as open cut. Offsite paving- +1 vendor for water truck. Open cut inspection trip added. pump station grading +2 vendor trips. Micro haul trps calcd from total exc. qty

Grading - Assumed phased import/export. No grading for open cut.

Vehicle Trips - Trip rate calculated to apprx. amount to total operational VMT

Energy Use - paving over pipeline, modeled as "parking lot" would not demand energy for operation. Client states all pumps are electric, annual kWH/yr = 1,879,920

Water And Wastewater - N/A

Construction Off-road Equipment Mitigation - Tier 4 Status provided in client data response

Stationary Sources - Emergency Generators and Fire Pumps -

Architectural Coating - parking lot area calculated using estimated area of lane striping (6 inches X 73,634 ft) and CalEEMod default % of parking lot painted (6%)

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	61,854.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	185,561.00	0.00
tblArchitecturalCoating	ConstArea_Parking	53,017.00	64,695.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	35.00	85.00
tblConstructionPhase	NumDays	35.00	262.00
tblConstructionPhase	NumDays	370.00	63.00
tblConstructionPhase	NumDays	35.00	42.00
tblConstructionPhase	NumDays	20.00	72.00
tblConstructionPhase	NumDays	20.00	252.00
tblConstructionPhase	NumDays	20.00	72.00
tblEnergyUse	LightingElect	2.99	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	NT24E	3.36	15.20
tblEnergyUse	NT24NG	6.90	0.00
tblEnergyUse	T24E	1.08	0.00
tblEnergyUse	T24NG	17.67	0.00
tblGrading	AcresOfGrading	15.94	3.35
tblLandUse	LandUseSquareFeet	123,710.00	123,707.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	6.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	9.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	70.00

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripNumber	0.00	60.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	60.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	20.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	165.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripLength	10.80	50.00
tblTripsAndVMT	WorkerTripLength	10.80	50.00
tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripLength	10.80	50.00

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripNumber	18.00	25.00
tblTripsAndVMT	WorkerTripNumber	58.00	120.00
tblTripsAndVMT	WorkerTripNumber	55.00	11.00
tblTripsAndVMT	WorkerTripNumber	423.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	23.00	5.00
tblTripsAndVMT	WorkerTripNumber	3.00	5.00
tblTripsAndVMT	WorkerTripNumber	85.00	24.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblVehicleTrips	ST_TR	6.42	0.05
tblVehicleTrips	SU_TR	5.09	0.05
tblVehicleTrips	WD_TR	3.93	0.05
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	28,607,937.50	0.00

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	1.4072	11.4062	14.9286	0.0322	0.4725	0.5054	0.9779	0.1270	0.4911	0.6182	0.0000	2,817.4257	2,817.4257	0.3820	0.0366	2,837.8790
2024	1.7792	12.4163	17.2514	0.0356	0.4768	0.5304	1.0072	0.1283	0.5164	0.6446	0.0000	3,104.5810	3,104.5810	0.3860	0.0324	3,123.8745
Maximum	**1.7792**	**12.4163**	**17.2514**	**0.0356**	**0.4768**	**0.5304**	**1.0072**	**0.1283**	**0.5164**	**0.6446**	**0.0000**	**3,104.5810**	**3,104.5810**	**0.3860**	**0.0366**	**3,123.8745**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.9186	7.1973	16.2365	0.0322	0.4725	0.2826	0.7552	0.1270	0.2803	0.4073	0.0000	2,817.4230	2,817.4230	0.3820	0.0366	2,837.8763
2024	1.2469	7.8326	18.6248	0.0356	0.4768	0.2942	0.7710	0.1283	0.2929	0.4211	0.0000	3,104.5779	3,104.5779	0.3860	0.0324	3,123.8714
Maximum	**1.2469**	**7.8326**	**18.6248**	**0.0356**	**0.4768**	**0.2942**	**0.7710**	**0.1283**	**0.2929**	**0.4211**	**0.0000**	**3,104.5779**	**3,104.5779**	**0.3860**	**0.0366**	**3,123.8714**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**32.04**	**36.91**	**-8.33**	**0.00**	**0.00**	**44.31**	**23.12**	**0.00**	**43.12**	**34.40**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2023**	**8-31-2023**	5.5638	3.4462
2	**9-1-2023**	**11-30-2023**	5.4160	3.4799
3	**12-1-2023**	**2-29-2024**	5.4685	3.5649
4	**3-1-2024**	**5-31-2024**	5.4556	3.4630
5	**6-1-2024**	**8-31-2024**	2.4483	1.5513
6	**9-1-2024**	**9-30-2024**	0.7904	0.5002
		Highest	5.5638	3.5649

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6240	8.0000e-005	9.2400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0180	0.0180	5.0000e-005	0.0000	0.0192
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	173.9767	173.9767	0.0282	3.4100e-003	175.6971
Mobile	2.8000e-003	3.7400e-003	0.0278	6.0000e-005	6.6600e-003	5.0000e-005	6.7100e-003	1.7800e-003	4.0000e-005	1.8200e-003	0.0000	5.8999	5.8999	3.4000e-004	2.9000e-004	5.9949
Waste						0.0000	0.0000		0.0000	0.0000	31.1388	0.0000	31.1388	1.8403	0.0000	77.1451
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.6268**	**3.8200e-003**	**0.0371**	**6.0000e-005**	**6.6600e-003**	**8.0000e-005**	**6.7400e-003**	**1.7800e-003**	**7.0000e-005**	**1.8500e-003**	**31.1388**	**179.8946**	**211.0334**	**1.8688**	**3.7000e-003**	**258.8562**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6240	8.0000e-005	9.2400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0180	0.0180	5.0000e-005	0.0000	0.0192
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	173.9767	173.9767	0.0282	3.4100e-003	175.6971
Mobile	2.8000e-003	3.7400e-003	0.0278	6.0000e-005	6.6600e-003	5.0000e-005	6.7100e-003	1.7800e-003	4.0000e-005	1.8200e-003	0.0000	5.8999	5.8999	3.4000e-004	2.9000e-004	5.9949
Waste						0.0000	0.0000		0.0000	0.0000	31.1388	0.0000	31.1388	1.8403	0.0000	77.1451
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.6268**	**3.8200e-003**	**0.0371**	**6.0000e-005**	**6.6600e-003**	**8.0000e-005**	**6.7400e-003**	**1.7800e-003**	**7.0000e-005**	**1.8500e-003**	**31.1388**	**179.8946**	**211.0334**	**1.8688**	**3.7000e-003**	**258.8562**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	On-Site Construction_Pipeline and Dissolution Grading	Grading	6/1/2023	9/27/2023	5	85	
2	Offsite_Construction Open Cut	Grading	6/1/2023	6/1/2024	5	262	
3	Off-Site Construction_Micro_Slip	Trenching	6/1/2023	12/10/2024	5	399	

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	On-Site Construction_Sheet Pile Driving	Building Construction	6/1/2023	8/28/2023	5	63	
5	On-Site Construction_Pump Station Grading	Grading	8/29/2023	10/25/2023	5	42	
6	On-Site Construction_Pipeline/Pump Station Construction	Trenching	11/1/2023	5/21/2024	5	145	
7	On-Site Construction_Pump Station Paving	Paving	11/1/2023	2/8/2024	5	72	
8	Off-Site Construction_Paving - Line Painting	Architectural Coating	1/1/2024	12/17/2024	5	252	
9	On-Site Construction_Pipeline Paving	Paving	2/9/2024	5/20/2024	5	72	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 3.35

Acres of Paving: 20.28

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 64,695 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
On-Site Construction_Pipeline and Dissolution Grading	Cranes	1	6.00	231	0.29
On-Site Construction_Pipeline and Dissolution Grading	Excavators	2	6.00	158	0.38
On-Site Construction_Pipeline and Dissolution Grading	Graders	1	3.00	187	0.41
On-Site Construction_Pipeline and Dissolution Grading	Off-Highway Trucks	2	6.00	402	0.38
On-Site Construction_Pipeline and Dissolution Grading	Tractors/Loaders/Backhoes	1	3.00	97	0.37
Offsite_Construction Open Cut	Concrete/Industrial Saws	2	8.00	81	0.73
Offsite_Construction Open Cut	Excavators	6	10.00	158	0.38
Offsite_Construction Open Cut	Generator Sets	3	10.00	84	0.74
Offsite_Construction Open Cut	Pumps	6	10.00	84	0.74
Offsite_Construction Open Cut	Rubber Tired Loaders	3	10.00	203	0.36
Offsite_Construction Open Cut	Welders	3	8.00	46	0.45

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-Site Construction_Micro_Slip	Bore/Drill Rigs	1	10.00	221	0.50
Off-Site Construction_Micro_Slip	Cranes	2	10.00	231	0.29
Off-Site Construction_Micro_Slip	Excavators	2	10.00	158	0.38
Off-Site Construction_Micro_Slip	Forklifts	1	10.00	89	0.20
Off-Site Construction_Micro_Slip	Generator Sets	3	10.00	84	0.74
Off-Site Construction_Micro_Slip	Pumps	9	10.00	84	0.74
Off-Site Construction_Micro_Slip	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Off-Site Construction_Micro_Slip	Welders	2	10.00	46	0.45
On-Site Construction_Sheet Pile Driving	Off-Highway Trucks	1	10.00	402	0.38
On-Site Construction_Pump Station Grading	Aerial Lifts			63	0.31
On-Site Construction_Pump Station Grading	Pumps	2	10.00	84	0.74
On-Site Construction_Pump Station Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
On-Site Construction_Pipeline/Pump Station Construction	Concrete/Industrial Saws	2	7.00	81	0.73
On-Site Construction_Pipeline/Pump Station Construction	Cranes	2	7.00	231	0.29
On-Site Construction_Pipeline/Pump Station Construction	Generator Sets	1	6.00	84	0.74
On-Site Construction_Pipeline/Pump Station Construction	Tractors/Loaders/Backhoes	1	7.00	97	0.37
On-Site Construction_Pipeline/Pump Station Construction	Welders	3	7.00	46	0.45
On-Site Construction_Pump Station Paving	Cement and Mortar Mixers	1	10.00	9	0.56
Off-Site Construction_Paving - Line Painting	Air Compressors	1	10.00	78	0.48
On-Site Construction_Pipeline Paving	Pavers	1	10.00	130	0.42
On-Site Construction_Pipeline Paving	Paving Equipment	1	10.00	132	0.36
On-Site Construction_Pipeline Paving	Plate Compactors	1	10.00	8	0.43

Trips and VMT

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
On-Site Construction_Pipeline	7	25.00	5.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT
Offsite_Construction Open Cut	23	120.00	12.00	60.00	50.00	60.00	25.00	LD_Mix	HDT_Mix	HHDT
Off-Site Construction_Micro_Sl	22	11.00	1.00	1.00	50.00	50.00	70.00	LD_Mix	HDT_Mix	HHDT
On-Site Construction_Sheet Pi	1	5.00	2.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT
On-Site Construction_Pump St	3	5.00	3.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT
On-Site Construction_Pipeline/	9	5.00	4.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT
On-Site Construction_Pump St	1	5.00	1.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT
Off-Site Construction_Paving -	1	24.00	5.00	0.00	50.00	20.00	30.00	LD_Mix	HDT_Mix	HHDT
On-Site Construction_Pipeline	3	5.00	1.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 On-Site Construction_Pipeline and Dissolution Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7800e-003	0.0000	1.7800e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0639	0.5464	0.5383	1.5100e-003		0.0218	0.0218		0.0200	0.0200	0.0000	132.7275	132.7275	0.0429	0.0000	133.8006
Total	**0.0639**	**0.5464**	**0.5383**	**1.5100e-003**	**1.7800e-003**	**0.0218**	**0.0235**	**1.9000e-004**	**0.0200**	**0.0202**	**0.0000**	**132.7275**	**132.7275**	**0.0429**	**0.0000**	**133.8006**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 On-Site Construction_Pipeline and Dissolution Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.5000e-004	0.0494	8.3800e-003	2.7000e-004	9.5300e-003	3.8000e-004	9.9000e-003	2.7500e-003	3.6000e-004	3.1100e-003	0.0000	26.3779	26.3779	3.4000e-004	3.9300e-003	27.5586
Worker	5.5600e-003	4.3300e-003	0.0553	1.9000e-004	0.0233	1.1000e-004	0.0234	6.2000e-003	1.0000e-004	6.3000e-003	0.0000	18.0656	18.0656	3.1000e-004	4.0000e-004	18.1936
Total	**6.3100e-003**	**0.0537**	**0.0637**	**4.6000e-004**	**0.0329**	**4.9000e-004**	**0.0333**	**8.9500e-003**	**4.6000e-004**	**9.4100e-003**	**0.0000**	**44.4435**	**44.4435**	**6.5000e-004**	**4.3300e-003**	**45.7523**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7800e-003	0.0000	1.7800e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0272	0.1621	0.7374	1.5100e-003		5.4000e-003	5.4000e-003		5.1300e-003	5.1300e-003	0.0000	132.7273	132.7273	0.0429	0.0000	133.8005
Total	**0.0272**	**0.1621**	**0.7374**	**1.5100e-003**	**1.7800e-003**	**5.4000e-003**	**7.1800e-003**	**1.9000e-004**	**5.1300e-003**	**5.3200e-003**	**0.0000**	**132.7273**	**132.7273**	**0.0429**	**0.0000**	**133.8005**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 On-Site Construction_Pipeline and Dissolution Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.5000e-004	0.0494	8.3800e-003	2.7000e-004	9.5300e-003	3.8000e-004	9.9000e-003	2.7500e-003	3.6000e-004	3.1100e-003	0.0000	26.3779	26.3779	3.4000e-004	3.9300e-003	27.5586
Worker	5.5600e-003	4.3300e-003	0.0553	1.9000e-004	0.0233	1.1000e-004	0.0234	6.2000e-003	1.0000e-004	6.3000e-003	0.0000	18.0656	18.0656	3.1000e-004	4.0000e-004	18.1936
Total	**6.3100e-003**	**0.0537**	**0.0637**	**4.6000e-004**	**0.0329**	**4.9000e-004**	**0.0333**	**8.9500e-003**	**4.6000e-004**	**9.4100e-003**	**0.0000**	**44.4435**	**44.4435**	**6.5000e-004**	**4.3300e-003**	**45.7523**

3.3 Offsite_Construction Open Cut - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5674	4.6991	6.3949	0.0119		0.2140	0.2140		0.2086	0.2086	0.0000	1,023.0593	1,023.0593	0.1648	0.0000	1,027.1795
Total	**0.5674**	**4.6991**	**6.3949**	**0.0119**	**0.0000**	**0.2140**	**0.2140**	**0.0000**	**0.2086**	**0.2086**	**0.0000**	**1,023.0593**	**1,023.0593**	**0.1648**	**0.0000**	**1,027.1795**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Offsite_Construction Open Cut - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	2.7800e-003	5.8000e-004	1.0000e-005	3.7000e-004	2.0000e-005	3.9000e-004	1.0000e-004	2.0000e-005	1.2000e-004	0.0000	1.2569	1.2569	3.0000e-005	2.0000e-004	1.3167
Vendor	3.7600e-003	0.2520	0.0416	1.4000e-003	0.0491	1.9300e-003	0.0510	0.0142	1.8500e-003	0.0160	0.0000	135.5883	135.5883	1.7300e-003	0.0202	141.6568
Worker	0.0727	0.0588	0.7574	2.7700e-003	0.3335	1.5900e-003	0.3351	0.0887	1.4600e-003	0.0901	0.0000	257.3761	257.3761	3.7700e-003	5.4200e-003	259.0857
Total	**0.0765**	**0.3136**	**0.7995**	**4.1800e-003**	**0.3830**	**3.5400e-003**	**0.3865**	**0.1030**	**3.3300e-003**	**0.1063**	**0.0000**	**394.2213**	**394.2213**	**5.5300e-003**	**0.0258**	**402.0592**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3739	3.1917	6.8787	0.0119		0.1281	0.1281		0.1268	0.1268	0.0000	1,023.0581	1,023.0581	0.1648	0.0000	1,027.1782
Total	**0.3739**	**3.1917**	**6.8787**	**0.0119**	**0.0000**	**0.1281**	**0.1281**	**0.0000**	**0.1268**	**0.1268**	**0.0000**	**1,023.0581**	**1,023.0581**	**0.1648**	**0.0000**	**1,027.1782**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Offsite_Construction Open Cut - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	2.7800e-003	5.8000e-004	1.0000e-005	3.7000e-004	2.0000e-005	3.9000e-004	1.0000e-004	2.0000e-005	1.2000e-004	0.0000	1.2569	1.2569	3.0000e-005	2.0000e-004	1.3167
Vendor	3.7600e-003	0.2520	0.0416	1.4000e-003	0.0491	1.9300e-003	0.0510	0.0142	1.8500e-003	0.0160	0.0000	135.5883	135.5883	1.7300e-003	0.0202	141.6568
Worker	0.0727	0.0588	0.7574	2.7700e-003	0.3335	1.5900e-003	0.3351	0.0887	1.4600e-003	0.0901	0.0000	257.3761	257.3761	3.7700e-003	5.4200e-003	259.0857
Total	**0.0765**	**0.3136**	**0.7995**	**4.1800e-003**	**0.3830**	**3.5400e-003**	**0.3865**	**0.1030**	**3.3300e-003**	**0.1063**	**0.0000**	**394.2213**	**394.2213**	**5.5300e-003**	**0.0258**	**402.0592**

3.3 Offsite_Construction Open Cut - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3850	3.1406	4.6215	8.6000e-003		0.1358	0.1358		0.1322	0.1322	0.0000	740.4227	740.4227	0.1181	0.0000	743.3763
Total	**0.3850**	**3.1406**	**4.6215**	**8.6000e-003**	**0.0000**	**0.1358**	**0.1358**	**0.0000**	**0.1322**	**0.1322**	**0.0000**	**740.4227**	**740.4227**	**0.1181**	**0.0000**	**743.3763**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Offsite_Construction Open Cut - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-005	2.0200e-003	4.3000e-004	1.0000e-005	2.7000e-004	2.0000e-005	2.8000e-004	7.0000e-005	2.0000e-005	9.0000e-005	0.0000	0.8963	0.8963	2.0000e-005	1.4000e-004	0.9390
Vendor	2.6300e-003	0.1836	0.0293	1.0000e-003	0.0355	1.4100e-003	0.0369	0.0103	1.3500e-003	0.0116	0.0000	96.6243	96.6243	1.2500e-003	0.0144	100.9522
Worker	0.0494	0.0376	0.5077	1.9400e-003	0.2414	1.0900e-003	0.2425	0.0642	1.0100e-003	0.0652	0.0000	181.6634	181.6634	2.4300e-003	3.6300e-003	182.8053
Total	**0.0521**	**0.2231**	**0.5375**	**2.9500e-003**	**0.2771**	**2.5200e-003**	**0.2797**	**0.0745**	**2.3800e-003**	**0.0769**	**0.0000**	**279.1840**	**279.1840**	**3.7000e-003**	**0.0182**	**284.6965**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2559	2.1563	4.9715	8.6000e-003		0.0811	0.0811		0.0803	0.0803	0.0000	740.4218	740.4218	0.1181	0.0000	743.3754
Total	**0.2559**	**2.1563**	**4.9715**	**8.6000e-003**	**0.0000**	**0.0811**	**0.0811**	**0.0000**	**0.0803**	**0.0803**	**0.0000**	**740.4218**	**740.4218**	**0.1181**	**0.0000**	**743.3754**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Offsite_Construction Open Cut - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-005	2.0200e-003	4.3000e-004	1.0000e-005	2.7000e-004	2.0000e-005	2.8000e-004	7.0000e-005	2.0000e-005	9.0000e-005	0.0000	0.8963	0.8963	2.0000e-005	1.4000e-004	0.9390
Vendor	2.6300e-003	0.1836	0.0293	1.0000e-003	0.0355	1.4100e-003	0.0369	0.0103	1.3500e-003	0.0116	0.0000	96.6243	96.6243	1.2500e-003	0.0144	100.9522
Worker	0.0494	0.0376	0.5077	1.9400e-003	0.2414	1.0900e-003	0.2425	0.0642	1.0100e-003	0.0652	0.0000	181.6634	181.6634	2.4300e-003	3.6300e-003	182.8053
Total	**0.0521**	**0.2231**	**0.5375**	**2.9500e-003**	**0.2771**	**2.5200e-003**	**0.2797**	**0.0745**	**2.3800e-003**	**0.0769**	**0.0000**	**279.1840**	**279.1840**	**3.7000e-003**	**0.0182**	**284.6965**

3.4 Off-Site Construction_Micro_Slip - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5773	4.9934	6.2430	0.0117		0.2333	0.2333		0.2276	0.2276	0.0000	1,006.2508	1,006.2508	0.1386	0.0000	1,009.7154
Total	**0.5773**	**4.9934**	**6.2430**	**0.0117**		**0.2333**	**0.2333**		**0.2276**	**0.2276**	**0.0000**	**1,006.2508**	**1,006.2508**	**0.1386**	**0.0000**	**1,009.7154**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Off-Site Construction_Micro_Slip - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	8.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0377	0.0377	0.0000	1.0000e-005	0.0395
Vendor	2.7000e-004	0.0177	3.0000e-003	1.0000e-004	3.4100e-003	1.3000e-004	3.5400e-003	9.8000e-004	1.3000e-004	1.1100e-003	0.0000	9.4340	9.4340	1.2000e-004	1.4100e-003	9.8563
Worker	6.6600e-003	5.3900e-003	0.0694	2.5000e-004	0.0306	1.5000e-004	0.0307	8.1300e-003	1.3000e-004	8.2600e-003	0.0000	23.5928	23.5928	3.5000e-004	5.0000e-004	23.7495
Total	**6.9300e-003**	**0.0231**	**0.0724**	**3.5000e-004**	**0.0340**	**2.8000e-004**	**0.0343**	**9.1100e-003**	**2.6000e-004**	**9.3700e-003**	**0.0000**	**33.0644**	**33.0644**	**4.7000e-004**	**1.9200e-003**	**33.6452**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3577	2.9711	6.7819	0.0117		0.1281	0.1281		0.1279	0.1279	0.0000	1,006.2496	1,006.2496	0.1386	0.0000	1,009.7142
Total	**0.3577**	**2.9711**	**6.7819**	**0.0117**		**0.1281**	**0.1281**		**0.1279**	**0.1279**	**0.0000**	**1,006.2496**	**1,006.2496**	**0.1386**	**0.0000**	**1,009.7142**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Off-Site Construction_Micro_Slip - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	8.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0377	0.0377	0.0000	1.0000e-005	0.0395
Vendor	2.7000e-004	0.0177	3.0000e-003	1.0000e-004	3.4100e-003	1.3000e-004	3.5400e-003	9.8000e-004	1.3000e-004	1.1100e-003	0.0000	9.4340	9.4340	1.2000e-004	1.4100e-003	9.8563
Worker	6.6600e-003	5.3900e-003	0.0694	2.5000e-004	0.0306	1.5000e-004	0.0307	8.1300e-003	1.3000e-004	8.2600e-003	0.0000	23.5928	23.5928	3.5000e-004	5.0000e-004	23.7495
Total	**6.9300e-003**	**0.0231**	**0.0724**	**3.5000e-004**	**0.0340**	**2.8000e-004**	**0.0343**	**9.1100e-003**	**2.6000e-004**	**9.3700e-003**	**0.0000**	**33.0644**	**33.0644**	**4.7000e-004**	**1.9200e-003**	**33.6452**

3.4 Off-Site Construction_Micro_Slip - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.8794	7.5794	10.1155	0.0190		0.3333	0.3333		0.3250	0.3250	0.0000	1,635.5268	1,635.5268	0.2226	0.0000	1,641.0918
Total	**0.8794**	**7.5794**	**10.1155**	**0.0190**		**0.3333**	**0.3333**		**0.3250**	**0.3250**	**0.0000**	**1,635.5268**	**1,635.5268**	**0.2226**	**0.0000**	**1,641.0918**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Off-Site Construction_Micro_Slip - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.3000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0603	0.0603	0.0000	1.0000e-005	0.0632
Vendor	4.2000e-004	0.0289	4.7500e-003	1.6000e-004	5.5400e-003	2.2000e-004	5.7600e-003	1.6000e-003	2.1000e-004	1.8100e-003	0.0000	15.0960	15.0960	2.0000e-004	2.2500e-003	15.7722
Worker	0.0102	7.7300e-003	0.1045	4.0000e-004	0.0497	2.3000e-004	0.0499	0.0132	2.1000e-004	0.0134	0.0000	37.3924	37.3924	5.0000e-004	7.5000e-004	37.6274
Total	**0.0106**	**0.0367**	**0.1093**	**5.6000e-004**	**0.0552**	**4.5000e-004**	**0.0557**	**0.0148**	**4.2000e-004**	**0.0152**	**0.0000**	**52.5487**	**52.5487**	**7.0000e-004**	**3.0100e-003**	**53.4628**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5502	4.5640	11.0050	0.0190		0.1835	0.1835		0.1830	0.1830	0.0000	1,635.5249	1,635.5249	0.2226	0.0000	1,641.0899
Total	**0.5502**	**4.5640**	**11.0050**	**0.0190**		**0.1835**	**0.1835**		**0.1830**	**0.1830**	**0.0000**	**1,635.5249**	**1,635.5249**	**0.2226**	**0.0000**	**1,641.0899**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Off-Site Construction_Micro_Slip - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.3000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0603	0.0603	0.0000	1.0000e-005	0.0632
Vendor	4.2000e-004	0.0289	4.7500e-003	1.6000e-004	5.5400e-003	2.2000e-004	5.7600e-003	1.6000e-003	2.1000e-004	1.8100e-003	0.0000	15.0960	15.0960	2.0000e-004	2.2500e-003	15.7722
Worker	0.0102	7.7300e-003	0.1045	4.0000e-004	0.0497	2.3000e-004	0.0499	0.0132	2.1000e-004	0.0134	0.0000	37.3924	37.3924	5.0000e-004	7.5000e-004	37.6274
Total	**0.0106**	**0.0367**	**0.1093**	**5.6000e-004**	**0.0552**	**4.5000e-004**	**0.0557**	**0.0148**	**4.2000e-004**	**0.0152**	**0.0000**	**52.5487**	**52.5487**	**7.0000e-004**	**3.0100e-003**	**53.4628**

3.5 On-Site Construction_Sheet Pile Driving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0198	0.1405	0.1295	5.2000e-004		5.0800e-003	5.0800e-003		4.6700e-003	4.6700e-003	0.0000	45.7181	45.7181	0.0148	0.0000	46.0878
Total	**0.0198**	**0.1405**	**0.1295**	**5.2000e-004**		**5.0800e-003**	**5.0800e-003**		**4.6700e-003**	**4.6700e-003**	**0.0000**	**45.7181**	**45.7181**	**0.0148**	**0.0000**	**46.0878**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 On-Site Construction_Sheet Pile Driving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2000e-004	0.0146	2.4800e-003	8.0000e-005	2.8200e-003	1.1000e-004	2.9400e-003	8.2000e-004	1.1000e-004	9.2000e-004	0.0000	7.8203	7.8203	1.0000e-004	1.1700e-003	8.1703
Worker	8.2000e-004	6.4000e-004	8.2000e-003	3.0000e-005	3.4600e-003	2.0000e-005	3.4700e-003	9.2000e-004	2.0000e-005	9.3000e-004	0.0000	2.6780	2.6780	5.0000e-005	6.0000e-005	2.6969
Total	**1.0400e-003**	**0.0153**	**0.0107**	**1.1000e-004**	**6.2800e-003**	**1.3000e-004**	**6.4100e-003**	**1.7400e-003**	**1.3000e-004**	**1.8500e-003**	**0.0000**	**10.4982**	**10.4982**	**1.5000e-004**	**1.2300e-003**	**10.8673**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0110	0.0660	0.1981	5.2000e-004		2.2900e-003	2.2900e-003		2.1500e-003	2.1500e-003	0.0000	45.7181	45.7181	0.0148	0.0000	46.0877
Total	**0.0110**	**0.0660**	**0.1981**	**5.2000e-004**		**2.2900e-003**	**2.2900e-003**		**2.1500e-003**	**2.1500e-003**	**0.0000**	**45.7181**	**45.7181**	**0.0148**	**0.0000**	**46.0877**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 On-Site Construction_Sheet Pile Driving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2000e-004	0.0146	2.4800e-003	8.0000e-005	2.8200e-003	1.1000e-004	2.9400e-003	8.2000e-004	1.1000e-004	9.2000e-004	0.0000	7.8203	7.8203	1.0000e-004	1.1700e-003	8.1703
Worker	8.2000e-004	6.4000e-004	8.2000e-003	3.0000e-005	3.4600e-003	2.0000e-005	3.4700e-003	9.2000e-004	2.0000e-005	9.3000e-004	0.0000	2.6780	2.6780	5.0000e-005	6.0000e-005	2.6969
Total	**1.0400e-003**	**0.0153**	**0.0107**	**1.1000e-004**	**6.2800e-003**	**1.3000e-004**	**6.4100e-003**	**1.7400e-003**	**1.3000e-004**	**1.8500e-003**	**0.0000**	**10.4982**	**10.4982**	**1.5000e-004**	**1.2300e-003**	**10.8673**

3.6 On-Site Construction_Pump Station Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.1768	0.2424	4.1000e-004		8.6700e-003	8.6700e-003		8.5400e-003	8.5400e-003	0.0000	35.4187	35.4187	3.2200e-003	0.0000	35.4991
Total	**0.0204**	**0.1768**	**0.2424**	**4.1000e-004**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**0.0000**	**8.5400e-003**	**8.5400e-003**	**0.0000**	**35.4187**	**35.4187**	**3.2200e-003**	**0.0000**	**35.4991**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 On-Site Construction_Pump Station Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2000e-004	0.0146	2.4800e-003	8.0000e-005	2.8200e-003	1.1000e-004	2.9400e-003	8.2000e-004	1.1000e-004	9.2000e-004	0.0000	7.8203	7.8203	1.0000e-004	1.1700e-003	8.1703
Worker	5.5000e-004	4.3000e-004	5.4700e-003	2.0000e-005	2.3000e-003	1.0000e-005	2.3200e-003	6.1000e-004	1.0000e-005	6.2000e-004	0.0000	1.7853	1.7853	3.0000e-005	4.0000e-005	1.7980
Total	**7.7000e-004**	**0.0151**	**7.9500e-003**	**1.0000e-004**	**5.1200e-003**	**1.2000e-004**	**5.2600e-003**	**1.4300e-003**	**1.2000e-004**	**1.5400e-003**	**0.0000**	**9.6056**	**9.6056**	**1.3000e-004**	**1.2100e-003**	**9.9683**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0147	0.1144	0.2487	4.1000e-004		5.4700e-003	5.4700e-003		5.5200e-003	5.5200e-003	0.0000	35.4187	35.4187	3.2200e-003	0.0000	35.4990
Total	**0.0147**	**0.1144**	**0.2487**	**4.1000e-004**	**0.0000**	**5.4700e-003**	**5.4700e-003**	**0.0000**	**5.5200e-003**	**5.5200e-003**	**0.0000**	**35.4187**	**35.4187**	**3.2200e-003**	**0.0000**	**35.4990**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 On-Site Construction_Pump Station Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2000e-004	0.0146	2.4800e-003	8.0000e-005	2.8200e-003	1.1000e-004	2.9400e-003	8.2000e-004	1.1000e-004	9.2000e-004	0.0000	7.8203	7.8203	1.0000e-004	1.1700e-003	8.1703
Worker	5.5000e-004	4.3000e-004	5.4700e-003	2.0000e-005	2.3000e-003	1.0000e-005	2.3200e-003	6.1000e-004	1.0000e-005	6.2000e-004	0.0000	1.7853	1.7853	3.0000e-005	4.0000e-005	1.7980
Total	**7.7000e-004**	**0.0151**	**7.9500e-003**	**1.0000e-004**	**5.1200e-003**	**1.2000e-004**	**5.2600e-003**	**1.4300e-003**	**1.2000e-004**	**1.5400e-003**	**0.0000**	**9.6056**	**9.6056**	**1.3000e-004**	**1.2100e-003**	**9.9683**

3.7 On-Site Construction_Pipeline/Pump Station Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0479	0.3936	0.4025	7.6000e-004		0.0174	0.0174		0.0168	0.0168	0.0000	64.1869	64.1869	0.0104	0.0000	64.4467
Total	**0.0479**	**0.3936**	**0.4025**	**7.6000e-004**		**0.0174**	**0.0174**		**0.0168**	**0.0168**	**0.0000**	**64.1869**	**64.1869**	**0.0104**	**0.0000**	**64.4467**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 On-Site Construction_Pipeline/Pump Station Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-004	0.0200	3.3900e-003	1.1000e-004	3.8600e-003	1.5000e-004	4.0100e-003	1.1100e-003	1.5000e-004	1.2600e-003	0.0000	10.6753	10.6753	1.4000e-004	1.5900e-003	11.1531
Worker	5.6000e-004	4.4000e-004	5.6000e-003	2.0000e-005	2.3600e-003	1.0000e-005	2.3700e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	1.8278	1.8278	3.0000e-005	4.0000e-005	1.8408
Total	**8.6000e-004**	**0.0204**	**8.9900e-003**	**1.3000e-004**	**6.2200e-003**	**1.6000e-004**	**6.3800e-003**	**1.7400e-003**	**1.6000e-004**	**1.9000e-003**	**0.0000**	**12.5031**	**12.5031**	**1.7000e-004**	**1.6300e-003**	**12.9939**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0237	0.2355	0.4138	7.6000e-004		8.0700e-003	8.0700e-003		7.9200e-003	7.9200e-003	0.0000	64.1869	64.1869	0.0104	0.0000	64.4466
Total	**0.0237**	**0.2355**	**0.4138**	**7.6000e-004**		**8.0700e-003**	**8.0700e-003**		**7.9200e-003**	**7.9200e-003**	**0.0000**	**64.1869**	**64.1869**	**0.0104**	**0.0000**	**64.4466**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 On-Site Construction_Pipeline/Pump Station Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-004	0.0200	3.3900e-003	1.1000e-004	3.8600e-003	1.5000e-004	4.0100e-003	1.1100e-003	1.5000e-004	1.2600e-003	0.0000	10.6753	10.6753	1.4000e-004	1.5900e-003	11.1531
Worker	5.6000e-004	4.4000e-004	5.6000e-003	2.0000e-005	2.3600e-003	1.0000e-005	2.3700e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	1.8278	1.8278	3.0000e-005	4.0000e-005	1.8408
Total	**8.6000e-004**	**0.0204**	**8.9900e-003**	**1.3000e-004**	**6.2200e-003**	**1.6000e-004**	**6.3800e-003**	**1.7400e-003**	**1.6000e-004**	**1.9000e-003**	**0.0000**	**12.5031**	**12.5031**	**1.7000e-004**	**1.6300e-003**	**12.9939**

3.7 On-Site Construction_Pipeline/Pump Station Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1064	0.8750	0.9468	1.8100e-003		0.0364	0.0364		0.0352	0.0352	0.0000	152.2640	152.2640	0.0243	0.0000	152.8718
Total	**0.1064**	**0.8750**	**0.9468**	**1.8100e-003**		**0.0364**	**0.0364**		**0.0352**	**0.0352**	**0.0000**	**152.2640**	**152.2640**	**0.0243**	**0.0000**	**152.8718**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 On-Site Construction_Pipeline/Pump Station Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-004	0.0477	7.8400e-003	2.6000e-004	9.1500e-003	3.6000e-004	9.5100e-003	2.6400e-003	3.5000e-004	2.9900e-003	0.0000	24.9358	24.9358	3.2000e-004	3.7200e-003	26.0529
Worker	1.2500e-003	9.2000e-004	0.0123	5.0000e-005	5.6000e-003	3.0000e-005	5.6200e-003	1.4900e-003	2.0000e-005	1.5100e-003	0.0000	4.2288	4.2288	7.0000e-005	9.0000e-005	4.2572
Total	**1.9500e-003**	**0.0486**	**0.0202**	**3.1000e-004**	**0.0148**	**3.9000e-004**	**0.0151**	**4.1300e-003**	**3.7000e-004**	**4.5000e-003**	**0.0000**	**29.1646**	**29.1646**	**3.9000e-004**	**3.8100e-003**	**30.3101**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0535	0.5308	0.9789	1.8100e-003		0.0170	0.0170		0.0167	0.0167	0.0000	152.2639	152.2639	0.0243	0.0000	152.8716
Total	**0.0535**	**0.5308**	**0.9789**	**1.8100e-003**		**0.0170**	**0.0170**		**0.0167**	**0.0167**	**0.0000**	**152.2639**	**152.2639**	**0.0243**	**0.0000**	**152.8716**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 On-Site Construction_Pipeline/Pump Station Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-004	0.0477	7.8400e-003	2.6000e-004	9.1500e-003	3.6000e-004	9.5100e-003	2.6400e-003	3.5000e-004	2.9900e-003	0.0000	24.9358	24.9358	3.2000e-004	3.7200e-003	26.0529
Worker	1.2500e-003	9.2000e-004	0.0123	5.0000e-005	5.6000e-003	3.0000e-005	5.6200e-003	1.4900e-003	2.0000e-005	1.5100e-003	0.0000	4.2288	4.2288	7.0000e-005	9.0000e-005	4.2572
Total	**1.9500e-003**	**0.0486**	**0.0202**	**3.1000e-004**	**0.0148**	**3.9000e-004**	**0.0151**	**4.1300e-003**	**3.7000e-004**	**4.5000e-003**	**0.0000**	**29.1646**	**29.1646**	**3.9000e-004**	**3.8100e-003**	**30.3101**

3.8 On-Site Construction_Pump Station Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5800e-003	9.8900e-003	8.2900e-003	2.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	1.2316	1.2316	1.3000e-004	0.0000	1.2348
Paving	0.0159					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0175**	**9.8900e-003**	**8.2900e-003**	**2.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**	**0.0000**	**1.2316**	**1.2316**	**1.3000e-004**	**0.0000**	**1.2348**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.8 On-Site Construction_Pump Station Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	4.9900e-003	8.5000e-004	3.0000e-005	9.6000e-004	4.0000e-005	1.0000e-003	2.8000e-004	4.0000e-005	3.1000e-004	0.0000	2.6688	2.6688	3.0000e-005	4.0000e-004	2.7883
Worker	5.6000e-004	4.4000e-004	5.6000e-003	2.0000e-005	2.3600e-003	1.0000e-005	2.3700e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	1.8278	1.8278	3.0000e-005	4.0000e-005	1.8408
Total	**6.4000e-004**	**5.4300e-003**	**6.4500e-003**	**5.0000e-005**	**3.3200e-003**	**5.0000e-005**	**3.3700e-003**	**9.1000e-004**	**5.0000e-005**	**9.5000e-004**	**0.0000**	**4.4966**	**4.4966**	**6.0000e-005**	**4.4000e-004**	**4.6291**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5800e-003	9.8900e-003	8.2900e-003	2.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	1.2316	1.2316	1.3000e-004	0.0000	1.2348
Paving	0.0159					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0175**	**9.8900e-003**	**8.2900e-003**	**2.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**	**0.0000**	**1.2316**	**1.2316**	**1.3000e-004**	**0.0000**	**1.2348**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.8 On-Site Construction_Pump Station Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	4.9900e-003	8.5000e-004	3.0000e-005	9.6000e-004	4.0000e-005	1.0000e-003	2.8000e-004	4.0000e-005	3.1000e-004	0.0000	2.6688	2.6688	3.0000e-005	4.0000e-004	2.7883
Worker	5.6000e-004	4.4000e-004	5.6000e-003	2.0000e-005	2.3600e-003	1.0000e-005	2.3700e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	1.8278	1.8278	3.0000e-005	4.0000e-005	1.8408
Total	**6.4000e-004**	**5.4300e-003**	**6.4500e-003**	**5.0000e-005**	**3.3200e-003**	**5.0000e-005**	**3.3700e-003**	**9.1000e-004**	**5.0000e-005**	**9.5000e-004**	**0.0000**	**4.4966**	**4.4966**	**6.0000e-005**	**4.4000e-004**	**4.6291**

3.8 On-Site Construction_Pump Station Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0600e-003	6.6700e-003	5.5900e-003	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	0.8306	0.8306	9.0000e-005	0.0000	0.8328
Paving	0.0107					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0118**	**6.6700e-003**	**5.5900e-003**	**1.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.8306**	**0.8306**	**9.0000e-005**	**0.0000**	**0.8328**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.8 On-Site Construction_Pump Station Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	3.3900e-003	5.6000e-004	2.0000e-005	6.5000e-004	3.0000e-005	6.8000e-004	1.9000e-004	2.0000e-005	2.1000e-004	0.0000	1.7724	1.7724	2.0000e-005	2.6000e-004	1.8518
Worker	3.6000e-004	2.6000e-004	3.5000e-003	1.0000e-005	1.5900e-003	1.0000e-005	1.6000e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.2023	1.2023	2.0000e-005	3.0000e-005	1.2104
Total	**4.1000e-004**	**3.6500e-003**	**4.0600e-003**	**3.0000e-005**	**2.2400e-003**	**4.0000e-005**	**2.2800e-003**	**6.1000e-004**	**3.0000e-005**	**6.4000e-004**	**0.0000**	**2.9747**	**2.9747**	**4.0000e-005**	**2.9000e-004**	**3.0622**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0600e-003	6.6700e-003	5.5900e-003	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	0.8306	0.8306	9.0000e-005	0.0000	0.8328
Paving	0.0107					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0118**	**6.6700e-003**	**5.5900e-003**	**1.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.8306**	**0.8306**	**9.0000e-005**	**0.0000**	**0.8328**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.8 On-Site Construction_Pump Station Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	3.3900e-003	5.6000e-004	2.0000e-005	6.5000e-004	3.0000e-005	6.8000e-004	1.9000e-004	2.0000e-005	2.1000e-004	0.0000	1.7724	1.7724	2.0000e-005	2.6000e-004	1.8518
Worker	3.6000e-004	2.6000e-004	3.5000e-003	1.0000e-005	1.5900e-003	1.0000e-005	1.6000e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.2023	1.2023	2.0000e-005	3.0000e-005	1.2104
Total	**4.1000e-004**	**3.6500e-003**	**4.0600e-003**	**3.0000e-005**	**2.2400e-003**	**4.0000e-005**	**2.2800e-003**	**6.1000e-004**	**3.0000e-005**	**6.4000e-004**	**0.0000**	**2.9747**	**2.9747**	**4.0000e-005**	**2.9000e-004**	**3.0622**

3.9 Off-Site Construction_Paving - Line Painting - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2249					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0380	0.2560	0.3801	6.2000e-004		0.0128	0.0128		0.0128	0.0128	0.0000	53.6183	53.6183	3.0200e-003	0.0000	53.6938
Total	**0.2629**	**0.2560**	**0.3801**	**6.2000e-004**		**0.0128**	**0.0128**		**0.0128**	**0.0128**	**0.0000**	**53.6183**	**53.6183**	**3.0200e-003**	**0.0000**	**53.6938**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.9 Off-Site Construction_Paving - Line Painting - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0800e-003	0.0632	0.0129	3.2000e-004	0.0113	4.5000e-004	0.0118	3.2700e-003	4.3000e-004	3.7000e-003	0.0000	31.3341	31.3341	4.1000e-004	4.6800e-003	32.7394
Worker	0.0226	0.0172	0.2326	8.9000e-004	0.1106	5.0000e-004	0.1111	0.0294	4.6000e-004	0.0299	0.0000	83.2349	83.2349	1.1100e-003	1.6600e-003	83.7581
Total	**0.0237**	**0.0804**	**0.2456**	**1.2100e-003**	**0.1219**	**9.5000e-004**	**0.1229**	**0.0327**	**8.9000e-004**	**0.0336**	**0.0000**	**114.5689**	**114.5689**	**1.5200e-003**	**6.3400e-003**	**116.4975**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2249					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0380	0.2560	0.3801	6.2000e-004		0.0128	0.0128		0.0128	0.0128	0.0000	53.6183	53.6183	3.0200e-003	0.0000	53.6937
Total	**0.2629**	**0.2560**	**0.3801**	**6.2000e-004**		**0.0128**	**0.0128**		**0.0128**	**0.0128**	**0.0000**	**53.6183**	**53.6183**	**3.0200e-003**	**0.0000**	**53.6937**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.9 Off-Site Construction_Paving - Line Painting - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0800e-003	0.0632	0.0129	3.2000e-004	0.0113	4.5000e-004	0.0118	3.2700e-003	4.3000e-004	3.7000e-003	0.0000	31.3341	31.3341	4.1000e-004	4.6800e-003	32.7394
Worker	0.0226	0.0172	0.2326	8.9000e-004	0.1106	5.0000e-004	0.1111	0.0294	4.6000e-004	0.0299	0.0000	83.2349	83.2349	1.1100e-003	1.6600e-003	83.7581
Total	**0.0237**	**0.0804**	**0.2456**	**1.2100e-003**	**0.1219**	**9.5000e-004**	**0.1229**	**0.0327**	**8.9000e-004**	**0.0336**	**0.0000**	**114.5689**	**114.5689**	**1.5200e-003**	**6.3400e-003**	**116.4975**

3.10 On-Site Construction_Pipeline Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0175	0.1570	0.2553	4.2000e-004		7.3500e-003	7.3500e-003		6.8000e-003	6.8000e-003	0.0000	36.0922	36.0922	0.0114	0.0000	36.3763
Paving	0.0266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0441**	**0.1570**	**0.2553**	**4.2000e-004**		**7.3500e-003**	**7.3500e-003**		**6.8000e-003**	**6.8000e-003**	**0.0000**	**36.0922**	**36.0922**	**0.0114**	**0.0000**	**36.3763**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.10 On-Site Construction_Pipeline Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	8.4100e-003	1.3800e-003	5.0000e-005	1.6100e-003	6.0000e-005	1.6800e-003	4.7000e-004	6.0000e-005	5.3000e-004	0.0000	4.4004	4.4004	6.0000e-005	6.6000e-004	4.5976
Worker	8.8000e-004	6.5000e-004	8.6900e-003	3.0000e-005	3.9500e-003	2.0000e-005	3.9700e-003	1.0500e-003	2.0000e-005	1.0700e-003	0.0000	2.9850	2.9850	5.0000e-005	6.0000e-005	3.0051
Total	**1.0000e-003**	**9.0600e-003**	**0.0101**	**8.0000e-005**	**5.5600e-003**	**8.0000e-005**	**5.6500e-003**	**1.5200e-003**	**8.0000e-005**	**1.6000e-003**	**0.0000**	**7.3855**	**7.3855**	**1.1000e-004**	**7.2000e-004**	**7.6027**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	-0.0036	-0.0827	0.3572	4.2000e-004		-0.0048	-0.0048		-0.0043	-0.0043	0.0000	36.0922	36.0922	0.0114	0.0000	36.3762
Paving	0.0266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0229**	**-0.0827**	**0.3572**	**4.2000e-004**		**-0.0048**	**-0.0048**		**-0.0043**	**-0.0043**	**0.0000**	**36.0922**	**36.0922**	**0.0114**	**0.0000**	**36.3762**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.10 On-Site Construction_Pipeline Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	8.4100e-003	1.3800e-003	5.0000e-005	1.6100e-003	6.0000e-005	1.6800e-003	4.7000e-004	6.0000e-005	5.3000e-004	0.0000	4.4004	4.4004	6.0000e-005	6.6000e-004	4.5976
Worker	8.8000e-004	6.5000e-004	8.6900e-003	3.0000e-005	3.9500e-003	2.0000e-005	3.9700e-003	1.0500e-003	2.0000e-005	1.0700e-003	0.0000	2.9850	2.9850	5.0000e-005	6.0000e-005	3.0051
Total	**1.0000e-003**	**9.0600e-003**	**0.0101**	**8.0000e-005**	**5.5600e-003**	**8.0000e-005**	**5.6500e-003**	**1.5200e-003**	**8.0000e-005**	**1.6000e-003**	**0.0000**	**7.3855**	**7.3855**	**1.1000e-004**	**7.2000e-004**	**7.6027**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.8000e-003	3.7400e-003	0.0278	6.0000e-005	6.6600e-003	5.0000e-005	6.7100e-003	1.7800e-003	4.0000e-005	1.8200e-003	0.0000	5.8999	5.8999	3.4000e-004	2.9000e-004	5.9949
Unmitigated	2.8000e-003	3.7400e-003	0.0278	6.0000e-005	6.6600e-003	5.0000e-005	6.7100e-003	1.7800e-003	4.0000e-005	1.8200e-003	0.0000	5.8999	5.8999	3.4000e-004	2.9000e-004	5.9949

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	6.19	6.19	6.19	18,059	18,059
Parking Lot	0.00	0.00	0.00		
Total	6.19	6.19	6.19	18,059	18,059

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.569946	0.056495	0.180011	0.112201	0.020944	0.005169	0.013608	0.012941	0.000792	0.000570	0.024535	0.000337	0.002451
Parking Lot	0.569946	0.056495	0.180011	0.112201	0.020944	0.005169	0.013608	0.012941	0.000792	0.000570	0.024535	0.000337	0.002451

5.0 Energy Detail

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	173.9767	173.9767	0.0282	3.4100e-003	175.6971
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	173.9767	173.9767	0.0282	3.4100e-003	175.6971
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	1.88035e+006	173.9767	0.0282	3.4100e-003	175.6971
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**173.9767**	**0.0282**	**3.4100e-003**	**175.6971**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	1.88035e+006	173.9767	0.0282	3.4100e-003	175.6971
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**173.9767**	**0.0282**	**3.4100e-003**	**175.6971**

6.0 Area Detail

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6240	8.0000e-005	9.2400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0180	0.0180	5.0000e-005	0.0000	0.0192
Unmitigated	0.6240	8.0000e-005	9.2400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0180	0.0180	5.0000e-005	0.0000	0.0192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0829					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5403					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.5000e-004	8.0000e-005	9.2400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0180	0.0180	5.0000e-005	0.0000	0.0192
Total	**0.6241**	**8.0000e-005**	**9.2400e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0180**	**0.0180**	**5.0000e-005**	**0.0000**	**0.0192**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0829					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5403					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.5000e-004	8.0000e-005	9.2400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0180	0.0180	5.0000e-005	0.0000	0.0192
Total	**0.6241**	**8.0000e-005**	**9.2400e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0180**	**0.0180**	**5.0000e-005**	**0.0000**	**0.0192**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	31.1388	1.8403	0.0000	77.1451
Unmitigated	31.1388	1.8403	0.0000	77.1451

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	153.4	31.1388	1.8403	0.0000	77.1451
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**31.1388**	**1.8403**	**0.0000**	**77.1451**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	153.4	31.1388	1.8403	0.0000	77.1451
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**31.1388**	**1.8403**	**0.0000**	**77.1451**

9.0 Operational Offroad

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

EBDA Cargill MSS Transport Pipeline Construction

Alameda County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	123.71	1000sqft	2.84	123,707.00	0
Parking Lot	883.61	1000sqft	20.28	883,610.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - ------Need to adjust intensity factors---------. Start of construction set to beginning of summer 2023 according to PD

Land Use - Asphalt Surface = Pipelines and Paving. General Heavy Industry = On-site facilities (pumps, etc).

Construction Phase - Onsite paving time split equally btwn pipeline and pump station. Total days sourced from PD and Data Response

Off-road Equipment - Use Equipment from Micro Slip tab. rows 46 to 71

Off-road Equipment - slurry seperation/solids control units modeled as additional pumps. Tool van modeled as additional vendor trip. Drill rig modeled as excavator (drill attachment assumed)

Off-road Equipment - hrs/day from client-provided data response

Off-road Equipment - Data from client data response and PD

Off-road Equipment - Avg equipment / hours per day used

Off-road Equipment - eqpt number and hours sourced from client data response

Off-road Equipment - Sourced from client provided data response

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment - 2 utility trucks modeled as additional vendor trip

Off-road Equipment - concrete truck modeled as additional vendor trips. mixer added to modeling to account for cement truck mixer

Off-road Equipment - "pile-driving truck" identified in PD modeled as off-highway truck

Trips and VMT - Micro Slip hauling trips asmd. same as open cut. Offsite paving- +1 vendor for water truck. Open cut inspection trip added. pump station grading +2 vendor trips. Micro haul trps calcd from total exc. qty

Grading - Assumed phased import/export. No grading for open cut.

Vehicle Trips - Trip rate calculated to apprx. amount to total operational VMT

Energy Use - paving over pipeline, modeled as "parking lot" would not demand energy for operation. Client states all pumps are electric, annual kWH/yr = 1,879,920

Water And Wastewater - N/A

Construction Off-road Equipment Mitigation - Tier 4 Status provided in client data response

Stationary Sources - Emergency Generators and Fire Pumps -

Architectural Coating - parking lot area calculated using estimated area of lane striping (6 inches X 73,634 ft) and CalEEMod default % of parking lot painted (6%)

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	61,854.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	185,561.00	0.00
tblArchitecturalCoating	ConstArea_Parking	53,017.00	64,695.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	35.00	85.00
tblConstructionPhase	NumDays	35.00	262.00
tblConstructionPhase	NumDays	370.00	63.00
tblConstructionPhase	NumDays	35.00	42.00
tblConstructionPhase	NumDays	20.00	72.00
tblConstructionPhase	NumDays	20.00	252.00
tblConstructionPhase	NumDays	20.00	72.00
tblEnergyUse	LightingElect	2.99	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	NT24E	3.36	15.20
tblEnergyUse	NT24NG	6.90	0.00
tblEnergyUse	T24E	1.08	0.00
tblEnergyUse	T24NG	17.67	0.00
tblGrading	AcresOfGrading	15.94	3.35
tblLandUse	LandUseSquareFeet	123,710.00	123,707.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	6.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	9.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	PhaseName		Off-Site Construction_Micro_Slip
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	70.00

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripNumber	0.00	60.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	60.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripLength	7.30	20.00
tblTripsAndVMT	VendorTripLength	7.30	50.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	165.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripLength	10.80	50.00
tblTripsAndVMT	WorkerTripLength	10.80	50.00
tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripLength	10.80	50.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblTripsAndVMT	WorkerTripLength	10.80	30.00
tblTripsAndVMT	WorkerTripNumber	18.00	25.00
tblTripsAndVMT	WorkerTripNumber	58.00	120.00
tblTripsAndVMT	WorkerTripNumber	55.00	11.00
tblTripsAndVMT	WorkerTripNumber	423.00	5.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	23.00	5.00
tblTripsAndVMT	WorkerTripNumber	3.00	5.00
tblTripsAndVMT	WorkerTripNumber	85.00	24.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblVehicleTrips	ST_TR	6.42	0.05
tblVehicleTrips	SU_TR	5.09	0.05
tblVehicleTrips	WD_TR	3.93	0.05
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	28,607,937.50	0.00

2.0 Emissions Summary

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	19.2642	154.8984	205.7023	0.4441	6.7910	6.8784	13.6694	1.8183	6.6807	8.4989	0.0000	42,919.6515	42,919.6515	6.1428	0.5704	43,234.5306
2024	20.7949	147.9148	209.7473	0.4415	7.1589	6.2550	13.4139	1.9213	6.0783	7.9996	0.0000	42,573.3890	42,573.3890	5.3626	0.5436	42,869.4337
Maximum	**20.7949**	**154.8984**	**209.7473**	**0.4441**	**7.1589**	**6.8784**	**13.6694**	**1.9213**	**6.6807**	**8.4989**	**0.0000**	**42,919.6515**	**42,919.6515**	**6.1428**	**0.5704**	**43,234.5306**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	12.7000	97.8538	224.1384	0.4441	6.7910	3.8268	10.6177	1.8183	3.7977	5.6160	0.0000	42,919.6515	42,919.6515	6.1428	0.5704	43,234.5306
2024	14.3326	94.9517	226.7720	0.4415	7.1589	3.4794	10.6382	1.9213	3.4505	5.3719	0.0000	42,573.3890	42,573.3890	5.3626	0.5436	42,869.4337
Maximum	**14.3326**	**97.8538**	**226.7720**	**0.4441**	**7.1589**	**3.8268**	**10.6382**	**1.9213**	**3.7977**	**5.6160**	**0.0000**	**42,919.6515**	**42,919.6515**	**6.1428**	**0.5704**	**43,234.5306**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	32.52	36.33	-8.54	0.00	0.00	44.37	21.52	0.00	43.19	33.40	0.00	0.00	0.00	0.00	0.00	0.00

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.4242	9.3000e-004	0.1027	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2205	0.2205	5.8000e-004		0.2348
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0170	0.0189	0.1539	3.6000e-004	0.0380	2.6000e-004	0.0383	0.0101	2.4000e-004	0.0104		37.7092	37.7092	1.9500e-003	1.6700e-003	38.2567
Total	**3.4413**	**0.0199**	**0.2565**	**3.7000e-004**	**0.0380**	**6.3000e-004**	**0.0387**	**0.0101**	**6.1000e-004**	**0.0107**		**37.9296**	**37.9296**	**2.5300e-003**	**1.6700e-003**	**38.4916**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.4242	9.3000e-004	0.1027	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2205	0.2205	5.8000e-004		0.2348
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0170	0.0189	0.1539	3.6000e-004	0.0380	2.6000e-004	0.0383	0.0101	2.4000e-004	0.0104		37.7092	37.7092	1.9500e-003	1.6700e-003	38.2567
Total	**3.4413**	**0.0199**	**0.2565**	**3.7000e-004**	**0.0380**	**6.3000e-004**	**0.0387**	**0.0101**	**6.1000e-004**	**0.0107**		**37.9296**	**37.9296**	**2.5300e-003**	**1.6700e-003**	**38.4916**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	On-Site Construction_Pipeline and Dissolution Grading	Grading	6/1/2023	9/27/2023	5	85	
2	Offsite_Construction Open Cut	Grading	6/1/2023	6/1/2024	5	262	
3	Off-Site Construction_Micro_Slip	Trenching	6/1/2023	12/10/2024	5	399	
4	On-Site Construction_Sheet Pile Driving	Building Construction	6/1/2023	8/28/2023	5	63	
5	On-Site Construction_Pump Station Grading	Grading	8/29/2023	10/25/2023	5	42	
6	On-Site Construction_Pipeline/Pump Station Construction	Trenching	11/1/2023	5/21/2024	5	145	
7	On-Site Construction_Pump Station Paving	Paving	11/1/2023	2/8/2024	5	72	
8	Off-Site Construction_Paving - Line Painting	Architectural Coating	1/1/2024	12/17/2024	5	252	
9	On-Site Construction_Pipeline Paving	Paving	2/9/2024	5/20/2024	5	72	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 3.35

Acres of Paving: 20.28

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 64,695 (Architectural Coating – sqft)

OffRoad Equipment

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
On-Site Construction_Pipeline and Dissolution Grading	Cranes	1	6.00	231	0.29
On-Site Construction_Pipeline and Dissolution Grading	Excavators	2	6.00	158	0.38
On-Site Construction_Pipeline and Dissolution Grading	Graders	1	3.00	187	0.41
On-Site Construction_Pipeline and Dissolution Grading	Off-Highway Trucks	2	6.00	402	0.38
On-Site Construction_Pipeline and Dissolution Grading	Tractors/Loaders/Backhoes	1	3.00	97	0.37
Offsite_Construction Open Cut	Concrete/Industrial Saws	2	8.00	81	0.73
Offsite_Construction Open Cut	Excavators	6	10.00	158	0.38
Offsite_Construction Open Cut	Generator Sets	3	10.00	84	0.74
Offsite_Construction Open Cut	Pumps	6	10.00	84	0.74
Offsite_Construction Open Cut	Rubber Tired Loaders	3	10.00	203	0.36
Offsite_Construction Open Cut	Welders	3	8.00	46	0.45
Off-Site Construction_Micro_Slip	Bore/Drill Rigs	1	10.00	221	0.50
Off-Site Construction_Micro_Slip	Cranes	2	10.00	231	0.29
Off-Site Construction_Micro_Slip	Excavators	2	10.00	158	0.38
Off-Site Construction_Micro_Slip	Forklifts	1	10.00	89	0.20
Off-Site Construction_Micro_Slip	Generator Sets	3	10.00	84	0.74
Off-Site Construction_Micro_Slip	Pumps	9	10.00	84	0.74
Off-Site Construction_Micro_Slip	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Off-Site Construction_Micro_Slip	Welders	2	10.00	46	0.45
On-Site Construction_Sheet Pile Driving	Off-Highway Trucks	1	10.00	402	0.38
On-Site Construction_Pump Station Grading	Aerial Lifts			63	0.31
On-Site Construction_Pump Station Grading	Pumps	2	10.00	84	0.74
On-Site Construction_Pump Station Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
On-Site Construction_Pipeline/Pump Station Construction	Concrete/Industrial Saws	2	7.00	81	0.73
On-Site Construction_Pipeline/Pump Station Construction	Cranes	2	7.00	231	0.29

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

On-Site Construction_Pipeline/Pump Station Construction	Generator Sets	1	6.00	84	0.74
On-Site Construction_Pipeline/Pump Station Construction	Tractors/Loaders/Backhoes	1	7.00	97	0.37
On-Site Construction_Pipeline/Pump Station Construction	Welders	3	7.00	46	0.45
On-Site Construction_Pump Station Paving	Cement and Mortar Mixers	1	10.00	9	0.56
Off-Site Construction_Paving - Line Painting	Air Compressors	1	10.00	78	0.48
On-Site Construction_Pipeline Paving	Pavers	1	10.00	130	0.42
On-Site Construction_Pipeline Paving	Paving Equipment	1	10.00	132	0.36
On-Site Construction_Pipeline Paving	Plate Compactors	1	10.00	8	0.43

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
On-Site Construction_Pipeline	7	25.00	5.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT
Offsite_Construction Open Cut	23	120.00	12.00	60.00	50.00	60.00	25.00	LD_Mix	HDT_Mix	HHDT
Off-Site Construction_Micro_Sl	22	11.00	1.00	1.00	50.00	50.00	70.00	LD_Mix	HDT_Mix	HHDT
On-Site Construction_Sheet Pi	1	5.00	2.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT
On-Site Construction_Pump St	3	5.00	3.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT
On-Site Construction_Pipeline/	9	5.00	4.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT
On-Site Construction_Pump St	1	5.00	1.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT
Off-Site Construction_Paving -	1	24.00	5.00	0.00	50.00	20.00	30.00	LD_Mix	HDT_Mix	HHDT
On-Site Construction_Pipeline	3	5.00	1.00	0.00	30.00	50.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 On-Site Construction_Pipeline and Dissolution Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0418	0.0000	0.0418	4.5100e-003	0.0000	4.5100e-003			0.0000			0.0000
Off-Road	1.5029	12.8572	12.6667	0.0356		0.5117	0.5117		0.4708	0.4708		3,442.5175	3,442.5175	1.1134		3,470.3520
Total	**1.5029**	**12.8572**	**12.6667**	**0.0356**	**0.0418**	**0.5117**	**0.5535**	**4.5100e-003**	**0.4708**	**0.4753**		**3,442.5175**	**3,442.5175**	**1.1134**		**3,470.3520**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0177	1.1170	0.1974	6.4100e-003	0.2313	8.8400e-003	0.2402	0.0665	8.4500e-003	0.0750		684.0827	684.0827	8.7800e-003	0.1020	714.6907
Worker	0.1324	0.0899	1.4767	4.9000e-003	0.5700	2.6600e-003	0.5727	0.1511	2.4500e-003	0.1536		501.8689	501.8689	8.2100e-003	9.6400e-003	504.9473
Total	**0.1501**	**1.2069**	**1.6740**	**0.0113**	**0.8014**	**0.0115**	**0.8129**	**0.2177**	**0.0109**	**0.2286**		**1,185.9516**	**1,185.9516**	**0.0170**	**0.1116**	**1,219.6381**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 On-Site Construction_Pipeline and Dissolution Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0418	0.0000	0.0418	4.5100e-003	0.0000	4.5100e-003			0.0000			0.0000
Off-Road	0.6398	3.8149	17.3508	0.0356		0.1270	0.1270		0.1207	0.1207	0.0000	3,442.5175	3,442.5175	1.1134		3,470.3520
Total	**0.6398**	**3.8149**	**17.3508**	**0.0356**	**0.0418**	**0.1270**	**0.1688**	**4.5100e-003**	**0.1207**	**0.1252**	**0.0000**	**3,442.5175**	**3,442.5175**	**1.1134**		**3,470.3520**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0177	1.1170	0.1974	6.4100e-003	0.2313	8.8400e-003	0.2402	0.0665	8.4500e-003	0.0750		684.0827	684.0827	8.7800e-003	0.1020	714.6907
Worker	0.1324	0.0899	1.4767	4.9000e-003	0.5700	2.6600e-003	0.5727	0.1511	2.4500e-003	0.1536		501.8689	501.8689	8.2100e-003	9.6400e-003	504.9473
Total	**0.1501**	**1.2069**	**1.6740**	**0.0113**	**0.8014**	**0.0115**	**0.8129**	**0.2177**	**0.0109**	**0.2286**		**1,185.9516**	**1,185.9516**	**0.0170**	**0.1116**	**1,219.6381**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Offsite_Construction Open Cut - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	7.4658	61.8296	84.1431	0.1564		2.8162	2.8162		2.7440	2.7440		14,838.5500	14,838.5500	2.3904		14,898.3098
Total	**7.4658**	**61.8296**	**84.1431**	**0.1564**	**0.0000**	**2.8162**	**2.8162**	**0.0000**	**2.7440**	**2.7440**		**14,838.5500**	**14,838.5500**	**2.3904**		**14,898.3098**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.5000e-004	0.0353	7.6500e-003	1.7000e-004	5.0100e-003	3.2000e-004	5.3300e-003	1.3700e-003	3.1000e-004	1.6800e-003		18.2231	18.2231	3.9000e-004	2.8800e-003	19.0908
Vendor	0.0495	3.1901	0.5481	0.0184	0.6662	0.0254	0.6916	0.1916	0.0243	0.2159		1,966.4116	1,966.4116	0.0252	0.2931	2,054.3834
Worker	0.9502	0.6834	11.4684	0.0391	4.5595	0.0209	4.5804	1.2088	0.0193	1.2281		3,999.2883	3,999.2883	0.0569	0.0726	4,022.3366
Total	**1.0002**	**3.9088**	**12.0242**	**0.0577**	**5.2306**	**0.0467**	**5.2773**	**1.4018**	**0.0439**	**1.4457**		**5,983.9230**	**5,983.9230**	**0.0825**	**0.3686**	**6,095.8108**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Offsite_Construction Open Cut - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	4.9195	41.9957	90.5086	0.1564		1.6858	1.6858		1.6682	1.6682	0.0000	14,838.5500	14,838.5500	2.3904		14,898.3097
Total	**4.9195**	**41.9957**	**90.5086**	**0.1564**	**0.0000**	**1.6858**	**1.6858**	**0.0000**	**1.6682**	**1.6682**	**0.0000**	**14,838.5500**	**14,838.5500**	**2.3904**		**14,898.3097**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.5000e-004	0.0353	7.6500e-003	1.7000e-004	5.0100e-003	3.2000e-004	5.3300e-003	1.3700e-003	3.1000e-004	1.6800e-003		18.2231	18.2231	3.9000e-004	2.8800e-003	19.0908
Vendor	0.0495	3.1901	0.5481	0.0184	0.6662	0.0254	0.6916	0.1916	0.0243	0.2159		1,966.4116	1,966.4116	0.0252	0.2931	2,054.3834
Worker	0.9502	0.6834	11.4684	0.0391	4.5595	0.0209	4.5804	1.2088	0.0193	1.2281		3,999.2883	3,999.2883	0.0569	0.0726	4,022.3366
Total	**1.0002**	**3.9088**	**12.0242**	**0.0577**	**5.2306**	**0.0467**	**5.2773**	**1.4018**	**0.0439**	**1.4457**		**5,983.9230**	**5,983.9230**	**0.0825**	**0.3686**	**6,095.8108**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Offsite_Construction Open Cut - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	7.0005	57.1022	84.0272	0.1564		2.4688	2.4688		2.4040	2.4040		14,839.5696	14,839.5696	2.3678		14,898.7648
Total	**7.0005**	**57.1022**	**84.0272**	**0.1564**	**0.0000**	**2.4688**	**2.4688**	**0.0000**	**2.4040**	**2.4040**		**14,839.5696**	**14,839.5696**	**2.3678**		**14,898.7648**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.5000e-004	0.0354	7.6900e-003	1.7000e-004	5.0100e-003	3.2000e-004	5.3400e-003	1.3700e-003	3.1000e-004	1.6800e-003		17.9565	17.9565	3.9000e-004	2.8400e-003	18.8118
Vendor	0.0479	3.2106	0.5331	0.0181	0.6662	0.0257	0.6919	0.1916	0.0246	0.2162		1,936.3722	1,936.3722	0.0252	0.2888	2,023.0706
Worker	0.8905	0.6037	10.6210	0.0378	4.5595	0.0199	4.5794	1.2088	0.0183	1.2271		3,899.9894	3,899.9894	0.0506	0.0672	3,921.2648
Total	**0.9390**	**3.8497**	**11.1618**	**0.0561**	**5.2307**	**0.0459**	**5.2766**	**1.4018**	**0.0432**	**1.4450**		**5,854.3182**	**5,854.3182**	**0.0762**	**0.3588**	**5,963.1472**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Offsite_Construction Open Cut - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	4.6534	39.2056	90.3907	0.1564		1.4745	1.4745		1.4595	1.4595	0.0000	14,839.5696	14,839.5696	2.3678		14,898.7648
Total	**4.6534**	**39.2056**	**90.3907**	**0.1564**	**0.0000**	**1.4745**	**1.4745**	**0.0000**	**1.4595**	**1.4595**	**0.0000**	**14,839.5696**	**14,839.5696**	**2.3678**		**14,898.7648**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.5000e-004	0.0354	7.6900e-003	1.7000e-004	5.0100e-003	3.2000e-004	5.3400e-003	1.3700e-003	3.1000e-004	1.6800e-003		17.9565	17.9565	3.9000e-004	2.8400e-003	18.8118
Vendor	0.0479	3.2106	0.5331	0.0181	0.6662	0.0257	0.6919	0.1916	0.0246	0.2162		1,936.3722	1,936.3722	0.0252	0.2888	2,023.0706
Worker	0.8905	0.6037	10.6210	0.0378	4.5595	0.0199	4.5794	1.2088	0.0183	1.2271		3,899.9894	3,899.9894	0.0506	0.0672	3,921.2648
Total	**0.9390**	**3.8497**	**11.1618**	**0.0561**	**5.2307**	**0.0459**	**5.2766**	**1.4018**	**0.0432**	**1.4450**		**5,854.3182**	**5,854.3182**	**0.0762**	**0.3588**	**5,963.1472**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Off-Site Construction_Micro_Slip - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.5966	65.7029	82.1452	0.1539		3.0699	3.0699		2.9952	2.9952		14,594.7589	14,594.7589	2.0100		14,645.0088
Total	**7.5966**	**65.7029**	**82.1452**	**0.1539**		**3.0699**	**3.0699**		**2.9952**	**2.9952**		**14,594.7589**	**14,594.7589**	**2.0100**		**14,645.0088**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0000e-005	1.0000e-003	1.7000e-004	1.0000e-005	1.5000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005		0.5462	0.5462	1.0000e-005	9.0000e-005	0.5722
Vendor	3.5400e-003	0.2234	0.0395	1.2800e-003	0.0463	1.7700e-003	0.0480	0.0133	1.6900e-003	0.0150		136.8165	136.8165	1.7600e-003	0.0204	142.9382
Worker	0.0871	0.0626	1.0513	3.5800e-003	0.4180	1.9200e-003	0.4199	0.1108	1.7700e-003	0.1126		366.6014	366.6014	5.2200e-003	6.6500e-003	368.7142
Total	**0.0907**	**0.2870**	**1.0909**	**4.8700e-003**	**0.4644**	**3.7000e-003**	**0.4681**	**0.1242**	**3.4700e-003**	**0.1276**		**503.9642**	**503.9642**	**6.9900e-003**	**0.0271**	**512.2245**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Off-Site Construction_Micro_Slip - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.7071	39.0939	89.2359	0.1539		1.6859	1.6859		1.6823	1.6823	0.0000	14,594.7589	14,594.7589	2.0100		14,645.0087
Total	**4.7071**	**39.0939**	**89.2359**	**0.1539**		**1.6859**	**1.6859**		**1.6823**	**1.6823**	**0.0000**	**14,594.7589**	**14,594.7589**	**2.0100**		**14,645.0087**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0000e-005	1.0000e-003	1.7000e-004	1.0000e-005	1.5000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005		0.5462	0.5462	1.0000e-005	9.0000e-005	0.5722
Vendor	3.5400e-003	0.2234	0.0395	1.2800e-003	0.0463	1.7700e-003	0.0480	0.0133	1.6900e-003	0.0150		136.8165	136.8165	1.7600e-003	0.0204	142.9382
Worker	0.0871	0.0626	1.0513	3.5800e-003	0.4180	1.9200e-003	0.4199	0.1108	1.7700e-003	0.1126		366.6014	366.6014	5.2200e-003	6.6500e-003	368.7142
Total	**0.0907**	**0.2870**	**1.0909**	**4.8700e-003**	**0.4644**	**3.7000e-003**	**0.4681**	**0.1242**	**3.4700e-003**	**0.1276**		**503.9642**	**503.9642**	**6.9900e-003**	**0.0271**	**512.2245**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Off-Site Construction_Micro_Slip - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.1203	61.3715	81.9070	0.1540		2.6991	2.6991		2.6314	2.6314		14,598.0542	14,598.0542	1.9869		14,647.7255
Total	**7.1203**	**61.3715**	**81.9070**	**0.1540**		**2.6991**	**2.6991**		**2.6314**	**2.6314**		**14,598.0542**	**14,598.0542**	**1.9869**		**14,647.7255**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0000e-005	1.0100e-003	1.7000e-004	0.0000	1.5000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005		0.5382	0.5382	1.0000e-005	9.0000e-005	0.5639
Vendor	3.4300e-003	0.2248	0.0384	1.2600e-003	0.0463	1.7900e-003	0.0481	0.0133	1.7100e-003	0.0150		134.7259	134.7259	1.7600e-003	0.0201	140.7588
Worker	0.0816	0.0553	0.9736	3.4700e-003	0.4180	1.8200e-003	0.4198	0.1108	1.6800e-003	0.1125		357.4990	357.4990	4.6400e-003	6.1600e-003	359.4493
Total	**0.0851**	**0.2812**	**1.0122**	**4.7300e-003**	**0.4644**	**3.6200e-003**	**0.4680**	**0.1242**	**3.4000e-003**	**0.1276**		**492.7631**	**492.7631**	**6.4100e-003**	**0.0264**	**500.7720**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Off-Site Construction_Micro_Slip - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.4546	36.9553	89.1094	0.1540		1.4854	1.4854		1.4819	1.4819	0.0000	14,598.0542	14,598.0542	1.9869		14,647.7255
Total	**4.4546**	**36.9553**	**89.1094**	**0.1540**		**1.4854**	**1.4854**		**1.4819**	**1.4819**	**0.0000**	**14,598.0542**	**14,598.0542**	**1.9869**		**14,647.7255**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0000e-005	1.0100e-003	1.7000e-004	0.0000	1.5000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005		0.5382	0.5382	1.0000e-005	9.0000e-005	0.5639
Vendor	3.4300e-003	0.2248	0.0384	1.2600e-003	0.0463	1.7900e-003	0.0481	0.0133	1.7100e-003	0.0150		134.7259	134.7259	1.7600e-003	0.0201	140.7588
Worker	0.0816	0.0553	0.9736	3.4700e-003	0.4180	1.8200e-003	0.4198	0.1108	1.6800e-003	0.1125		357.4990	357.4990	4.6400e-003	6.1600e-003	359.4493
Total	**0.0851**	**0.2812**	**1.0122**	**4.7300e-003**	**0.4644**	**3.6200e-003**	**0.4680**	**0.1242**	**3.4000e-003**	**0.1276**		**492.7631**	**492.7631**	**6.4100e-003**	**0.0264**	**500.7720**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 On-Site Construction_Sheet Pile Driving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6298	4.4599	4.1106	0.0165		0.1613	0.1613		0.1484	0.1484		1,599.8606	1,599.8606	0.5174		1,612.7963
Total	**0.6298**	**4.4599**	**4.1106**	**0.0165**		**0.1613**	**0.1613**		**0.1484**	**0.1484**		**1,599.8606**	**1,599.8606**	**0.5174**		**1,612.7963**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0800e-003	0.4468	0.0790	2.5600e-003	0.0925	3.5400e-003	0.0961	0.0266	3.3800e-003	0.0300		273.6331	273.6331	3.5100e-003	0.0408	285.8763
Worker	0.0265	0.0180	0.2953	9.8000e-004	0.1140	5.3000e-004	0.1145	0.0302	4.9000e-004	0.0307		100.3738	100.3738	1.6400e-003	1.9300e-003	100.9895
Total	**0.0336**	**0.4648**	**0.3743**	**3.5400e-003**	**0.2065**	**4.0700e-003**	**0.2106**	**0.0568**	**3.8700e-003**	**0.0607**		**374.0069**	**374.0069**	**5.1500e-003**	**0.0427**	**386.8658**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 On-Site Construction_Sheet Pile Driving - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3475	2.0943	6.2876	0.0165		0.0726	0.0726		0.0682	0.0682	0.0000	1,599.8606	1,599.8606	0.5174		1,612.7963
Total	**0.3475**	**2.0943**	**6.2876**	**0.0165**		**0.0726**	**0.0726**		**0.0682**	**0.0682**	**0.0000**	**1,599.8606**	**1,599.8606**	**0.5174**		**1,612.7963**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0800e-003	0.4468	0.0790	2.5600e-003	0.0925	3.5400e-003	0.0961	0.0266	3.3800e-003	0.0300		273.6331	273.6331	3.5100e-003	0.0408	285.8763
Worker	0.0265	0.0180	0.2953	9.8000e-004	0.1140	5.3000e-004	0.1145	0.0302	4.9000e-004	0.0307		100.3738	100.3738	1.6400e-003	1.9300e-003	100.9895
Total	**0.0336**	**0.4648**	**0.3743**	**3.5400e-003**	**0.2065**	**4.0700e-003**	**0.2106**	**0.0568**	**3.8700e-003**	**0.0607**		**374.0069**	**374.0069**	**5.1500e-003**	**0.0427**	**386.8658**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 On-Site Construction_Pump Station Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.9709	8.4178	11.5445	0.0196		0.4129	0.4129		0.4069	0.4069		1,859.1629	1,859.1629	0.1688		1,863.3828
Total	**0.9709**	**8.4178**	**11.5445**	**0.0196**	**0.0000**	**0.4129**	**0.4129**	**0.0000**	**0.4069**	**0.4069**		**1,859.1629**	**1,859.1629**	**0.1688**		**1,863.3828**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0106	0.6702	0.1184	3.8500e-003	0.1388	5.3000e-003	0.1441	0.0399	5.0700e-003	0.0450		410.4496	410.4496	5.2700e-003	0.0612	428.8144
Worker	0.0265	0.0180	0.2953	9.8000e-004	0.1140	5.3000e-004	0.1145	0.0302	4.9000e-004	0.0307		100.3738	100.3738	1.6400e-003	1.9300e-003	100.9895
Total	**0.0371**	**0.6882**	**0.4138**	**4.8300e-003**	**0.2528**	**5.8300e-003**	**0.2586**	**0.0702**	**5.5600e-003**	**0.0757**		**510.8234**	**510.8234**	**6.9100e-003**	**0.0631**	**529.8039**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 On-Site Construction_Pump Station Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7008	5.4494	11.8403	0.0196		0.2603	0.2603		0.2627	0.2627	0.0000	1,859.1629	1,859.1629	0.1688		1,863.3828
Total	**0.7008**	**5.4494**	**11.8403**	**0.0196**	**0.0000**	**0.2603**	**0.2603**	**0.0000**	**0.2627**	**0.2627**	**0.0000**	**1,859.1629**	**1,859.1629**	**0.1688**		**1,863.3828**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0106	0.6702	0.1184	3.8500e-003	0.1388	5.3000e-003	0.1441	0.0399	5.0700e-003	0.0450		410.4496	410.4496	5.2700e-003	0.0612	428.8144
Worker	0.0265	0.0180	0.2953	9.8000e-004	0.1140	5.3000e-004	0.1145	0.0302	4.9000e-004	0.0307		100.3738	100.3738	1.6400e-003	1.9300e-003	100.9895
Total	**0.0371**	**0.6882**	**0.4138**	**4.8300e-003**	**0.2528**	**5.8300e-003**	**0.2586**	**0.0702**	**5.5600e-003**	**0.0757**		**510.8234**	**510.8234**	**6.9100e-003**	**0.0631**	**529.8039**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 On-Site Construction_Pipeline/Pump Station Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2288	18.3089	18.7196	0.0354		0.8106	0.8106		0.7830	0.7830		3,290.8830	3,290.8830	0.5327		3,304.2006
Total	**2.2288**	**18.3089**	**18.7196**	**0.0354**		**0.8106**	**0.8106**		**0.7830**	**0.7830**		**3,290.8830**	**3,290.8830**	**0.5327**		**3,304.2006**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0142	0.8936	0.1579	5.1300e-003	0.1851	7.0700e-003	0.1921	0.0532	6.7600e-003	0.0600		547.2662	547.2662	7.0200e-003	0.0816	571.7526
Worker	0.0265	0.0180	0.2953	9.8000e-004	0.1140	5.3000e-004	0.1145	0.0302	4.9000e-004	0.0307		100.3738	100.3738	1.6400e-003	1.9300e-003	100.9895
Total	**0.0407**	**0.9116**	**0.4532**	**6.1100e-003**	**0.2991**	**7.6000e-003**	**0.3067**	**0.0835**	**7.2500e-003**	**0.0907**		**647.6399**	**647.6399**	**8.6600e-003**	**0.0835**	**672.7421**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 On-Site Construction_Pipeline/Pump Station Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1004	10.9553	19.2479	0.0354		0.3754	0.3754		0.3686	0.3686	0.0000	3,290.8830	3,290.8830	0.5327		3,304.2006
Total	**1.1004**	**10.9553**	**19.2479**	**0.0354**		**0.3754**	**0.3754**		**0.3686**	**0.3686**	**0.0000**	**3,290.8830**	**3,290.8830**	**0.5327**		**3,304.2006**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0142	0.8936	0.1579	5.1300e-003	0.1851	7.0700e-003	0.1921	0.0532	6.7600e-003	0.0600		547.2662	547.2662	7.0200e-003	0.0816	571.7526
Worker	0.0265	0.0180	0.2953	9.8000e-004	0.1140	5.3000e-004	0.1145	0.0302	4.9000e-004	0.0307		100.3738	100.3738	1.6400e-003	1.9300e-003	100.9895
Total	**0.0407**	**0.9116**	**0.4532**	**6.1100e-003**	**0.2991**	**7.6000e-003**	**0.3067**	**0.0835**	**7.2500e-003**	**0.0907**		**647.6399**	**647.6399**	**8.6600e-003**	**0.0835**	**672.7421**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 On-Site Construction_Pipeline/Pump Station Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0869	17.1576	18.5646	0.0354		0.7144	0.7144		0.6893	0.6893		3,291.0268	3,291.0268	0.5255		3,304.1630
Total	**2.0869**	**17.1576**	**18.5646**	**0.0354**		**0.7144**	**0.7144**		**0.6893**	**0.6893**		**3,291.0268**	**3,291.0268**	**0.5255**		**3,304.1630**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0137	0.8993	0.1537	5.0500e-003	0.1851	7.1400e-003	0.1922	0.0532	6.8300e-003	0.0601		538.9034	538.9034	7.0200e-003	0.0804	563.0353
Worker	0.0248	0.0159	0.2739	9.5000e-004	0.1140	5.1000e-004	0.1145	0.0302	4.7000e-004	0.0307		97.8820	97.8820	1.4700e-003	1.7900e-003	98.4513
Total	**0.0385**	**0.9152**	**0.4275**	**6.0000e-003**	**0.2991**	**7.6500e-003**	**0.3067**	**0.0835**	**7.3000e-003**	**0.0908**		**636.7854**	**636.7854**	**8.4900e-003**	**0.0822**	**661.4866**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 On-Site Construction_Pipeline/Pump Station Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0495	10.4087	19.1940	0.0354		0.3330	0.3330		0.3266	0.3266	0.0000	3,291.0268	3,291.0268	0.5255		3,304.1630
Total	**1.0495**	**10.4087**	**19.1940**	**0.0354**		**0.3330**	**0.3330**		**0.3266**	**0.3266**	**0.0000**	**3,291.0268**	**3,291.0268**	**0.5255**		**3,304.1630**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0137	0.8993	0.1537	5.0500e-003	0.1851	7.1400e-003	0.1922	0.0532	6.8300e-003	0.0601		538.9034	538.9034	7.0200e-003	0.0804	563.0353
Worker	0.0248	0.0159	0.2739	9.5000e-004	0.1140	5.1000e-004	0.1145	0.0302	4.7000e-004	0.0307		97.8820	97.8820	1.4700e-003	1.7900e-003	98.4513
Total	**0.0385**	**0.9152**	**0.4275**	**6.0000e-003**	**0.2991**	**7.6500e-003**	**0.3067**	**0.0835**	**7.3000e-003**	**0.0908**		**636.7854**	**636.7854**	**8.4900e-003**	**0.0822**	**661.4866**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.8 On-Site Construction_Pump Station Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0735	0.4602	0.3855	8.9000e-004		0.0179	0.0179		0.0179	0.0179		63.1454	63.1454	6.5600e-003		63.3093
Paving	0.7380					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8114**	**0.4602**	**0.3855**	**8.9000e-004**		**0.0179**	**0.0179**		**0.0179**	**0.0179**		**63.1454**	**63.1454**	**6.5600e-003**		**63.3093**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.5400e-003	0.2234	0.0395	1.2800e-003	0.0463	1.7700e-003	0.0480	0.0133	1.6900e-003	0.0150		136.8165	136.8165	1.7600e-003	0.0204	142.9382
Worker	0.0265	0.0180	0.2953	9.8000e-004	0.1140	5.3000e-004	0.1145	0.0302	4.9000e-004	0.0307		100.3738	100.3738	1.6400e-003	1.9300e-003	100.9895
Total	**0.0300**	**0.2414**	**0.3348**	**2.2600e-003**	**0.1603**	**2.3000e-003**	**0.1626**	**0.0435**	**2.1800e-003**	**0.0457**		**237.1903**	**237.1903**	**3.4000e-003**	**0.0223**	**243.9276**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.8 On-Site Construction_Pump Station Paving - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0735	0.4602	0.3855	8.9000e-004		0.0179	0.0179		0.0179	0.0179	0.0000	63.1454	63.1454	6.5600e-003		63.3093
Paving	0.7380					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8114**	**0.4602**	**0.3855**	**8.9000e-004**		**0.0179**	**0.0179**		**0.0179**	**0.0179**	**0.0000**	**63.1454**	**63.1454**	**6.5600e-003**		**63.3093**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.5400e-003	0.2234	0.0395	1.2800e-003	0.0463	1.7700e-003	0.0480	0.0133	1.6900e-003	0.0150		136.8165	136.8165	1.7600e-003	0.0204	142.9382
Worker	0.0265	0.0180	0.2953	9.8000e-004	0.1140	5.3000e-004	0.1145	0.0302	4.9000e-004	0.0307		100.3738	100.3738	1.6400e-003	1.9300e-003	100.9895
Total	**0.0300**	**0.2414**	**0.3348**	**2.2600e-003**	**0.1603**	**2.3000e-003**	**0.1626**	**0.0435**	**2.1800e-003**	**0.0457**		**237.1903**	**237.1903**	**3.4000e-003**	**0.0223**	**243.9276**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.8 On-Site Construction_Pump Station Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0735	0.4602	0.3855	8.9000e-004		0.0179	0.0179		0.0179	0.0179		63.1454	63.1454	6.5600e-003		63.3093
Paving	0.7380					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8114**	**0.4602**	**0.3855**	**8.9000e-004**		**0.0179**	**0.0179**		**0.0179**	**0.0179**		**63.1454**	**63.1454**	**6.5600e-003**		**63.3093**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4300e-003	0.2248	0.0384	1.2600e-003	0.0463	1.7900e-003	0.0481	0.0133	1.7100e-003	0.0150		134.7259	134.7259	1.7600e-003	0.0201	140.7588
Worker	0.0248	0.0159	0.2739	9.5000e-004	0.1140	5.1000e-004	0.1145	0.0302	4.7000e-004	0.0307		97.8820	97.8820	1.4700e-003	1.7900e-003	98.4513
Total	**0.0282**	**0.2408**	**0.3123**	**2.2100e-003**	**0.1603**	**2.3000e-003**	**0.1626**	**0.0435**	**2.1800e-003**	**0.0457**		**232.6078**	**232.6078**	**3.2300e-003**	**0.0219**	**239.2101**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.8 On-Site Construction_Pump Station Paving - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0735	0.4602	0.3855	8.9000e-004		0.0179	0.0179		0.0179	0.0179	0.0000	63.1454	63.1454	6.5600e-003		63.3093
Paving	0.7380					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8114**	**0.4602**	**0.3855**	**8.9000e-004**		**0.0179**	**0.0179**		**0.0179**	**0.0179**	**0.0000**	**63.1454**	**63.1454**	**6.5600e-003**		**63.3093**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4300e-003	0.2248	0.0384	1.2600e-003	0.0463	1.7900e-003	0.0481	0.0133	1.7100e-003	0.0150		134.7259	134.7259	1.7600e-003	0.0201	140.7588
Worker	0.0248	0.0159	0.2739	9.5000e-004	0.1140	5.1000e-004	0.1145	0.0302	4.7000e-004	0.0307		97.8820	97.8820	1.4700e-003	1.7900e-003	98.4513
Total	**0.0282**	**0.2408**	**0.3123**	**2.2100e-003**	**0.1603**	**2.3000e-003**	**0.1626**	**0.0435**	**2.1800e-003**	**0.0457**		**232.6078**	**232.6078**	**3.2300e-003**	**0.0219**	**239.2101**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.9 Off-Site Construction_Paving - Line Painting - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	1.7849					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3013	2.0313	3.0169	4.9500e-003		0.1015	0.1015		0.1015	0.1015		469.0801	469.0801	0.0264		469.7404
Total	**2.0862**	**2.0313**	**3.0169**	**4.9500e-003**		**0.1015**	**0.1015**		**0.1015**	**0.1015**		**469.0801**	**469.0801**	**0.0264**		**469.7404**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6500e-003	0.4830	0.1020	2.5700e-003	0.0926	3.5900e-003	0.0962	0.0266	3.4300e-003	0.0301		274.0519	274.0519	3.6300e-003	0.0409	286.3381
Worker	0.1781	0.1207	2.1242	7.5600e-003	0.9119	3.9800e-003	0.9159	0.2418	3.6600e-003	0.2454		779.9979	779.9979	0.0101	0.0134	784.2530
Total	**0.1868**	**0.6038**	**2.2262**	**0.0101**	**1.0045**	**7.5700e-003**	**1.0121**	**0.2684**	**7.0900e-003**	**0.2755**		**1,054.0497**	**1,054.0497**	**0.0138**	**0.0544**	**1,070.5911**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.9 Off-Site Construction_Paving - Line Painting - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	1.7849					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3013	2.0313	3.0169	4.9500e-003		0.1015	0.1015		0.1015	0.1015	0.0000	469.0801	469.0801	0.0264		469.7404
Total	**2.0862**	**2.0313**	**3.0169**	**4.9500e-003**		**0.1015**	**0.1015**		**0.1015**	**0.1015**	**0.0000**	**469.0801**	**469.0801**	**0.0264**		**469.7404**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6500e-003	0.4830	0.1020	2.5700e-003	0.0926	3.5900e-003	0.0962	0.0266	3.4300e-003	0.0301		274.0519	274.0519	3.6300e-003	0.0409	286.3381
Worker	0.1781	0.1207	2.1242	7.5600e-003	0.9119	3.9800e-003	0.9159	0.2418	3.6600e-003	0.2454		779.9979	779.9979	0.0101	0.0134	784.2530
Total	**0.1868**	**0.6038**	**2.2262**	**0.0101**	**1.0045**	**7.5700e-003**	**1.0121**	**0.2684**	**7.0900e-003**	**0.2755**		**1,054.0497**	**1,054.0497**	**0.0138**	**0.0544**	**1,070.5911**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.10 On-Site Construction_Pipeline Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4856	4.3616	7.0916	0.0116		0.2042	0.2042		0.1888	0.1888		1,105.1341	1,105.1341	0.3480		1,113.8331
Paving	0.7380					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2236**	**4.3616**	**7.0916**	**0.0116**		**0.2042**	**0.2042**		**0.1888**	**0.1888**		**1,105.1341**	**1,105.1341**	**0.3480**		**1,113.8331**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4300e-003	0.2248	0.0384	1.2600e-003	0.0463	1.7900e-003	0.0481	0.0133	1.7100e-003	0.0150		134.7259	134.7259	1.7600e-003	0.0201	140.7588
Worker	0.0248	0.0159	0.2739	9.5000e-004	0.1140	5.1000e-004	0.1145	0.0302	4.7000e-004	0.0307		97.8820	97.8820	1.4700e-003	1.7900e-003	98.4513
Total	**0.0282**	**0.2408**	**0.3123**	**2.2100e-003**	**0.1603**	**2.3000e-003**	**0.1626**	**0.0435**	**2.1800e-003**	**0.0457**		**232.6078**	**232.6078**	**3.2300e-003**	**0.0219**	**239.2101**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.10 On-Site Construction_Pipeline Paving - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	-0.1010	-2.2961	9.9210	0.0116		-0.1337	-0.1337		-0.1192	-0.1192	0.0000	1,105.1341	1,105.1341	0.3480		1,113.8331
Paving	0.7380					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6370**	**-2.2961**	**9.9210**	**0.0116**		**-0.1337**	**-0.1337**		**-0.1192**	**-0.1192**	**0.0000**	**1,105.1341**	**1,105.1341**	**0.3480**		**1,113.8331**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4300e-003	0.2248	0.0384	1.2600e-003	0.0463	1.7900e-003	0.0481	0.0133	1.7100e-003	0.0150		134.7259	134.7259	1.7600e-003	0.0201	140.7588
Worker	0.0248	0.0159	0.2739	9.5000e-004	0.1140	5.1000e-004	0.1145	0.0302	4.7000e-004	0.0307		97.8820	97.8820	1.4700e-003	1.7900e-003	98.4513
Total	**0.0282**	**0.2408**	**0.3123**	**2.2100e-003**	**0.1603**	**2.3000e-003**	**0.1626**	**0.0435**	**2.1800e-003**	**0.0457**		**232.6078**	**232.6078**	**3.2300e-003**	**0.0219**	**239.2101**

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0170	0.0189	0.1539	3.6000e-004	0.0380	2.6000e-004	0.0383	0.0101	2.4000e-004	0.0104		37.7092	37.7092	1.9500e-003	1.6700e-003	38.2567
Unmitigated	0.0170	0.0189	0.1539	3.6000e-004	0.0380	2.6000e-004	0.0383	0.0101	2.4000e-004	0.0104		37.7092	37.7092	1.9500e-003	1.6700e-003	38.2567

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	6.19	6.19	6.19	18,059	18,059
Parking Lot	0.00	0.00	0.00		
Total	6.19	6.19	6.19	18,059	18,059

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.569946	0.056495	0.180011	0.112201	0.020944	0.005169	0.013608	0.012941	0.000792	0.000570	0.024535	0.000337	0.002451
Parking Lot	0.569946	0.056495	0.180011	0.112201	0.020944	0.005169	0.013608	0.012941	0.000792	0.000570	0.024535	0.000337	0.002451

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.4242	9.3000e-004	0.1027	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2205	0.2205	5.8000e-004		0.2348
Unmitigated	3.4242	9.3000e-004	0.1027	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2205	0.2205	5.8000e-004		0.2348

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4544					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.9603					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.4800e-003	9.3000e-004	0.1027	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2205	0.2205	5.8000e-004		0.2348
Total	**3.4242**	**9.3000e-004**	**0.1027**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**		**0.2205**	**0.2205**	**5.8000e-004**		**0.2348**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4544					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.9603					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.4800e-003	9.3000e-004	0.1027	1.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004		0.2205	0.2205	5.8000e-004		0.2348
Total	**3.4242**	**9.3000e-004**	**0.1027**	**1.0000e-005**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**		**0.2205**	**0.2205**	**5.8000e-004**		**0.2348**

7.0 Water Detail

7.1 Mitigation Measures Water

EBDA Cargill MSS Transport Pipeline Construction - Alameda County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix C

Special-Status Species

Special-Status Species Potential for Occurrence in the Biological Study Area

Common Name	Scientific Name	Listing Status (Fed/State/CRPR)	General Habitat Requirements	Summary of Known Occurrences	Potential to Occur
Fish					
Chinook salmon Central Valley Fall-Run ESU	*Oncorhynchus tshawytscha*	--/SSC/--	Includes all naturally spawned populations of Fall-Run Chinook salmon in the Sacramento and San Joaquin river basins and their tributaries east of Carquinez Strait, California.	No CNDDB documented occurrences in the study area. Known to be present in several South Bay creeks (including Coyote Creek, Alameda Creek, and the Guadalupe River) and associated marshes and small channels within the Don Edwards San Francisco Bay National Wildlife Refuge.	Potential for seasonal transitory occurrence in tidal channels. **May Occur**
Delta smelt	*Hypomesus transpacificus*	FT/SE/--	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt. Most often at salinities < 2ppt.	No documented occurrences in the study area; outside of species range.	The study area is outside the known range of this species. **Not Expected to Occur**
Green sturgeon-Southern DPS	*Acipenser medirostris*	FT/--/--	Spawning occurs primarily in cool sections of mainstem rivers in deep pools with substrate containing small to medium sized sand, gravel, cobble, or boulder. Spawns in the Sacramento, Feather and Yuba Rivers. Non-spawning adults occupy marine/estuarine waters. Delta Estuary is important for rearing juveniles.	No CNDDB documented occurrences in study area, but well known from San Francisco Bay.	Critical habitat for this species is present in the study area within several tidal channels. Although the species is known to occur throughout San Francisco Bay, evidence of this species occurring in the project area has not been documented. **May Occur**
White sturgeon	*Acipenser transmontanus*	--/SSC/--	Primarily inhabit estuaries of large rivers and move into freshwater to spawn; less commonly some move to nearshore marine waters.	No CNDDB documented occurrences in study area, but extant range includes San Francisco Bay.	Although the species is known to occur throughout San Francisco Bay, evidence of this species occurring in the project area has not been documented. **May Occur**
Longfin smelt	*Spirinchus thaleichthys*	FC/ST/ --	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt but can be found in completely freshwater to almost pure seawater.	1 extant occurrence in the study area; collected from south San Francisco Bay, west of Coyote Hills Regional Park and south of Alameda Creek; last reported in 1995.	Suitable habitat for this species occurs in tidal channels. **May Occur**
Pacific lamprey	*Entosphenus tridentatus*	--/SSC/--	Spawn in habitat similar to that of salmon: gravel bottomed streams at the upstream end of riffle habitat.	No CNDDB occurrences of this species within 1 mile of the study area.	Adult and larval Pacific Lamprey have been documented in freshwater habitats north and south of the Cargill Facility, occurring in Alameda Creek, Coyote Creek, and the Guadalupe River. May be present in tidal channels within southern portion of the study area. **May Occur**
Steelhead - central California coast DPS	*Oncorhynchus mykiss irideus*	FT/--/--	DPS includes all naturally spawned populations of steelhead (and their progeny) in streams from the Russian River to Aptos Creek, Santa Cruz County, California (inclusive). Also includes the drainages of San Francisco and San Pablo Bays.	1 extant occurrence from 1999 in the study area that overlaps with the proposed Alameda Creek Flood Control Channel crossing.	The species is known to use San Francisco Bay and the lower reaches of Alameda Creek as migratory habitat. Evidence of this species occurring in Plummer Creek, Mowry Slough, or the Cargill Solar Salt Facility has not been documented. **May Occur**
Tidewater goby	*Eucyclogobius newberryi*		Endemic to California coastal lagoons and estuaries. range is from Tillas Slough (mouth of Smith River, Del Norte County) south to Agua Hedionda Lagoon (San Diego County).	No documented occurrences in study area.	The study area is outside the known range of this species. **Not Expected to Occur**
Birds					
Alameda song sparrow	*Melospiza melodia pusillula*	--/SSC/--	Resident of salt marshes bordering southern arm of San Francisco Bay. Inhabits *Salicornia* marshes; nests low in *Grindelia* bushes (high enough to escape high tides), and in *Salicornia*.	4 extant occurrences within study area, several historical occurrences including within the Proposed Project alignment area near the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant (dating to 1909). The closest recent (2004) occurrence is from a portion of Newark Slough near Don Edwards National Wildlife Refuge and Newark Slough Trail approximately 0.25 miles southwest of the proposed Newark Slough crossing.	There is foraging or nesting habitat in the study area in the form of salt marsh and adjoining habitats in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Cargill Facility; and near the Proposed Project alignment near the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant. Extant observations near Don Edwards National Wildlife Refuge and Newark Slough Trail. **May Occur**
Bank swallow	*Riparia riparia*	--/ST/--	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, and ocean to dig nesting hole.	1 extant occurrence from study area from 1980s; south of Alameda Creek Flood Control Channel, and west of Proposed Project alignment at Union City Boulevard and Paseo Padre Parkway.	No nesting or foraging habitat is present in the study area. **Not Expected to Occur**
Burrowing owl	*Athene cunicularia*	--/SSC/--	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent on burrowing mammals; most notably, the California ground squirrel.	5 occurrences within study area, 2 of which are possibly extirpated. 1 extant occurrence range is mapped in the area of the Proposed Project alignment near Oro Loma Marsh. 1 extant occurrence range is mapped in the area of the Eden Shores Boulevard and Marina Drive optional alignment, in open grassland habitat among urban developments. Third mapped extant	Grasslands, unvegetated berms, or similar areas with little or low-growing vegetation may provide suitable habitat, particularly in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; and near Oro Loma Marsh.

Common Name	Scientific Name	Listing Status (Fed/State/CRPR)	General Habitat Requirements	Summary of Known Occurrences	Potential to Occur
				occurrence is located approximately 600 feet west of the Proposed Project alignment in pasture habitat.	May Occur
California black rail	*Laterallus jamaicensis coturniculus*	--/ST, FP/--	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	4 extant occurrences from study area; the closest recent occurrence is in the vicinity of Alameda Creek in 2017. Additional observations along Old Alameda Creek downstream from the Proposed Project alignment.	There is foraging and nesting habitat in the study area in the form of salt marsh habitat in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; and at Oro Loma Marsh. May Occur
California brown pelican	*Pelecanus occidentalis californicus*	--/SSC, FP/--	Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally.	No documented occurrences in study area; however, species commonly observed in San Francisco Bay.	Foraging habitat present in portions of study area near the Bay; no suitable nesting habitat present. May Occur
California Ridgway's rail	*Rallus obsoletus obsoletus*	FE/SE, FP/--	Inhabits saltwater and brackish marshes traversed by tidal sloughs in the San Francisco Bay vicinity. Associated with abundant growths of pickleweed but feeds away from cover on invertebrates from mud-bottomed sloughs.	7 extant occurrences in study area; Proposed Project, alignment is within mapped occurrence range along Newark Slough in Don Edwards Refuge and in San Lorenzo shoreline marshes near the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant, and in Oro Loma Marsh. Additional nearby occurrence approximately 0.6 miles west of the proposed Hetch Hetchy Pipeline/Barge Canal crossing.	There is foraging and nesting habitat in the study area in the form of salt marsh habitat in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; in Oro Loma Marsh; and near the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant. May Occur
Northern harrier	*Circus hudsonius*	--/SSC/--	Coastal salt and freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain ciénagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	2 extant occurrences including a mapped occurrence range within Coyote Hills Regional Park overlapping with the Proposed Project alignment dating to 1971. The second occurrence was mapped approximately 0.7 miles southwest of the Proposed Project's southern terminus at the Solar Salt Facility.	There is foraging and nesting habitat in the study area in the form of salt marsh and grassland habitats particularly in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Cargill Facility; and near Oro Loma Marsh. May Occur
Salt-marsh common yellowthroat	*Geothlypis trichas sinuosa*	--/SSC/--	Resident of the San Francisco Bay region, in fresh and saltwater marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	6 extant occurrences in the study area including within a non-specific area of Alameda Creek that overlaps with the proposed Old Alameda Creek Flood Control Channel crossing dating to 1976. Two additional observations are within 400 to 600 feet of the Proposed Project staging area at Union City Boulevard.	Suitable salt marsh habitat for foraging is present in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; and near Oro Loma Marsh. Nesting habitat likely marginal and limited. May Occur
Tricolored blackbird	*Agelaius tricolor*	--/ST, SSC/	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	2 occurrences with the study area, one of which extirpated from the region; the extant occurrence was observed last in 1974 within Coyote Hills Regional Park with a mapped habitat range that includes a portion of the Proposed Project alignment.	Marginal foraging or nesting habitat may be present at margins of waterbodies in study area. May Occur
Western snowy plover	*Charadrius nivosus nivosus*	FT/SSC/--	Inhabits sandy beaches, salt pond berms, and shores of large alkali lakes. Needs sandy, gravelly, or friable soils for nesting.	2 extant occurrences in the study area, one of which historical (dating to 1971). The remaining occurrences was mapped to Eden Landing Ecological Reserve as recently as 2017.	There is foraging or nesting habitat in the study area in the form of salt marsh and adjoining habitats in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; and in Oro Loma Marsh. Recent observations in Eden Landing Ecological Reserve. May Occur
White-tailed kite	*Elanus leucurus*	--/FP/--	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	3 extant occurrences in the study area, including occurrence from 1971 in willow or sycamore tree within Proposed Project alignment along Paseo Padre Parkway. Remaining two occurrences are also from 1971 in willow or sycamore trees 900 feet and 0.3 miles west of the Proposed Project alignment along Union City Boulevard and Paseo Parkway (respectively).	Suitable salt marsh habitat for foraging is present in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; and near the Proposed Project alignment near Oro Loma Marsh. Nesting habitat likely marginal and limited. Nesting habitat for this species is present in trees within study area. May Occur
Yellow-billed cuckoo	*Coccyzus americanus*	FT/SE/--	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	No documented occurrences in study area.	Outside of the recorded range for this species, nearest recorded occurrence observed outside of the study area approximately 9.5 miles southeast of the Proposed Project alignment dating to 1899.. Not Expected to Occur

Common Name	Scientific Name	Listing Status (Fed/State/CRPR)	General Habitat Requirements	Summary of Known Occurrences	Potential to Occur
Yellow rail	*Coturnicops noveboracensis*	--/SSC/--	Summer resident in eastern Sierra Nevada in Mono County. Freshwater marshlands. Nests typically occur in shallow marshes.	1 extant and historical occurrence (1883) in the study area that overlaps with the Proposed Project alignment in the Eden Landing Ecological Reserve and Alameda Creek region along Union City Boulevard	Limited freshwater marsh habitat potential present in study area. **May Occur**
Terrestrial Mammals					
Pallid bat	*Antrozous pallidus*	--/SSC/--	Deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	1 extant occurrence in the study area, mapped in 1932 nearby Mount Eden overlapping with a short segment of the Proposed Project alignment.	Marginally suitable grassland foraging habitat and urban roosting sites within study area. **May Occur**
Salt-marsh harvest mouse	*Reithrodontomys raviventris*	FE/SE, FP/--	Occurs only in the saline emergent wetlands of the San Francisco Bay and its tributaries.	13 presumed extant occurrences in the study area; proposed project alignment overlaps with mapped occurrence ranges at Newark Slough crossing and in playa habitat west of Quarry Road. Mapped occurrence range also recorded in dense pickleweed within Oro Loma Marsh. Several other occurrences within 1,000 feet of less of the Proposed Project alignment.	There is salt marsh or adjoining refugia habitat in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; and in Oro Loma Marsh. **May Occur**
Salt-marsh wandering shrew	*Sorex vagrans halicoetes*	--/SSC/--	Salt marshes of the southern arm of San Francisco Bay. Medium high marsh 6 to 8 feet above sea level where abundant driftwood is scattered among *Salicornia*.	3 extant occurrences in the study area including 1 from 1985 in Newark Slough marshes that overlap with the proposed Newark Slough crossing, and the second also from 1985 in Newark Slough marshes approximately 0.6 miles west of the proposed Hetch Hetchy Pipeline/Barge Canal crossing. Third occurrence is in tidal and salt marsh habitat at Johnson and Hayward Landings more than 0.5 miles from the Proposed Project alignment.	Suitable salt marsh habitat is present in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; and near the Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant. **May Occur**
Reptiles and Amphibians					
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT/ST/--	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats. Mostly south-facing slopes and ravines, with rock outcrops, deep crevices or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.	No documented occurrences in the study area.	The study area is outside the known range of this species, and no suitable habitat for this species is present. **Not Expected to Occur**
California red-legged frog	*Rana draytonii*	FT/SSC/--	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	No documented occurrences in the study area.	The study area is outside the known range of this species, and no suitable habitat for this species is present. **Not Expected to Occur**
California tiger salamander	*Ambystoma californiense*	FT/FT, WL/--	Lives in vacant or mammal-occupied burrows throughout most of the year; in grassland, savanna, or open woodland habitats. Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	No documented occurrences in the study area.	The study area is outside the known range of this species, and no suitable habitat for this species is present. **Not Expected to Occur**
Invertebrates					
Monarch butterfly-California overwintering population	*Danaus plexippus* pop. 1	FC/--/--	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	3 extant occurrences in the study area; the Proposed Project alignment is close to mapped range within former Skywest Golf Course blue gum eucalyptuses.	Study area includes only limited habitat in former Skywest Golf Course area unlikely to be affected by the proposed project. **May Occur**
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT/--/--	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	No documented occurrences in study area.	No suitable vernal pool habitat exists in the study area. **Not Expected to Occur**
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE/--/--	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass-bottomed swales of unplowed grasslands.	No documented occurrences in study area.	No suitable vernal pool habitat exists in the study area. **Not Expected to Occur**
Western bumble bee	*Bombus occidentalis*	--/C/--	Typically nests underground in abandoned rodent burrows or in hollows in decaying wood.	3 extant occurrences in the study area, dating between 1919 and 1971. A 1959 occurrence is mapped within the northern portion of the Proposed Project alignment, but precise location information is unknown. The 1971 occurrence is mapped just east of the southern portion of the Proposed Project, but precise location information is also unknown	Marginally suitable urban park areas with flowering plants unlikely to be affected by proposed project, lack of recent occurrences in study area. **May Occur**

Common Name	Scientific Name	Listing Status (Fed/State/CRPR)	General Habitat Requirements	Summary of Known Occurrences	Potential to Occur
Plants					
Adobe sanicle	*Sanicula maritima*	--/--/1B.2	Chaparral, coastal prairie, meadows and seeps, valley and foothill grassland. Flowering period: February to May	No documented occurrences in study area.	Marginally suitable annual grassland and no recorded occurrences in study area. **May Occur**
Alkali milk-vetch	*Astragalus tener* var. *tener*	--/--/1B.2	Alkali playa, valley and foothill grassland, vernal pools, low ground, alkali flats, and flooded lands; in annual grasslands or in playas or vernal pools. Flowering period: March to June. Elevation: 0 to 550 feet	4 occurrences from study area; 2 extirpated, and 2 possibly extirpated.	This species is considered to be extirpated from the study area. **May Occur**
Bent-flowered fiddleneck	*Amsinckia lunaris*	--/--/1B.2	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Flowering period: March to June	No documented occurrences in study area.	Marginally suitable annual grassland and no recorded occurrences in study area. **May Occur**
Big-scale balsamroot	*Balsamorhiza macrolepis*	--/--/1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Flowering period: March to June	No documented occurrences in study area.	Marginally suitable annual grassland and no recorded occurrences in study area. **May Occur**
California seablite	*Suaeda californica*	FE/--/1B.1	Marshes and swamps. Margins of coastal salt marshes. Flowering Period: May to October. Elevation: 0 to 15 feet.	1 extant occurrence from a transplant population in 2008 that overlaps the study area near Roberts Landing and San Lorenzo Creek.	There is only marginally suitable habitat in and around the study area. Occurrence record is likely erroneous, and seablite has not been documented in annual surveys at Warm Springs. **May Occur**
Chaparral ragwort	*Senecio aphanactis*	--/--/2B.2	Chaparral, cismontane woodland, coastal scrub, drying alkaline flats. Flowering period: January to April. Elevation: 65 to 3,400 feet	1 occurrence in the study area mapped in 1892 near Coyote Hills Regional Park between Alameda Creek and the Newark Slough.	Suitable habitat is present in the study area in the form of alkali wetlands. **May Occur**
Congdon's tarplant	*Centromadia parryi* ssp. *Congdonii*	--/--/1B.1	Valley and foothill grassland, alkaline soils (heavy white clay). Flowering period: May to October. Elevation: 0 to 800 feet	4 extant occurrences in the study area. Includes a population mapped in the Don Edwards Refuge approximately 0.5 miles west of the proposed Newark Slough crossing; a population along railroad tracks approximately 0.4 miles east of the proposed Hetch Hetchy Pipeline/Barge Canal crossing; a population within an undeveloped urban field more than 0.5 miles west of the Proposed Project alignment; and in disturbed ruderal habitat near Oro Loma Sanitary District/Castro Valley Sanitary District Water Pollution Control Plant within 300 feet of the alignment .	Suitable habitat is present in the study area in the form of grassland habitat, particularly in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing to HWY 84) or in undeveloped urban parcels. **May Occur**
Contra Costa goldfields	*Lasthenia conjugens*	FE/--/1B.1	Valley and foothill grassland, vernal pools, cismontane woodland. Extirpated from most of its range; extremely Endangered. Flowering period: March to June. Elevation: 0 to 1,500 feet	2 occurrences in the study area; one of which is assumed extirpated from the region; the extant population was mapped in 1959 and is located in the general vicinity of the Hayward Regional Shoreline near Cabot Boulevard and Depot Road, within existing urban developed habitat more than 0.5 miles west of the Proposed Project alignment.	Marginally suitable grassland habitat in and around the study area. **May Occur**
Dark-eyed gilia	*Gilia millefoliata*	--/--/1B.2	Coastal dunes. Flowering period: April to July	No documented occurrences in study area.	No suitable habitat or recorded occurrences in study area. **Not Expected to Occur**
Diablo helianthella	*Helianthella castanea*	--/--/1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Flowering period: March to June	No documented occurrences in study area.	There is only limited marginally suitable habitat in and around the study area, and no recorded occurrences. **May Occur**
Fragrant fritillary	*Fritillaria liliacea*	--/--/1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Flowering period: February to April	No documented occurrences in study area.	There is only limited marginally suitable habitat in and around the study area, and no recorded occurrences. **May Occur**
Hairless popcornflower	*Plagiobothrys glaber*	--/--/1A	Meadows and seeps, marshes and swamps. Coastal salt marshes and alkaline meadows. Flowering period: March to May. Elevation: 15 to 375 feet.	2 possibly extirpated occurrences in the study area which were reported in the 1890s.	Marginal habitat present including salt marsh habitat in and around the study area. Presumed extirpated in California per CRPR. **Not Expected to Occur**
Hoover's button-celery	*Eryngium aristulatum var. hooveri*	--/--/1B.1	Vernal pools, alkaline depressions, roadside ditches and other wet places near the coast. Flowering period: July. Elevation: 1 to 160 feet	1 extant occurrence in the study area; near Thornton Avenue and Willow Street approximately 0.6 miles east of the proposed Hetch Hetchy Pipeline/Barge Canal crossing.	Suitable habitat may be present along the alignment where wet ditches may occur, particularly in vicinity of proposed crossings. **May Occur**
Jepson's coyote-thistle	*Eryngium jepsonii*	--/--/1B.2	Valley and foothill grassland, vernal pools. Flowering period: April to August	No documented occurrences in study area.	Marginally suitable annual grassland and no recorded occurrences in study area. **May Occur**

Common Name	Scientific Name	Listing Status (Fed/State/CRPR)	General Habitat Requirements	Summary of Known Occurrences	Potential to Occur
Loma Prieta hoita	*Hoita strobilina*	--/--/1B.1	Chaparral, cismontane woodland, riparian woodland. Flowering period: May to July	No documented occurrences in study area.	No suitable habitat or recorded occurrences in study area. **Not Expected to Occur**
Long-styled sand-spurrey	*Spergularia macrotheca var. longistyla*	--/--/1B.2	Marshes and swamps, meadows and seeps. Alkaline. Flowering period: February to May. Elevation: 0 to 725 feet	1 extant occurrence in the study area; mapped from 1897 in the general vicinity south of SR 84 and east of the Proposed Project alignment.	Suitable habitat is present in salt marsh and adjoining habitats in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; and in Oro Loma Marsh. **May Occur**
Most beautiful jewelflower	*Streptanthus albidus* ssp. *peramoenus*	--/--/1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Flowering period: April to September	No documented occurrences in study area.	Marginally suitable annual grassland and no recorded occurrences in study area. **May Occur**
Northern slender pondweed	*Stuckenia filiformis* ssp. *alpina*	--/--/2B.2	Marshes and swamps (shallow freshwater). Flowering period: May to July	No documented occurrences in study area.	No suitable habitat or recorded occurrences in study area. **Not Expected to Occur**
Point Reyes salty bird's-beak	*Chloropyron maritimum* ssp. *palustre*	--/--/1B.2	Coastal salt marsh. Flowering period: June to October. Elevation: 0 to 380 feet	1 extant occurrence in the study area; mapped in 2015, according to digital data, near the Lariviere Marsh within the Don Edwards National Wildlife Refuge approximately 0.4 miles of the Proposed Project alignment along Thornton Avenue.	Suitable salt marsh habitat is present in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; and in Oro Loma Marsh. **May Occur**
Robust spineflower	*Chorizanthe robusta* var. *robusta*	E/--/1B.1	Chaparral (maritime), cismontane woodland, coastal dunes, coastal scrub. Flowering period: April to September	No documented occurrences in study area.	No suitable habitat or recorded occurrences in study area. **Not Expected to Occur**
Saline clover	*Trifolium hydrophilum*	--/--/1B.2	Marshes and swamps, valley and foothill grassland, vernal pools; mesic alkaline sites and salt marshes. Flowering period: April to June. Elevation: 1 to 1,100 feet	1 extant occurrence in the study area observed in 2004 at an undefined but assumed location at Thornton Avenue and Willow Street, approximately 0.6 miles east of the proposed Newark Slough Crossing.	Suitable habitat is present in the salt marshes and grasslands particularly in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; and at Oro Loma Marsh. **May Occur**
San Joaquin spearscale	*Extriplex joaquinana*	--/--/1B.2	Chenopod scrub, alkali meadow, playas, valley and foothill grassland. In seasonal alkali wetlands or alkali sink scrub with *Distichlis spicata*, *Frankenia*, etc. Flowering period: April to September. Elevation: 0 to 2,625 feet.	1 extant occurrence from 1928 immediately east of the Proposed Project alignment near Newark Marsh.	Suitable salt marsh habitat is present in the vicinity of the southern MSS Brine Transport pipeline alignment (south from approximately the Alameda Creek Flood Control Channel proposed crossing) and Solar Salt Facility; and in Oro Loma Marsh. **May Occur**
Woodland woollythreads	*Monolopia gracilens*	E/--/1B.2	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, North Coast coniferous forest (openings), valley and foothill grassland. Flowering period: March to July	No documented occurrences in study area.	Marginally suitable annual grassland and no recorded occurrences in study area. **May Occur**

Sources: CDFW 2022b, CDFW 2022c, USFWS 2022b, NMFS 2016, GAIA 2021, CNPS 2022.

Notes:

Not Expected to Occur: Species not carried forward for analysis. Includes species where suitable habitat or recorded occurrences do not occur in the study area or are considered extirpated from the region.

May Occur: Species carried forward for analysis. Species where suitable habitat or observed occurrences occur within the study area.

1A=Plants presumed extirpated in California and either rare or extinct elsewhere

1B.1=Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California

1B.2=Plants rare, threatened, or endangered in California and elsewhere; moderately threatened in California

CNDDB = California Natural Diversity Data Base

CRPR = California Rare Plant Rank

DPS = Distinct Population Segment

ESU = Evolutionary Significant Unit

FC=Federal Candidate

FP=Fully Protected

FT=Federal Threatened

Listing Status
FE=Federal Endangered

SE=State Endangered

SSC=Species of Special Concern

ST=State Threatened

Appendix D

Noise Measurement Data and Noise Modeling Calculations

Long-Term Noise Measurement Summary

KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

Measurement Site: San Lorenzo Park, near UPPR and res. neighborhood
Measurement Date: November 17,2022- LT 12
Project Name: EBDA Cargill

Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA/10)	Computation of CNEL: Period of 24-Hour Day (1=included, 0=not) Day	Evening	Night	Sound Power Breakdown by Period of Day Day	Evening	Night
10:00	53.3	213,796	1	0	0	213,796	0	0
11:00	65.3	3,388,442	1	0	0	3,388,442	0	0
12:00	52.3	169,824	1	0	0	169,824	0	0
13:00	51.6	144,544	1	0	0	144,544	0	0
14:00	50.0	100,000	1	0	0	100,000	0	0
15:00	51.6	144,544	1	0	0	144,544	0	0
16:00	53.2	208,930	1	0	0	208,930	0	0
17:00	52.0	158,489	1	0	0	158,489	0	0
18:00	66.7	4,677,351	1	0	0	4,677,351	0	0
19:00	50.6	114,815	0	1	0	0	114,815	0
20:00	50.2	104,713	0	1	0	0	104,713	0
21:00	59.5	891,251	0	1	0	0	891,251	0
22:00	53.2	208,930	0	0	1	0	0	208,930
23:00	49.0	79,433	0	0	1	0	0	79,433
0:00	63.3	2,137,962	0	0	1	0	0	2,137,962
1:00	44.0	25,119	0	0	1	0	0	25,119
2:00	45.7	37,154	0	0	1	0	0	37,154
3:00	45.8	38,019	0	0	1	0	0	38,019
4:00	47.6	57,544	0	0	1	0	0	57,544
5:00	49.1	81,283	0	0	1	0	0	81,283
6:00	51.4	138,038	0	0	1	0	0	138,038
7:00	70.2	10,471,285	1	0	0	10,471,285	0	0
8:00	50.7	117,490	1	0	0	117,490	0	0
9:00	51.8	151,356	1	0	0	151,356	0	0
					Sum of Sound Power during Period wo/penalty	19,946,052	1,110,779	2,803,481
					Log Factor for CNEL Penalty (i.e., 10*log(x))	1	3	10
					Sound Power during Period with penalty	19,946,052	3,332,337	28,034,813

Total Daily Sound Power, with penalties	51,313,203
Hours per Day	24
Average Hourly Sound Power, with penalties	2,138,050
CNEL	63.3

Ldn computation on next page.

24-hour Interval Noise Level Data (LT 12)

Date		Time	Duration	Leq	SEL	Lmax	Lmin	Peak	Uwpk	L(5)	L(10)	L(33)	L(50)	L(67)	L(90)	Loads
17-Nov	22	9:28:56	1864	96.8	129.5	114.3	48	130.7	134.9	63.8	60	51.5	50.1	49.5	48.6	1
17-Nov	22	10:00:00	3600	53.3	88.9	75	43	87.6	93.8	58.4	55.7	48	46.6	45.6	44.3	0
17-Nov	22	11:00:00	3600	65.3	100.9	92.7	41.9	105.9	111.5	60	58	50	47.9	46.7	45.4	0
17-Nov	22	12:00:00	3600	52.3	87.9	69.8	38	85.9	96.9	58.9	55.8	46.1	44.3	43	41	0
17-Nov	22	13:00:00	3600	51.6	87.2	70.9	36.3	89.1	91.6	58.9	55.7	45.1	42.6	40.6	38.3	0
17-Nov	22	14:00:00	3600	50	85.6	69.1	39.2	84.5	98.8	57.1	53.6	45.4	44.1	43.3	41.8	0
17-Nov	22	15:00:00	3600	51.6	87.1	65.8	38.1	83.3	92.7	58.8	56.4	48.1	44.9	43.3	41.1	0
17-Nov	22	16:00:00	3600	53.2	88.8	67.2	38.1	84.6	90.2	60.5	57.7	49	46	44.4	42.2	0
17-Nov	22	17:00:00	3600	52	87.6	66.8	37.8	79.9	88.7	59.8	55.9	46.3	44.7	43.5	41.7	0
17-Nov	22	18:00:00	3600	66.7	102.3	88.9	36.8	103.6	112.1	61.4	57.7	45.9	43.6	42.1	40	0
17-Nov	22	19:00:00	3600	50.6	86.2	62.4	37.9	75.8	86.7	58.8	55.4	45.7	44.1	42.5	40.2	0
17-Nov	22	20:00:00	3600	50.2	85.8	64.6	36.9	76.6	88.7	58.5	54.7	42.9	41.6	40.6	39.2	0
17-Nov	22	21:00:00	3600	59.5	95.1	86.8	36.5	102	105.4	60.2	57.3	45.7	41.8	39.7	38.2	0
17-Nov	22	22:00:00	3600	53.2	88.8	69.2	36.6	82.2	88.7	61.1	57.4	46.1	43.3	41.4	38.6	0
17-Nov	22	23:00:00	3600	49	84.6	65.5	36.7	79.3	88.7	56.7	48.8	41.2	40.1	39.1	38	0
18-Nov	22	0:00:00	3600	63.3	98.9	88.9	35.6	104.2	107.1	52.7	45.2	39.9	38.6	37.8	36.9	0
18-Nov	22	1:00:00	3600	44	79.6	62.4	34.1	77.1	86.7	43.1	40.1	38.7	38.1	37.4	36	0
18-Nov	22	2:00:00	3600	45.7	81.3	64.9	34.6	76.3	86.7	45.9	42.5	39.2	38.3	37.4	36	0
18-Nov	22	3:00:00	3600	45.8	81.4	68.1	34.5	79.8	88.7	41.3	39.7	37.9	37.1	36.5	35.5	0
18-Nov	22	4:00:00	3600	47.6	83.1	65.2	34.4	77.8	90.2	50.2	42.3	40	39.3	38.5	36.7	0
18-Nov	22	5:00:00	3600	49.1	84.6	64.6	38.9	77.4	90.2	54.3	45.5	42.2	41.7	41.3	40.4	0
18-Nov	22	6:00:00	3600	51.4	87	74	41.3	87.9	90.2	54.8	50	45.4	44.5	43.6	42.4	0
18-Nov	22	7:00:00	3600	70.2	105.7	92.5	43.2	109.3	113.8	67.9	61	51.8	49	47.3	45.5	0
18-Nov	22	8:00:00	3600	50.7	86.3	62.2	41.7	77.5	88.7	57.4	53.5	48.6	47.3	45.8	43.6	0
18-Nov	22	9:00:00	3600	51.8	87.4	70.7	38.9	84.3	92.7	58.8	55.7	45.3	43.3	42.3	41.1	0
18-Nov	22	10:00:00	3600	63.2	98.8	89.5	40	105.2	114.7	56.8	51.5	45	43.9	43.2	41.9	0
18-Nov	22	11:00:00	3600	52.3	87.9	72.4	39.2	89.4	92.7	59	55.4	46.2	43.7	42.5	41.1	0
18-Nov	22	12:00:00	1683.9	51.6	83.9	73.2	38.9	86	92.7	56.4	53	46.6	43.8	42.2	40.4	0

Day LmaxAvg	68.585
Night Lmax Avg	69.717

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Tuesday, June 8, 2021** **to** **Wednesday, June 9, 2021**

Site: LT-01

Hour	Leq	Lmax	L50	L90
12:00	61.8	81.2	50.4	49.4
13:00	63.8	85.4	52.1	51.2
14:00	65.4	82.6	55.0	53.8
15:00	67.8	93.4	56.5	55.3
16:00	65.3	87.1	53.6	52.5
17:00	63.6	89.3	52.7	51.7
18:00	67.0	97.6	50.8	49.7
19:00	60.6	85.4	47.6	47.0
20:00	57.4	75.6	47.0	46.3
21:00	60.1	82.8	46.0	44.8
22:00	54.0	78.8	44.1	43.4
23:00	53.4	79.8	41.9	41.3
0:00	48.3	74.5	41.1	40.6
1:00	41.2	50.1	38.8	38.3
2:00	54.3	84.4	40.6	40.2
3:00	55.5	80.6	41.8	41.2
4:00	61.4	85.1	44.2	44.0
5:00	64.5	82.5	45.9	45.1
6:00	67.3	87.5	47.7	46.2
7:00	65.7	86.5	45.7	45.0
8:00	62.5	85.1	44.7	44.0
9:00	61.3	84.1	44.9	44.1
10:00	63.4	83.9	46.8	46.1
11:00	64.4	85.0	48.7	47.5

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	64.1	85.7	49.5	48.6
Nighttime (10 p.m. - 7 a.m.)	60.8	78.1	42.9	42.3

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	67.8	97.6	56.5	55.3
Nighttime (10 p.m. - 7 a.m.)	67.3	87.5	47.7	46.2

Percentage of Energy

Daytime	78%
Nighttime	22%

Calculated L_{dn}, dBA

67.8

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Tuesday, June 8, 2021** **to** **Wednesday, June 9, 2021**

Site: LT-01

Hour	Leq	Lmax	L50	L90
12:00	61.8	97.4	50.4	49.4
13:00	63.8	99.4	52.1	51.2
14:00	65.4	101.0	55.0	53.8
15:00	67.8	103.4	56.5	55.3
16:00	65.3	100.9	53.6	52.5
17:00	63.6	99.1	52.7	51.7
18:00	67.0	102.6	50.8	49.7
19:00	60.6	96.2	47.6	47.0
20:00	57.4	93.0	47.0	46.3
21:00	60.1	95.7	46.0	44.8
22:00	54.0	89.6	44.1	43.4
23:00	53.4	88.9	41.9	41.3
0:00	48.3	83.9	41.1	40.6
1:00	41.2	76.8	38.8	38.3
2:00	54.3	89.9	40.6	40.2
3:00	55.5	91.1	41.8	41.2
4:00	61.4	97.0	44.2	44.0
5:00	64.5	100.1	45.9	45.1
6:00	67.3	102.8	47.7	46.2
7:00	65.7	101.3	45.7	45.0
8:00	62.5	98.1	44.7	44.0
9:00	61.3	96.9	44.9	44.1
10:00	63.4	99.0	46.8	46.1
11:00	64.4	100.0	48.7	47.5

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	64.8	99.9	50.2	49.2
Evening (7 p.m. - 9 p.m.)	59.6	95.0	46.9	46.0
Nighttime (9 p.m. - 7 a.m.)	60.8	91.1	42.9	42.3

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	67.8	103.4	56.5	55.3
Evening (7 p.m. - 9 p.m.)	60.6	96.2	47.6	47.0
Nighttime (9 p.m. - 7 a.m.)	67.3	102.8	47.7	46.2

Percentage of Energy

Daytime	73%
Evening	6%
Nighttime	22%

Calculated CNEL, dBA

68.0

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Wednesday, June 9, 2021** **to** **Thursday, June 10, 2021**

Site: LT-02

Hour	Leq	Lmax	L50	L90
14:00	68.9	83.8	66.0	56.1
15:00	69.5	84.9	66.9	57.8
16:00	69.5	86.5	66.9	58.0
17:00	69.3	79.8	66.1	57.0
18:00	68.5	80.7	64.8	54.9
19:00	67.4	83.7	63.0	51.7
20:00	71.0	99.6	60.8	51.2
21:00	63.1	78.4	56.6	47.3
22:00	63.0	76.7	55.8	46.0
23:00	59.6	76.1	49.5	41.3
0:00	57.1	76.6	44.3	39.1
1:00	57.7	79.2	44.0	39.6
2:00	54.6	76.1	42.4	39.9
3:00	56.6	78.5	42.7	40.9
4:00	63.7	88.3	49.9	42.7
5:00	65.2	80.8	58.0	47.8
6:00	67.1	80.3	62.8	53.5
7:00	68.5	88.5	64.4	53.3
8:00	68.2	79.0	64.7	52.7
9:00	67.0	79.9	63.1	52.0
10:00	66.5	78.6	63.0	52.3
11:00	66.2	77.6	62.7	51.4
12:00	67.5	85.0	64.2	52.4
13:00	67.4	81.9	64.1	52.7

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	68.2	83.2	63.8	53.4
Nighttime (10 p.m. - 7 a.m.)	62.4	79.2	49.9	43.4

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	71.0	99.6	66.9	58.0
Nighttime (10 p.m. - 7 a.m.)	67.1	88.3	62.8	53.5

Percentage of Energy

Daytime	87%
Nighttime	13%

Calculated L_{dn}, dBA

70.3

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Wednesday, June 9, 2021** **to** **Thursday, June 10, 2021**

Site: LT-02

Hour	Leq	Lmax	L50	L90
14:00	68.9	104.5	66.0	56.1
15:00	69.5	105.1	66.9	57.8
16:00	69.5	105.1	66.9	58.0
17:00	69.3	104.9	66.1	57.0
18:00	68.5	104.1	64.8	54.9
19:00	67.4	102.9	63.0	51.7
20:00	71.0	106.6	60.8	51.2
21:00	63.1	98.7	56.6	47.3
22:00	63.0	98.6	55.8	46.0
23:00	59.6	95.1	49.5	41.3
0:00	57.1	92.7	44.3	39.1
1:00	57.7	93.2	44.0	39.6
2:00	54.6	90.2	42.4	39.9
3:00	56.6	92.2	42.7	40.9
4:00	63.7	99.3	49.9	42.7
5:00	65.2	100.8	58.0	47.8
6:00	67.1	102.7	62.8	53.5
7:00	68.5	104.0	64.4	53.3
8:00	68.2	103.8	64.7	52.7
9:00	67.0	102.5	63.1	52.0
10:00	66.5	102.1	63.0	52.3
11:00	66.2	101.8	62.7	51.4
12:00	67.5	103.1	64.2	52.4
13:00	67.4	103.0	64.1	52.7

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	68.2	103.7	64.7	54.2
Evening (7 p.m. - 9 p.m.)	68.3	102.7	60.1	50.1
Nighttime (9 p.m. - 7 a.m.)	62.4	96.1	49.9	43.4

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	69.5	105.1	66.9	58.0
Evening (7 p.m. - 9 p.m.)	71.0	106.6	63.0	51.7
Nighttime (9 p.m. - 7 a.m.)	67.1	102.7	62.8	53.5

Percentage of Energy

Daytime	69%
Evening	17%
Nighttime	13%

Calculated CNEL, dBA

70.9

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Tuesday, June 8, 2021** **to** **Wednesday, June 9, 2021**

Site: LT-03

Hour	Leq	Lmax	L50	L90
15:00	60.3	77.8	57.6	51.9
16:00	63.7	91.6	58.4	52.3
17:00	60.6	80.4	57.9	52.0
18:00	59.7	78.7	56.7	50.8
19:00	57.2	74.3	53.9	48.1
20:00	57.9	83.7	52.3	46.0
21:00	55.2	74.4	51.1	45.1
22:00	52.3	64.3	48.5	41.6
23:00	50.6	64.5	44.6	38.1
0:00	48.5	68.0	40.8	35.9
1:00	44.3	64.5	37.0	34.5
2:00	43.3	62.0	35.1	33.2
3:00	45.4	65.3	36.3	33.9
4:00	51.8	70.3	40.3	35.1
5:00	56.3	71.5	50.2	39.6
6:00	59.0	80.3	54.0	44.6
7:00	62.7	92.4	54.9	46.6
8:00	62.4	84.6	56.6	48.4
9:00	70.7	91.7	55.1	49.7
10:00	61.0	77.5	53.6	46.4
11:00	56.1	72.2	53.0	47.5
12:00	58.0	73.2	54.8	49.1
13:00	59.1	79.4	56.5	50.8
14:00	59.9	83.0	57.0	51.2

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	62.5	81.0	55.3	49.1
Nighttime (10 p.m. - 7 a.m.)	53.0	67.9	43.0	37.4

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	70.7	92.4	58.4	52.3
Nighttime (10 p.m. - 7 a.m.)	59.0	80.3	54.0	44.6

Percentage of Energy

Daytime	94%
Nighttime	6%

Calculated L_{dn}, dBA

62.7

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Tuesday, June 8, 2021** **to** **Wednesday, June 9, 2021**

Site: LT-03

Hour	Leq	Lmax	L50	L90
15:00	60.3	95.8	57.6	51.9
16:00	63.7	99.3	58.4	52.3
17:00	60.6	96.2	57.9	52.0
18:00	59.7	95.2	56.7	50.8
19:00	57.2	92.8	53.9	48.1
20:00	57.9	93.4	52.3	46.0
21:00	55.2	90.8	51.1	45.1
22:00	52.3	87.9	48.5	41.6
23:00	50.6	86.2	44.6	38.1
0:00	48.5	84.1	40.8	35.9
1:00	44.3	79.9	37.0	34.5
2:00	43.3	78.9	35.1	33.2
3:00	45.4	80.9	36.3	33.9
4:00	51.8	87.4	40.3	35.1
5:00	56.3	91.8	50.2	39.6
6:00	59.0	94.6	54.0	44.6
7:00	62.7	98.2	54.9	46.6
8:00	62.4	98.0	56.6	48.4
9:00	70.7	106.2	55.1	49.7
10:00	61.0	96.6	53.6	46.4
11:00	56.1	91.7	53.0	47.5
12:00	58.0	93.5	54.8	49.1
13:00	59.1	94.7	56.5	50.8
14:00	59.9	95.4	57.0	51.2

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	63.2	96.7	56.0	49.7
Evening (7 p.m. - 9 p.m.)	56.9	92.3	52.4	46.4
Nighttime (9 p.m. - 7 a.m.)	53.0	85.7	43.0	37.4

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	70.7	106.2	58.4	52.3
Evening (7 p.m. - 9 p.m.)	57.9	93.4	53.9	48.1
Nighttime (9 p.m. - 7 a.m.)	59.0	94.6	54.0	44.6

Percentage of Energy

Daytime	88%
Evening	5%
Nighttime	6%

Calculated CNEL, dBA

63.0

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Wednesday, June 9, 2021** **to** **Thursday, June 10, 2021**

Site: LT-04

Hour	Leq	Lmax	L50	L90
17:00	59.1	77.3	55.9	47.5
18:00	57.2	69.3	53.8	46.5
19:00	55.8	73.2	51.3	43.5
20:00	54.3	71.1	50.2	42.4
21:00	52.0	69.5	47.0	37.2
22:00	51.6	66.6	45.7	35.3
23:00	48.2	66.1	38.4	30.5
0:00	46.4	65.7	33.9	28.7
1:00	44.6	63.8	33.0	28.3
2:00	42.0	62.2	29.3	27.0
3:00	44.8	65.2	28.8	26.4
4:00	48.8	71.0	36.4	29.0
5:00	53.4	67.3	47.1	35.7
6:00	56.4	76.6	51.7	40.1
7:00	55.9	67.1	52.3	41.2
8:00	55.3	70.2	51.7	41.6
9:00	53.4	64.5	49.6	40.5
10:00	58.8	84.6	50.7	40.8
11:00	54.7	73.5	50.7	40.8
12:00	55.4	72.2	51.0	41.9
13:00	55.7	67.1	52.2	43.8
14:00	58.1	70.1	54.9	46.3
15:00	60.3	76.6	56.8	49.2
16:00	60.1	76.8	56.8	49.9

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	57.0	72.2	52.3	43.5
Nighttime (10 p.m. - 7 a.m.)	50.7	67.2	38.3	31.2

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	60.3	84.6	56.8	49.9
Nighttime (10 p.m. - 7 a.m.)	56.4	76.6	51.7	40.1

Percentage of Energy

Daytime	88%
Nighttime	12%

Calculated L_{dn}, dBA

58.8

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Wednesday, June 9, 2021** **to** **Thursday, June 10, 2021**

Site: LT-04

Hour	Leq	Lmax	L50	L90
17:00	59.1	94.6	55.9	47.5
18:00	57.2	92.8	53.8	46.5
19:00	55.8	91.4	51.3	43.5
20:00	54.3	89.9	50.2	42.4
21:00	52.0	87.6	47.0	37.2
22:00	51.6	87.1	45.7	35.3
23:00	48.2	83.8	38.4	30.5
0:00	46.4	82.0	33.9	28.7
1:00	44.6	80.1	33.0	28.3
2:00	42.0	77.5	29.3	27.0
3:00	44.8	80.4	28.8	26.4
4:00	48.8	84.4	36.4	29.0
5:00	53.4	89.0	47.1	35.7
6:00	56.4	92.0	51.7	40.1
7:00	55.9	91.5	52.3	41.2
8:00	55.3	90.8	51.7	41.6
9:00	53.4	88.9	49.6	40.5
10:00	58.8	94.4	50.7	40.8
11:00	54.7	90.2	50.7	40.8
12:00	55.4	90.9	51.0	41.9
13:00	55.7	91.3	52.2	43.8
14:00	58.1	93.7	54.9	46.3
15:00	60.3	95.9	56.8	49.2
16:00	60.1	95.7	56.8	49.9

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	57.5	92.6	53.0	44.2
Evening (7 p.m. - 9 p.m.)	54.3	89.6	49.5	41.0
Nighttime (9 p.m. - 7 a.m.)	50.7	84.0	38.3	31.2

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	60.3	95.9	56.8	49.9
Evening (7 p.m. - 9 p.m.)	55.8	91.4	51.3	43.5
Nighttime (9 p.m. - 7 a.m.)	56.4	92.0	51.7	40.1

Percentage of Energy

Daytime	78%
Evening	9%
Nighttime	12%

Calculated CNEL, dBA

59.2

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Tuesday, June 8, 2021** **to** **Wednesday, June 9, 2021**

Site: LT-05

Hour	Leq	Lmax	L50	L90
17:00	71.9	87.1	67.7	57.1
18:00	70.9	90.6	66.6	54.5
19:00	68.7	81.8	63.0	51.8
20:00	68.5	95.7	60.6	49.2
21:00	66.6	82.1	58.5	46.1
22:00	63.8	80.1	53.4	40.6
23:00	61.6	85.5	45.7	35.2
0:00	59.1	81.6	41.1	33.5
1:00	55.2	77.2	30.2	27.5
2:00	54.3	79.4	30.0	26.2
3:00	55.0	78.1	31.6	27.2
4:00	63.5	82.4	43.7	29.9
5:00	69.0	83.1	59.5	42.9
6:00	71.5	91.7	64.1	49.2
7:00	73.4	96.9	68.5	55.5
8:00	71.8	92.3	66.6	52.0
9:00	70.2	85.0	64.0	50.4
10:00	69.6	85.6	63.4	49.1
11:00	69.5	86.6	63.3	51.1
12:00	69.8	83.1	64.5	53.1
13:00	73.4	105.1	63.6	53.6
14:00	70.7	85.5	66.1	56.5
15:00	71.0	83.1	66.7	56.4
16:00	71.8	86.5	67.8	58.5

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	70.9	88.5	64.7	53.0
Nighttime (10 p.m. - 7 a.m.)	65.2	82.1	44.4	34.7

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	73.4	105.1	68.5	58.5
Nighttime (10 p.m. - 7 a.m.)	71.5	91.7	64.1	49.2

Percentage of Energy

Daytime	86%
Nighttime	14%

Calculated L_{dn}, dBA

73.0

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Tuesday, June 8, 2021** **to** **Wednesday, June 9, 2021**

Site: LT-05

Hour	Leq	Lmax	L50	L90
17:00	71.9	107.5	67.7	57.1
18:00	70.9	106.5	66.6	54.5
19:00	68.7	104.2	63.0	51.8
20:00	68.5	104.1	60.6	49.2
21:00	66.6	102.2	58.5	46.1
22:00	63.8	99.4	53.4	40.6
23:00	61.6	97.1	45.7	35.2
0:00	59.1	94.6	41.1	33.5
1:00	55.2	90.8	30.2	27.5
2:00	54.3	89.9	30.0	26.2
3:00	55.0	90.6	31.6	27.2
4:00	63.5	99.1	43.7	29.9
5:00	69.0	104.6	59.5	42.9
6:00	71.5	107.1	64.1	49.2
7:00	73.4	109.0	68.5	55.5
8:00	71.8	107.3	66.6	52.0
9:00	70.2	105.7	64.0	50.4
10:00	69.6	105.2	63.4	49.1
11:00	69.5	105.0	63.3	51.1
12:00	69.8	105.4	64.5	53.1
13:00	73.4	109.0	63.6	53.6
14:00	70.7	106.3	66.1	56.5
15:00	71.0	106.6	66.7	56.4
16:00	71.8	107.4	67.8	58.5

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	71.4	106.7	65.7	54.0
Evening (7 p.m. - 9 p.m.)	68.0	103.5	60.7	49.0
Nighttime (9 p.m. - 7 a.m.)	65.2	97.0	44.4	34.7

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	73.4	109.0	68.5	58.5
Evening (7 p.m. - 9 p.m.)	68.7	104.2	63.0	51.8
Nighttime (9 p.m. - 7 a.m.)	71.5	107.1	64.1	49.2

Percentage of Energy

Daytime	77%
Evening	9%
Nighttime	14%

Calculated CNEL, dBA

73.4

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Wednesday, June 9, 2021** **to** **Thursday, June 10, 2021**

Site: LT-06

Hour	Leq	Lmax	L50	L90
15:00	61.6	71.5	54.2	53.1
16:00	61.9	71.8	55.1	53.4
17:00	61.5	78.2	54.3	53.0
18:00	60.5	71.6	53.2	51.6
19:00	61.3	78.8	52.3	50.5
20:00	62.1	90.1	49.9	48.3
21:00	57.2	76.4	46.5	44.4
22:00	54.3	65.8	43.9	41.3
23:00	52.1	66.1	40.5	39.2
0:00	50.5	67.0	38.2	36.9
1:00	48.0	64.4	37.2	36.6
2:00	45.2	59.9	36.2	35.6
3:00	46.9	66.0	35.8	35.3
4:00	51.2	67.4	40.2	38.8
5:00	54.3	66.4	44.1	41.7
6:00	57.2	68.3	51.5	50.3
7:00	58.1	78.6	51.7	50.3
8:00	58.0	81.2	50.2	48.3
9:00	56.0	67.0	48.2	46.1
10:00	56.4	72.9	48.4	46.6
11:00	57.9	83.5	48.4	46.6
12:00	57.7	73.3	49.2	47.0
13:00	57.8	69.6	49.8	47.9
14:00	60.3	78.2	52.2	50.6

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	59.7	76.2	50.9	49.2
Nighttime (10 p.m. - 7 a.m.)	52.5	65.7	40.8	39.5

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	62.1	90.1	55.1	53.4
Nighttime (10 p.m. - 7 a.m.)	57.2	68.3	51.5	50.3

Percentage of Energy

Daytime	90%
Nighttime	10%

Calculated L_{dn}, dBA

61.0

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Wednesday, June 9, 2021** **to** **Thursday, June 10, 2021**

Site: LT-06

Hour	Leq	Lmax	L50	L90
15:00	61.6	97.2	54.2	53.1
16:00	61.9	97.5	55.1	53.4
17:00	61.5	97.1	54.3	53.0
18:00	60.5	96.1	53.2	51.6
19:00	61.3	96.9	52.3	50.5
20:00	62.1	97.7	49.9	48.3
21:00	57.2	92.8	46.5	44.4
22:00	54.3	89.9	43.9	41.3
23:00	52.1	87.7	40.5	39.2
0:00	50.5	86.1	38.2	36.9
1:00	48.0	83.6	37.2	36.6
2:00	45.2	80.8	36.2	35.6
3:00	46.9	82.5	35.8	35.3
4:00	51.2	86.7	40.2	38.8
5:00	54.3	89.9	44.1	41.7
6:00	57.2	92.8	51.5	50.3
7:00	58.1	93.7	51.7	50.3
8:00	58.0	93.6	50.2	48.3
9:00	56.0	91.6	48.2	46.1
10:00	56.4	92.0	48.4	46.6
11:00	57.9	93.5	48.4	46.6
12:00	57.7	93.3	49.2	47.0
13:00	57.8	93.4	49.8	47.9
14:00	60.3	95.8	52.2	50.6

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	59.4	94.6	51.2	49.5
Evening (7 p.m. - 9 p.m.)	60.7	95.8	49.6	47.7
Nighttime (9 p.m. - 7 a.m.)	52.5	86.7	40.8	39.5

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	61.9	97.5	55.1	53.4
Evening (7 p.m. - 9 p.m.)	62.1	97.7	52.3	50.5
Nighttime (9 p.m. - 7 a.m.)	57.2	92.8	51.5	50.3

Percentage of Energy

Daytime	67%
Evening	22%
Nighttime	10%

Calculated CNEL, dBA

61.9

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Wednesday, June 9, 2021** **to** **Thursday, June 10, 2021**

Site: LT-07

Hour	Leq	Lmax	L50	L90
16:00	69.5	90.0	60.3	56.0
17:00	60.5	71.5	59.3	55.1
18:00	58.8	68.0	57.4	53.3
19:00	56.6	70.0	54.4	50.1
20:00	54.8	68.5	52.5	48.8
21:00	52.9	64.7	50.6	47.1
22:00	51.6	63.1	48.4	45.0
23:00	50.2	63.7	46.4	43.9
0:00	48.5	65.2	44.3	42.9
1:00	46.2	60.6	43.7	42.4
2:00	45.4	60.0	43.4	42.3
3:00	46.0	65.5	43.8	42.4
4:00	60.6	87.3	45.1	42.7
5:00	54.6	81.6	50.3	45.2
6:00	54.5	67.1	53.4	48.5
7:00	55.3	71.8	54.1	49.5
8:00	55.1	68.2	53.4	48.8
9:00	53.6	66.1	51.9	47.5
10:00	53.6	71.5	51.3	47.0
11:00	61.9	78.8	51.6	47.0
12:00	59.8	73.0	55.8	50.2
13:00	56.4	70.5	54.2	50.0
14:00	58.7	69.6	57.0	51.9
15:00	63.2	88.5	61.0	57.2

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	60.9	72.7	55.0	50.6
Nighttime (10 p.m. - 7 a.m.)	53.8	68.2	46.5	43.9

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	69.5	90.0	61.0	57.2
Nighttime (10 p.m. - 7 a.m.)	60.6	87.3	53.4	48.5

Percentage of Energy

Daytime	90%
Nighttime	10%

Calculated L_{dn}, dBA

62.2

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Wednesday, June 9, 2021** **to** **Thursday, June 10, 2021**

Site: LT-07

Hour	Leq	Lmax	L50	L90
16:00	69.5	90.0	60.3	56.0
17:00	60.5	71.5	59.3	55.1
18:00	58.8	68.0	57.4	53.3
19:00	56.6	70.0	54.4	50.1
20:00	54.8	68.5	52.5	48.8
21:00	52.9	64.7	50.6	47.1
22:00	51.6	63.1	48.4	45.0
23:00	50.2	63.7	46.4	43.9
0:00	48.5	65.2	44.3	42.9
1:00	46.2	60.6	43.7	42.4
2:00	45.4	60.0	43.4	42.3
3:00	46.0	65.5	43.8	42.4
4:00	60.6	87.3	45.1	42.7
5:00	54.6	81.6	50.3	45.2
6:00	54.5	67.1	53.4	48.5
7:00	55.3	71.8	54.1	49.5
8:00	55.1	68.2	53.4	48.8
9:00	53.6	66.1	51.9	47.5
10:00	53.6	71.5	51.3	47.0
11:00	61.9	78.8	51.6	47.0
12:00	59.8	73.0	55.8	50.2
13:00	56.4	70.5	54.2	50.0
14:00	58.7	69.6	57.0	51.9
15:00	63.2	88.5	61.0	57.2

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	61.7	74.0	55.6	51.1
Evening (7 p.m. - 9 p.m.)	55.0	67.7	52.5	48.7
Nighttime (9 p.m. - 7 a.m.)	53.8	68.2	46.5	43.9

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	69.5	90.0	61.0	57.2
Evening (7 p.m. - 9 p.m.)	56.6	70.0	54.4	50.1
Nighttime (9 p.m. - 7 a.m.)	60.6	87.3	53.4	48.5

Percentage of Energy

Daytime	85%
Evening	5%
Nighttime	10%

Calculated CNEL, dBA

62.4

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Wednesday, June 9, 2021** **to** **Thursday, June 10, 2021**

Site: LT-08

Hour	Leq	Lmax	L50	L90
19:00	52.4	71.1	51.1	48.1
20:00	50.9	62.3	50.2	47.0
21:00	50.1	62.3	49.1	45.7
22:00	48.4	59.8	47.8	43.3
23:00	47.2	63.7	44.9	40.8
0:00	45.8	65.1	43.0	38.0
1:00	42.8	57.7	39.9	36.0
2:00	43.9	61.4	39.6	35.1
3:00	44.3	59.4	39.9	35.0
4:00	47.5	58.5	45.7	38.7
5:00	51.5	64.8	50.2	44.4
6:00	53.9	66.6	52.9	48.7
7:00	52.8	62.0	51.9	47.0
8:00	50.9	62.0	49.8	47.0
9:00	51.9	66.3	50.4	47.5
10:00	52.1	69.8	49.6	46.9
11:00	50.3	64.8	48.8	46.2
12:00	51.5	62.1	50.5	47.5
13:00	52.5	64.3	51.3	48.7
14:00	55.3	72.4	54.5	51.2
15:00	58.7	71.5	58.0	55.3
16:00	58.9	75.9	58.3	55.3
17:00	58.4	66.3	57.8	55.1
18:00	57.6	77.8	56.1	52.9

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	54.8	67.4	52.5	49.4
Nighttime (10 p.m. - 7 a.m.)	48.7	61.9	44.9	40.0

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	58.9	77.8	58.3	55.3
Nighttime (10 p.m. - 7 a.m.)	53.9	66.6	52.9	48.7

Percentage of Energy

Daytime	87%
Nighttime	13%

Calculated L_{dn}, dBA

56.7

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Wednesday, June 9, 2021** **to** **Thursday, June 10, 2021**

Site: LT-08

Hour	Leq	Lmax	L50	L90
19:00	52.4	88.0	51.1	48.1
20:00	50.9	86.5	50.2	47.0
21:00	50.1	85.7	49.1	45.7
22:00	48.4	84.0	47.8	43.3
23:00	47.2	82.7	44.9	40.8
0:00	45.8	81.4	43.0	38.0
1:00	42.8	78.4	39.9	36.0
2:00	43.9	79.5	39.6	35.1
3:00	44.3	79.9	39.9	35.0
4:00	47.5	83.1	45.7	38.7
5:00	51.5	87.1	50.2	44.4
6:00	53.9	89.5	52.9	48.7
7:00	52.8	88.4	51.9	47.0
8:00	50.9	86.5	49.8	47.0
9:00	51.9	87.5	50.4	47.5
10:00	52.1	87.6	49.6	46.9
11:00	50.3	85.9	48.8	46.2
12:00	51.5	87.0	50.5	47.5
13:00	52.5	88.1	51.3	48.7
14:00	55.3	90.9	54.5	51.2
15:00	58.7	94.2	58.0	55.3
16:00	58.9	94.5	58.3	55.3
17:00	58.4	93.9	57.8	55.1
18:00	57.6	93.2	56.1	52.9

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	55.4	89.8	53.1	50.1
Evening (7 p.m. - 9 p.m.)	51.2	86.7	50.1	46.9
Nighttime (9 p.m. - 7 a.m.)	48.7	82.8	44.9	40.0

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	58.9	94.5	58.3	55.3
Evening (7 p.m. - 9 p.m.)	52.4	88.0	51.1	48.1
Nighttime (9 p.m. - 7 a.m.)	53.9	89.5	52.9	48.7

Percentage of Energy

Daytime	80%
Evening	8%
Nighttime	13%

Calculated CNEL, dBA

57.0

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Thursday, June 10, 2021** **to** **Friday, June 11, 2021**

Site: LT-09

Hour	Leq	Lmax	L50	L90
16:00	68.0	88.1	64.5	57.0
17:00	67.3	82.8	64.2	56.6
18:00	66.2	85.0	62.2	54.6
19:00	64.4	86.6	58.5	49.9
20:00	62.3	78.6	55.5	46.6
21:00	61.2	83.3	52.6	42.8
22:00	60.5	83.9	53.0	41.7
23:00	58.8	81.9	45.3	34.9
0:00	58.0	80.5	42.7	31.7
1:00	56.1	78.1	37.7	30.9
2:00	55.9	85.2	34.8	30.9
3:00	57.9	84.6	35.5	30.6
4:00	60.5	84.4	47.2	32.7
5:00	69.9	100.9	57.3	43.0
6:00	67.2	84.2	61.1	47.6
7:00	67.9	84.3	63.6	51.0
8:00	67.1	85.7	61.9	49.1
9:00	67.4	85.1	62.1	49.3
10:00	66.1	84.7	60.1	47.6
11:00	66.1	83.6	60.5	48.1
12:00	65.2	84.7	60.0	49.8
13:00	66.5	83.9	61.5	52.4
14:00	66.8	86.2	62.7	54.0
15:00	67.6	89.3	64.0	56.1

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	66.4	84.8	60.9	51.0
Nighttime (10 p.m. - 7 a.m.)	63.5	84.9	46.1	36.0

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	68.0	89.3	64.5	57.0
Nighttime (10 p.m. - 7 a.m.)	69.9	100.9	61.1	47.6

Percentage of Energy

Daytime	76%
Nighttime	24%

Calculated L_{dn}, dBA

70.4

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Thursday, June 10, 2021** **to** **Friday, June 11, 2021**

Site: LT-09

Hour	Leq	Lmax	L50	L90
16:00	68.0	103.6	64.5	57.0
17:00	67.3	102.9	64.2	56.6
18:00	66.2	101.8	62.2	54.6
19:00	64.4	100.0	58.5	49.9
20:00	62.3	97.9	55.5	46.6
21:00	61.2	96.8	52.6	42.8
22:00	60.5	96.1	53.0	41.7
23:00	58.8	94.4	45.3	34.9
0:00	58.0	93.6	42.7	31.7
1:00	56.1	91.7	37.7	30.9
2:00	55.9	91.4	34.8	30.9
3:00	57.9	93.5	35.5	30.6
4:00	60.5	96.1	47.2	32.7
5:00	69.9	105.5	57.3	43.0
6:00	67.2	102.7	61.1	47.6
7:00	67.9	103.5	63.6	51.0
8:00	67.1	102.7	61.9	49.1
9:00	67.4	103.0	62.1	49.3
10:00	66.1	101.7	60.1	47.6
11:00	66.1	101.7	60.5	48.1
12:00	65.2	100.8	60.0	49.8
13:00	66.5	102.0	61.5	52.4
14:00	66.8	102.4	62.7	54.0
15:00	67.6	103.2	64.0	56.1

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	66.9	102.4	62.3	52.1
Evening (7 p.m. - 9 p.m.)	62.8	98.2	55.5	46.4
Nighttime (9 p.m. - 7 a.m.)	63.5	96.1	46.1	36.0

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	68.0	103.6	64.5	57.0
Evening (7 p.m. - 9 p.m.)	64.4	100.0	58.5	49.9
Nighttime (9 p.m. - 7 a.m.)	69.9	105.5	61.1	47.6

Percentage of Energy

Daytime	70%
Evening	7%
Nighttime	24%

Calculated CNEL, dBA

70.6

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Thursday, June 10, 2021** **to** **Friday, June 11, 2021**

Site: LT-10

Hour	Leq	Lmax	L50	L90
18:00	57.3	74.7	48.6	47.7
19:00	55.1	75.0	46.0	45.2
20:00	52.8	71.3	43.5	43.1
21:00	51.1	64.8	42.4	42.1
22:00	50.2	70.0	42.0	41.5
23:00	50.0	69.8	40.9	40.2
0:00	48.4	66.1	34.3	34.0
1:00	44.6	65.8	33.1	32.7
2:00	42.9	67.3	33.1	32.9
3:00	47.2	67.1	33.2	33.0
4:00	51.4	70.5	36.1	34.2
5:00	52.9	69.3	42.9	42.5
6:00	55.3	70.0	43.5	43.2
7:00	56.5	71.6	45.1	44.0
8:00	57.1	71.6	46.4	45.4
9:00	57.9	80.6	45.4	44.4
10:00	56.6	73.0	45.4	44.6
11:00	57.3	73.5	45.7	44.5
12:00	56.3	74.7	44.8	44.0
13:00	56.4	73.6	47.9	45.9
14:00	58.0	74.6	48.4	47.4
15:00	58.6	81.2	48.7	47.5
16:00	57.8	75.6	48.8	47.6
17:00	58.3	77.2	48.6	47.1

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	56.8	74.2	46.4	45.4
Nighttime (10 p.m. - 7 a.m.)	50.7	68.4	37.7	37.1

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	58.6	81.2	48.8	47.7
Nighttime (10 p.m. - 7 a.m.)	55.3	70.5	43.5	43.2

Percentage of Energy

Daytime	87%
Nighttime	13%

Calculated L_{dn}, dBA

58.7

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Thursday, June 10, 2021** **to** **Friday, June 11, 2021**

Site: LT-10

Hour	Leq	Lmax	L50	L90
18:00	57.3	92.8	48.6	47.7
19:00	55.1	90.7	46.0	45.2
20:00	52.8	88.3	43.5	43.1
21:00	51.1	86.7	42.4	42.1
22:00	50.2	85.8	42.0	41.5
23:00	50.0	85.6	40.9	40.2
0:00	48.4	84.0	34.3	34.0
1:00	44.6	80.1	33.1	32.7
2:00	42.9	78.4	33.1	32.9
3:00	47.2	82.7	33.2	33.0
4:00	51.4	87.0	36.1	34.2
5:00	52.9	88.5	42.9	42.5
6:00	55.3	90.9	43.5	43.2
7:00	56.5	92.1	45.1	44.0
8:00	57.1	92.7	46.4	45.4
9:00	57.9	93.5	45.4	44.4
10:00	56.6	92.2	45.4	44.6
11:00	57.3	92.9	45.7	44.5
12:00	56.3	91.9	44.8	44.0
13:00	56.4	92.0	47.9	45.9
14:00	58.0	93.6	48.4	47.4
15:00	58.6	94.1	48.7	47.5
16:00	57.8	93.4	48.8	47.6
17:00	58.3	93.9	48.6	47.1

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	57.4	92.9	47.0	45.8
Evening (7 p.m. - 9 p.m.)	53.3	88.6	44.0	43.5
Nighttime (9 p.m. - 7 a.m.)	50.7	84.8	37.7	37.1

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	58.6	94.1	48.8	47.7
Evening (7 p.m. - 9 p.m.)	55.1	90.7	46.0	45.2
Nighttime (9 p.m. - 7 a.m.)	55.3	90.9	43.5	43.2

Percentage of Energy

Daytime	80%
Evening	8%
Nighttime	13%

Calculated CNEL, dBA

59.0

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Thursday, June 10, 2021** **to** **Friday, June 11, 2021**

Site: LT-11

Hour	Leq	Lmax	L50	L90
20:00	43.9	61.7	37.6	34.1
21:00	41.7	58.0	36.5	33.5
22:00	42.4	59.2	36.8	32.7
23:00	41.6	59.7	32.8	29.2
0:00	43.5	70.1	29.0	28.0
1:00	36.2	58.9	28.9	27.6
2:00	36.0	51.6	32.0	29.1
3:00	32.6	57.9	28.9	28.0
4:00	31.5	48.1	30.2	28.6
5:00	37.8	52.8	35.1	30.6
6:00	41.2	53.1	39.8	35.7
7:00	48.3	61.5	44.5	39.4
8:00	52.2	65.3	50.1	46.0
9:00	56.3	66.1	49.9	45.9
10:00	61.5	71.2	61.1	58.5
11:00	55.8	68.4	50.6	44.8
12:00	49.6	63.2	47.5	43.8
13:00	52.0	68.7	50.2	47.1
14:00	54.3	69.7	49.6	46.6
15:00	54.8	72.6	52.3	48.2
16:00	52.6	68.9	49.1	45.6
17:00	47.6	62.9	45.9	43.6
18:00	49.5	65.9	46.1	43.4
19:00	47.7	60.7	44.1	42.5

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	53.9	65.7	47.7	44.2
Nighttime (10 p.m. - 7 a.m.)	39.7	56.8	32.6	29.9

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 10 p.m.)	61.5	72.6	61.1	58.5
Nighttime (10 p.m. - 7 a.m.)	43.5	70.1	39.8	35.7

Percentage of Energy

Daytime	98%
Nighttime	2%

Calculated L_{dn}, dBA

52.8

Long-Term 24 Hour Continuous Noise Monitoring

Model Input Sheet

Project: 60657391 - MSS Phase 2A

Date: **Thursday, June 10, 2021** **to** **Friday, June 11, 2021**

Site: LT-11

Hour	Leq	Lmax	L50	L90
20:00	43.9	79.5	37.6	34.1
21:00	41.7	77.2	36.5	33.5
22:00	42.4	78.0	36.8	32.7
23:00	41.6	77.1	32.8	29.2
0:00	43.5	79.1	29.0	28.0
1:00	36.2	71.8	28.9	27.6
2:00	36.0	71.6	32.0	29.1
3:00	32.6	68.2	28.9	28.0
4:00	31.5	67.0	30.2	28.6
5:00	37.8	73.4	35.1	30.6
6:00	41.2	76.8	39.8	35.7
7:00	48.3	83.9	44.5	39.4
8:00	52.2	87.8	50.1	46.0
9:00	56.3	91.9	49.9	45.9
10:00	61.5	97.1	61.1	58.5
11:00	55.8	91.3	50.6	44.8
12:00	49.6	85.1	47.5	43.8
13:00	52.0	87.6	50.2	47.1
14:00	54.3	89.8	49.6	46.6
15:00	54.8	90.4	52.3	48.2
16:00	52.6	88.2	49.1	45.6
17:00	47.6	83.2	45.9	43.6
18:00	49.5	85.1	46.1	43.4
19:00	47.7	83.3	44.1	42.5

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	54.8	88.5	49.7	46.1
Evening (7 p.m. - 9 p.m.)	45.2	80.0	39.4	36.7
Nighttime (9 p.m. - 7 a.m.)	39.7	73.7	32.6	29.9

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	61.5	97.1	61.1	58.5
Evening (7 p.m. - 9 p.m.)	47.7	83.3	44.1	42.5
Nighttime (9 p.m. - 7 a.m.)	43.5	79.1	39.8	35.7

Percentage of Energy

Daytime	95%
Evening	3%
Nighttime	2%

Calculated CNEL, dBA

53.0

Traffic Noise Spreadsheet Calculator

Project: EBDA Cargill - Existing Traffic Noise Levels- LT-13

Noise Level Descriptor: CNEL
Site Conditions: Soft
Traffic Input: ADT
Traffic K-Factor:

		Segment Description and Location		Input										Output				
						Distance to Directional Centerline, (feet)[4]		Traffic Distribution Characteristics							Distance to Contour, (feet)[3]			
Number	Name	From	To	ADT	Speed (mph)	Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night	CNEL, (dBA)[5,6,7]	75 dBA	70 dBA	65 dBA	60 dBA
Existing Conditions																		
1	HWY 92	San Mateo/Hayward Co. Line	Clawiter Road	98,000	55	60	130	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	75.9	102	220	474	1022

DISTRICT	ROUTE	RTE_SFX	COUNTY	PM_PFX	PM	PM_SFX	DESCRIPTION	BACK_PEAK_HOUR	BACK_PEAK_MADT	BACK_AADT	AHEAD_PEAK_HOUR	AHEAD_PEAK_MADT	AHEAD_AADT	
04	092		SM		0.000		HALF MOON BAY, JCT. RTE. 1				1300	14700	14000	
04	092		SM		0.200		HALF MOON BAY, MAIN ST	1300	14700	14000	2100	23000	21800	
04	092		SM		5.191		JCT. RTE. 35 SOUTH	2100	23000	21800	2200	24200	23000	
04	092		SM		7.190		RALSTON AVE/SKYLINE BLVD,JCT. RTE. 35 NORTH	2200	24200	23000	2000	21500	20300	
04	092		SM	R	7.310		ON RALSTON AVE, JCT. RTE. 280	1600	18300	17200	7000	64000	62000	
04	092		SM	R	7.929		RALSTON AVE/POLHEMUS ROAD	7000	64000	62000	5900	56000	54000	
04	092		SM	R	8.674		MONTEREY ST	5900	56000	54000	5300	57000	56000	
04	092		SM	R	9.378		SAN MATEO, W HILLSDALE BLVD	5300	57000	56000	5100	55000	54000	
04	092		SM	R	10.564		SAN MATEO, ALAMEDA DE LAS PULGAS	5100	55000	54000	5900	64000	62000	
04	092		SM	R	11.208		JCT. RTE. 82	5900	64000	62000	6800	73000	72000	
04	092		SM	R	11.606		SAN MATEO, SOUTH DELAWARE ST CONNECTIONS	6800	73000	72000	7500	82000	80000	
04	092		SM	R	12.143		SAN MATEO, JCT. RTE. 101	7500	82000	80000	10700	126000	118000	
04	092		SM	R	12.777		MARINERS ISLAND BLVD/ W CAPE DR	10700	126000	118000	7900	110000	103000	
04	092		SM	R	13.831		FOSTER CITY BLVD	7900	110000	103000	6900	96000	91000	
04	092		SM	R	14.443		SAN MATEO/HAYWARD BRIDGE	6900	96000	91000	7100	98000	93000	
04	092		SM	R	18.801		SAN MATEO/ALAMEDA COUNTY LINE	6900	96000	91000				
04	092		ALA	R	0.000		SAN MATEO/ALAMEDA COUNTY LINE				7100	98000	93000	
04	092		ALA	R	2.594		SAN MATEO-HAYWARD BRIDGE TOLL PLAZA	7300	102000	96000	7500	104000	98000	Segment used in noise model
04	092		ALA	R	4.477		HAYWARD, CLAWITER ROAD	7300	102000	96000	7500	104000	98000	
04	092		ALA	R	5.121		INDUSTRIAL BLVD	7500	104000	98000	7100	94000	88000	
04	092		ALA	R	5.757		HAYWARD, HESPERIAN BLVD	7100	94000	88000	7600	101000	94000	
04	092		ALA		6.392		HAYWARD, JCT. RTE. 880	7600	101000	94000	3400	40500	37500	
04	092		ALA		6.780		HAYWARD, SANTA CLARA ST, END FREEWAY	3400	40500	37500	3200	37500	34500	
04	092		ALA		6.798		HAYWARD, JCT. RTES. 185/238	3200	37500	34500				

Citation #	Citations	
1	Caltrans Technical Noise Supplement. 2009 (November). Table (5-11), Pg 5-60.	Caltrans Technical Noise Supplement. 2013 (September). Table (4-2), Pg 4-17.
2	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-26), Pg 5-60.	Caltrans Technical Noise Supplement. 2013 (September). Equation (4-5), Pg 4-17.
3	Caltrans Technical Noise Supplement. 2009 (November). Equation (2-16), Pg 2-32.	FHWA 2004 TNM Version 2.5
4	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-11), Pg 5-47, 48.	FHWA 2004 TNM Version 2.5
5	Caltrans Technical Noise Supplement. 2009 (November). Equation (2-26), Pg 2-55, 56.	Caltrans Technical Noise Supplement. 2013 (September). Equation (2-23), Pg 2-51, 52.
6	Caltrans Technical Noise Supplement. 2009 (November). Equation (2-27), Pg 2-57.	Caltrans Technical Noise Supplement. 2013 (September). Equation (2-24), Pg 2-53.
7	Caltrans Technical Noise Supplement. 2009 (November). Pg 2-53.	Caltrans Technical Noise Supplement. 2013 (September). Pg 2-57.
8	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-7), Pg 5-45.	FHWA 2004 TNM Version 2.5
9	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-8), Pg 5-45.	FHWA 2004 TNM Version 2.5
10	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-9), Pg 5-45.	FHWA 2004 TNM Version 2.5
11	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-13), Pg 5-49.	FHWA 2004 TNM Version 2.5
12	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-14), Pg 5-49.	FHWA 2004 TNM Version 2.5
13	Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (16), Pg 67	
14	Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (20), Pg 69	
15	Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (18), Pg 69	

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California Department of Transportation (Caltrans). 2009 (November). Technical Noise Supplement. Available: http://www.dot.ca.gov/hq/env/noise/pub/tens_complete.pdf. Accessed August 17, 2017.

California Department of Transportation (Caltrans). 2013 (September). Technical Noise Supplement. Available: http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013A.pdf. Accessed August 17, 2017.

Federal Highway Administration. 2004. Traffic Noise Model Version 2.5. Available: https://www.fhwa.dot.gov/environment/noise/traffic_noise_model/tnm_v25/. Accessed August 17, 2017.

Open/Trenchless Cut Pipeline Installation Operation (LEQ)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,239	60.0
San Leandro Receptor (2120 Keller Avenue.)	145	78.6
Hayward Receptor (Admiral Circle)	100	81.9
Union City Receptor (31175 Union City Boulevard)	55	87.1
Fremont Receptor (5547 Clove Hitch LP)	150	78.3
Newark Receptor (9572 Seawind Way)	60	86.3

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Concrete Saw	90	0.4
Excavator	85	0.4
Front End Loader	80	0.4
Compactor (ground)	80	0.4
Welder / Torch	73	0.4

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Concrete Saw	86.0
Excavator	81.0
Front End Loader	76.0
Compactor (ground)	76.0
Welder / Torch	69.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
87.9

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Open/Trenchless Cut Pipeline Installation Operation (LMAX)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,960	60.0
San Leandro Receptor (2120 Keller Avenue.)	145	82.6
Hayward Receptor (Admiral Circle)	100	85.8
Union City Receptor (31175 Union City Boulevard)	55	91.0
Fremont Receptor (5547 Clove Hitch LP)	150	82.3
Newark Receptor (9572 Seawind Way)	60	90.3

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Concrete Saw	90	1
Excavator	85	1
Front End Loader	80	1
Compactor (ground)	80	1
Welder / Torch	73	1

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Concrete Saw	90.0
Excavator	85.0
Front End Loader	80.0
Compactor (ground)	80.0
Welder / Torch	73.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
91.9

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Solar Salt Facility Buildout (LEQ)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	998	60.0
Newark Receptor (9568 Capebreeze Drive)	1770	51.7

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Flat Bed Truck	84	0.4
Backhoe	80	0.4
Pickup Truck	55	0.4
Concrete Mixer Truck	85	0.4
Concrete Pump Truck	82	0.4
		0.4
		0.4
Impact Pile Driver	95	0.4
Crane	85	0.4
Pumps	77	0.4
Pumps	77	0.4
Pumps	77	0.4

Ground Type	Soft
Source Height	8
Receiver Height	5
Ground Factor[2]	0.63

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Flat Bed Truck	80.0
Backhoe	76.0
Pickup Truck	51.0
Concrete Mixer Truck	81.0
Concrete Pump Truck	78.0
Impact Pile Driver	91.0
Crane	81.0
Pumps	73.0
Pumps	73.0
Pumps	73.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
92.5

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Solar Salt Facility Buildout (LEQ)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,440	60.0
Newark Receptor (9568 Cape Breeze Drive)	1770	55.7

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Flat Bed Truck	84	1
Backhoe	80	1
Pickup Truck	55	1
		1
Concrete Mixer Truck	85	1
Concrete Pump Truck	82	1
		1
Impact Pile Driver	95	1
Crane	85	1
Pumps	77	1
Pumps	77	1
Pumps	77	1

Ground Type	Soft
Source Height	8
Receiver Height	5
Ground Factor[2]	0.63

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Flat Bed Truck	84.0
Backhoe	80.0
Pickup Truck	55.0
Concrete Mixer Truck	85.0
Concrete Pump Truck	82.0
Impact Pile Driver	95.0
Crane	85.0
Pumps	77.0
Pumps	77.0
Pumps	77.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
96.5

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Existing Noise Combined with Construction Noise for Solar Salt Facility

Hourly Leq Noise Level by Noise Source	Existing Measured Noise Levels	Construction Noise Levels[1]	Combined Hourly Leq
Hour of Day			
0:00	43.4		43.4
1:00	43.3		43.3
2:00	43.4		43.4
3:00	44.7		44.7
4:00	48.6		48.6
5:00	55.3		55.3
6:00	51.8		51.8
7:00	51.4	51.7	54.6
8:00	50.9	51.7	54.3
9:00	50.1	51.7	54.0
10:00	49.2	51.7	53.6
11:00	54.3	51.7	56.2
12:00	51.8	51.7	54.8
13:00	49.7	51.7	53.8
14:00	68.7	51.7	68.8
15:00	52.5	51.7	55.1
16:00	54.3	51.7	56.2
17:00	54.2	51.7	56.1
18:00	68.8	51.7	68.9
19:00	61.8	51.7	62.2
20:00	48.6		48.6
21:00	47.2		47.2
22:00	45.9		45.9
23:00	44.0		44.0

Notes

[1] Construction noise levels only implemented during allowed hours from municipal code which is 7:00 am to 6:30 pm
Existing Noise level values are shown in Appendix X, Long-term Noise Measurement Summary worksheet

Construction Activity CNEL Calculation

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

Measurement Site:
Measurement Date:
Project Name: Solar Salt Facility

Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA/10)	Computation of CNEL: Period of 24-Hour Day (1=included, 0=not) Day	Evening	Night	Sound Power Breakdown by Period of Day Day	Evening	Night
0:00	43.4	21,879	0	0	1	0	0	21,879
1:00	43.3	21,381	0	0	1	0	0	21,381
2:00	43.4	21,879	0	0	1	0	0	21,879
3:00	44.7	29,513	0	0	1	0	0	29,513
4:00	48.6	72,445	0	0	1	0	0	72,445
5:00	55.3	338,845	0	0	1	0	0	338,845
6:00	51.8	151,357	0	0	1	0	0	151,357
7:00	54.6	285,949	1	0	0	285,949	0	0
8:00	54.3	270,938	1	0	0	270,938	0	0
9:00	54.0	250,240	1	0	0	250,240	0	0
10:00	53.6	231,087	1	0	0	231,087	0	0
11:00	56.2	417,064	1	0	0	417,064	0	0
12:00	54.8	299,267	1	0	0	299,267	0	0
13:00	53.8	241,236	1	0	0	241,236	0	0
14:00	68.8	7,561,013	1	0	0	7,561,013	0	0
15:00	55.1	325,739	1	0	0	325,739	0	0
16:00	56.2	417,064	1	0	0	417,064	0	0
17:00	56.1	410,938	1	0	0	410,938	0	0
18:00	68.9	7,733,687	1	0	0	7,733,687	0	0
19:00	62.2	1,661,472	0	1	0	0	1,661,472	0
20:00	48.6	72,445	0	1	0	0	72,445	0
21:00	47.2	52,482	0	1	0	0	52,482	0
22:00	45.9	38,906	0	0	1	0	0	38,906
23:00	44.0	25,120	0	0	1	0	0	25,120
Sum of Sound Power during Period wo/penalty						18,444,222	1,786,398	721,323
Log Factor for CNEL Penalty (i.e., 10*log(x))						1	3	10
Sound Power during Period with penalty						18,444,222	5,359,195	7,213,232

Total Daily Sound Power, with penalties	31,016,650
Hours per Day	24
Average Hourly Sound Power, with penalties	1,292,360
CNEL	61.1

Ldn computation on next page.

Computation of Ldn

Period of 24-Hour Day (1=included, 0=not)		Sound Power Breakdown by Period of Day	
Day	Night	Day	Night
0	1	0	21,879
0	1	0	21,381
0	1	0	21,879
0	1	0	29,513
0	1	0	72,445
0	1	0	338,845
0	1	0	151,357
1	0	285,949	0
1	0	270,938	0
1	0	250,240	0
1	0	231,087	0
1	0	417,064	0
1	0	299,267	0
1	0	241,236	0
1	0	7,561,013	0
1	0	325,739	0
1	0	417,064	0
1	0	410,938	0
1	0	7,733,687	0
1	0	1,661,472	0
1	0	72,445	0
1	0	52,482	0
0	1	0	38,906
0	1	0	25,120

Sum of Sound Power during Period wo/penalty	20,230,621	721,323
Log Factor for Penalty (i.e., 10*log(x))	1	10
Sound Power during Period with penalty	20,230,621	7,213,232

Total Daily Sound Power, with penalties	27,443,853
Hours per Day	24
Average Hourly Sound Power, with penalties	1,143,494
Ldn	60.6

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Log factors for the Ldn and CNEL penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

Source:

California Deaprtment of Transportation (Caltrans), Divisiong of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement* . Sacramento, CA. Available: <http://www.dot.ca.gov/hq/env/noise/>. Accessed September 24, 2010.

Existing Noise Combined with Construction Noise for Newark

Hourly Leq Noise Level by Noise Source	Existing Measured Noise Levels	Construction Noise Levels[1]	Combined Hourly Leq
Hour of Day			
0:00	43.5		43.5
1:00	36.2		36.2
2:00	36.0		36.0
3:00	32.6		32.6
4:00	31.5		31.5
5:00	37.8		37.8
6:00	41.2		41.2
7:00	48.3	86.3	86.3
8:00	52.2	86.3	86.3
9:00	56.3	86.3	86.3
10:00	61.5	86.3	86.3
11:00	55.8	86.3	86.3
12:00	49.6	86.3	86.3
13:00	52.0	86.3	86.3
14:00	54.3	86.3	86.3
15:00	54.8	86.3	86.3
16:00	52.6	86.3	86.3
17:00	47.6	86.3	86.3
18:00	49.5	86.3	86.3
19:00	47.7	86.3	86.3
20:00	43.9		43.9
21:00	41.7		41.7
22:00	42.4		42.4
23:00	41.6		41.6

Notes

[1] Construction noise levels only implemented during allowed hours from municipal code which is 7:00 am to 6:30 pm
Existing Noise level values are shown in Appendix X, Long-term Noise Measurement Summary worksheet

Construction Activity CNEL Calculation

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

Measurement Site:
Measurement Date:
Project Name: Sensitive Receptor in the City of Newark

Computation of CNEL

Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA/10)	Period of 24-Hour Day (1=included, 0=not)			Sound Power Breakdown by Period of Day		
			Day	Evening	Night	Day	Evening	Night
0:00	43.5	22,388	0	0	1	0	0	22,388
1:00	36.2	4,170	0	0	1	0	0	4,170
2:00	36.0	3,982	0	0	1	0	0	3,982
3:00	32.6	1,821	0	0	1	0	0	1,821
4:00	31.5	1,414	0	0	1	0	0	1,414
5:00	37.8	6,027	0	0	1	0	0	6,027
6:00	41.2	13,184	0	0	1	0	0	13,184
7:00	86.3	426,647,127	1	0	0	426,647,127	0	0
8:00	86.3	426,745,477	1	0	0	426,745,477	0	0
9:00	86.3	427,006,098	1	0	0	427,006,098	0	0
10:00	86.3	427,992,056	1	0	0	427,992,056	0	0
11:00	86.3	426,959,708	1	0	0	426,959,708	0	0
12:00	86.3	426,670,720	1	0	0	426,670,720	0	0
13:00	86.3	426,738,008	1	0	0	426,738,008	0	0
14:00	86.3	426,848,672	1	0	0	426,848,672	0	0
15:00	86.3	426,881,514	1	0	0	426,881,514	0	0
16:00	86.3	426,761,489	1	0	0	426,761,489	0	0
17:00	86.3	426,637,063	1	0	0	426,637,063	0	0
18:00	86.3	426,668,644	1	0	0	426,668,644	0	0
19:00	86.3	426,638,403	0	1	0	0	426,638,403	0
20:00	43.9	24,548	0	1	0	0	24,548	0
21:00	41.7	14,792	0	1	0	0	14,792	0
22:00	42.4	17,379	0	0	1	0	0	17,379
23:00	41.6	14,455	0	0	1	0	0	14,455

Sum of Sound Power during Period wo/penalty	5,122,556,577	426,677,743	84,819
Log Factor for CNEL Penalty (i.e., 10*log(x))	1	3	10
Sound Power during Period with penalty	5,122,556,577	1,280,033,230	848,188

Total Daily Sound Power, with penalties	6,403,437,995
Hours per Day	24
Average Hourly Sound Power, with penalties	266,809,916
CNEL	84.3

Computation of Ldn

Ldn computation on next page.

Period of 24-Hour Day (1=included, 0=not)		Sound Power Breakdown by Period of Day	
Day	Night	Day	Night
0	1	0	22,388
0	1	0	4,170
0	1	0	3,982
0	1	0	1,821
0	1	0	1,414
0	1	0	6,027
0	1	0	13,184
1	0	426,647,127	0
1	0	426,745,477	0
1	0	427,006,098	0
1	0	427,992,056	0
1	0	426,959,708	0
1	0	426,670,720	0
1	0	426,738,008	0
1	0	426,848,672	0
1	0	426,881,514	0
1	0	426,761,489	0
1	0	426,637,063	0
1	0	426,668,644	0
1	0	426,638,403	0
1	0	24,548	0
1	0	14,792	0
0	1	0	17,379
0	1	0	14,455

Sum of Sound Power during Period wo/penalty	5,549,234,321	84,819
Log Factor for Penalty (i.e., 10*log(x))	1	10
Sound Power during Period with penalty	5,549,234,321	848,188

Total Daily Sound Power, with penalties	5,550,082,508
Hours per Day	24
Average Hourly Sound Power, with penalties	231,253,438
Ldn	83.6

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Log factors for the Ldn and CNEL penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

Source:

California Deaprtment of Transportation (Caltrans), Divisiong of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement* . Sacramento, CA. Available: <http://www.dot.ca.gov/hq/env/noise/>. Accessed September 24, 2010.

Existing Noise Combined with Construction Noise for Pipeline in Fremont

Hourly Leq Noise Level by Noise Source	Existing Measured Noise Levels	Construction Noise Levels[1]	Combined Hourly Leq
Hour of Day			
0:00	50.5		50.5
1:00	48.0		48.0
2:00	45.2		45.2
3:00	46.9		46.9
4:00	51.2		51.2
5:00	54.3		54.3
6:00	57.2		57.2
7:00	58.1	78.3	78.3
8:00	58.0	78.3	78.3
9:00	56.0	78.3	78.3
10:00	56.4	78.3	78.3
11:00	57.9	78.3	78.3
12:00	57.7	78.3	78.3
13:00	57.8	78.3	78.3
14:00	60.3	78.3	78.4
15:00	61.6	78.3	78.4
16:00	61.9	78.3	78.4
17:00	61.5	78.3	78.4
18:00	60.5	78.3	78.4
19:00	61.3	78.3	78.4
20:00	62.1		62.1
21:00	57.2		57.2
22:00	54.3		54.3
23:00	52.1		52.1

Notes

[1] Construction noise levels only implemented during allowed hours from municipal code which is 7:00 am to 6:30 pm
Existing Noise level values are shown in Appendix X, Long-term Noise Measurement Summary worksheet

Construction Activity CNEL Calculation

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

Measurement Site:
Measurement Date:
Project Name: Sensitive Receptor in Fremont

Computation of CNEL

Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA/10)	Period of 24-Hour Day (1=included, 0=not)			Sound Power Breakdown by Period of Day		
			Day	Evening	Night	Day	Evening	Night
0:00	50.5	112,203	0	0	1	0	0	112,203
1:00	48.0	63,097	0	0	1	0	0	63,097
2:00	45.2	33,114	0	0	1	0	0	33,114
3:00	46.9	48,979	0	0	1	0	0	48,979
4:00	51.2	131,827	0	0	1	0	0	131,827
5:00	54.3	269,154	0	0	1	0	0	269,154
6:00	57.2	524,808	0	0	1	0	0	524,808
7:00	78.3	68,253,952	1	0	0	68,253,952	0	0
8:00	78.3	68,239,255	1	0	0	68,239,255	0	0
9:00	78.3	68,006,405	1	0	0	68,006,405	0	0
10:00	78.3	68,044,813	1	0	0	68,044,813	0	0
11:00	78.3	68,224,893	1	0	0	68,224,893	0	0
12:00	78.3	68,197,141	1	0	0	68,197,141	0	0
13:00	78.3	68,210,857	1	0	0	68,210,857	0	0
14:00	78.4	68,679,817	1	0	0	68,679,817	0	0
15:00	78.4	69,053,737	1	0	0	69,053,737	0	0
16:00	78.4	69,157,114	1	0	0	69,157,114	0	0
17:00	78.4	69,020,835	1	0	0	69,020,835	0	0
18:00	78.4	68,730,316	1	0	0	68,730,316	0	0
19:00	78.4	68,957,260	0	1	0	0	68,957,260	0
20:00	62.1	1,621,811	0	1	0	0	1,621,811	0
21:00	57.2	524,808	0	1	0	0	524,808	0
22:00	54.3	269,154	0	0	1	0	0	269,154
23:00	52.1	162,182	0	0	1	0	0	162,182

Sum of Sound Power during Period wo/penalty	821,819,135	71,103,880	1,614,519
Log Factor for CNEL Penalty (i.e., 10*log(x))	1	3	10
Sound Power during Period with penalty	821,819,135	213,311,640	16,145,187

Total Daily Sound Power, with penalties	1,051,275,962
Hours per Day	24
Average Hourly Sound Power, with penalties	43,803,165
CNEL	76.4

Computation of Ldn

Ldn computation on next page.

Period of 24-Hour Day (1=included, 0=not)		Sound Power Breakdown by Period of Day	
Day	Night	Day	Night
0	1	0	112,203
0	1	0	63,097
0	1	0	33,114
0	1	0	48,979
0	1	0	131,827
0	1	0	269,154
0	1	0	524,808
1	0	68,253,952	0
1	0	68,239,255	0
1	0	68,006,405	0
1	0	68,044,813	0
1	0	68,224,893	0
1	0	68,197,141	0
1	0	68,210,857	0
1	0	68,679,817	0
1	0	69,053,737	0
1	0	69,157,114	0
1	0	69,020,835	0
1	0	68,730,316	0
1	0	68,957,260	0
1	0	1,621,811	0
1	0	524,808	0
0	1	0	269,154
0	1	0	162,182

Sum of Sound Power during Period wo/penalty	892,923,015	1,614,519
Log Factor for Penalty (i.e., 10*log(x))	1	10
Sound Power during Period with penalty	892,923,015	16,145,187

Total Daily Sound Power, with penalties	909,068,202
Hours per Day	24
Average Hourly Sound Power, with penalties	37,877,842
Ldn	75.8

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Log factors for the Ldn and CNEL penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

Source:

California Deaprtment of Transportation (Caltrans), Divisiong of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement* . Sacramento, CA. Available: <http://www.dot.ca.gov/hq/env/noise/>. Accessed September 24, 2010.

Existing Noise Combined with Construction Noise for Pipeline in Union City

Hourly Leq Noise Level by Noise Source	Existing Measured Noise Levels	Construction Noise Levels[1]	Combined Hourly Leq
Hour of Day			
0:00	57.1		57.1
1:00	57.7		57.7
2:00	54.6		54.6
3:00	56.6		56.6
4:00	63.7		63.7
5:00	65.2		65.2
6:00	67.1		67.1
7:00	68.5		68.5
8:00	68.2	87.1	87.2
9:00	67.0	87.1	87.1
10:00	66.5	87.1	87.1
11:00	66.2	87.1	87.1
12:00	67.5	87.1	87.1
13:00	67.4	87.1	87.1
14:00	68.9	87.1	87.2
15:00	69.5	87.1	87.2
16:00	69.5	87.1	87.2
17:00	69.3	87.1	87.2
18:00	68.5	87.1	87.2
19:00	67.4	87.1	87.1
20:00	71.0	87.1	87.2
21:00	63.1		63.1
22:00	63.0		63.0
23:00	59.6		59.6

Notes

[1] Construction noise levels only implemented during allowed hours from municipal code which is 7:00 am to 6:30 pm
Existing Noise level values are shown in Appendix X, Long-term Noise Measurement Summary worksheet

Construction Activity CNEL Calculation

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

Measurement Site:
Measurement Date:
Project Name: Sensitive Receptor in Union City

Computation of CNEL

Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA/10)	Period of 24-Hour Day (1=included, 0=not)			Sound Power Breakdown by Period of Day		
			Day	Evening	Night	Day	Evening	Night
0:00	57.1	512,862	0	0	1	0	0	512,862
1:00	57.7	588,845	0	0	1	0	0	588,845
2:00	54.6	288,404	0	0	1	0	0	288,404
3:00	56.6	457,089	0	0	1	0	0	457,089
4:00	63.7	2,344,230	0	0	1	0	0	2,344,230
5:00	65.2	3,311,312	0	0	1	0	0	3,311,312
6:00	67.1	5,128,615	0	0	1	0	0	5,128,615
7:00	68.5	7,079,459	1	0	0	7,079,459	0	0
8:00	87.2	519,468,318	1	0	0	519,468,318	0	0
9:00	87.1	517,873,256	1	0	0	517,873,256	0	0
10:00	87.1	517,328,220	1	0	0	517,328,220	0	0
11:00	87.1	517,030,078	1	0	0	517,030,078	0	0
12:00	87.1	518,484,797	1	0	0	518,484,797	0	0
13:00	87.1	518,356,793	1	0	0	518,356,793	0	0
14:00	87.2	520,623,855	1	0	0	520,623,855	0	0
15:00	87.2	521,773,893	1	0	0	521,773,893	0	0
16:00	87.2	521,773,893	1	0	0	521,773,893	0	0
17:00	87.2	521,372,764	1	0	0	521,372,764	0	0
18:00	87.2	519,940,842	1	0	0	519,940,842	0	0
19:00	87.1	518,356,793	0	1	0	0	518,356,793	0
20:00	87.2	525,450,638	0	1	0	0	525,450,638	0
21:00	63.1	2,041,739	0	1	0	0	2,041,739	0
22:00	63.0	1,995,263	0	0	1	0	0	1,995,263
23:00	59.6	912,012	0	0	1	0	0	912,012

Sum of Sound Power during Period wo/penalty	5,721,106,169	1,045,849,170	15,538,632
Log Factor for CNEL Penalty (i.e., 10*log(x))	1	3	10
Sound Power during Period with penalty	5,721,106,169	3,137,547,509	155,386,324

Total Daily Sound Power, with penalties	9,014,040,003
Hours per Day	24
Average Hourly Sound Power, with penalties	375,585,000
CNEL	85.7

Ldn computation on next page.

Computation of Ldn

Period of 24-Hour Day (1=included, 0=not)		Sound Power Breakdown by Period of Day	
Day	Night	Day	Night
0	1	0	512,862
0	1	0	588,845
0	1	0	288,404
0	1	0	457,089
0	1	0	2,344,230
0	1	0	3,311,312
0	1	0	5,128,615
1	0	7,079,459	0
1	0	519,468,318	0
1	0	517,873,256	0
1	0	517,328,220	0
1	0	517,030,078	0
1	0	518,484,797	0
1	0	518,356,793	0
1	0	520,623,855	0
1	0	521,773,893	0
1	0	521,773,893	0
1	0	521,372,764	0
1	0	519,940,842	0
1	0	518,356,793	0
1	0	525,450,638	0
1	0	2,041,739	0
0	1	0	1,995,263
0	1	0	912,012

Sum of Sound Power during Period wo/penalty	6,766,955,339	15,538,632
Log Factor for Penalty (i.e., 10*log(x))	1	10
Sound Power during Period with penalty	6,766,955,339	155,386,324

Total Daily Sound Power, with penalties	6,922,341,663
Hours per Day	24
Average Hourly Sound Power, with penalties	288,430,903
Ldn	84.6

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Log factors for the Ldn and CNEL penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

Source:

California Deaprtment of Transportation (Caltrans), Divisiong of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement* . Sacramento, CA. Available: <http://www.dot.ca.gov/hq/env/noise/>. Accessed September 24, 2010.

Construction Activity CNEL Calculation

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

Measurement Site:
Measurement Date:
Project Name: Sensitive Receptor used in Hayward analysis (4477 Horner St)

Computation of CNEL

Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA/10)	Period of 24-Hour Day (1=included, 0=not)			Sound Power Breakdown by Period of Day		
			Day	Evening	Night	Day	Evening	Night
0:00	48.3	67,609	0	0	1	0	0	67,609
1:00	41.2	13,184	0	0	1	0	0	13,184
2:00	54.3	269,154	0	0	1	0	0	269,154
3:00	55.5	354,814	0	0	1	0	0	354,814
4:00	61.4	1,380,385	0	0	1	0	0	1,380,385
5:00	64.5	2,818,384	0	0	1	0	0	2,818,384
6:00	67.3	5,370,319	0	0	1	0	0	5,370,319
7:00	65.7	3,715,353	1	0	0	3,715,353	0	0
8:00	87.1	514,639,663	1	0	0	514,639,663	0	0
9:00	87.1	514,210,347	1	0	0	514,210,347	0	0
10:00	87.1	515,049,146	1	0	0	515,049,146	0	0
11:00	87.1	515,615,613	1	0	0	515,615,613	0	0
12:00	87.1	514,374,945	1	0	0	514,374,945	0	0
13:00	87.1	515,260,217	1	0	0	515,260,217	0	0
14:00	87.1	516,328,752	1	0	0	516,328,752	0	0
15:00	87.2	518,886,980	1	0	0	518,886,980	0	0
16:00	87.1	516,249,826	1	0	0	516,249,826	0	0
17:00	87.1	515,152,252	1	0	0	515,152,252	0	0
18:00	87.1	517,873,256	1	0	0	517,873,256	0	0
19:00	87.1	514,009,538	0	1	0	0	514,009,538	0
20:00	87.1	513,410,925	0	1	0	0	513,410,925	0
21:00	60.1	1,023,294	0	1	0	0	1,023,294	0
22:00	54.0	251,190	0	0	1	0	0	251,190
23:00	53.4	218,777	0	0	1	0	0	218,777

Sum of Sound Power during Period wo/penalty	5,677,356,350	1,028,443,756	10,743,817
Log Factor for CNEL Penalty (i.e., 10*log(x))	1	3	10
Sound Power during Period with penalty	5,677,356,350	3,085,331,269	107,438,167

Total Daily Sound Power, with penalties	8,870,125,786
Hours per Day	24
Average Hourly Sound Power, with penalties	369,588,574
CNEL	85.7

Computation of Ldn

Ldn computation on next page.

Period of 24-Hour Day (1=included, 0=not)		Sound Power Breakdown by Period of Day	
Day	Night	Day	Night
0	1	0	67,609
0	1	0	13,184
0	1	0	269,154
0	1	0	354,814
0	1	0	1,380,385
0	1	0	2,818,384
0	1	0	5,370,319
1	0	3,715,353	0
1	0	514,639,663	0
1	0	514,210,347	0
1	0	515,049,146	0
1	0	515,615,613	0
1	0	514,374,945	0
1	0	515,260,217	0
1	0	516,328,752	0
1	0	518,886,980	0
1	0	516,249,826	0
1	0	515,152,252	0
1	0	517,873,256	0
1	0	514,009,538	0
1	0	513,410,925	0
1	0	1,023,294	0
0	1	0	251,190
0	1	0	218,777

Sum of Sound Power during Period wo/penalty	6,705,800,106	10,743,817
Log Factor for Penalty (i.e., 10*log(x))	1	10
Sound Power during Period with penalty	6,705,800,106	107,438,167

Total Daily Sound Power, with penalties	6,813,238,273
Hours per Day	24
Average Hourly Sound Power, with penalties	283,884,928
Ldn	84.5

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Log factors for the Ldn and CNEL penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

Source:

California Deaprtment of Transportation (Caltrans), Divisiong of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement* . Sacramento, CA. Available: <http://www.dot.ca.gov/hq/env/noise/>. Accessed September 24, 2010.

Existing Noise Combined with Construction Noise for Pipeline in Union City

Hourly Leq Noise Level by Noise Source	Existing Measured Noise Levels	Construction Noise Levels[1]	Combined Hourly Leq
Hour of Day			
0:00	48.3		48.3
1:00	41.2		41.2
2:00	54.3		54.3
3:00	55.5		55.5
4:00	61.4		61.4
5:00	64.5		64.5
6:00	67.3		67.3
7:00	65.7		65.7
8:00	62.5	87.1	87.1
9:00	61.3	87.1	87.1
10:00	63.4	87.1	87.1
11:00	64.4	87.1	87.1
12:00	61.8	87.1	87.1
13:00	63.8	87.1	87.1
14:00	65.4	87.1	87.1
15:00	67.8	87.1	87.2
16:00	65.3	87.1	87.1
17:00	63.6	87.1	87.1
18:00	67.0	87.1	87.1
19:00	60.6	87.1	87.1
20:00	57.4	87.1	87.1
21:00	60.1		60.1
22:00	54.0		54.0
23:00	53.4		53.4

Notes

[1] Construction noise levels only implemented during allowed hours from municipal code which is 7:00 am to 6:30 pm
Existing Noise level values are shown in Appendix X, Long-term Noise Measurement Summary worksheet

Existing Noise Combined with Construction Noise for Alameda County

Hourly Leq Noise Level by Noise Source	Existing Measured Noise Levels	Construction Noise Levels[1]	Combined Hourly Leq
Hour of Day			
0:00	63.3		63.3
1:00	44.0		44.0
2:00	45.7		45.7
3:00	45.8		45.8
4:00	47.6		47.6
5:00	49.1		49.1
6:00	51.4		51.4
7:00	70.2	78.6	79.2
8:00	50.7	78.6	78.6
9:00	51.8	78.6	78.6
10:00	53.3	78.6	78.6
11:00	65.3	78.6	78.8
12:00	52.3	78.6	78.6
13:00	51.6	78.6	78.6
14:00	50.0	78.6	78.6
15:00	51.6	78.6	78.6
16:00	53.2	78.6	78.6
17:00	52.0	78.6	78.6
18:00	66.7	78.6	78.9
19:00	50.6		50.6
20:00	50.2		50.2
21:00	59.5		59.5
22:00	53.2		53.2
23:00	49.0		49.0

Notes

[1] assumed same daytime hours as Hayward (7am-7pm)

Existing Noise level values are shown in AECOM 2020, Long-term Noise Measurement Summary worksheet

Construction Activity CNEL Calculation

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

Measurement Site:
Measurement Date:
Project Name: Sensitive Receptor in Alameda County

Computation of CNEL

Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA/10)	Period of 24-Hour Day (1=included, 0=not)			Sound Power Breakdown by Period of Day		
			Day	Evening	Night	Day	Evening	Night
0:00	63.3	2,137,963	0	0	1	0	0	2,137,963
1:00	44.0	25,120	0	0	1	0	0	25,120
2:00	45.7	37,155	0	0	1	0	0	37,155
3:00	45.8	38,020	0	0	1	0	0	38,020
4:00	47.6	57,545	0	0	1	0	0	57,545
5:00	49.1	81,284	0	0	1	0	0	81,284
6:00	51.4	138,039	0	0	1	0	0	138,039
7:00	79.2	82,914,881	1	0	0	82,914,881	0	0
8:00	78.6	72,561,086	1	0	0	72,561,086	0	0
9:00	78.6	72,594,952	1	0	0	72,594,952	0	0
10:00	78.6	72,657,392	1	0	0	72,657,392	0	0
11:00	78.8	75,832,038	1	0	0	75,832,038	0	0
12:00	78.6	72,613,420	1	0	0	72,613,420	0	0
13:00	78.6	72,588,140	1	0	0	72,588,140	0	0
14:00	78.6	72,543,596	1	0	0	72,543,596	0	0
15:00	78.6	72,588,140	1	0	0	72,588,140	0	0
16:00	78.6	72,652,526	1	0	0	72,652,526	0	0
17:00	78.6	72,602,085	1	0	0	72,602,085	0	0
18:00	78.9	77,120,947	1	0	0	77,120,947	0	0
19:00	50.6	114,816	0	1	0	0	114,816	0
20:00	50.2	104,714	0	1	0	0	104,714	0
21:00	59.5	891,252	0	1	0	0	891,252	0
22:00	53.2	208,931	0	0	1	0	0	208,931
23:00	49.0	79,434	0	0	1	0	0	79,434

Sum of Sound Power during Period wo/penalty	889,269,204	1,110,782	2,803,490
Log Factor for CNEL Penalty (i.e., 10*log(x))	1	3	10
Sound Power during Period with penalty	889,269,204	3,332,346	28,034,903

Total Daily Sound Power, with penalties	920,636,454
Hours per Day	24
Average Hourly Sound Power, with penalties	38,359,852
CNEL	75.8

Ldn computation on next page.

Computation of Ldn

Period of 24-Hour Day (1=included, 0=not)		Sound Power Breakdown by Period of Day	
Day	Night	Day	Night
0	1	0	2,137,963
0	1	0	25,120
0	1	0	37,155
0	1	0	38,020
0	1	0	57,545
0	1	0	81,284
0	1	0	138,039
1	0	82,914,881	0
1	0	72,561,086	0
1	0	72,594,952	0
1	0	72,657,392	0
1	0	75,832,038	0
1	0	72,613,420	0
1	0	72,588,140	0
1	0	72,543,596	0
1	0	72,588,140	0
1	0	72,652,526	0
1	0	72,602,085	0
1	0	77,120,947	0
1	0	114,816	0
1	0	104,714	0
1	0	891,252	0
0	1	0	208,931
0	1	0	79,434

Sum of Sound Power during Period wo/penalty	890,379,986	2,803,490
Log Factor for Penalty (i.e., 10*log(x))	1	10
Sound Power during Period with penalty	890,379,986	28,034,903

Total Daily Sound Power, with penalties	918,414,889
Hours per Day	24
Average Hourly Sound Power, with penalties	38,267,287
Ldn	75.8

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Log factors for the Ldn and CNEL penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

Source:

California Deaprtment of Transportation (Caltrans), Divisiong of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement* . Sacramento, CA. Available: <http://www.dot.ca.gov/hq/env/noise/>. Accessed September 24, 2010.

Existing Noise Combined with Construction Noise for Pipeline in Fremont with 10 dB reduction

Hourly Leq Noise Level by Noise Source	Existing Measured Noise Levels	Construction Noise Levels[1]	Combined Hourly Leq
Hour of Day			
0:00	61.6		61.6
1:00	61.9		61.9
2:00	61.5		61.5
3:00	60.5		60.5
4:00	61.3		61.3
5:00	62.1		62.1
6:00	57.2		57.2
7:00	54.3	68.3	68.5
8:00	52.1	68.3	68.4
9:00	50.5	68.3	68.4
10:00	48.0	68.3	68.3
11:00	45.2	68.3	68.3
12:00	46.9	68.3	68.3
13:00	51.2	68.3	68.4
14:00	54.3	68.3	68.5
15:00	57.2	68.3	68.6
16:00	58.1	68.3	68.7
17:00	58.0	68.3	68.7
18:00	56.0	68.3	68.5
19:00	56.4	68.3	68.6
20:00	57.9		57.9
21:00	57.7		57.7
22:00	57.8		57.8
23:00	60.3		60.3

Notes

[1] Construction noise levels only implemented during allowed hours from municipal code which is 7:00 am to 6:30 pm

Existing Noise level values are shown in Appendix X, Long-term Noise Measurement Summary worksheet

Construction Activity CNEL Calculation

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

Measurement Site:
Measurement Date:
Project Name: Sensitive Receptor in Fremont with 10 db reduction

Computation of CNEL

Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA/10)	Period of 24-Hour Day (1=included, 0=not)			Sound Power Breakdown by Period of Day		
			Day	Evening	Night	Day	Evening	Night
0:00	61.6	1,445,441	0	0	1	0	0	1,445,441
1:00	61.9	1,548,818	0	0	1	0	0	1,548,818
2:00	61.5	1,412,539	0	0	1	0	0	1,412,539
3:00	60.5	1,122,019	0	0	1	0	0	1,122,019
4:00	61.3	1,348,964	0	0	1	0	0	1,348,964
5:00	62.1	1,621,811	0	0	1	0	0	1,621,811
6:00	57.2	524,808	0	0	1	0	0	524,808
7:00	68.5	7,029,983	1	0	0	7,029,983	0	0
8:00	68.4	6,923,011	1	0	0	6,923,011	0	0
9:00	68.4	6,873,032	1	0	0	6,873,032	0	0
10:00	68.3	6,823,925	1	0	0	6,823,925	0	0
11:00	68.3	6,793,943	1	0	0	6,793,943	0	0
12:00	68.3	6,809,808	1	0	0	6,809,808	0	0
13:00	68.4	6,892,655	1	0	0	6,892,655	0	0
14:00	68.5	7,029,983	1	0	0	7,029,983	0	0
15:00	68.6	7,285,637	1	0	0	7,285,637	0	0
16:00	68.7	7,406,484	1	0	0	7,406,484	0	0
17:00	68.7	7,391,787	1	0	0	7,391,787	0	0
18:00	68.5	7,158,937	1	0	0	7,158,937	0	0
19:00	68.6	7,197,346	0	1	0	0	7,197,346	0
20:00	57.9	616,596	0	1	0	0	616,596	0
21:00	57.7	588,845	0	1	0	0	588,845	0
22:00	57.8	602,561	0	0	1	0	0	602,561
23:00	60.3	1,071,520	0	0	1	0	0	1,071,520
Sum of Sound Power during Period wo/penalty						84,419,185	8,402,786	10,698,481
Log Factor for CNEL Penalty (i.e., 10*log(x))						1	3	10
Sound Power during Period with penalty						84,419,185	25,208,359	#########

Total Daily Sound Power, with penalties	216,612,351
Hours per Day	24
Average Hourly Sound Power, with penalties	9,025,515
CNEL	69.6

Ldn computation on next page.

Computation of Ldn

Period of 24-Hour Day (1=included, 0=not)		Sound Power Breakdown by Period of Day	
Day	Night	Day	Night
0	1	0	1,445,441
0	1	0	1,548,818
0	1	0	1,412,539
0	1	0	1,122,019
0	1	0	1,348,964
0	1	0	1,621,811
0	1	0	524,808
1	0	7,029,983	0
1	0	6,923,011	0
1	0	6,873,032	0
1	0	6,823,925	0
1	0	6,793,943	0
1	0	6,809,808	0
1	0	6,892,655	0
1	0	7,029,983	0
1	0	7,285,637	0
1	0	7,406,484	0
1	0	7,391,787	0
1	0	7,158,937	0
1	0	7,197,346	0
1	0	616,596	0
1	0	588,845	0
0	1	0	602,561
0	1	0	1,071,520

Sum of Sound Power during Period wo/penalty	92,821,972	10,698,481
Log Factor for Penalty (i.e., 10*log(x))	1	10
Sound Power during Period with penalty	92,821,972	106,984,807

Total Daily Sound Power, with penalties	199,806,779
Hours per Day	24
Average Hourly Sound Power, with penalties	8,325,282
Ldn	69.2

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Log factors for the Ldn and CNEL penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

Source:

California Deaprtment of Transportation (Caltrans), Divisiong of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement* . Sacramento, CA. Available: <http://www.dot.ca.gov/hq/env/noise/>. Accessed September 24, 2010.

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS signs)	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jack	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer (hoe ram)	20	90	90	212	84.0	77.0	100	84.0	77.0
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzle)	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-truck)	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch	40	73	74	5	67.0	63.0	100	68.0	64.0
chipper		75							

Source:
FHWA Roadway Construction Noise Model, January 2006. Table 9.1
U.S. Department of Transportation
CA/T Construction Spec. 721.560

Distance Propagation Calculations for Stationary Sources of Ground Vibration

KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

STEP 1: Determine units in which to perform calculation.

— If vibration decibels (VdB), then use Table A and proceed to Steps 2A and 3A.

— If peak particle velocity (PPV), then use Table B and proceed to Steps 2B and 3B.

STEP 2A: Identify the vibration source and enter the reference vibration level (VdB) and distance.

STEP 3A: Select the distance to the receiver.

Table A. Propagation of vibration decibels (VdB) with distance

Noise Source/ID	Reference Noise Level			Attenuated Noise Level at Receptor		
	vibration level (VdB)	@	distance (ft)	vibration level (VdB)	@	distance (ft)
Impact pile driver	104	@	25	47.9	@	1850
Jackhammer	79	@	25	68.7	@	55
Loaded Trucks	86.0	@	25	75.7	@	55
Hoe Ram	87	@	25	77	@	55

The Lv metric (VdB) is used to assess the likelihood for vibration to result in human annoyance.

STEP 2B: Identify the vibration source and enter the reference peak particle velocity (PPV) and distance.

STEP 3B: Select the distance to the receiver.

Table B. Propagation of peak particle velocity (PPV) with distance

Noise Source/ID	Reference Noise Level			Attenuated Noise Level at Receptor		
	vibration level (PPV)	@	distance (ft)	vibration level (PPV)	@	distance (ft)
Impact Pile Driver	1.518	@	25	0.002	@	1850
Jackhammer	0.035	@	25	0.011	@	55
Loaded Trucks	0.076	@	25	0.023	@	55
Hoe Ram	0.089	@	25	0.027	@	55

The PPV metric (in/sec) is used for assessing the likelihood for the potential of structural damage.

Notes:

Computation of propagated vibration levels is based on the equations presented on pg. 185 of FTA 2018. Estimates of attenuated vibration levels do not account for reductions from intervening underground barriers or other underground structures of any type, or changes in soil type.

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123. Washington, D.C. Accessed: December 20, 2020. Page Available:

https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Pump Station Operations (LEQ)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	957	50.0
Newark Receptor (9268 Cape Breeze Drive)	1850	40.7

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Pumps	77	0.4
Pumps	77	0.4
Pumps	77	0.4
Pumps	77	0.4
Pumps	77	0.4
Pumps	77	0.4
Pumps	77	0.4
Pumps	77	0.4

Ground Type	Soft
Source Height	8
Receiver Height	5
Ground Factor[2]	0.63

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Pumps	73.0
Pumps	73.0
Pumps	73.0
Pumps	73.0
Pumps	73.0
Pumps	73.0
Pumps	73.0
Pumps	73.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
82.1

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Pump Station Operations (LMAX)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,381	50.0
Newark Receptor (9268 Cape Breeze Drive)	1850	44.7

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Pumps	77	1
Pumps	77	1
Pumps	77	1
Pumps	77	1
Pumps	77	1
Pumps	77	1
Pumps	77	1
Pumps	77	1

Ground Type	Soft
Source Height	8
Receiver Height	5
Ground Factor[2]	0.63

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Pumps	77.0
Pumps	77.0
Pumps	77.0
Pumps	77.0
Pumps	77.0
Pumps	77.0
Pumps	77.0
Pumps	77.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
86.0

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS signs)	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jack	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer (hoe ram)	20	90	90	212	84.0	77.0	100	84.0	77.0
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzle)	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-truck)	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch	40	73	74	5	67.0	63.0	100	68.0	64.0
chipper		75							

Source:
FHWA Roadway Construction Noise Model, January 2006. Table 9.1
U.S. Department of Transportation
CA/T Construction Spec. 721.560