

Chapter 27 Public Health and Environmental Hazards

27.1 Introduction

This chapter describes the environmental setting, methods of analysis, impact analysis, and mitigation measures for public health and environmental hazards relevant to construction and operation of the Project. These public health and environmental hazards are categorized as hazards and hazardous materials, wildfires, water quality-based public health concerns, and exposure to vector-borne illness.

The study areas for these categories, as well as potential public health and environmental hazards that are not discussed further in this chapter, are described below. The study area for hazards and hazardous materials consists of areas where hazardous materials may be used during Project construction or operation of new facilities, and where excavation and other soil-disturbing activities would occur plus a 0.25-mile buffer. The Tehama Campus of Shasta College is located just over 0.25 mile west of the RBPP in Tehama County; however, the RBPP is not included in the study area for hazards and hazardous materials. The installation and operation of the two new pumps in the existing concrete bays at the RBPP would not require soil disturbance or involve hazards and hazardous materials that are different from existing conditions. Current operations and maintenance activities at the RBPP entail the occasional use of quantities of hazardous materials (e.g., fuels, lubricants, and oils). The handling, use, and disposal of these hazardous materials is in compliance with applicable regulations and no impacts from hazards or hazardous materials are expected within a 0.25 mile of the RBPP. There are no other existing or proposed schools within 0.25 mile of Project facilities and, therefore, schools are not discussed further in this chapter. The pump installation at the RBPP would require the use of few construction vehicles and pieces of equipment for a relatively short work period; therefore, the installation is not expected to affect emergency response or evacuation procedures in that area. Potential impacts on adopted emergency response plans and emergency evacuation plans relevant to Project facilities in Colusa, Glenn, and Yolo Counties are discussed in this chapter.

There are no airports within 2 miles of the Project facilities. The Red Bluff Municipal Airport is approximately 2.05 miles west of the RBPP. The nearest air traffic facility is the helicopter pad at the Saint Elizabeth Community Hospital, located approximately 0.61 mile west of the RBPP. The installation of two additional pumps at the RBPP would not interfere with airport operations, airport land use plans, air traffic routes, or a restricted air space. There are no other airports or air traffic facilities in proximity to Project facilities; therefore, air traffic safety hazards and excessive air traffic noise are not addressed further.

The study area for wildfire hazards consists of the portions of the Project area in Glenn and Colusa Counties that are identified as located within or near a State Responsibility Area or Very

High Fire Hazard Severity Zone (VHFHSZ). There are no State Responsibility Areas or VHFHSZs in the parts of Tehama and Yolo Counties where Project facilities would be constructed or operated. The RBPP in Tehama County and the TC Canal intake and Dunnigan Pipeline in Yolo County are not in or near State Responsibility Areas or VHFHSZs. Accordingly, the effects of wildfires in these two counties are not discussed in this chapter.

The water quality-based public health concerns discussed in this chapter are harmful algal blooms (HABs) and the bioaccumulation of methylmercury in fish. The study area for HABs consists of Lake Oroville, Shasta Lake, Folsom Lake, San Luis Reservoir, Sites Reservoir, and the Delta. Operations of Sites Reservoir could alter the water storage at these reservoirs, potentially affecting environmental variables that influence HABs such as water temperature and water residence time. The study area for the bioaccumulation of methylmercury in fish encompasses the study area for HABs and includes the Yolo Bypass because operations of Sites Reservoir would release water into the Sacramento River and Yolo Bypass.

Tables 27-1a and 27-1b summarize the CEQA determinations and NEPA conclusions for construction and operation impacts, respectively, by alternatives.

Table 27-1a. Summary of Construction Impacts and Mitigation Measures for Public Health and Environmental Hazards

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-2: Create a significant hazard through accidental releases of hazardous materials into the environment			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-3: Be located on an identified hazardous materials site			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-4: Impair implementation of or physically interfere with adopted emergency response plan or emergency evacuation plan			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact HAZ-5: Be located in or near state responsibility areas or lands classified as very high fire hazard severity zones and <i>(the following impact analysis is subdivided into lettered components to address the varied fire hazards associated with this threshold):</i>			
Impact HAZ-5a: Substantially impair an adopted emergency response plan or emergency evacuation plan			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-5b: Exacerbate wildfire risks and expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-5c: Require infrastructure that may exacerbate fire risk			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-5d: Expose people or structures to significant risks as a result of runoff, post-fire slope instability, or drainage changes			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-6: Result in an impact on public health related to methylmercury bioaccumulation in fish			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-7: Result in an impact on public health due to an increase in harmful algal blooms			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-8: Result in exposure to nuisance problems or spread of mosquito- or vector-borne illnesses			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE

Notes:

NI = CEQA no impact

LTS = CEQA less-than-significant impact

NE = NEPA no effect or no adverse effect

Table 27-1b. Summary of Operations Impacts and Mitigation Measures for Public Health and Environmental Hazards

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-2: Create a significant hazard through accidental releases of hazardous materials into the environment			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-3: Be located on an identified hazardous materials site			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-4: Impair or interfere with adopted emergency response plan or emergency evacuation plan			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-5: Be located in or near state responsibility areas or very high fire hazard severity zones and (the following is subdivided into lettered components to address the varied fire hazards associated with this threshold):			
Impact HAZ -5a: Substantially impair an adopted emergency response plan or emergency evacuation plan			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-5b: Exacerbate wildfire risks and expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-5c: Require infrastructure that may exacerbate fire risk			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-5d: Expose people or structures to significant risks as a result of runoff, post-fire slope			

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
instability, or drainage changes			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-6: Result in a substantial increase in methylmercury bioaccumulation			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-7: Result in an impact on public health due to an increase in harmful algal blooms			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact HAZ-8: Result in exposure to nuisance problems or spread of mosquito- or vector-borne illnesses			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE

Notes:

NI = CEQA no impact

LTS = CEQA less-than-significant impact

NE = NEPA no effect or no adverse effect

27.2 Environmental Setting

This section discusses the existing conditions for hazards and hazardous materials, wildfire hazards, public health hazards related to methylmercury and HABs, and mosquitos and vectors. Appendix 4A, *Regulatory Requirements*, describes applicable federal, state, and local laws, regulations and requirements related to hazards and hazardous materials, wildfire hazards, and public health hazards related to methylmercury and HABs.

27.2.1. Hazards and Hazardous Materials

As defined by Section 25501 of the California Health and Safety Code (HSC), hazardous materials are those “that, because of their quantity, concentration, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.”

Hazardous waste is a subset of hazardous materials and defined as:

[W]astes 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 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 (HSC 101075).

An environmental records search was conducted on January 6, 2021 (Appendix 27A, *Environmental Records Search*). The purpose of the search was to identify sites with potential environmental concerns (PECs) that are listed in government databases. No site visits or interviews were conducted. The search included PEC sites within 0.25 mile of the study area, which includes facilities of Alternatives 1, 2, and 3. Various agencies issue operating permits or regulate the handling, movements, storage, and disposal of hazardous materials and require mandatory reporting. Focus Maps 1 to 25 in Appendix 27A depict the locations of the PEC sites identified in the environmental records search. Inclusion of properties in the environmental record search results does not imply that a PEC exists presently in the search area or has in the past. This section provides information on the results of the environmental records search in the study area, where applicable.

27.2.1.1. Agricultural Land Uses

Most of the study area has historically been or is presently used for agricultural purposes. As a result, soils contaminated with pesticides, herbicides, and other agricultural chemicals, even though properly applied, may be present in the study area.

In addition to pesticide and fertilizer use, there are other agricultural practices that can involve hazardous materials. Farming properties often have land that is not engaged directly in crop production (e.g., buildings used for equipment storage and maintenance). These properties may also have ASTs and underground storage tanks (USTs) potentially containing hazardous materials (e.g., fuel, fertilizer) used in farming operations. Onsite storage of petrochemical products is common. Farms also often have a waste disposal area, where waste crop material may be stored for later offsite disposal, composting, or final disposal. Because agricultural land uses typically are found in rural areas, agricultural properties are often served by septic systems. These areas may also contain drums of lubricants, agricultural chemicals, or other potentially hazardous material (e.g., paint, solvents) temporarily stored prior to disposal.

Two existing farms in proximity to the TRR East were listed in the Resource Conservation and Recovery Act (RCRA) and AST databases. Five farms located along the construction route of Road 68 between Interstate 5 (I-5) and Road D were also identified in these two databases. There were no listed compliance violations for farms in the study area at the time of the environmental records search. One farm is included in the California Environmental Reporting System (CERS) database for a routine compliance violation and is located near the McDermott Road construction route extension at 4753 Maxwell Sites Road. The evaluation noted a failure to adequately establish and implement a business plan when storing/handling a hazardous material at or above reportable quantities. No violations related to this location were noted as of March 19, 2020.

27.2.1.2. Commercial and Industrial Land Uses

Current and past commercial and industrial land uses within the study area have the potential to be associated with PECs. Such properties can use and store different hazardous materials or have ASTs or USTs. Commercial and industrial land uses often also are associated with the use and storage of heavy equipment, including outdoor storage yards, vehicle and equipment maintenance and fueling activities, and use of other equipment or site features that can be

associated with a PEC, such as oil/water separators, grease traps, wastewater treatment systems, and solid waste storage and disposal areas. Depending on the age and condition of buildings, commercial and industrial land uses can also be associated with asbestos-containing materials (ACM), lead-based paint, and polychlorinated biphenyls (PCBs). The types of hazardous materials conditions associated with a particular property depends on the history of actual use. Commercial and industrial site operators are required to follow local, state, and federal handling, disposal, and transporting of hazardous materials.

A Pacific Gas and Electric Company (PG&E) substation is on Road 49 at 2nd Street, approximately 0.20 mile west of the GCID Main Canal. This substation is listed on the Certified Unified Program Agencies (CUPA) listing for chemical use and storage. No violations were listed at the time of the environmental records search. The PG&E Colusa Generating Station site on McDermott Road is along the construction route; according to the environmental records search, a 55-gallon drum of sodium hydroxide ruptured at this site and spilled onto the pavement. A cleanup was completed on May 17, 2012, and the case was closed. Ritchie Bros. is a commercial auction yard located at 5500 County Road 99W in Dunnigan. This site is listed on various databases (RCRA, AST, CERS). The facility was noted for prior improper chemical storage, monitoring, and hazardous waste reporting. These violations were subsequently addressed, and no violations related to the facility dated after January 22, 2020, were identified in the environmental records search.

27.2.1.3. Quarries

Quarries located in the study area have the potential to be associated with PECs. Quarrying removes vegetation, topsoil, and subsoil to reach the aggregate underneath. As discussed in Chapter 8, *Groundwater Resources*, quarries can disrupt groundwater flow and potentially affect groundwater quality. Depending on the type, size, and condition of current and former quarries and mining operations, these sites have the potential to be associated with significant use, disposal, and exposure to hazardous substances, including explosives, fuels, lubricants, heavy metals, respirable dust and particulate matter, and other hazardous materials.

Three sites were identified from the Mineral Industry Location System, a database maintained by the U.S. Bureau of Mines. The Colusa Sandstone site is noted as a crushed stone producer, but no other information was available. This facility is located east of Maxwell Sites Road near the Sites Rock Processing facility (Figure 2C-1 in Appendix 2C, *Construction Means, Methods, and Assumptions*, and Appendix 27A, *Environmental Records Search*). The Brownstone Quarry site is located at 4341 Maxwell Sites Road east of the Sites Dam footprint and is a 5-acre sand and gravel mining facility. The Thompson Quarry site is located just west of Maxwell Sites Road along the construction route of Maxwell Sites Road. This facility is listed as a mine.

27.2.1.4. Railroads

The two Union Pacific Railroad lines (in Willows and Dunnigan) that cross the study area have the potential to be associated with PECs. Railcars frequently hold and transport hazardous materials. Soils along freight railroad lines have typically been affected by heavy metals (e.g., from slag ballast used to set railroad ties), fuel oil and total petroleum hydrocarbons as diesel from locomotives, PCBs from locomotive transformers, and polynuclear aromatics from railroad ties. The presence of contaminated soils along railroad lines can adversely affect the soils and groundwater in areas adjacent to the railroad right-of-way.

27.2.1.5. Lead and Asbestos

Aerially Deposited Lead

Many roads in the study area have been used by motorized vehicles since at least the 1950s and surface soils could have been affected by aerially deposited lead (ADL) from the historical use of leaded gasoline. Areas of primary concern for ADL are soils along routes that have had high vehicle emissions from large traffic volumes or congestion when leaded gasoline was in use (generally prior to 1986). The ADL is typically found in the top 2 feet of material adjacent to roads. Residual ADL can build up in surface soils and be conveyed into drainages through runoff. Road 47 in Willows, County Road 99W, Funks Creek Road, Delevan Road, and Maxwell Sites Road have been in use since before 1952 (U.S. Geological Survey 1952). Except for County Road 99W, these roads are not considered to have a high volume of traffic because they are rural roads. The soils along these roads in the study area have likely been disturbed during previous roadway maintenance and widening, and therefore are not expected to contain a substantial build-up of ADL. The alignment of the underground Dunnigan Pipeline would extend through existing agricultural lands and cross beneath I-5, County Road 99W, Ritchie Bros. auction yard, and the Union Pacific Railroad line. These areas have a high potential for containing ADL given their present and historical uses.

Lead-based Paint and Asbestos-containing Materials

Lead-based paint (LBP) and ACM are hazardous substances commonly found in building materials. Until 1978, lead compounds were commonly used in interior and exterior paints. Prior to the 1980s, building materials often contained asbestos fibers, which were used to provide strength and fire resistance. Building materials with LBP and ACM can be affected during demolition and renovation activities associated with repair, replacement, and redevelopment. Various regulations govern the handling and disposal of lead and asbestos during the demolition of structures.

Project construction would involve the demolition of buildings in the community of Sites. Demolition of buildings constructed prior to 1978 has the potential to release lead particles, asbestos fibers, or other hazardous materials into the air where they may be inhaled by construction workers and the general public. Loose and peeling paint must be disposed of as a California Environmental Protection Agency- and/or RCRA-listed hazardous waste if the concentration of lead exceeds applicable waste thresholds. State and federal construction worker health and safety regulations require air quality monitoring and the use of protective measures during demolition activities where LBP and ACM are present. LBP associated with steel structures, utility openings, and buildings may be encountered during demolition. ACM associated with asbestos-containing pipe and the existing siphons may also be found during demolition.

27.2.1.6. Water Wells and Septic Systems

Communities in rural areas may rely on septic systems and water wells. Wells and septic systems are used in the community of Sites. Septic systems have the potential to contaminate nearby waterbodies (U.S. Environmental Protection Agency 2017). Aging, abandoned, unsecured, or damaged underground water wells or piping systems can serve as potential conduits for soil and groundwater contamination (U.S. Environmental Protection Agency 2017). There has been no

reported soil or groundwater contamination as a result of septic systems in the study area (Appendix 27A).

27.2.1.7. Evacuation and Emergency Routes

The Counties of Colusa, Glenn, and Yolo each have an Office of Emergency Services (OES) that provides coordinated emergency management. Local emergency response teams, including fire, police, and sheriff's departments, provide most of the services to supply aid in an emergency.

The Colusa County OES is a division of the Colusa County Sheriff's Office and is the county's emergency management agency. The Colusa County OES coordinates emergency response efforts and responds to disasters in the unincorporated areas of Colusa County. The Colusa County OES partners with the emergency management programs of the Cities of Colusa and Williams, the Colusa Regional Medical Center, and other districts and authorities (Colusa County n.d.). The County of Colusa does not expressly identify any emergency routes or plans in their general plan (Colusa County 2012).

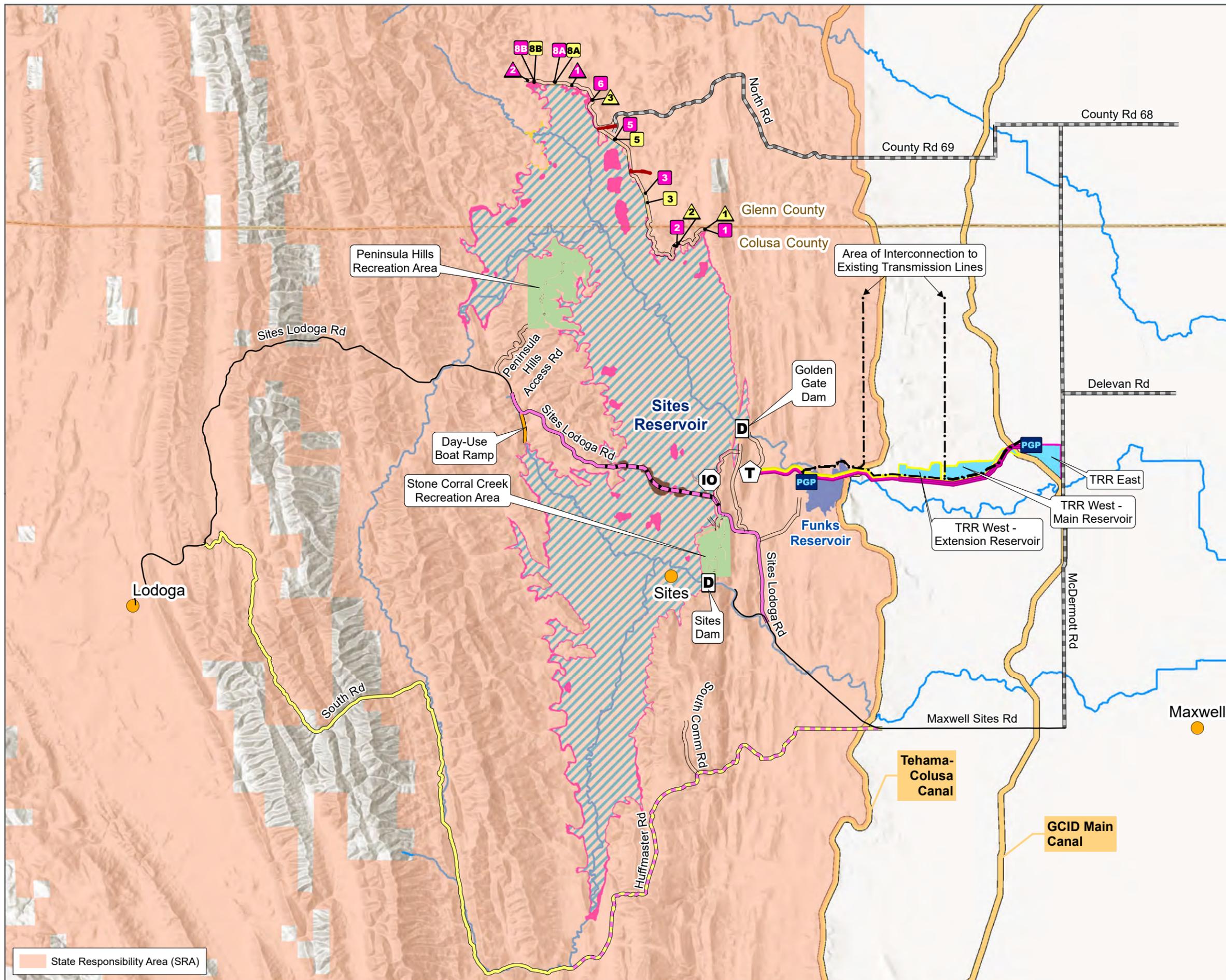
The Glenn County OES is operated through the Glenn County Sheriff's Office in Willows and is responsible for coordination of county resources, staff, and public information for emergencies. Emergency evacuation procedures are outlined in the Glenn County Operational Area Emergency Operation Plan and provide guidance for an integrated response from the County and the Cities of Orland and Willows (Glenn County 2018). Glenn County utilizes an emergency alert and warning system called CodeRED which can be used to send mass notifications via phone, text, email, mobile app, social media, and the national Emergency Alert System (Glenn County 2021). The County of Glenn does not expressly identify any emergency routes or plans in its general plan.

Yolo County OES operates the Emergency Operation Center in Woodland and provides overall coordination of county resources for disasters and large-scale emergencies (Yolo County 2021a). The County of Yolo uses the Yolo-Alert system to alert residents about emergency events, including evacuations. The Yolo County OES has identified two different evacuation zones for the area near the town of Dunnigan. The Dunnigan Pipeline, the only Project facility in Yolo County, is in Zones 6 and 7. The primary evacuation routes for Zone 6 are County Road 99W west, County Road 1, County Road 6W, or County Road 8W. Zone 7's primary evacuation routes are State Route 45, County Road 1, or County Roads 98A/108/99E (Yolo County 2021b).

27.2.2. Wildfire Hazards

A wildland fire, or wildfire, is an uncontrolled, unplanned fire in a wildland. The wildland-urban interface is the zone where urban areas and human activity intermix with an undeveloped area (National Parks Service n.d.).

The areas where the state has financial responsibility for wildland fire protection are designated as State Responsibility Areas and California Department of Forestry and Fire Protection (CAL FIRE) provides fire protection in State Responsibility Areas. These lands are identified as State Responsibility Areas based on land ownership, population density, and land use. Table 27-2 summarizes the associated responsibility area designations in the study area and Figure 27-1 identifies the parts of the study area in a State Responsibility Area.



Legend

- City/Town/Community
- Existing Roads
- Canal
- Creek/Slough

Project Features - All Alternatives

- Inundation Area Common to Alternatives 1, 2 and 3
- Underground Pipelines (4)
- Access Roads
- Road Improvements
- Road Realignment
- Main Dam
- Inlet/Outlet Tower
- Transmission Line
- Day-Use Boat Ramp
- Recreation Areas
- Transition Manifold
- Pumping Generating Plant

Project Features - Alternatives 1 and 3

- Inundation Area Exclusive to Alternatives 1 and 3 (Total Inundation for Alts 1 and 3 is 1.5 MAF)
- Saddle Dikes (total of 2)
- Saddle Dams (total of 7; 8B includes spillway)
- Emergency Release Structure (total of 2)
- Road Realignment
- Underground Pipelines (4)
- Bridge with Prism Fill
- Terminal Regulating Reservoir

Project Features - Alternative 2

- Inundation Area Exclusive to Alternative 2 (Total Inundation for Alt 2 is 1.3 MAF)
- Saddle Dikes (total of 3)
- Saddle Dams (total of 4; 8B includes spillway)
- Road Realignment
- Terminal Regulating Reservoir

GCID = Glenn-Colusa Irrigation District; MAF = million acre-feet
 DATA SOURCES: Glenn County 2020b, Colusa County 2020b, Yolo County 2020b.; Inlet/Outlet Tower and PGP - ICF, 2020; City/Town - GNIS, 2020; Project Features - AECOM, 2020; Canal, River and Creek/Slough (NHD) - USGS, 2018; Aerial Imagery (NAIP) - USDA, 2020; Counties -
 DISCLAIMER: This exhibit is preliminary and is subject to change.
 MAP DATE: 6/23/2021

FIGURE 27-1
 STATE RESPONSIBILITY AREAS
 AND ALTERNATIVES 1, 2, AND 3

0 1 2
 MILES

Sites

Table 27-2. Project Facilities and Associated Responsibility Areas

Project Facility	Local Responsibility Area	State Responsibility Area	Federal Responsibility Area
Sacramento River Diversion and Conveyance to Regulating Reservoirs: RBPP and GCID System Upgrades	X	-	-
Regulating Reservoirs and Conveyance Complex	-	-	-
Funks Reservoir and Funks PGP	-	-	X
Funks Pipelines	X	X	X
TRR East, TRR East PGP, and TRR East electrical substation (Alternatives 1 and 3)	X	-	-
TRR East Pipelines (Alternatives 1 and 3)	X	X	X
TRR West, TRR West PGP, and TRR West electrical substation (Alternative 2)	X	-	-
TRR West pipelines (Alternative 2)	X	X	X
Transmission line corridor – north from TRR West (Alternative 2) or Funks Reservoir (Alternatives 1 and 3)	X	X	X
Sites Reservoir and Related Facilities	-	-	-
Inundation Area	-	X	-
Main Dams, Saddle Dams, Saddle Dikes	-	X	-
Roads (including South Road and Huffmaster Road Realignment)	X	X	-
Recreation Areas	-	X	-
Conveyance to Sacramento River: TC Canal intake, Dunnigan Pipeline, CBD Outlet (Alternatives 1 and 3), and Sacramento River discharge (Alternative 2)	X	-	-

CAL FIRE is required to identify fire hazard severity zones (FHSZs) in the state. In addition, local agencies designate high FHSZs and VHFHSZs in jurisdictions. The FHSZs are derived from the Fire Hazard Severity Scale, which was created by CAL FIRE and is used for evaluating and designating potential fire hazards in wildland areas. The study area is primarily located in a moderate FHSZ and is shown in Figure 27-2. The following Project facilities would be located within the moderate FHSZ: Sites Reservoir, roads (including all of the Huffmaster Road realignment and part of the South Road for Alternative 2), the recreation areas, Funks Reservoir, Funks PGP, Funks pipelines, parts of the TRR East (Alternatives 1 and 3) and TRR West (Alternative 2) pipelines, and sections of the transmission line corridor. The only facility that would fall within a VHFHSZ is part of the South Road near Lodoga for Alternative 2. The conveyances to the Sacramento River, TRR East, TRR West, TRR PGPs, and electrical substations would not be in an FHSZ.

The rural community of Sites is not in a VHFHSZ, but is within a State Responsibility Area. There are multiple structures in Sites, including houses, barns, and other structures (i.e., sheds,

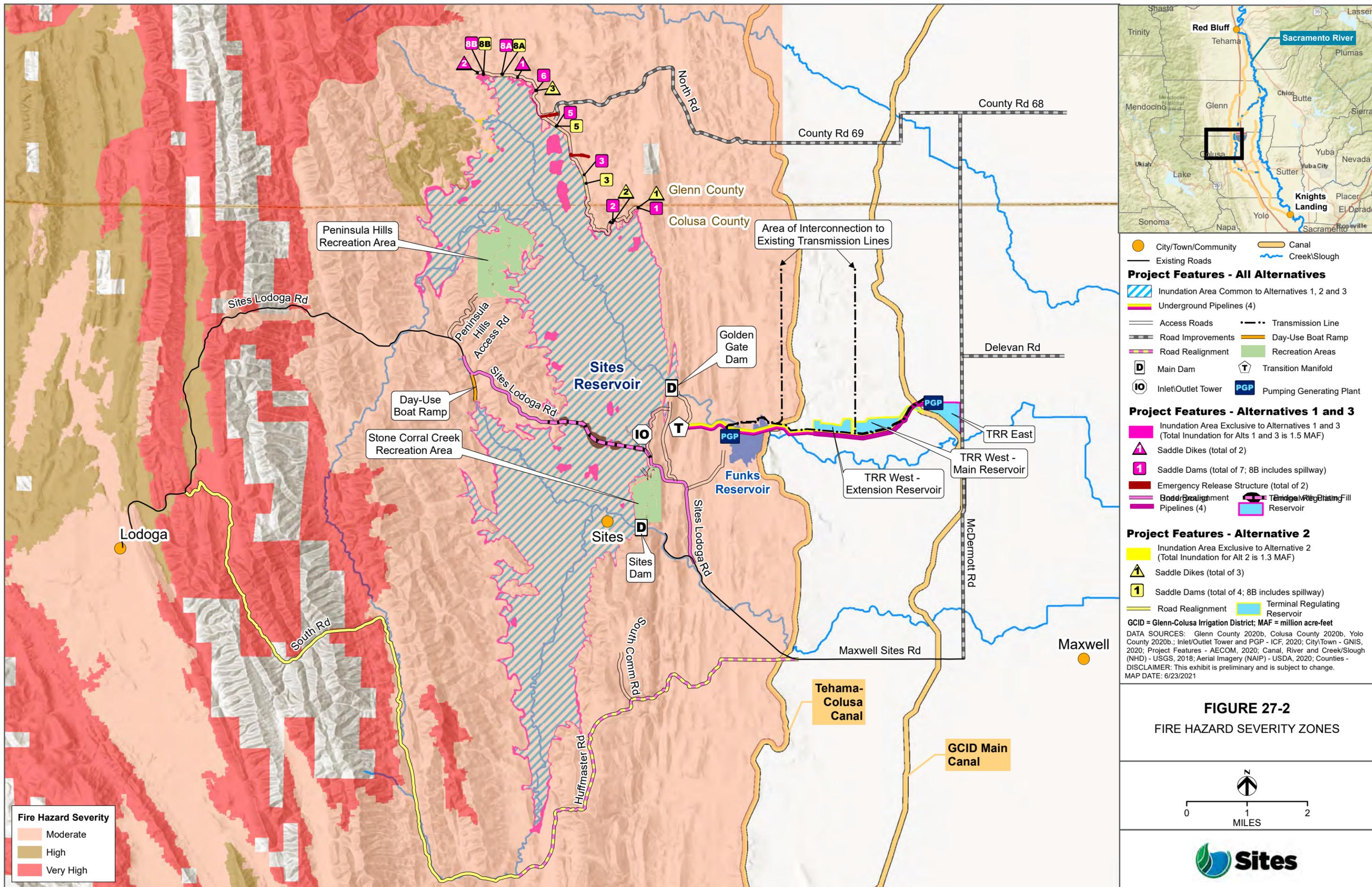


FIGURE 27-2
FIRE HAZARD SEVERITY ZONES

0 1 2
MILES

Sites

silos, and pump house). The study area as a whole is sparsely populated and has relatively few structures.

The topography of the study area varies and is described in Chapter 12, *Geology and Soils*. Most of the study area consists of relatively level, dry terrain. Elevations generally range from 30 feet to 800 feet. Land cover in the study area is predominantly annual grassland, with areas of oak woodlands becoming abundant to the west as elevations rise (Chapter 9, *Vegetation and Wetland Resources*). Agricultural areas containing rice and orchards are the most abundant land cover type east of Antelope Valley. Wildfires generally burn up a slope faster and more intensely than on flat surfaces (FIRESafe MARIN 2017). Therefore, steeply sloped terrain can represent more of a wildfire risk depending on the type of vegetation and hydrologic conditions present. For example, a 560-acre fire that was south of East Park Reservoir, which is west of the study area, burned for 2 days in August 2020; the area that burned was steeply sloped.

The average wind speed in the study area was estimated using the Climate Data Summary tool (Western Regional Climate Center 2020). The annual average maximum wind speed for the Sacramento area is 9.7 miles per hour (mph) and the average wind speed is approximately 8.5 mph. The annual average maximum and average wind speeds for the Redding area are 8.1 mph and 7.6 mph, respectively. The average wind speeds in the Sacramento and Redding areas from August through October (i.e., the driest months for those areas), are 7.3 mph and 6.5 mph, respectively. Maximum wind speeds and gusts in Sacramento and Redding can exceed 60 mph throughout the year.

California has recently experienced a number of catastrophic wildfires caused by multiple ignition sources. These fires have not occurred within the study area but have increased a heightened awareness of potential ignition sources, methods to reduce wildfire risk, and the need for staffing and equipment resources across local, state, and federal levels. These fires are frequently ignited in VHFHSZs and are generally located in heavily forested areas with steep hills and terrain; they have not been located in the flat Central Valley. Examples of recent wildfires outside of the study area are:

- The LNU Lightning Complex Fire in 2020 was determined to be ignited by numerous lightning strikes and spread throughout Napa, Sonoma, Lake, Yolo, and Solano Counties.
- The Zogg Fire in 2021 was determined to be ignited by a tree hitting a PG&E transmission line in Shasta County.

In addition, as noted in Chapter 28, *Climate Change*, wildfire risk is likely to increase under climate change scenarios due to alterations in precipitation patterns and increases in temperature.

27.2.3. Public Health Hazards Related to Methylmercury and HABs

This section provides a summary of mercury bioaccumulation in fish and HABs in the context of public health in the study area.

27.2.3.1. Methylmercury

Chapter 6, *Surface Water Quality*, provides a discussion of mercury and methylmercury as water quality constituents, describes the mercury and methylmercury occurrence in the study area, and identifies the waterbodies in the study area that are currently impaired by these contaminants. In

freshwater environments, inorganic mercury is converted by bacteria (sulfate- and iron-reducing) to methylmercury. This conversion is enhanced by multiple environmental variables in water and sediment, including temperature, pH, oxygen, sulfate, and the presence of organic matter. Methylmercury is the form of mercury that enters the food web in aquatic environments and bioaccumulates in fish and shellfish through prey consumption and absorption from water. Bioaccumulation is the process by which organisms, including humans, can, over time, accumulate certain contaminants (from sources including water, air, and diet) in their tissues more rapidly than can be eliminated through metabolism and excretion (Extension Toxicology Network 1993). The degree to which bioaccumulation occurs in an organism determines the toxic effects which are eventually produced.

Nearly all people have some methylmercury in their bodies because it is so widespread in the environment (U.S. Environmental Protection Agency 2019a). Human exposure to methylmercury occurs primarily through the consumption of fish and fish products (U.S. Environmental Protection Agency 2019a). Health effects of methylmercury include neurotoxicity, reproductive and cardiovascular toxicity, and potentially immunotoxicity (Hong et al. 2012:355–358). The risks to human health from mercury due to fish consumption depend on the concentration of methylmercury in the fish tissue and the quantity of mercury-contaminated fish eaten over time. The concentration of methylmercury in fish species depends on the level of methylmercury contamination in the waterbodies in which the fish reside, as well as the diet and life span of the fish species. Large carnivorous fish species with longer life spans have higher methylmercury tissue concentrations than small, short-lived species (Mozaffarian and Rimm 2006:1889; Diez 2009:114). Because methylmercury crosses the placenta, fetal exposure can occur. Human fetuses are particularly sensitive to the neurotoxic effects of mercury because the central nervous system is undergoing rapid development beginning as early as the third week of gestation (Grandjean and Herz 2011:1). Significant neurodevelopmental abnormalities have been observed in children following high gestational exposure from maternal consumption of highly contaminated fish (Mozaffarian and Rimm 2006:1890).

The Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries (ISWEBE) establishes a sport fish water quality objective for mercury of 0.2 milligrams (mg) methylmercury per kilogram (kg) wet weight of fish tissue (ww) within a calendar year¹ (State Water Resources Control Board 2017a:A-5). In addition, the State Water Resources Control Board (State Water Board) and the Regional Water Quality Control Boards are developing a statewide mercury control program for reservoirs. The program will establish a reservoir mercury Total Maximum Daily Load that would have the same a methylmercury sport fish objective as the Water Quality Control Plan for ISWEBE (State Water Resources Control Board 2017b). For the Yolo Bypass and the Delta, average methylmercury concentrations in trophic level (TL) 3 and TL4 fish are not to exceed fish tissue methylmercury objectives of 0.08 and 0.24 mg mg/kg ww, respectively (150–500 millimeters [mm] total length) and are not to exceed

¹ The water quality objective applies to the wet weight concentration in skinless fillet in trophic level (TL) 3 or TL 4 fish, whichever is the highest trophic level fish in the water body. Freshwater TL 3 fish are between 150 to 500 millimeters (mm) in total length and TL 4 fish are between 200 to 500 mm in total length, except for sizes specified in Attachment C of *Final Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions* (State Water Resources Control Board 2017), or as additionally limited in size in accordance with the legal size limit for the species caught.

0.03 mg/kg ww, in whole fish less than 50 mm long (Central Valley Regional Water Quality Control Board 2018).

The California Office of Environmental Health Hazard Assessment (OEHHA) issues fish consumption advisories in California. Most of these fish consumption advisories are issued due to mercury and provide sport fish consumers with guidance for choosing fish that are high in beneficial fats. OEHHA has issued over 100 site-specific advisories throughout the state, as well as a statewide advisory for lakes and reservoirs. OEHHA provides separate guidelines in their fish advisories for the following two groups: (1) women 18–49 years old and children 1–17 years old (hereinafter referred to as “sensitive populations”); and (2) women 50 years and older and men 18 years and older. OEHHA recommends certain serving amounts for fish known to occur in the study area (Table 4A.23-1 in Appendix 4A). In addition, OEHHA has developed Advisory Tissue Levels (ATLs) to guide the development of advice for sport fish consumption. For methylmercury, the “no consumption” ATL for sensitive populations is 0.44 mg/kg ww of fish tissue, and 1.31 mg/kg ww for women over 45 and men (Office of Environmental Health Hazard Assessment 2013:29).

Mercury present in the Delta, its tributaries, Suisun Marsh, and San Francisco Bay occurs because of historical and ongoing deposition from upstream tributaries and discharge of methylated mercury from wetlands adjacent to these waterbodies. Most of the mercury present in these locations is the result of historical mining of mercury ore in the Coast Ranges (via Putah and Cache Creeks to the Yolo Bypass) and the extensive use of elemental mercury to aid gold extraction processes in the Sierra Nevada (via Sacramento, San Joaquin, Cosumnes, and Mokelumne Rivers) (Alpers et al. 2008; Wiener et al. 2003).

27.2.3.2. Harmful Algal Blooms

As described in Chapter 6, HABs are overgrowths of algae in surface waterbodies that generally occur from spring to fall (May to October) in the Central Valley when water temperatures are warmer and are therefore conducive to bloom formation (Central Valley Regional Water Quality Control Board 2019:20). Generally, HABs are dependent on a water temperature of at least 66°F; water column sunlight (known as irradiance); low turbidity; a calm, stratified water column coupled with long water residence times; and the availability of dissolved nitrogen and phosphorus in non-limiting concentrations (U.S. Environmental Protection Agency 2016:15; Lehman et al. 2013:153–155; Berg and Sutula 2015:ii–iii). The public health analysis for HABs in this chapter focuses on cyanobacteria, which are the most common cause of HABs in fresh water (U.S. Geological Survey n.d.).

Some species of cyanobacteria produce toxins (cyanotoxins), which can adversely affect humans, domestic animals, and fish and other wildlife. Most toxin-producing cyanobacteria are freshwater species; however, studies have shown that freshwater cyanobacteria have a relatively broad range of salinity tolerance (Berg and Sutula 2015:21, 22). Cyanotoxins typically remain within cyanobacteria until they die or rupture, at which point the toxins are released; however, toxins can be actively released from living cyanobacteria as well (Graham et al. 2008:15). Once released, cyanotoxins eventually undergo biodegradation and, to some degree, photodegradation (Gagala and Mankiewicz-Boczek 2012:1128, 1129). Microcystins (a class of cyanotoxins) can be relatively rapidly degraded (i.e., in hours to days) by certain microbes in sediment (Berg and

Sutula 2015:30; Gagala and Mankiewicz-Boczek 2012:1132; Kormas and Lympelopoulou 2013:1).

There are multiple ways by which humans may be exposed to cyanotoxins, including drinking contaminated water, body contact, inhalation, consumption of contaminated food, consumption of algal dietary supplements, and hemodialysis (Massey et al. 2018:4). Human exposure to cyanotoxins in fresh water has the potential to occur during recreational activities (e.g., swimming, boating) through direct contact, by inhaling aerosolized toxins near a contaminated waterbody, or through accidental ingestion of (or oral exposure to) contaminated water (U.S. Environmental Protection Agency 2019b). Acute health effects from recreational exposure of humans to microcystins include headache, sore throat, blistering around the mouth, dry cough, abdominal pain, nausea, vomiting, diarrhea, and pneumonia (U.S. Environmental Protection Agency 2014:3). These health effects may occur within minutes to days following exposure and in severe cases, seizures, liver failure, respiratory arrest, and (rarely) death may occur (U.S. Environmental Protection Agency 2014:3). Ingestion of drinking water contaminated with elevated concentrations of microcystin and cylindrospermopsin (a cyanotoxin) may cause liver and kidney damage (U.S. Environmental Protection Agency 2020a). Long-term studies in animals have indicated that chronic effects include liver and kidney damage (American Water Works Association and Water Research Foundation 2016:5). The locations of recent occurrences of HABs in surface waters in the study area are discussed in Section 6.2.2.6.

There are no federal or state regulatory standards for cyanotoxins in drinking water or recreational waters. Participating state agencies, including the State Water Board and Regional Water Quality Control Boards have developed voluntary guidance for responding to HABs in recreational waters (California Water Quality Monitoring Council 2021). The U.S. Environmental Protection Agency (USEPA) has published recommendations and guidelines for public water systems on developing a cyanotoxin management plan and treatment strategies and has developed health advisories for drinking water for microcystin and cylindrospermopsin, as well as recommended recreational ambient water quality criteria or swimming advisories (U.S. Environmental Protection Agency 2015, 2019c, 2020b).

27.2.4. Mosquitos and Vectors

Mosquitos are a prevalent vector² in and around the study area due to its location (generally rural with various waterways and agricultural lands that use irrigation) and temperature (generally warm/hot in the spring and fall). It is reasonable to assume that vectors found in the study area include mosquitoes and small mammals, such as mice and rats, given the widespread occurrence of these insect and rodent species.

Diseases carried by warm-blooded animals, such as hantavirus³ and plague⁴, are not of concern in the study area, as their occurrence is extremely rare in the nation, state, and the Delta (University of California, Davis 2017; Center for Disease Control 2019). Given the low rate of

² A “vector” is any organism that can serve as a transmission vehicle for a disease-causing agent.

³ Hantavirus is a pulmonary disease that is carried by deer mice, white-footed mice, and rice rats, and is spread through inhalation or ingestion of contaminated particles of urine, saliva, or excrement.

⁴ Plague is a bacterial infection that is carried by fleas on small mammals and is spread through the bite of infected fleas.

infection for both hantavirus and plague in California, these diseases are not discussed further in this chapter.

The vector of most concern in the study area is the mosquito because it is considered a nuisance to the public through irritating bites and can transmit various diseases, including the West Nile virus, to birds and humans. West Nile virus is the most common vector-borne disease in California and was first detected in Imperial County in July 2003. Since then, there have been more than 7,000 human cases and over 300 reported deaths. Between 2003 and 2018, almost 95% of all West Nile virus activity in California occurred in the Central Valley and southern California. (Snyder et al. 2020).

27.3 Methods of Analysis

This section describes the methods used to evaluate public health and environmental hazards that would be associated with Project construction and operation. The BMPs described in Appendix 2D, *Best Management Practices, Management Plans, and Technical Studies*, are incorporated into the analysis of potential impacts related to public health and environmental hazards. The Authority would prepare and implement an RMP (Section 2D.3) that also includes actions to address public health and environmental hazards, including coordination with mosquito and vector control districts. The RMP monitoring procedures and protocols (Section 2D.3) are also incorporated into the impact analysis for bioaccumulation of methylmercury in fish tissue and HABs.

27.3.1. Hazards and Hazardous Materials

Potential impacts relating to hazards and hazardous materials resulting from construction and operation were evaluated based on a review of existing conditions, available technical data, applicable laws, regulations, guidelines, and standards. Existing conditions for hazards and hazardous materials in the study area are discussed in Section 27.2.1 and are identified based on a review of available data, including a Preliminary Environmental Assessment Report prepared for the Project (Appendix 27A). The analysis also incorporates the regulations and requirements for the handling, use, treatment, disposal, and remediation of hazardous materials (Appendix 4A).

In addition, the following BMPs included as part of the Project and described in more detail in Appendix 2D would be incorporated and implemented prior to and during construction and operation:

- BMP-8, Performance of Environmental Site Assessments, requires implementation of American Society for Testing and Materials (ASTM) standard Phase 1 Environmental Assessments prior to construction, and, if necessary based on the findings of the Phase 1 Environmental Assessments, subsequent ASTM-standard Phase II Environmental Site Assessments, and if necessary based on the findings of the Phase II Environmental Site Assessments, subsequent remediation investigation under oversight of state agencies would be required.

- BMP-5, Decommissioning of Natural Gas Wells, and BMP-6, Decommissioning of Water Wells, require following all applicable regulations when decommissioning natural gas wells and water wells.
- BMP-4, Verification and/or Relocation of Utilities and Infrastructure, requires that utility/infrastructure locations be confirmed, such as modifying or relocating utility lines in a manner that minimizes interruption of service. Any relocations of utilities are assumed to be included within the footprint of Alternatives 1, 2, or 3.
- BMP-11, Management of Dredged Material, requires chemical characterization of Funks Reservoir sediment prior to dredging, and design and operation of settling/dewatering basins and dredged material storage areas to avoid adverse effects on surface water and groundwater quality from pollutants potentially contained in Funks Reservoir sediment, and runoff and subsequent sedimentation and turbidity.
- BMP-12, Development and Implementation of Stormwater Pollution Prevention Plan(s) (SWPPP) and Obtainment of Coverage under Stormwater Construction General Permit (Stormwater and Non-stormwater), requires identification of potential stormwater pollution at construction sites and described practices to reduce pollutants.
- BMP-14, Obtainment of Permit Coverage and Compliance with Requirements of Central Valley Regional Water Quality Control Board Order R5-2016-0076-01 (National Pollutant Discharge Elimination System No. CAG995002 for Limited Threat Discharges to Surface Water) and State Water Resource Control Board Order 2003-0003-003-DWQ (Statewide General Waste Discharge Requirements For Discharges To Land With A Low Threat To Water Quality), requires coverage under and compliance with waste discharge requirements.
- BMP-13, Development and Implementation of Spill Prevention and Hazardous Materials Management/Accidental Spill Prevention, Containment, and Countermeasure Plans (SPCCPs) and Response Measures, and BMP-30, Development and Implementation of Hazardous Materials Management Plans, require various measures relating to the storage, handling, and disposal of hazardous materials during construction, operation, and maintenance activities.
- BMP-16, Development and Implementation of a Construction Equipment, Truck, and Traffic Management Plan (TMP), requires the identification of specific haul and access routes with all contractors and appropriate communication with various emergency entities/agencies
- BMP-21, Performance of Mosquito and Vector Control During Construction, coordination with mosquito and vector control districts of Colusa, Glenn, and Yolo Counties to support actions that minimize the potential for mosquito breeding.
- BMP-20, Preparation and Implementation of Blast Plans for Worker Health and Safety, regulations and requirements for safe transportation, handling, and use of explosives during blasting, including redundant communication protocols and implementing distance requirements.

- BMP-25, Preparation of an Emergency Action Plan for Reservoir Operations, will be prepared pursuant to the California Office of Emergency Services and will include emergency notification flowcharts, notification procedures, inundation maps, and emergency response protocols for notifying downstream entities if an emergency release is anticipated.

Chapter 6 evaluates the potential for hazardous materials impacts on water quality and discusses the regulatory requirements and BMPs (e.g., BMP-12) to reduce water quality impacts during Project construction and operation. The methods for the analysis of potential effects from Valley Fever are discussed in Chapter 20, *Air Quality*. Effects on emergency response times and the provision of emergency public services are described in Chapter 26, *Public Services and Utilities*.

27.3.2. Wildfire Hazards

Potential impacts relating to wildfire hazards resulting from construction and operation were evaluated based on a review of existing conditions, available technical data, and the applicable laws, regulations, guidelines, and standards. The impact analysis associated with wildfires uses data from various state sources to determine the proximity of the Project facilities to various wildfire responsibility and risk locations. CAL FIRE data for State Responsibility Areas were used to determine if the Project facilities are located in or near a designated State Responsibility Area (Figure 27-1). Glenn and Colusa County data from CAL FIRE were used to determine if the Project facilities are located in or near a VHFHSZ (Figure 27-2). In addition, wind data, as well as the topography, were considered.

In addition, the following BMPs included as part of the Project and described in more detail in Appendix 2D, *Best Management Practices, Management Plans, and Technical Studies*, would be implemented prior to construction:

- BMP-18, Development and Implementation of Fire Safety Plans for Prevention and Suppression/Control During Construction and Maintenance, requires the preparation of a fire safety plan that includes precautions during high-fire danger, a list of fire suppression equipment and water supply to have on hand, and descriptions of actions that would reduce the risk of ignition and expedite the immediate control of an accidental fire.
- BMP-19, Development and Implementation of Worker Occupational Health and Safety Plans, requires the development of a construction emergency action plan, including an emergency notification process and other emergency response protocols and requires emergency equipment to be kept on-site to keep construction workers safe.
- BMP-16, Development and Implementation of a Construction Equipment, Truck, and Traffic Management Plan (TMP), requires the identification of access and emergency routes and ensures construction equipment is maintained to be in good working conditions and in compliance with local, state, and federal regulations.

The Recreation Management Plan (Section 2D.8), includes measures to avoid fires and reduce fire risk in the recreation areas, including prohibiting smoking, maintaining fire suppression equipment onsite, noticing fire prevention awareness and publicly noticing red flag warnings.

Chapter 26, *Public Services and Utilities*, provides information on local first responder stations and CAL FIRE stations in the study area.

27.3.3. Bioaccumulation of Methylmercury in Fish

Potential impacts relating to bioaccumulation of methylmercury in fish resulting from construction and operation were evaluated based on a review of existing conditions, available technical data, and applicable laws, regulations, guidelines, and standards. For the purpose of the analysis in this chapter, the findings from Chapter 6 for potential increases in methylmercury are summarized for Alternatives 1, 2, and 3. A qualitative evaluation is conducted regarding the potential impact on public health due to a potential for increases in methylmercury bioaccumulation in fish in the study area.

27.3.4. Harmful Algal Blooms

Potential impacts relating to HABs resulting from construction and operation were evaluated based on a review of existing conditions, available technical data, and applicable laws, regulations, guidelines and standards. Chapter 6 provides a qualitative evaluation of whether construction and operation of the Project would result in HABs in Sites Reservoir and an increase in frequency of HABs in the Delta. For the purposes of this analysis, the initial filling of the reservoir is considered part of construction. This analysis includes environmental variables generally considered to be the primary drivers of HABs formation and maintenance: nutrient levels, water temperature, and water column stability.

For the purpose of the HABs impact analysis in this chapter, the findings from Chapter 6 are summarized for each alternative and a qualitative determination is made as to whether public health may be affected due to increased exposure to HABs (cyanotoxins) in the study area. With the exception of the initial filling/inundation of Sites Reservoir, construction of the Project would not have any effect with regard to HABs because construction activities would not elicit changes in surface waterbodies in the study area that would make them more conducive to HABs formation relative to the No Project Alternative. Accordingly, no other aspect of Project construction is considered further in the HABs analysis.

As discussed in Chapter 6, it was determined that Shasta Lake, Lake Oroville, Folsom Lake, and San Luis Reservoir would not experience an increase in the frequency of HABs due to operation of the Project because modeling results indicate that substantial reductions in storage in these reservoirs relative to baseline conditions would not occur. Accordingly, these reservoirs are not addressed in this analysis.

27.3.5. Mosquitos and Vectors

Potential impacts relating to mosquitos and vectors resulting from construction and operation were evaluated based on a review of existing conditions, available technical data, applicable laws, regulations, guidelines, and standards. The potential for vectors to cause public health hazards and the need for vector control during construction and operation are qualitatively discussed. BMP-21 would be implemented prior to and during construction.

27.3.6. Thresholds of Significance

An impact on public health and environmental hazards would be considered significant if the 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 accident conditions involving the release of hazardous materials into the environment.
- 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.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.
- If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:
 - Substantially impair an adopted emergency response plan or emergency evacuation plan.
 - Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
 - Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
 - Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

In addition, the following potential hazards to public health were evaluated.

- Result in an impact on public health related to methylmercury bioaccumulation in fish.
- Result in an impact on public health due to an increase in HABs.
- Result in exposure to nuisance problems, or from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses.

27.4 Impact Analysis and Mitigation Measures

Impact HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials

No Project

Under the No Project Alternative, the operation of the existing water conveyance facilities (TC Canal, RBPP, and GCID Main Canal) would continue. Operations and maintenance of water conveyance facilities and the associated equipment involve the use of hazardous materials such as fuels, lubricants, and oils. This type of use is not considered routine because it is typically intermittent and infrequent (i.e., on an as-needed basis). The transport, handling, use, and disposal of these hazardous materials would be in compliance with applicable regulations.

Existing land uses and the potential hazards and hazardous materials previously described in Section 27.2.1 would still be present. Agricultural, commercial, and industrial operations would continue to use and store various hazardous materials. Any potential hazards related to quarries (e.g., contaminated groundwater) and railroads (e.g., total petroleum hydrocarbons) would continue to be present. It is assumed all land uses and operations would comply with applicable laws and regulations regarding the transport, handling, use, and disposal of hazardous materials according to the CUPA and California Occupational Safety and Health Administration (Cal-OSHA) requirements.

Significance Determination

The No Project Alternative would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials because the hazardous materials would continue to be used at the existing water conveyance facilities and agricultural operations on an intermittent basis. Further, the transport, handling, use, and disposal of hazardous materials and hazardous wastes would be in compliance with all applicable federal, state, and local laws and regulations. Accordingly, the No Project Alternative would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. There would be no impact/no effect.

Alternatives 1, 2, and 3

Construction and Operation

Construction of Alternatives 1, 2, and 3 would involve the handling and use of different quantities of commonly used hazardous materials, such as fuels, lubricants, and oils. The hazardous materials handled and used during construction would primarily be associated with operating construction vehicles and equipment. Onsite quarrying would also involve the use of hazardous materials during blasting (i.e., explosives). The quantities of hazardous materials required for construction may differ between Alternatives 1, 2, and 3. For example, construction of the South Road, TRR West, a longer Dunnigan Pipeline, and the Sacramento River discharge for Alternative 2 may require the use of more hazardous materials relative to Alternatives 1 and 3. Most hazardous materials would be transported to construction sites using rural roads along the construction route and would be used in remote areas that are not accessible to the public. For construction on private property that is closer to the public (e.g., GCID Main Canal system

upgrades), hazardous materials would be securely stored in fenced areas inaccessible to the public. Therefore, the public would either not be located in the areas of handling, use, and transport of hazardous materials or would not have access to the hazardous materials used during construction.

All hazardous materials used for construction of Alternative 1, 2, or 3 would be handled, stored, and used following regulations of the regulating or permitting agency, including county CUPAs, Cal-OSHA, Mine Safety and Health Administration, and Bureau of Alcohol, Tobacco, Firearms, and Explosives. In addition, the implementation of BMP-12, BMP-13, and BMP-30 would also manage the proper handling of hazardous materials and prevent or control spills of hazardous materials through specific equipment, workforce, procedural, and training requirements. Furthermore, California Highway Patrol requires a hazardous materials transport license for the transport of explosives, as identified in BMP-20.

Under operation of Alternatives 1, 2, and 3, most of the handling and disposal of hazardous materials would involve relatively small quantities of fuels, lubricants, and oils needed to operate and maintain equipment at each facility. Maintenance and repair of equipment would be completed at each facility, or the equipment would be transported to nearby onsite facilities. Hazardous materials used under operating conditions would be securely stored in fenced areas inaccessible to the public. Currently the areas around existing facilities are inaccessible to the public (e.g., Funks Reservoir and RBPP) as it is standard operating procedure to keep the public out of operating infrastructure.

Accidental releases of quantities of hazardous substances during Project construction or operation activities could contaminate soils and degrade the quality of surface water and groundwater or be released into the air. The transportation, handling, use, and disposal of hazardous materials during Project construction and operation would be compliant with applicable regulations enforced by agencies such as the county CUPAs and Cal-OSHA, CHP, and Bureau of Alcohol, Tobacco, Firearms, and Explosives. These regulations require accounting for the types and quantities of materials on site, direct the proper use and disposal of the materials, and are meant to prevent the type of circumstances that would lead to a potentially significant hazard to the public. The public would be precluded from construction areas and operational facilities where hazardous materials would be used or stored.

CEQA Significance Determination

The public would either not be located in the areas of handling, use, and transport of hazardous materials or would be prevented from direct access to those areas during construction or operation. Furthermore, the transportation, handling, and disposal of hazardous materials during construction will be in accordance with BMP-12, BMP-13, and BMP-30 and compliant with regulations enforced by county CUPAs, Cal-OSHA, and other regulating and permitting agencies. The magnitude of potential impacts related to the use, handling, and storage of hazardous materials may be greater under Alternative 2 because the construction of the additional facilities may require larger quantities of the hazardous materials. Operation and maintenance would regularly use potentially hazardous materials (e.g., fuels, lubricants), which would also be regulated by county CUPAs and Cal-OSHA. Impacts associated with construction and operation of Alternative 1, 2, or 3 regarding the routine handling, use, or storage of hazardous materials would be less than significant.

NEPA Conclusion

Construction and operation effects associated with the routine handling, use, or storage of hazardous materials would be the same as described above for CEQA. Construction and operation of Alternative 1, 2, or 3 would not create a significant hazard to the public or the environment as compared to the No Project Alternative. The public would be prevented from accessing areas of handling, use, and transport of hazardous materials. In addition, the transportation, handling, and disposal of hazardous materials during construction and operation will be in accordance with applicable regulations and compliant with regulations enforced by CUPAs, OSHA, and other regulating and permitting agencies (BMP-12, BMP-13, and BMP-30). Construction and operation of Alternative 1, 2, or 3 would have no adverse effect regarding the routine handling, use, or storage of hazardous materials.

Impact HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

No Project

Under the No Project Alternative, the operations of the existing TC Canal, RBPP, and GCID Main Canal would continue and Sites Reservoir would not be constructed. The potential to accidentally release hazardous materials through excavation or dewatering in contaminated soil or ground water would not occur under this alternative because grading and excavation for road and railroad siphon improvements, Dunnigan Pipeline, and TRR East or West would not occur. While existing facilities involve the handling and use of different quantities of commonly used hazardous materials (e.g., fuels, lubricants, and oils), the transport, handling, use, and disposal of these hazardous materials are in compliance with applicable regulations. None of these facilities would likely be affected by preexisting hazardous materials sites because none have been identified in the study area. No new facilities would be constructed and operated.

Significance Determination

The No Project Alternative would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The existing facilities are not located on known hazardous materials sites and activities (e.g., excavation) that would release hazardous materials from preexisting hazardous sites would not occur under the No Project Alternative. There would be no impact/no effect.

*Alternatives 1, 2, and 3*Construction

Construction personnel, the public, and the environment could be inadvertently exposed to preexisting contamination during construction of Project facilities through activities such as soil disturbance, dredging, or the demolition of structures. If preexisting hazardous materials conditions exist in soil, sediment, groundwater, or structural materials, they could be accidentally released through construction activities at the inundation area, Funks Reservoir, TRR East or West and the associated PGP and pipelines, TC Canal intake, Dunnigan Pipeline, CBD outlet, and GCID system upgrades. Construction of Project facilities would involve the handling and

use of different quantities of commonly used hazardous materials, such as fuels, lubricants, and oils that, if released, could cause harm to human health and/or the environment.

Groundwater Contamination

Although not specifically identified in the environmental records search, there is potential for construction to discover and/or exacerbate previously unknown groundwater contamination. Three quarries (crushed stone, sand and gravel) are located adjacent to Project facilities. While the records search did not identify any violations associated with these quarries, groundwater degradation and contamination can occur as a result of quarrying. Quarries can disrupt the existing movement of surface water and groundwater by interrupting the natural water recharge. Dewatering during quarrying activities can lower the water table and changes groundwater flow directions. Measures to control runoff and sedimentation are required to prevent the deterioration of groundwater (Green et al. 2003:216; Ekmekci 1990:4).

Construction and improvements to Maxwell Sites Road and other existing roads are expected to involve average excavation depths of 14 inches to several feet below the ground surface. Because groundwater has been documented at depths between 10 and 18 feet, there is limited potential for excavation related to the road improvements to expose construction personnel and the public to contaminated groundwater that could cause adverse health effects.

Environmental contamination liabilities would be assessed prior to parcel acquisition. In accordance with BMP-8, a Phase I environmental site assessment would be prepared for Alternative 1, 2, or 3 and would include conducting preconstruction surveys to assess the potential for hazardous substance contamination. If the Phase I environmental site assessment indicates likely site contamination, a Phase II environmental site assessment would be performed and would include soil and groundwater testing at known or suspected contaminated areas. If contamination is uncovered, remediation and/or containment of contamination would be required, and a remediation investigation would be conducted and the site remediated per state and federal guidelines. Lastly, BMP-14 would require groundwater encountered during any excavation be stored on site in bermed areas or Baker tanks before being discharged onto suitable land where it would infiltrate back into the water table. Therefore, the potential of the Project to create a significant hazard involving the accidental release of contaminated groundwater is considered low.

Agricultural and Railroad Land Uses

As previously discussed, much of the study area was and still is used for agricultural purposes. Soils contaminated with pesticides, herbicides, and other agricultural chemicals, even though properly applied, may be present in portions of the study area where grading and excavation would occur. Maxwell Sites Road, McDermott Road, Road 68, Road 69, and Delevan Road cross agricultural land, and the TRR East would be constructed in an existing orchard. In addition, the Dunnigan Pipeline to the CBD under Alternatives 1 and 3, and to the Sacramento River under Alternative 2, would extend through existing agricultural lands. Ground disturbing activities such as grading and excavation may expose construction personnel and the general public to hazardous materials that may result in adverse health effects.

The only known commercial/industrial land uses in the study area are two PG&E facilities: a PG&E substation approximately 0.20 mile west of the GCID Main Canal and the PG&E Colusa Generating Station site on McDermott Road. Other commercial and industrial land uses have the potential to be associated with PECs, storage tanks containing hazardous materials as well as solid waste storage and disposal areas. Some portions of the study area could have soils contaminated with PECs or PCBs where grading and excavation would occur.

Similarly, if soils adjacent to and underneath railroad lines are disturbed during construction, workers, the public or the environment could be exposed to heavy metals, total petroleum hydrocarbons as diesel, fuel oil, polynuclear aromatics, and PCBs. This disturbance would include excavation required for improvements to the railroad siphon near Willows and the installation of the Dunnigan Pipeline that would cross the railroad line adjacent to Road 99W. These construction activities would not disrupt rail service or the actual rail lines. Implementation of BMP-4 would include preconstruction coordination with railroad personnel to reduce potential conflicts between railway operations and Project construction activities.

BMP-8 would include a Phase 1 environmental site assessment which would identify potential sites of concern within the construction footprint. If indicated, soil testing and evaluation would be conducted (Phase II environmental site assessment) and, if needed, containment or removal of contaminated soils (remediation investigation). These measures would reduce the potential of the Project to create a significant hazard involving the accidental release of agricultural chemicals and exposure to hazardous materials in contaminated soils near railroad lines.

Aerially Deposited Lead

During Project construction, there would be potential for encountering ADL at the Dunnigan Pipeline near County Road 99W. Implementation of BMP-8 would entail completion of a Phase I environmental site assessment to identify the locations of older roads that were heavily traveled when leaded gasoline was in use. If the potential presence of ADL is indicated, a Phase II environmental site assessment would confirm the presence of ADL and if ADL levels are above regulatory thresholds, a remediation investigation would be conducted for identification and remediation of contaminated soils. These measures would reduce the potential to expose workers or the environment to a significant hazard involving the accidental release of ADL.

Funks Reservoir

Funks Reservoir receives water from Sacramento River via the TC Canal and from Funks Creek. Funks Reservoir and Funks Creek are not identified as 303(d) impaired (Appendix 6A, *Water Quality Constituents and Beneficial Uses*). Funks Reservoir is currently limited access to authorized personnel only and therefore the public would not be exposed. The Project would involve excavating up to 740,000 cubic yards of sediment from the existing Funks Reservoir that has accumulated since its construction. The excavated sediment would be stockpiled adjacent to Funks Reservoir and may be used for construction purposes, or, if suitable, graded in place and revegetated. If contaminants are present in sediment, these toxicants would be temporarily disturbed through dredging activities at Funks Reservoir. BMP-11 and BMP-12 require chemical evaluation of water and sediment per standards before dredging to determine the suitability of dredged material for beneficial use and determine compliance with water quality standards. If

dredged materials are above regulatory thresholds for reuse, they would be taken to a certified landfill for appropriate disposal.

Lead-Based Paint and Asbestos Containing Materials

The demolition and clearing of houses, other buildings and structures (e.g., barns, sheds, and silos), septic tanks and other USTs, roads, fences, and utilities in the community of Sites during construction could expose workers and the environment to hazardous materials such as LBP, ACM, and PCBs. Building materials manufactured before the 1980s could contain ACM and/or LBP. These materials are known to be hazardous to human health and could be released if disturbed during demolition. Confirmation of the construction dates of buildings and structures would be required; however, it is likely there are buildings and structures older than 1980. If buildings and structures were constructed before 1980, the building materials would be tested for LBP and ACM prior to demolition. Asbestos-containing pipe in utilities and LBP associated with steel structures, utility openings, and buildings may be encountered during demolition.

BMP-8 includes provisions for the potential to encounter lead or asbestos in building materials. Pre-demolition surveys of structures to be demolished would be conducted to characterize hazardous materials (including ACM and LBP) and remove and dispose of them in accordance with applicable regulations. Therefore, the potential to expose workers or the environment to a significant hazard involving the accidental release of ACM or LBP is reduced.

No demolition or relocation would be required for the TRRs and associated facilities, Funks Reservoir-related facilities, or facilities associated with conveyance to the Sacramento River (i.e., Dunnigan Pipeline and CBD).

Operation

Project operations would not expose workers or the environment to previously unknown hazardous materials sites or conditions. BMP-8 would include a Phase I environmental site assessment before construction, and if warranted, a Phase II environmental site assessment to identify and evaluate the site and a remediation investigation to address remediation before Project operation. These measures would reduce the potential for operation of the Project to create a significant hazard involving the accidental release of known or unknown hazardous materials because any site identified prior to construction would then be remediated.

CEQA Significance Determination

Prior to construction of Alternative 1, 2, or 3, Phase I environmental site assessment(s) are required to identify potential hazardous materials sites in the Project area (BMP-8). If needed, the Phase II environmental site assessment and remediation investigation would be performed to test and remediate soil and groundwater of contamination according to federal and state regulations (BMP-8). Furthermore, as discussed under Impact HAZ-1, during construction the public would be prevented from accessing areas where hazardous materials would be used, which would reduce the likelihood of accidents or upsets resulting in a significant hazard to the public. The transportation, handling, and disposal of hazardous materials during construction and operation will be in accordance with applicable regulations and compliant with regulations enforced by CUPAs, OSHA, and other regulating and permitting agencies (BMP-12, BMP-13, and BMP-30) which would also reduce the risk of accidents and upsets. Environmental site

assessments would identify and remediate (if necessary) potential hazardous materials sites prior to operation of Alternative 1, 2 or 3, thus eliminating the likelihood of accidents or upsets as a result of existing potential hazardous materials during operations. Construction and operation of Alternative 1, 2 or 3 would result in impacts that are less than significant regarding the potential to create a significant hazard to the public or environment involving the accidental release of hazardous materials.

NEPA Conclusion

Construction and operation effects associated with the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be the same as described above for CEQA. Construction and operation of Alternative 1, 2, or 3 would not create a significant hazard to the public or the environment as compared to the No Project Alternative. The public would be prevented from accessing areas where hazardous materials would be used, which would reduce the likelihood of accidents or upsets resulting in a significant hazard to the public. Furthermore, implementation of BMP-8, BMP-12, BMP-13, and BMP-30 are required. Construction and operation of Alternative 1, 2, or 3 would have no adverse effect from creating a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Impact HAZ-3: 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

No Project

Under the No Project Alternative, the operations of the existing TC Canal, RBPP, and GCID Main Canal would continue. None of these facilities are known to occur on or near a hazardous materials site listed pursuant to Government Code Section 65962.5 and would therefore not create a significant hazard to the public or environment.

Significance Determination

The No Project Alternative would not create a significant hazard to the public or the environment because the existing facilities are not located on a hazardous materials site listed pursuant to Government Code Section 65962.5. There would be no impact/no effect.

Alternatives 1, 2, and 3

Construction and Operation

Project facilities would not be located on a hazardous materials site listed pursuant to Government Code Section 65962.5. The results of the environmental records search and database review did not indicate differences between Alternatives 1, 2, and 3 with respect to the location of potential hazardous materials sites compiled pursuant to Government Code Section 65962.5.

Other properties identified in the environmental records search included facilities that are regulated as hazardous waste generators and containing ASTs (farms, PG&E substation); two sites that were previously in violation of proper record keeping and hazardous waste reporting

requirements; and a detergent spill on McDermott Road. Three quarries (Colusa Sandstone, Brownstone Quarry, and Thompson Quarry) were also identified in or near the study area, but the environmental records search revealed no outstanding violations or unaddressed releases of hazardous substances. All other facilities and sites listed were either in compliance or a cleanup had been completed at the time of the records search. Therefore, construction and operation of the Project would not occur on a site that is included on the lists of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

CEQA Significance Determination and Mitigation Measures

None of the existing or planned Project facilities are located on or near a property 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. In addition, the required environmental site assessment (BMP-8) would further reduce the potential impact of encountering a previously unknown hazardous materials site as a result of unlisted septic tanks, water wells, other underground storage devices, or unreported hazardous materials spills during construction. Therefore, construction and operation of Alternative 1, 2, or 3 would not create a significant hazard to the public or environment as a result of being located on site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and impacts would be less than significant.

There would be no impacts under operating conditions because any unknown soil or groundwater contamination that may have been discovered during construction would be removed and remediated prior to operation.

NEPA Conclusion

Effects associated with construction and operation being located on a site that is included on the lists of hazardous materials sites compiled pursuant to Government Code Section 65962.5 would be the same as described above for CEQA. Construction and operation of the Project would not occur on a site that is included on the lists of hazardous materials sites compiled pursuant to Government Code Section 65962.5. As compared to the No Project Alternative, the construction and operation of Alternative 1, 2, or 3 would have no adverse effect associated with the creation of a significant hazard to the public or the environment from a known hazardous materials site and operation would have no effect.

Impact HAZ-4: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

No Project

The No Project Alternative would not require traffic controls or detours and would not be expected to result in significant impacts on emergency response or evacuation plans. Operations of the existing TC Canal, RBPP, and GCID Main Canal would continue and there would be no effect on emergency or evacuation routes. People would be notified via emergency personnel and communications if evacuations were needed.

The counties and municipalities in the study area would continue to coordinate with each other in the event of an emergency requiring an evacuation. County and municipality emergency plans under the No Project Alternative would be the same as those for existing conditions.

Significance Determination

The No Project Alternative would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. There would be no impact/no effect.

Alternatives 1 and 3

Construction

During construction for Alternatives 1 and 3, equipment and materials would be transported on local roads, including on over-sized vehicles. During construction of the bridge, access to the west side of the Sites Reservoir would be maintained through other existing routes and the shoofly. The realignment of Huffmaster Road and bridge construction would be completed prior to the demolition and removal of the affected segment of Huffmaster Road and Sites Lodoga Road to maintain access. Several existing roads would be improved to support the construction of Sites Reservoir facilities (e.g., main dams and saddle dams) and enable vehicles to safely pass one another if needed. After construction, most of these roads would be maintained and available for public use. There are no formally adopted emergency routes or plans in Glenn and Colusa Counties. Some construction traffic would occur around Yolo County rural roads designated in Zones 6 and 7, but it would involve relatively few construction trips that would be infrequently dispersed over the construction duration (Chapter 18). In addition, tunneling would occur under I-5 so as not to interfere with I-5. Furthermore, BMP-16 would be implemented prior to and during construction activities, including the development and implementation of the TMP(s) (further discussed in Chapter 18, *Navigation, Transportation, and Traffic*). The TMP details requirements for signage, emergency services notifications, and traffic controls and would have provisions that require compliance with construction notification procedures for counties, sheriff's departments, public works, and fire and police departments. These plans would include emergency notification flowcharts, procedures for construction area evacuation in case of a fire, and the identification of emergency routes. Implementation of the TMP(s) would support continued emergency access during construction.

Operation

The operation of Alternatives 1 and 3 would be the same because both alternatives include the same facilities. Generally, operation and maintenance activities would involve employees commuting to facilities on a daily, annual, periodic (as needed), or long-term basis. Operation of Alternatives 1 and 3 facilities could increase traffic on local roads when regular and routine tasks are scheduled. However, these activities would be spread over 24 hours and consist of a relatively low number of individuals with few vehicles and equipment, and therefore would not likely affect emergency access or evacuation routes.

In the highly unlikely event of an emergency release at Sites Reservoir, as described in Chapter 5, *Surface Water Resources*, the Emergency Action Plan for Reservoir Operations would be

implemented. This plan is required pursuant to the California OES and includes emergency notification procedures and emergency response protocols for notifying downstream entities.

Operation is expected to increase traffic on local roads (Maxwell Sites Road, Sites Lodoga Road) leading to the recreation areas at the Sites Reservoir (Chapter 18). Increased traffic is expected primarily from Fridays through Sundays during the primary recreation season (i.e., May 1 through September 20). Roadway improvements for local access roads would be designed to provide safe, efficient travel and be consistent with state and local road design guidelines. The bridge crossing under Alternatives 1 and 3 would provide an evacuation route in the event of an emergency similar to that currently available on Sites Lodoga Road. Operation of the Dunnigan pipeline and CBD outlet would be primarily underground and would not interfere with emergency plans or evacuation routes.

CEQA Significance Determination and Mitigation Measures

During construction, existing roads would be open and maintained and the shoofly would offer an evacuation route similar to that currently offered by Sites Lodoga Road. Roadway improvements during construction would keep roadways safe and accessible at all times. In addition, much of the study area lacks an adopted emergency response plan or evacuation plan. Furthermore, BMP-16 requires that a TMP(s) which includes requiring advance notification to local jurisdictions of the location of construction work be developed and implemented before and during the construction period. During operation roadway improvements and the bridge would provide evacuation routes in the event of an emergency similar to that currently available on Sites Lodoga Road. Therefore, construction and operation of Alternatives 1 and 3 would not impair implementation of or physically interfere with any adopted emergency response plan or emergency evacuation plan and impacts would be less than significant.

NEPA Conclusion

Construction and operation effects on adopted emergency response or emergency evacuation plans would be the same as described above for CEQA. Roadway improvements during construction would keep roadways safe and accessible, similar to that of the No Project Alternative. Existing roads would be open and maintained during construction of Alternative 1 or 3, and the shoofly would offer an evacuation route similar to that currently offered by Sites Lodoga Road. During operation, roadway improvements and the bridge would provide evacuation routes in the event of an emergency, similar to that of the No Project Alternative. Construction and operation of Alternative 1 or 3 would have no adverse effect associated with the implementation of or physical interference with adopted emergency response or emergency evacuation plans.

Alternative 2

Construction and Operation

Road access during construction would be similar between Alternatives 1, 2, and 3. The main differences under Alternative 2 are the realignment of Huffmaster Road and the construction and operation of the South Road, as well as a longer Dunnigan Pipeline crossing SR 45. All other permanent access, maintenance, and construction roads would be the same for the reservoir facilities between Alternatives 1, 2, and 3.

Sites Lodoga Road would be kept open during the construction of the realigned Huffmaster Road and South Road to maintain access between Maxwell and Lodoga, including for the purposes of emergency responses and evacuations. The new South Road would be more than twice the length of the existing route to Lodoga but would still serve as an emergency route. There are no formally adopted emergency routes or plans in Glenn and Colusa Counties. Some construction traffic would occur around Yolo County rural roads designated in Zones 6 and 7, but it would involve relatively few construction trips that would be infrequently dispersed over the construction duration (Chapter 18). Similar to Alternatives 1 and 3, tunneling would occur under I-5 so as not to interfere with I-5. Under Alternative 2, boring may be required under SR 45 if open cut is not possible. Given the above, it is expected construction would not physically interfere with an adopted emergency response plan or emergency evacuation plan. Furthermore, as described above for Alternative 1 or 3, BMP-16 would be implemented.

CEQA Significance Determination

Alternative 2 would have similar impacts as described above for Alternatives 1 and 3. Either the lack of adopted plan(s) or keeping roads open during construction would ensure no physical interference with an adopted emergency response plan or emergency evacuation plan. Furthermore, construction of Alternative 2 would involve the development and implementation of a TMP(s) that would require advance notification to local jurisdictions of the location of construction work, as well as implementation of other safety measures to ensure continued access. Effects on emergency routes would be greater for operation and maintenance under Alternative 2 because of the longer South Road length; however, it would still provide an emergency route, if needed. Despite the smaller reservoir under Alternative 2, similar recreational amenities would attract the same number of visitors. Roadway improvements would help keep roadways safe and accessible at all times. Therefore, construction and operation of Alternative 2 would not impair implementation of or physically interfere with any adopted emergency response plans or emergency evacuation plans. The impact would be less than significant.

NEPA Conclusion

Construction and operation effects on adopted emergency response or emergency evacuation plans would be the same as described above for CEQA. Roadway improvements during construction would keep roadways safe and accessible, similar to that of the No Project Alternative. During construction of Alternative 2, existing roads would be open and maintained. During operation, the longer South Road would still provide an evacuation route in the event of an emergency, similar to that of the No Project Alternative. Construction and operation of Alternative 2 would have no adverse effect associated with the implementation of or physical interference with adopted emergency response or emergency evacuation plans.

Impact HAZ-5: Be located in or near state responsibility areas or lands classified as very high fire hazard severity zones and (*the following impact analysis is subdivided into lettered components to address the varied fire hazards associated with this threshold*):

Impact HAZ-5a: Substantially impair an adopted emergency response plan or emergency evacuation plan

No Project

Under the No Project Alternative, the current operations of existing conveyances and infrastructure and existing land uses would continue and would not impair an adopted emergency response plan or emergency evacuation plan. People in or near a State Responsibility Area or VHFHSZ would be notified via emergency personnel and communications if evacuations were needed due to wildfire hazards. The counties and municipalities in the study area would continue to coordinate with each other in the event of a wildfire-related emergency requiring an evacuation.

Significance Determination

The No Project Alternative would not substantially impair an adopted emergency response plan or emergency evacuation plan within a state responsibility area or VHFHSZ. There would be no impact/no effect.

Alternatives 1, 2, and 3

Alternatives 1, 2, and 3 would involve the construction and operation of facilities in a State Responsibility Area. The realigned Huffmaster Road, under all alternatives, does not occur within a VHFHSZ, while portions of the South Road, under Alternative 2, are located in a VHFHSZ as shown on Figure 27-2. Section 27.2.1.7 discusses general evacuation and emergency routes in Glenn and Colusa Counties, as there are no formally identified routes.

Construction and Operation

As described above under Impact HAZ-4, construction access roads would be available to construction workers during construction and would not impair an emergency response plan or emergency evacuation plan under Alternatives 1, 2, and 3. In addition, the TMP(s) would allow emergency access during construction. The existing Sites Lodoga Road and Huffmaster Road would remain in place throughout construction for emergency vehicles to travel between Lodoga and Maxwell and allow residential access along the existing Huffmaster Road. Furthermore, the Sites Lodoga temporary detour road (shoo-fly) would allow emergency responders and local residents to travel between Lodoga and Maxwell. The bridge crossing the reservoir under operation of Alternatives 1 and 3 would provide access to the west side of the reservoir, which is the side closest to a VHFHSZ. The bridge would provide emergency access if a wildland fire were to occur in the VHFHSZ, thus creating an available emergency route for use in case of emergency. The realignment of Huffmaster Road would partially occur in a VHFHSZ, but this realignment would be used for residential purposes under Alternatives 1 and 3. It would not be a primary thoroughfare or generate a higher volume of traffic than the current Huffmaster Road

under Alternatives 1 and 3. The realigned road provides additional access out of the VHFHSZ in case of emergency.

Similar to Alternatives 1 and 3, there would be access roads during construction and operation under Alternative 2, as described above via Sites Lodoga Road and Huffmaster Road. Construction and operation impacts would be the same as described above under Alternatives 1 and 3, except for a difference with the South Road and Huffmaster Road under operations. Both roads are located in a VHFHSZ. Huffmaster Road would have more traffic under operations as it would replace Sites Lodoga Road and connect to the South Road as part of the thoroughfare between Lodoga and Maxwell. These roads would not impair an existing emergency response plan or evacuation route. They would be used as an emergency route, as described under Impact HAZ-4 and would be used as evacuation routes in the event of a wildfire in the VHFHSZ.

CEQA Significance Determination and Mitigation Measures

Construction or operation of Alternatives 1, 2, and 3 would not substantially impair an adopted emergency response plan or emergency evacuation plan for facilities located in a State Responsibility Area or VHFHSZ. The required TMP(s) (BMP-16) would allow emergency routes and access during construction. The access roads and the public roads, including the bridge (Alternatives 1 or 3) and the South Road (Alternative 2), would continue to provide access in an emergency under both construction and operating conditions. Therefore, construction and operation impacts on emergency access would be less than significant under Alternatives 1, 2, and 3.

NEPA Conclusion

Construction and operation effects on the implementation of an adopted emergency response plan or emergency evacuation plan for facilities within a State Responsibility Area or VHFHSZ would be the same as described above for CEQA. Construction or operation of Alternatives 1, 2, and 3 would not substantially impair an adopted emergency response plan or emergency evacuation plan for facilities located in a State Responsibility Area or VHFHSZ as compared to the No Project Alternative. The required TMP(s) (BMP-16) would allow emergency routes and access during construction. During construction and operation, access roads and the public roads, including the bridge (Alternatives 1 or 3) and the South Road (Alternative 2), would continue to provide access in an emergency, similar to that of the No Project Alternative. There would be no adverse effect from construction and operation of Alternatives 1, 2, and 3.

Impact HAZ-5b: Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire

No Project

Under the No Project Alternative, the current operations of existing conveyances and infrastructure would continue and would not expose occupants of the Project area to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire more than the current risk, as discussed in Section 27.2.2. Occupants of the community of Sites would continue to be adjacent to or within an identified State Responsibility Area or VHFHSZ. Land use management

that currently exists in the study area, such as grazing or active agricultural crops, would limit vegetation and serve to reduce the potential wildfire risk.

Significance Determination

The No Project Alternative would not exacerbate wildfire risks, and thereby expose people to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors. There would be no impact/no effect.

Alternatives 1 and 3

Construction

Most construction for Alternatives 1 and 3 would not occur within a State Responsibility Area or a VHFHSZ (Table 27-2 and Section 27.2.2) under Alternatives 1 or 3. The residents of the community of Sites would be relocated prior to the start of construction and therefore would have no ability to be exposed to wildfire risk or pollutants generated by potential wildfires during construction. All buildings would be demolished and vegetation in the inundation area would be cleared prior to active construction and therefore would reduce fuel sources associated with vegetation. Existing residents along Huffmaster Road would continue to be adjacent to a VHFHSZ (Figure 27-2) or within an identified State Responsibility Area (Figure 27-1). Construction of realigned Huffmaster Road would include developing a new gravel road using various pieces of heavy equipment and water trucks through moderately steep terrain. Ignition sources in this area, as with other areas with grasslands, during construction could include equipment striking a rock or vegetation touching hot equipment or vehicles. The area would be graded and cleared of vegetation prior to additional construction, thus reducing the potential for vegetation to act as an ignition source. Furthermore, BMP-18 will be implemented and includes developing a list of the required onsite fire-suppression equipment and tools; procedures and policies for controlling any onsite fires; specific direction for onsite water supply; and a description of other actions that would reduce the risk of ignition and immediately control an accidental fire. In addition, BMP-19 requires medical and emergency equipment on-site. In the unlikely event of an accidental fire, workers on site would have adequate preparation, equipment, and plans to reduce the possibility of exacerbating wildfire risks. Construction workers and residents would not be exposed to a substantial increase in pollutant concentrations.

Operation

Alternatives 1 and 3 would not have permanent occupants; therefore, operations would not expose occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

Recreationists and employees would not be permanent occupants, and therefore if a wildfire were to occur it would not expose occupants to substantial increases in pollutant concentrations. During operations for Alternatives 1 and 3, people would be working in the administrative and operations building adjacent to Funks Reservoir. The terrain is flat in this location and the vegetation is generally not dense, thus limiting the overall potential for the uncontrolled spread of a wildfire. Implementation of BMP-18 will require that fire safety plans are prepared for Alternatives 1 and 3 facilities in Glenn and Colusa Counties. Appropriate emergency plans, equipment (e.g., fire extinguishers), and smoking restrictions would be established in the

operational facilities where staff would be located. The fire safety plans would also provide a list of actions that would reduce the risk of ignition of an accidental wildfire and include precautions for operations staff during high-fire danger. The staff will require emergency and safety equipment is located on site and in vehicles; this would support worker safety and allow for an immediate response in the event of a wildfire-related emergency. The public would use the recreation areas and day-use boat ramp on a temporary or transient basis. The number and extent of people visiting would depend on multiple variables including the availability and location of other recreational opportunities and the weather. It is expected that the public would use the recreation areas in the summer, during Memorial Day and Labor Day. The recreation areas are located adjacent to steep slopes, which can increase the potential for the uncontrolled spread of a wildfire; but the terrain around the reservoir, including where recreational amenities would be located, would be generally flat. The Recreation Management Plan would require multiple actions to reduce ignition sources and fuel sources, including prohibiting the use of various ignition sources such as smoking and fireworks and reducing fuel sources through fuel management and vegetation reduction practices in select locations in the Recreation Areas to reduce fuel load and maintain clear roadways.

CEQA Significance Determination and Mitigation Measures

Construction of Alternatives 1 and 3 would not exacerbate wildfire conditions or expose occupants to increased pollutant concentrations as a result of slope, prevailing winds, and other factors because most construction would not occur in a VHFHSZ. The construction methods would help reduce ignition and fuel sources through demolition of buildings, clearing of vegetation, and use of water trucks for dust control. BMP-18 and BMP-19 will require specific equipment, workforce, procedural, and training requirements to further reduce wildfire risk. For example, these BMPs will require a list of potential fire hazards was distributed, along with requirements for the handling and storage of potential ignitable materials and the type of fire protection equipment necessary to control fire hazards. This would reduce the potential for fire hazards and control ignitable materials.

Occupied buildings (e.g., the administration and operations building) would be located in flat terrain where the potential for uncontrolled wildfire would be limited based on vegetation and grade; and no permanent occupants would be present. Recreationists would be present in areas around the lake with moderately steep terrain to gentle terrain during the summer months when the risk of wildfires is higher. The Reservoir Management Plan will require specific equipment, workforce, procedural, and training requirements to reduce ignition sources and control fuel.

During construction and operation, the risk of an uncontrolled wildfire would be managed, pollutants would not be concentrated, and permanent occupants would not be present for exposure to increased pollutant levels. Potential impacts related to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire would be less than significant.

NEPA Conclusion

Construction and operation effects on wildfire risk and exposure of Project occupants to the associated pollutant concentrations would be the same as described for CEQA. Construction of Alternative 1 or 3 would not exacerbate wildfire conditions or expose occupants to increased pollutant concentrations as a result of slope, prevailing winds, and other factors as compared to

the No Project Alternative because most construction would not occur in a VHFHSZ. During operation of Alternative 1 or 3, no permanent occupants would be present, as compared to the No Project Alternative. Construction and operations of Alternative 1 or 3 would not expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire and there would be no adverse effects.

Alternative 2

Construction and Operation

The South Road and realigned Huffmaster Road run through a VHFHSZ that also occurs in a State Responsibility Area. The South Road would be located in much steeper topography when compared to other Alternative 2 facilities or Alternatives 1 and 3 facilities. Thus, the steep topography could influence and exacerbate the severity and magnitude of a wildfire during construction or operation of Alternative 2. However, the same BMPs described for Alternatives 1 and 3 would apply and would reduce the risk of exposing construction workers to pollutant concentrations from a wildfire or uncontrolled spread of a wildfire. The residents of the community of Sites would be relocated prior to the start of construction. Existing residents along Huffmaster Road would continue to be adjacent to or within an identified State Responsibility Area or VHFHSZ. BMP-18 to reduce the risk of wildfires would be implemented during construction and operations. Although the South Road would be located on steeper terrain, its use would not be required to access the administrative building and maintenance building. The recreational visitors and employees would not be permanent occupants, and therefore if a wildfire were to occur it would not expose people to substantial increases in pollutant concentrations. Operational impacts for Alternative 2 would be similar to those for Alternatives 1 and 3. The operation of the South Road for Alternative 2 would not expose people to substantial increases in pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

CEQA Significance Determination and Mitigation Measures

Alternative 2 would have impacts similar to those for Alternative 1 or 3. The inclusion of the South Road and realigned Huffmaster Road would result in an increased potential for the severity and magnitude of exacerbating wildfire risks due to slope, prevailing winds, and other factors, resulting in the potential exposure of Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. The BMPs described for Alternative 1 or 3 would be implemented for Alternative 2 and impacts would be less than significant.

NEPA Conclusion

Construction and operation effects on wildfire risk and exposure of Project occupants to the associated pollutant concentrations would be the same as described for CEQA. The inclusion of the steep topography for the South Road and the realigned Huffmaster Road for Alternative 2 could exacerbate wildfire risks and potentially expose Project occupants to pollutant concentrations from a wildfire or uncontrolled spread of a wildfire as compared to the No Project Alternative. The use of the South Road would not be required to access the administrative building and maintenance building, and the recreational visitors and employees would not be permanent occupants. The BMPs described for Alternative 1 or 3 would be implemented for Alternative 2. Construction and operations of Alternative 2 would not expose Project occupants

to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire and there would be no adverse effect.

Impact HAZ-5c: Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment

No Project

Under the No Project Alternative, the current operations of existing conveyances, and infrastructure would continue and would not require the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. The existing RBPP and GCID head gate are not located in a State Responsibility Area or VHFHSZ, and maintenance would not exacerbate fire risk. Funks Reservoir is not located in a VHFHSZ but is located in a State Responsibility Area. The reservoir would continue operating as it does as a re-regulating reservoir and maintenance would not exacerbate fire risk because maintenance does not generally involve ignition sources (e.g., hot equipment on vegetation). The No Project Alternative would not require the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. Infrastructure such as roads, fuel breaks, emergency water sources, power lines, and other utilities would continue as planned in the counties and municipalities in the study area and would be aligned with the associated regulations.

Significance Determination

The No Project Alternative would not result in the installation or maintenance of infrastructure associated with the Project that may exacerbate fire risk or that may result in temporary or ongoing impacts or effects to the environment. Infrastructure such as roads, fuel breaks, emergency water sources, power lines, and other utilities would continue as planned in the counties and municipalities in the study area and would be aligned with the associated regulations. There would be no impact/no effect.

Alternatives 1 and 3

Construction and Operation

Alternatives 1 and 3 would involve the installation or maintenance of the following infrastructure: roads, high voltage transmission lines, and substations. The operation of Alternatives 1 and 3 would be the same because the differences in water deliveries would not affect installation or maintenance of roads, transmission lines, or substations and because these infrastructures would be the same under both alternatives.

Construction of infrastructure such as roads, transmission lines, and substations would occur in portions of a State Responsibility Area but would not be located in a VHFHSZ.

Operation and maintenance of roads, transmission lines, and substations would not exacerbate fire risk because these activities would primarily occur on flat terrain and away from dense vegetation that would act as ignitable materials and have a higher likelihood of burning

uncontrollably. Areas around the transmission lines would be kept clear and free of vegetation as described in Chapter 9. Vegetation clearing of approximately 50 feet around each tower (total diameter of 100 feet per tower) is assumed. The reservoir itself would be new infrastructure and would provide a source of water for suppressing and controlling wildfires, as many reservoirs throughout California are used as a source of water during wildfire emergencies. This construction would not exacerbate a fire risk because BMP-18 would be implemented. As discussed in Impacts HAZ-5a and HAZ-5b, BMP-18 includes developing and implementing a fire safety plan for prevention and suppression/control, which would equip construction sites with fire-suppression equipment, minimize ignitable materials, and prohibit smoking in areas near those ignitable materials. These practices would reduce the risk of ignition and expedite the immediate control of an accidental fire. In addition, construction of some of these facilities (i.e., substations and transmission lines) would take place in flat terrain with limited vegetation, which, as noted in HAZ-5b, generally reduces the potential for the uncontrolled spread of a wildfire.

CEQA Significance Determination and Mitigation Measures

Construction and operation of the infrastructure for Alternatives 1 and 3, such as roads, transmission lines, and substations, would not exacerbate fire risk because the implementation of BMP-18 would alert both construction and operation workers to potential ignitable materials and allow implementation of fire suppression procedures and tools. Furthermore, Sites Reservoir itself would be a potential source of water in the event of a wildfire. Therefore, the installation and maintenance of associated infrastructure would not exacerbate fire risk and impacts would be less than significant.

NEPA Conclusion

Construction and operation effects on fire risk would be the same as described for CEQA. Construction and operation of Alternative 1 or 3 infrastructure would not exacerbate fire risk as compared to the No Project Alternative. BMP-18 would be implemented and the Sites Reservoir would represent a potential water source in the event of a wildfire. Construction and operation of Alternative 1 or 3 would not exacerbate fire risk from the installation and maintenance of associated infrastructure and there would be no adverse effects under Alternative 1 or 3.

Alternative 2

Construction and Operation

Construction of the South Road for Alternative 2 would overlap a VHFHSZ. The road would partially exist in steep and hilly dry terrain where the possibility of fire risk is prevalent. This road would be a primary route of travel between Maxwell and Lodoga. The current Huffmaster Road already travels through a State Responsibility Area and this would not change under Alternative 2. As discussed above in Impacts HAZ-5a and HAZ-5b, BMP-18 would be implemented to reduce the risk of fire during construction and operation. It is expected more people would travel on Huffmaster Road between Lodoga and Maxwell, using the realigned Huffmaster Road and the new South Road compared with existing conditions. The South Road would not be owned by the Authority and would comply with both county and state recommendations for fire prevention in Fire Hazard Severity Zones during its operation and maintenance. For example, per county road standards, new county roads would be of sufficient

grade, radius, and width, which would allow access for fire-fighting vehicles (Action SA 1-AA of the Colusa County General Plan).

Transmission lines would connect Funks Reservoir and TRR West substations. These facilities would be located in a Local Responsibility Area (LRA) and not in a VHFHSZ. This construction would not differ between Alternatives 1 and 3. The difference in operations for Alternative 2 would not change the installation and maintenance of transmission lines and substations from Alternatives 1 and 3. Lastly, as with Alternatives 1 and 3, the Sites Reservoir under Alternative 2 would provide a source of water to extinguish wildfires.

CEQA Significance Determination and Mitigation Measures

Construction and operation of new infrastructure, such as roads, transmission lines, and substations, would not exacerbate fire risk. Incorporation of BMP-18 in construction and management plans would alert both construction and operation workers to potential ignitable materials and prepare the construction site by implementing required fire suppression procedures and tools. Therefore, the installation and maintenance of associated infrastructure would not exacerbate fire risk and impacts would be less than significant.

NEPA Conclusion

Construction and operation effects on fire risk would be the same as described for CEQA. Construction and operation of Alternative 2 infrastructure would not exacerbate fire risk as compared to the No Project Alternative. BMP-18 would be implemented and the Sites Reservoir would represent a potential water source in the event of a wildfire. Construction and operations of Alternative 2 would not exacerbate fire risk from the installation and maintenance of associated infrastructure and there would be no adverse effects under Alternative 2.

Impact HAZ-5d: Expose people or structures to a significant risk, loss, injury or death involving wildland fires or significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes

No Project

None of the Project facilities would be constructed and there would be no associated increased risk of flooding, landslides, post-fire conditions, or drainage changes. People or structures would not be exposed, directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires because people would not use the recreation areas or work at the Project facilities. The residents currently living in Antelope Valley would experience the same level of potential risk associated with wildland fires as under existing conditions. The existing RBPP and GCID head gate are not located in a State Responsibility Area or VHFHSZ, and maintenance would not exacerbate fire risk. Funks Reservoir is not located in a VHFHSZ but is located in a State Responsibility Area. The reservoir would continue operating as it does as a re-regulating reservoir and maintenance would not exacerbate fire risk because maintenance does not generally involve ignition sources (e.g., hot equipment on vegetation).

Significance Determination

The No Project Alternative would not expose people or structures to incremental risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability,

or drainage changes, or to a significant risk of loss, injury, or death involving wildland fires. There would be no impact/no effect.

Alternatives 1, 2, and 3

Construction and Operation

Structures constructed and operated under Alternatives 1, 2, and 3 would include some structures in the recreation areas, an administration and operations building, and a maintenance building at Funks Reservoir. The only people who could be potentially exposed to risks such as downstream flooding or landslides due to post-fire conditions are recreation area visitors and operations staff. In the event of a wildland fire in the Project area, no one would be displaced from their residences because no residences would be present. Recreational visitors and operation and maintenance staff would not be permanent occupants. People and structures would not be subjected to increased risk of flooding or landslide because people would not be located downslope of topography changes or areas vulnerable to wildland fire.

Construction and operation activities for Alternative 2 would be similar to those for Alternatives 1 and 3. The primary difference would be associated with the construction and operation of the South Road and Huffmaster Road Realignment. These roads would partially occur in a VHFHSZ (Figure 27-2). In addition, the South Road goes through steeper terrain and therefore there is some greater potential for slope instability and damage to the road if a wildfire occurs. However, implementing the road design guidelines in Appendix 2C would reduce damage to the road should a wildfire occur.

BMP-16, BMP-18, and BMP-19 will require fire control actions taken to prevent wildland fires as a result of construction. These BMPs include actions such as preparing fire safety plans for each county, equipping construction sites with fire-suppression tools, and implementing safety protocols against smoking near flammable sources. By implementing these actions, the possibility of significant runoff, post-fire slope instability, or drainage changes resulting from a wildfire would be greatly reduced and would not expose the construction workers, operations staff, or recreational visitors to a significant risk involving wildland fire.

People would not be permanently located in or near the study area as a result of construction or operation of Alternatives 1, 2, and 3. They would not be exposed to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Furthermore, the rural nature of the study area and the relatively low amount of residential development would greatly reduce the potential for exposing people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

Sites Reservoir would not contribute to downslope or downstream flooding or landslides as a result of upslope runoff, post-fire instability, or drainage changes. The reservoir would be constructed with a spillway to prevent overflow and would be able to contain a probable maximum flood in post-fire conditions. Because many facilities for Alternatives 1, 2, and 3 would not be in a VHFHSZ, would be constructed on level ground, and would be subject to the requirements of the fire safety plan (BMP-18), people and structures would not be exposed to significant risks as a result of runoff, post-fire slope instability, or drainage changes.

CEQA Significance Determination and Mitigation Measures

Alternatives 1, 2, and 3 would not expose people or structures to significant risks as a result of runoff, post-fire slope instability, or drainage changes because of the rural nature of the study area and relatively low amount of residential development and limited number of structures. Alternative 2 does include the South Road, which runs through a VHFHSZ and has a greater risk for damage, but by implementing the road design guidelines, damage would be minimized should a wildfire occur. Alternatives 1, 2, and 3 would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. Construction and operation impacts for Alternatives 1, 2, and 3 would be less than significant.

NEPA Conclusion

Significant risks to people or structures involving wildland fires or as a result of runoff, post-fire slope instability, or drainage changes from construction and operation of Alternative 1, 2, or 3 would be the same as described for CEQA. The construction and operation of Alternative 1, 2, or 3 would not expose people or structures to a significant risk, loss, injury or death involving wildland fires or significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, as compared to the No Project Alternative. There would be no adverse effect on people or structures for Alternative 1, 2, or 3 as a result of runoff, post-fire slope instability, or drainage changes. There would be no adverse effect on people or structures, either directly or indirectly, due to increased risk of loss, injury, or death involving wildland fires.

Impact HAZ-6: Result in an impact on public health related to methylmercury bioaccumulation in fish*No Project*

The No Project Alternative represents the continuation of the existing conditions in the study area. Under the No Project Alternative, the operations of the existing TC Canal, RBPP, and GCID Main Canal would continue, and Sites Reservoir would not be constructed or operated. Existing conditions as they relate to methylmercury in fish in the study area (as described in Section 27.2, Environmental Setting) and public health due to the consumption of those fish would not be expected to change substantially. Human exposure to methylmercury bioaccumulation in fish would continue to be primarily through ingestion. OEHHA standards and fish consumption advisories would continue to be implemented for the consumption of study area fish, which would serve to protect people against the overconsumption of fish with increased body burdens of mercury.

Significance Determination

The No Project Alternative would not result in an impact on public health related to methylmercury due to the consumption of fish from the study area. Accordingly, there would be no impact/no effect.

Alternatives 1, 2, and 3

Construction and Operation

Sites Reservoir

Due to inundation of organic matter in the Sites Reservoir footprint during the initial filling of the reservoir, aqueous methylmercury concentrations in the reservoir under Alternatives 1, 2, and 3 would be higher than average concentrations in the long term. Studies have shown that methylmercury concentrations in fish in newly inundated reservoirs may increase between 2- to 7-fold, and that concentrations may peak 3–8 years after the initial fill (Section 6.2.2.4, *Mercury and Methylmercury*).

In the long term, Sites Reservoir fluctuations (i.e., shoreline wetting/drying cycles) due to reservoir operations and thermal stratification in the summer would contribute to mercury methylation and thus bioaccumulation of methylmercury in reservoir fish. Bioaccumulation would be greatest in larger, older piscivorous fish (i.e., top predators). Average fish tissue methylmercury concentrations in Sites Reservoir for Alternatives 1, 2, and 3 are expected to be within the range observed at other nearby reservoirs and lakes (Chapter 6 and Appendix 6F, *Mercury and Methylmercury*). Median tissue methylmercury concentrations (normalized to 350 mm largemouth bass) are expected to be approximately 0.47–0.85 mg/kg ww. Therefore, concentrations would be expected to exceed the California sport fish objective of 0.2 mg/kg ww.

OEHHA standards and fish consumption advisories would be implemented as required under applicable laws for the consumption of study area fish, which would serve to protect people against the overconsumption of fish with increased body burdens of mercury. The overall potential intake of mercury-tainted fish by the public would be reduced. Furthermore, as described in Chapter 6, Mitigation Measure WQ-1.1, Methylmercury Management will be implemented to reduce mercury methylation and bioaccumulation in Sites Reservoir. Actions implemented as part of this mitigation measure, such as removing vegetation in the Sites Reservoir inundation footprint prior to the initial filling and delaying fish stocking of the reservoir for the first 10 years following initial filling, would help reduce methylmercury bioaccumulation in reservoir fish. In doing so, the overall potential intake of mercury-tainted fish by the public would be further reduced.

CBD

Releases from Sites Reservoir would not increase total mercury concentrations in the CBD because estimated expected short- and long-term concentrations in reservoir releases would be lower than average concentrations in the CBD under existing conditions. However, estimated expected and worst-case short-term, and worst-case long-term methylmercury concentrations in Sites Reservoir releases under Alternatives 1, 2, and 3 would exceed average methylmercury concentrations in the CBD under existing conditions. If methylmercury concentrations in the CBD were to increase somewhat from Sites Reservoir releases, it is unlikely that this would lead to a substantial long-term increase in fish tissue concentrations because water residence time would be low due to Sites Reservoir releases, which would generally occur from May – November. Temporary increases in water column methylmercury concentrations may translate to increased mercury concentration in fish tissues. However, there is a lag-time of several months for such increases to be reflected in fish tissues (State Water Resources Control Board 2017b).

This lag-time for fish tissue concentrations to reflect water column methylmercury changes will limit the duration over which fish tissue concentration increases would occur. Fish tissue methylmercury concentrations might increase in response to a sufficiently long period of elevated aqueous methylmercury concentrations and may exceed the sport fish objective but would be expected to return to baseline concentrations after reservoir discharges with elevated concentrations cease.

The CBD is an engineered drainage canal designed to convey agricultural drainage flows during the irrigation season and stormwater flows in the winter. The CBD has multiple water quality impairments, including low dissolved oxygen, and thus does not provide ideal fish habitat. Because the CBD does not support sport fish, it is unlikely that anglers would be fishing this water body. As such, any potential increases in methylmercury bioaccumulation of fish in the CBD would not be expected to affect the public.

Funks and Stone Corral Creeks

Sites Reservoir releases to Funks and Stone Corral Creeks under Alternatives 1, 2, and 3 would result in increased mercury and methylmercury in these creeks relative to existing conditions, and concentrations would be higher in the short term compared to the long term, as discussed above for Sites Reservoir. The contribution of mercury and methylmercury from Sites Reservoir would be reflected in fish in these creeks and could cause exceedances of the 0.2 mg/kg ww sport fish objective, particularly in the short term (i.e., during initial filling of the reservoir and for up to 10 years after). Stone Corral Creek is impaired by low dissolved oxygen, and both Stone Corral and Funks Creeks have been substantially altered by farming practices and flow only intermittently (mostly in winter and early spring), as described in Chapter 11, *Aquatic Biological Resources*. Because Funks and Stone Corral Creeks do not support sport fish, it is unlikely that anglers would be fishing these waterbodies; accordingly, any potential increases in methylmercury bioaccumulation of fish in these creeks would not be expected to affect the public.

Yolo Bypass

Aqueous mercury and methylmercury from Sites Reservoir releases for Alternatives 1, 2, and 3 would not substantially increase the concentrations in Yolo Bypass relative to existing conditions. The mean total mercury and methylmercury concentrations in Yolo Bypass under existing conditions are greater than both the estimated short- and long-term concentrations in Sites Reservoir releases. Further, Sites Reservoir releases would be diluted in conveyance to Yolo Bypass. Wetting and drying of soils creates conditions conducive to mercury methylation. Under Alternatives 1, 2, and 3, Yolo Bypass habitat flows planned for August through October would result in minimal inundation of land relative to existing conditions during this same period because these flows would generally be contained within the Yolo Bypass channels. As such, measurable increases in methylmercury are not expected. Diversions of Sacramento River water to Sites Reservoir during high flow events would sometimes reduce flow over the Fremont Weir into Yolo Bypass relative to existing conditions. The change in inundated acres in Yolo Bypass would depend on water year type (Appendix 11M); the largest reductions would occur in March and April of Below Normal Water Years. A reduction in inundation would lower the potential for methylmercury formation in Yolo Bypass. Accordingly, neither releases in the short term

(during the initial filling of the reservoir and for up to 10 years after) or in the long term would cause measurable increases in methylmercury in fish in Yolo Bypass.

Delta

Aqueous methylmercury concentrations in the north Delta may increase due to Sites Reservoir releases under Alternatives 1, 2, and 3 in the short term (during the initial filling period and for up to 10 years after), and in Dry and Critically Dry Water Years in the short term, and in the long term when methylmercury in releases is at the estimated long-term worst-case methylmercury concentration. Such increases may result in measurable increases in methylmercury in fish in the north Delta. These increases would be greater in the short term compared to the long term, given that aqueous methylmercury concentrations in Sites Reservoir releases would be greater due to inundation of organic matter during the initial filling of the reservoir. OEHHA standards and fish consumption advisories would be implemented as required under applicable laws for the consumption of study area fish, which would serve to protect people against the overconsumption of fish with increased body burdens of mercury.

CEQA Significance Determination and Mitigation Measures

Fish tissue methylmercury concentrations in the CBD, Funks Creek, Stone Corral Creek, and the north Delta may increase relative to existing conditions due to Sites Reservoir releases. Because Funks Creek, Stone Corral Creek, and the CBD do not support sport fish, it is unlikely that anglers would be fishing these waterbodies; accordingly, any potential methylmercury bioaccumulation in fish at these locations would not be expected to affect the public. Fish tissue methylmercury concentrations are not expected to increase measurably in Yolo Bypass because there would not be a substantial increase in inundated acres due to Sites Reservoir releases.

In the long term, fish tissue methylmercury concentrations in Sites Reservoir would be within the range observed at nearby reservoirs and lakes and would be expected to exceed the sport fish objective (0.20 mg/kg ww) under Alternatives 1, 2, and 3. Short-term aqueous and fish tissue methylmercury concentrations would be higher than concentrations in the long term due to increased mercury methylation as a result of inundation of organic matter in the Sites Reservoir footprint during the initial filling of the reservoir. Fish tissue methylmercury concentrations in the north Delta may increase measurably in the short term, as well as in the long term in Dry and Critically Dry Water Years during the export window due to releases from Sites Reservoir. OEHHA standards and fish consumption advisories would be implemented as required under applicable laws for the consumption of study area fish, which would serve to protect people against the overconsumption of fish with increased body burdens of mercury. The overall potential intake of mercury-tainted fish by the public would be reduced. Furthermore, implementation of Mitigation Measure WQ-1.1, Methylmercury Management, as required under Impact WQ-1 would further reduce the potential for methylmercury to form and the public to ingest mercury-tainted fish. Therefore, construction and operation of Alternatives 1, 2, and 3 would have a less-than-significant impact on public health related to methylmercury bioaccumulation in fish.

NEPA Conclusion

Construction and operation effects on public health related to methylmercury due to the consumption of fish in Sites Reservoir and the north Delta under Alternatives 1, 2, and 3 would

be the same as described above for CEQA. Methylmercury in fish in the study area and public health due to the consumption of those fish would not be expected to change substantially as compared to the No Project Alternative. OEHHA standards and fish consumption advisories would be implemented as required under applicable laws for the consumption of study area fish, and implementation of Mitigation Measure WQ-1.1 would further reduce potential effects from methylmercury. There would be no adverse effect on public health.

Impact HAZ-7: Result in an impact on public health due to an increase in harmful algal blooms

No Project

Under the No Project Alternative, the operations of the existing TC Canal, RBPP, and GCID Main Canal would continue, and Sites Reservoir would not be constructed or operated. HABs would likely continue to occur in surface waters within the study area where blooms have been observed previously (e.g., Lake Oroville, Folsom and Shasta Lakes, and the Delta) when conditions are conducive to bloom formation. Because of this, there would be the potential for people to be exposed to cyanotoxins in recreational waters or drinking water supply sources. The State Water Board and Central Valley Regional Water Quality Control Board work with local waterbody managers and other stakeholders to identify, monitor, and take appropriate response actions to control HABs, and to inform and educate the public regarding potentially HABs-compromised surface waterbodies and drinking water supplies.

Significance Determination

The No Project Alternative would not result in an impact or effect on public health due to exposure to HABs because of ongoing coordination between the State Water Board, Central Valley Regional Water Quality Control Board, local water body managers, and other stakeholders to protect public health from HABs exposure. These efforts would include identification and monitoring of HABs, as well as public notification and education outreach to minimize exposure. There would be no impact/no effect.

Alternatives 1, 2, and 3

Construction and Operation

With the exception of the initial filling/inundation of Sites Reservoir, construction activities would not elicit changes in surface waterbodies in the study area that would make them more conducive to HABs formation relative to existing conditions. During the initial filling of Sites Reservoir for Alternatives 1, 2, and 3, nutrient (nitrogen and phosphorus) levels would be relatively high due to flooding of soils and other organic matter present within the inundation footprint. These factors, in combination with low storage volume prior to filling and warm water temperatures starting in late spring, would contribute to creating conditions conducive to promoting and maintaining HABs. Vegetation removal in the Sites Reservoir inundation area prior to reservoir filling would reduce but not eliminate available nutrients (Section 2D.3).

Operation

Operating Sites Reservoir would result in reservoir drawdown, reduced storage volume, and higher water temperatures during late spring through fall that would further contribute to

favorable conditions for HABs during the initial filling period, as well as in subsequent years, and reduced storage volumes (particularly during the late spring through fall of Dry and Critically Dry Water Years) would potentially result in higher concentrations of cyanotoxins if HABs were to occur.

Periods of lower water storage levels in Sites Reservoir could make it more likely that cyanobacteria and cyanotoxins (if present) could be released from the reservoir as the water surface elevation approaches the elevation of the lowest I/O tower tier or the low-level intake. The concentrations of cyanobacteria and cyanotoxin would depend on the magnitude of the bloom(s) and the depth from which water is released in the reservoir. This would be more likely to occur under Alternative 3 in Critically Dry Water Years if water were released through the lowest I/O tower tier but could also occur under Alternatives 1 and 2 in Critically Dry Water Years. While cyanobacteria and cyanotoxins are found naturally in surface water at low concentrations, releasing elevated concentrations of cyanobacteria and cyanotoxins if blooms were present could likely be avoided in Critically Dry Water Years by releasing export water through the low-level intake. The concentrations of cyanobacteria and cyanotoxins at dead pool depths would be expected to be relatively low given that cyanobacteria are generally concentrated closer to the water's surface where light is adequate. If cyanobacteria and cyanotoxins were present in reservoir releases, concentrations would be greatly diluted when eventually discharged into the Sacramento River, either via CBD or at the Sacramento River discharge location. Furthermore, cyanotoxins would undergo biodegradation and photodegradation relatively rapidly. Water quality monitoring for cyanobacteria and cyanotoxins would inform releases through the low-level intake (Section 2D.3).

Because Sites Reservoir would be a recreational destination, the public could be exposed to cyanotoxins while recreating in or near the water. Potential pathways for exposure of recreators to cyanotoxins arising from HABs include direct contact to persons swimming, boating, or otherwise utilizing the reservoir. Other potential exposure pathways would include inhalation of aerosolized toxins by persons in the immediate vicinity of water at the reservoir or through accidental ingestion of (or oral exposure to) contaminated water. Water stored in the reservoir or discharged to GCID Main Canal and TC Canal water would not be used for drinking water.

The Authority would develop and implement an RMP, which would minimize the potential for effects on public health due to HABs during the initial filling period and during reservoir operation. The RMP would include annual seasonal monitoring for apparent HABs, as well as cyanobacteria density assessment and testing for cyanotoxins, as necessary. The RMP would also include implementation of an action plan for responding to HABs based on cyanobacteria density and cyanotoxin concentration assessments, which would include the installation of public advisory warning signs around the reservoir noting the presence of HABs. In addition, if cyanobacteria and cyanotoxins are confirmed near the I/O tower at a level at or above a specific density and concentration, respectively, reservoir releases would be made from deeper in the reservoir, while still considering other water quality objectives (e.g., water temperature for rice).

Operation of Sites Reservoir under Alternatives 1, 2, and 3 (i.e., water diversions to the reservoir) would not be expected to increase the frequency of HABs in the Delta or further downstream due to flow reductions in the Sacramento River. Diversions to the reservoir from Sacramento River would occur primarily during storm events in winter when conditions are less

conducive to bloom formation and maintenance. Therefore, adverse effects on public health in these locations would not be expected.

CEQA Significance Determination and Mitigation Measures

The initial filling of Sites Reservoir may make reservoir conditions more conducive to the formation and maintenance of HABs due to high nutrient levels from flooded vegetation and soils. Operation of Alternatives 1, 2, and 3 may result in water quality conditions within Sites Reservoir that are conducive to HABs during the late spring through fall (particularly in Dry and Critically Dry Water Years). Actions implemented as part of the RMP, including visual monitoring for suspected HABs, cyanobacteria density assessment and testing for cyanotoxins (as necessary), and posting public warnings when the presence of cyanobacteria and cyanotoxins has been confirmed would minimize the risk to public health from potential exposure to cyanotoxins. Therefore, impacts on public health related to HABs due to construction and operation of Alternatives 1, 2, and 3 would be less than significant.

NEPA Conclusion

Construction and operation effects associated with HABs would be the same as those described above under CEQA. The initial filling of Sites Reservoir and operations of Alternative 1, 2, or 3 would potentially result in conditions that are conducive to the formation and maintenance of HABs as compared to the No Project Alternative. The HAB-associated actions implemented for the RMP would minimize the risk to public health from potential cyanotoxin exposure. There would be no adverse effects on public health related HABs due to construction and operation of Alternatives 1, 2, and 3.

Impact HAZ-8: Result in exposure to nuisance problems, or from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses

No Project

Under the No Project Alternative, the operations of the existing facilities (TC Canal, RBPP, and GCID Main Canal) would continue and Sites Reservoir would not be constructed or operated.

Some conditions conducive to mosquito-borne illness would be expected to be present as existing facilities, including RBPP, GCID Main Canal, Funks Reservoir, and would still provide some breeding opportunities. These facilities are not open to the public. Furthermore, vector control districts for each county would continue to enforce vector control in their jurisdictions and take appropriate measures to keep mosquito populations under control.

Significance Determination

The No Project Alternative would not result in exposure to nuisance problems, or from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses because existing facilities would continue to comply with all relevant laws and regulations pertaining to vector control. Accordingly, there would be no impact/no effect.

Alternatives 1, 2, and 3

Impacts related to mosquitos would be similar under Alternatives 1, 2, and 3. Sites Reservoir under Alternative 1 or 3 would have a larger storage capacity than the reservoir under Alternative 2. Therefore, operational impacts related to mosquitos would be greater under Alternatives 1 and 3. These facilities would require the same Project construction methods and operation and maintenance activities, and the types of impacts related to mosquitos and vectors would be the same.

Construction

Under Alternatives 1, 2, and 3, ponding could be created at construction sites after a rainstorm. Large ponding areas that do not completely dry for several days encourage mosquito breeding and can contribute to mosquito population growth, primarily in the spring, summer and into the fall, when temperatures are warmer. In addition, to comply with stormwater permit requirements, construction contractors may create drainage ditches and subsequent retention ponds to prevent stormwater runoff from entering nearby waterbodies. This type of ponding, however, would be limited and temporary. In addition, the implementation of BMP-21 would include coordination with vector control districts, monitoring and sampling of waterbodies, and the use of larvicides and adulticides, as necessary to keep mosquito populations under control.

The construction of the reservoir would create an increase in total surface water area and reservoir shoreline. Increased surface water area would create suitable breeding habitat for mosquitos. However, standard vector control practices, including coordination with Glenn County Mosquito and Vector Control District and the Colusa County Mosquito Abatement District, would be implemented, as identified in BMP-21. As a result, impacts from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses at the new reservoir would be appropriately managed and controlled.

Operation

Operation of Sites Reservoir (i.e., water diversions to the reservoir) would result in an increase in surface water area and reservoir shoreline that could provide new breeding habitat for mosquitos. The reservoir would be used for water storage and recreational use. Recreational use would include facilities such as picnic sites, hiking trails, camping areas, and boat ramps would be open to the public. Reservoir personnel working in the area would also be exposed to mosquitos and potentially mosquito-borne diseases.

Existing mosquito abatement controls would continue to be implemented in place to minimize impacts from mosquito or vector populations, and the spread of mosquito- or vector-borne illnesses. Additionally, the RMP would establish protocols and practices for communicating/coordinating with Glenn County Mosquito and Vector Control District and the Colusa County Mosquito Abatement District to determining how vector control would be managed at the reservoir site. Additional measures, as identified in BMP-21 would also be implemented. As a result, impacts from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses at the new reservoir would be appropriately managed and controlled.

CEQA Significance Determination

Mosquito or vector populations and the spread of mosquito- or vector-borne illnesses at the new reservoir would be appropriately managed and controlled. BMP-21 would be implemented during construction. Further, the RMP would establish protocols and practices for communicating/coordinating with Glenn County Mosquito and Vector Control District and the Colusa County Mosquito Abatement District to determining how vector control would be managed at the reservoir site. Construction and operation of Alternatives 1, 2, and 3 would not result in exposure to nuisance problems, or from mosquito or vector populations, or the spread of mosquito- or vector-borne illnesses and impacts would be less than significant.

NEPA Conclusion

Construction and operation effects on the public from exposure to nuisance problems, mosquito or vector populations, or the spread of mosquito- or vector-borne illness would be the same as described for CEQA. The construction and operation of Alternative 1, 2, or 3 would result in an increase in surface water area and reservoir shoreline that could provide new breeding habitat for mosquitos as compared to the No Project Alternative. The management and control of mosquito or vector populations and the spread of mosquito or vector-borne diseases, the implementation of BMP-21, and the establishment and implementation of control protocol and practices in the RMP would minimize the risk to the public. Construction and operation of Alternative 1, 2, or 3 would have no adverse effect on the public from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses.

27.5 References

27.5.1. Printed References

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