Interlake Tunnel and Spillway Modification Project

Draft Environmental Impact Report

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Document Information

Project Name: Interlake Tunnel and Spillway Modification Project

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Date:	January 2023
Citation:	MCWRA. 2023. *Interlake Tunnel and Spillway Modification Project. Draft Environmental Impact Report*. January.

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°C	degree Celsius
$\mu g/m^3$	micrograms per cubic meter
AB	Assembly Bill
ADT	average daily traffic
AFY	acre-feet per year
Agency Act	Monterey County Water Resources Agency Act
AI	Agricultural Industrial
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
AMM	Avoidance and Minimization Measure
ANAB	American National Standards Institute National Accreditation Board
AQMP	Air Quality Management Plan
ATCMs	airborne toxic control measures
ATV	all-terrain vehicle
AVE	Area of Visual Effect
BA	biological assessment
Basin	Salinas Valley Groundwater Basin
BAT	best available technology
bgs	below the ground surface
BMP	Best Management Practice
BO	biological opinion
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CALGreen	California Green Building Standards Code
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CBSC	California Building Standards Code
CCIC	Central Coast Information Centers
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGP	Construction Storm Water General Permit
CGS	California Geological Survey
CH_4	methane
CMF	California Missions Foundation
CNEL	Community noise equivalent level

CO	carbon monoxide
CO_2	carbon dioxide
CPUC	California Public Utilities Commission
CRPR	California Rare Plant Rank
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DEIR	draft environmental impact report
DOC	California Department of Conservation
DPM	diesel particulate matter
DPR	Department of Parks and Recreation
Draft 2022 Scoping Plan	Draft 2022 Scoping Plan Update
DSOD	Division of Safety of Dams
DWR	California Department of Water Resources
ECP	Erosion Control Plan
EFH	essential fish habitat
EHRP	Earthquake Hazards Reduction Program
EIR	environmental impact report
EIS	Environmental Impact Statement
EMFAC2017	Emission Factor 2017
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EWP	EnergyWise Plan
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHL	Fort Hunter Liggett
FIRMs	Flood Insurance Rate Maps
FMMP	Farmland Mapping and Monitoring Program
FMUs	Forecasted Mitigation Units
Friant Ranch Project	Community Plan Update and Friant Ranch Specific Plan
FTA	Federal Transit Administration
General Construction Permit	General Permit for Construction Activities
General Permit	General Permit for Stormwater Discharges Associated with Construction Activity
GHG	greenhouse gases
GIS	geographic information system
GPS	Global Positioning System
GSA	Groundwater Sustainability Agencies
GSP	groundwater sustainability plan
GWMP	Groundwater Management Plan
GWP	global warming potentials
H_2S	Hydrogen sulfide

HCP	Habitat Conservation Plan
hereafter referred to as the Friant Ranch Decision	California Supreme Court's decision in Sierra Club v. County of Fresno (6 Cal. 5th 502)
HFCs	hydrofluorocarbons
HPC	Historic Properties Component
HPU	hydraulic power unit
HVAC	heating, ventilation, and air-conditioning
IPaC	Information for Planning and Consultation
IRWM	Integrated Regional Water Management
IRWM Plan	Integrated Regional Water Management Plan for the Greater Monterey County
kW	kilowatt
lbs/day	pounds per day
LCFS	low-carbon fuel standard
Ldn	Day-night sound level
LED	light-emitting diode
Leq	Equivalent sound level
LiDAR	Light Detection and Ranging
LLOW	low-level outlet works
Lmax	Maximum sound level
Lmin	Minimum sound level
LSAA	Lake or Streambed Alteration Agreement
LTMP	Long-Term Management Plan
M	magnitude
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MBARD	Monterey Bay Air Resources District
MCWRA	Monterey County Water Resources Agency
MJA	McMillen Jacobs Associates
MMI	Modified Mercalli Intensity
$MMTCO_2e$	million metric tons of CO_2e
$MTCO_2e$	metric tons of carbon dioxide equivalent
MW	megawatts
MWh	megawatt hours
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NOP	Notice of Preparation

NO_X	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRWMAC	Nacimiento Recycled Water Management Agency Committee
NWIC	Northwest Information Center
O_3	Ozone
OHW	ordinary high-water
OSR	Old Salinas River
pb	lead
PFCs	perfluorocarbons
PG	Permanent Grazing
PG&E	Pacific Gas and Electric
PM	Particulate matter
PM_{10}	Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
$PM_{2.5}$	fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less
PMF	Probable Maximum Flood
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
ppm	parts per million
PPV	peak particle velocity
PRMMP	Paleontological Resources Monitoring and Mitigation Plan
project or proposed project	Interlake Tunnel and Spillway Modification Project
Pub. Res. Code	Public Resources Code
Regional Water Board	Regional Water Quality Control Board
RG	Rural Grazing
RIS	reservoir-induced seismicity
Road G14	Nacimiento Lake Drive
ROG	reactive organic gas
RPS	Renewables Portfolio Standard
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
SAFE	Safer Affordable Fuel-Efficient
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SEAP	Safety and Environmental Awareness Program
SF_6	sulfur hexafluoride
SGMA	Sustainable Groundwater Management Act of 2014
SIP	State Implementation Plan
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLCP	Short-Lived Climate Pollutants
SLF	Sacred Lands File

SLOAPCD	San Luis Obispo Air Pollution Control District
SLOCAPCD	San Luis Obispo County Air Pollution Control District
SLOCOG	San Luis Obispo Council of Governments
SO_2	sulfur dioxide
SOP	Standard Operating Procedure
Spillway Modification	San Antonio Dam Spillway Modification
SRA	Sensitive Resource Areas
SRDF	Salinas River Diversion Facility
State Water Board	State Water Resources Control Board
SVP	Society of Vertebrate Paleontology
SVWP	Salinas Valley Water Project
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TAMC	Transportation Agency for Monterey County
TBM	tunnel boring machine
TCM	Transportation Control Measure
TCP	Traditional Cultural Property
TCR	Tribal Cultural Resource
TMDLs	total maximum daily loads
U.S. 101	U.S. Highway 101
U.S.C.	United States Code
UCMP	University of California Museum of Paleontology
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USGS 11149400 and 11149500	Mean Monthly Flow in Nacimiento River, Before and After Dam Construction
V/C	volume-to-capacity
VdB	vibration decibels
VMT	vehicle miles traveled
VOC	Volatile organic compound
WDRs	waste discharge requirements
WSE	water surface elevation

ES.1 Introduction

The Monterey County Water Resources Agency (MCWRA) proposes to build and operate the Interlake Tunnel and Spillway Modification Project (proposed project). MCWRA, as the lead agency, has prepared this Draft environmental impact report (EIR) in compliance with the requirements of the California Environmental Quality Act (CEQA).[1] This executive summary is intended to highlight major areas of importance in the environmental analysis, as required by section 15123 of the CEQA Guidelines. This chapter provides an overview of the project background; the project purpose and objectives; the proposed project description; a summary of alternatives to the proposed project, including the environmentally superior alternative; a summary of environmental issues to be resolved and areas of known controversy; and a summary of the environmental impacts of the proposed project and Tunnel-Only Alternative.

The executive summary also includes a brief discussion of the Notice of Preparation (NOP) of the EIR, the Notice of a Public Scoping Meeting, topics analyzed in the EIR and initial study, and terms used in the EIR to describe the level of significance of the impacts. This is followed by a summary table that presents the environmental impacts of the proposed project and Tunnel-Only Alternative, as identified in the EIR, by topic and, where applicable, the corresponding mitigation measures to reduce or lessen the significant impacts.

ES.2 Proposed Project Background

MCWRA is responsible for managing, protecting, and enhancing the water supply and water quality, as well as providing flood protection in Monterey County. MCWRA's predecessor, the Monterey County Flood Control and Water Conservation District, was created in 1947 through the Monterey County Flood Control and Water Conservation District Act (Chapter 669 of the Statutes of 1947). MCWRA was created in 1991, through the Monterey County Water Resources Agency Act (Agency Act), California Water Code, Appendix 52 (MCWRA 2022a). The Agency Act mandated MCWRA to control flood and storm waters, conserve such waters through storage and percolation, control groundwater extraction, protect water quality, reclaim water, exchange water, and construct and operate hydroelectric power facilities. MCWRA's territory covers all of Monterey County, including the Salinas Valley Groundwater Basin (Basin) (MCWRA 2006).

MCWRA's mission is to manage, protect, store, and conserve water resources in Monterey County for beneficial uses, including environmental uses, while minimizing damage from flooding, to create a safe and sustainable water supply for present and future generations. To fulfill this mission, MCWRA operates and manages numerous water-related facilities throughout the region and undertakes various improvement and maintenance projects to meet current and future needs (MCWRA 2022b). Included among its efforts are water storage facilities and hydroelectric facilities.

[1] California Public Resources Code Sections 21000 et seq. (CEQA Statute) and California Code of Regulations Title 14, Sections 15000 et seq. (CEQA Guidelines).

In addition, MCWRA develops groundwater management measures to protect groundwater from the intrusion of sea water. Section 1.2.1, *Water Resource Management in the Salinas River Basin*, describes some of these efforts and projects related to the proposed project.

Climate is a critical factor in MCWRA's management activities. Monterey County, as well as the larger central coast region, is situated in an area with a Mediterranean climate. Mediterranean climates typically have warm, dry summers and cool, wet winters. However, from year to year, weather patterns can be highly variable. Over the past century, Monterey County has experienced years with major floods and abundant water as well as years with both short- and long-term drought conditions (MCWRA 2022c). Such variability poses significant and constantly changing water management challenges. Moreover, Monterey County is not connected to any federal or state water projects; therefore, it cannot offset water supply shortages with water imported from other areas of the state.

Nacimiento and San Antonio Reservoirs are MCWRA's primary water infrastructure facilities (see **Figure ES-1**). MCWRA's predecessor, the Monterey County Flood Control and Water Conservation District, completed construction of Nacimiento Dam in 1957 and San Antonio Dam in 1967, with each creating its respective reservoir to control floodwaters, store water, and release water into the Salinas River for percolation into underground aquifers throughout the summer (Greater Monterey County Integrated Regional Water Management Group 2018). Nacimiento and San Antonio Dams are under the jurisdiction of the California Department of Water Resources (DWR), Division of Safety and Dams (DSOD). Nacimiento Dam is also under the jurisdiction of the Federal Energy Regulatory Commission (FERC) due to the hydroelectric plant at the dam abutment.

Both reservoirs are vital regional water-storage and flood-control facilities, and both offer recreational opportunities (e.g., boating, swimming, camping, fishing). The reservoirs are fed by rivers that are a part of the Salinas River Watershed, which originates near Santa Margarita in San Luis Obispo County. The Salinas River runs approximately 175 miles from its origination, and its watershed drains an approximately 4,200-square-mile area of Monterey and San Luis Obispo Counties that includes 200,000 acres of irrigated land for agriculture (see **Figure ES-2**)(Resource Conservation District of Monterey County 2022). Two of the three major tributaries to the Salinas River are the Nacimiento and San Antonio Rivers, each of which serves as the primary water source for its respective reservoir. Below Nacimiento and San Antonio Dams, each river continues until its confluence with the Salinas River. Fertile soils in the floodplain, a highly favorable climate, and river flows for aquifer recharge and irrigation make the Salinas Valley one of the most productive agricultural regions in California (MCWRA and State Coastal Conservancy 2019).

Historically, the Salinas River was dry during the summer months and prone to flooding during extreme winter and spring-storm events. Levees were constructed to prevent flooding and restrict channel migration on the historic floodplain and adjacent lands. The construction of Nacimiento and San Antonio Dams further modified the natural hydrologic condition of the Salinas River. Operation of the dams has significantly altered the seasonal distribution and magnitude of streamflow in the Salinas River by reducing wet-season flows and increasing dry-season flows (MCWRA and State Coastal Conservancy 2019). Such flows provide groundwater recharge that benefits groundwater users in the Basin including but not limited to agricultural water users.

Figure ES-1
Project Location

Figure ES-22
Salinas Watershed

Since the construction of both reservoirs, MCWRA has observed that, on average, Nacimiento Reservoir fills approximately three times faster than San Antonio Reservoir (Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement 2008). Accordingly, when Nacimiento Reservoir reaches capacity, San Antonio Reservoir will typically have remaining capacity. However, in such situations, Nacimiento Reservoir's excess water must be released downstream because, at present, the means do not exist for conveying water between the reservoirs.

In 1991, MCWRA included the proposed project in its Water Facilities Capital Plan, presenting it as an approach for improving the management of flood and conservation flows in the Salinas River watershed (MCWRA 1991). In 2013, the proposed project was included in the *Greater Monterey County Integrated Regional Water Management Plan*, which was updated in 2018 (Greater Monterey County Integrated Regional Water Management Group 2018). The drought years of 2011 to 2017 rekindled interest in the project among agricultural interests and others in the region.

ES.3 Project Purpose and Objectives

The purpose of the proposed project is to develop a multi-benefit project for the Salinas River Basin that improves the sustainability of the water supply, water quality, and flood management for the basin. The proposed project is intended to meet the following objectives:

- Minimize flood control releases through the Nacimiento Dam Spillway and reduce associated downstream flood damage. Increase the overall surface water supply available from Nacimiento and San Antonio Reservoirs by maximizing the opportunity for water to be collectively stored in the reservoirs.
- Improve the hydrologic balance of the Salinas Valley Groundwater Basin (Basin) and reduce seawater intrusion.
- Continue to meet downstream environmental flow requirements for south-central California coast steelhead.
- Minimize the impact on existing hydroelectric production.
- Preserve recreational opportunities in the reservoirs.
- Protect agricultural viability and prime agricultural land.

ES.4 Project Overview

MCWRA has prepared this EIR to provide the public, responsible agencies, and trustee agencies with information about the potential environmental effects associated with construction and operation of the proposed Interlake Tunnel and Spillway Modification Project. MCWRA operates Nacimiento and San Antonio Reservoirs, which are considered the most prominent elements of the region's water infrastructure. Together, the reservoirs are used for water supply (groundwater recharge), flood management, and recreation. Water released from the reservoirs is heavily regulated to satisfy several parallel needs, such as those related to the Salinas Valley Water Project (SVWP), environmental compliance, flood control, recreation management, and drought contingency.

The proposed project would connect Nacimiento and San Antonio Reservoirs with an underground water conveyance tunnel (i.e., Interlake Tunnel) and modify the spillway at San Antonio Dam (i.e., Spillway Modification). As further described in Chapter 2, *Project Description*, the proposed project is intended to reduce flood control releases from Nacimiento Reservoir and expand and make better use of the storage capacity at San Antonio Reservoir. In addition to the proposed project, this EIR also evaluates a Tunnel-Only Alternative. The Tunnel-Only Alternative would provide the Interlake Tunnel but omit the Spillway Modification.

This EIR evaluates the Tunnel-Only Alternative with a level of detail comparable to that found in the evaluation of the proposed project. Note that the Spillway Modification would not be constructed without the Interlake Tunnel because an increase in the storage capacity of San Antonio Reservoir would not be warranted without it. In addition to the Tunnel-Only Alternative, this EIR also evaluates a reasonable range of other alternatives to the proposed project and compares the relative environmental advantages and disadvantages of each alternative to the proposed project. Refer to Chapter 6, *Alternatives*, for further discussion of these alternatives.

ES.4.1 Project Description

The proposed project is composed of two separate but interrelated components:

- A water conveyance tunnel from Nacimiento Reservoir to San Antonio Reservoir (Interlake Tunnel)
- Modifications to the existing spillway at San Antonio Reservoir (San Antonio Dam Spillway Modification). The project components are shown on **Figure ES-3**.

A description of the project components, along with all subcomponents and associated activities, follows.

Interlake Tunnel

As shown on **Figures ES-4** and **ES-5** and detailed below, the Interlake Tunnel consists of the following.

1. A Tunnel Intake Structure at Nacimiento Reservoir
2. An Interlake Tunnel that would link Nacimiento and San Antonio Reservoirs
3. An Energy Dissipation Structure at San Antonio Reservoir

The design detail for the Interlake Tunnel and associated subcomponents is provided in the *Interlake Tunnel – Design Documentation Report, 60% Design Submittal* (McMillen Jacobs Associates 2020a).

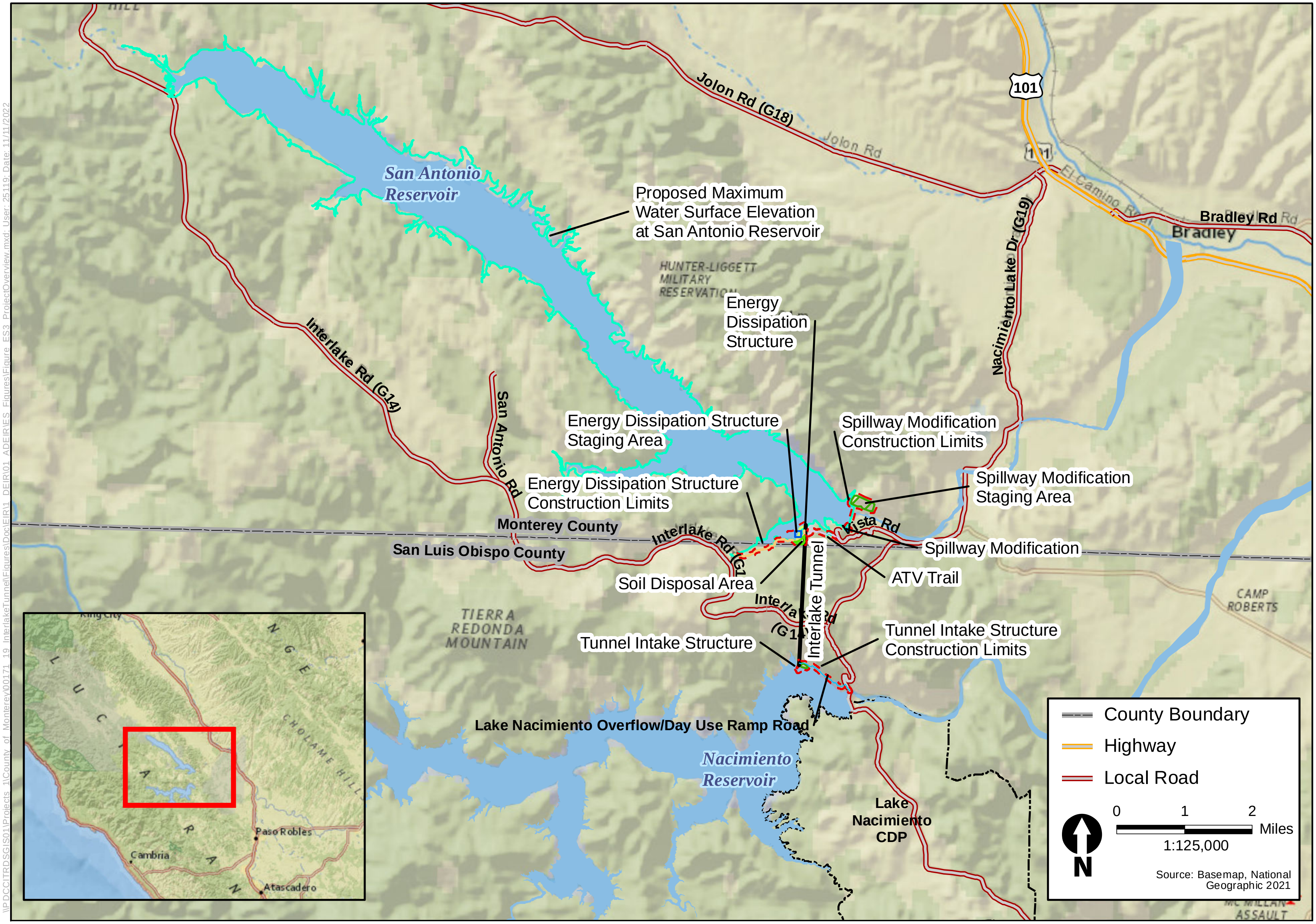

Figure ES-3
Proposed Project Components

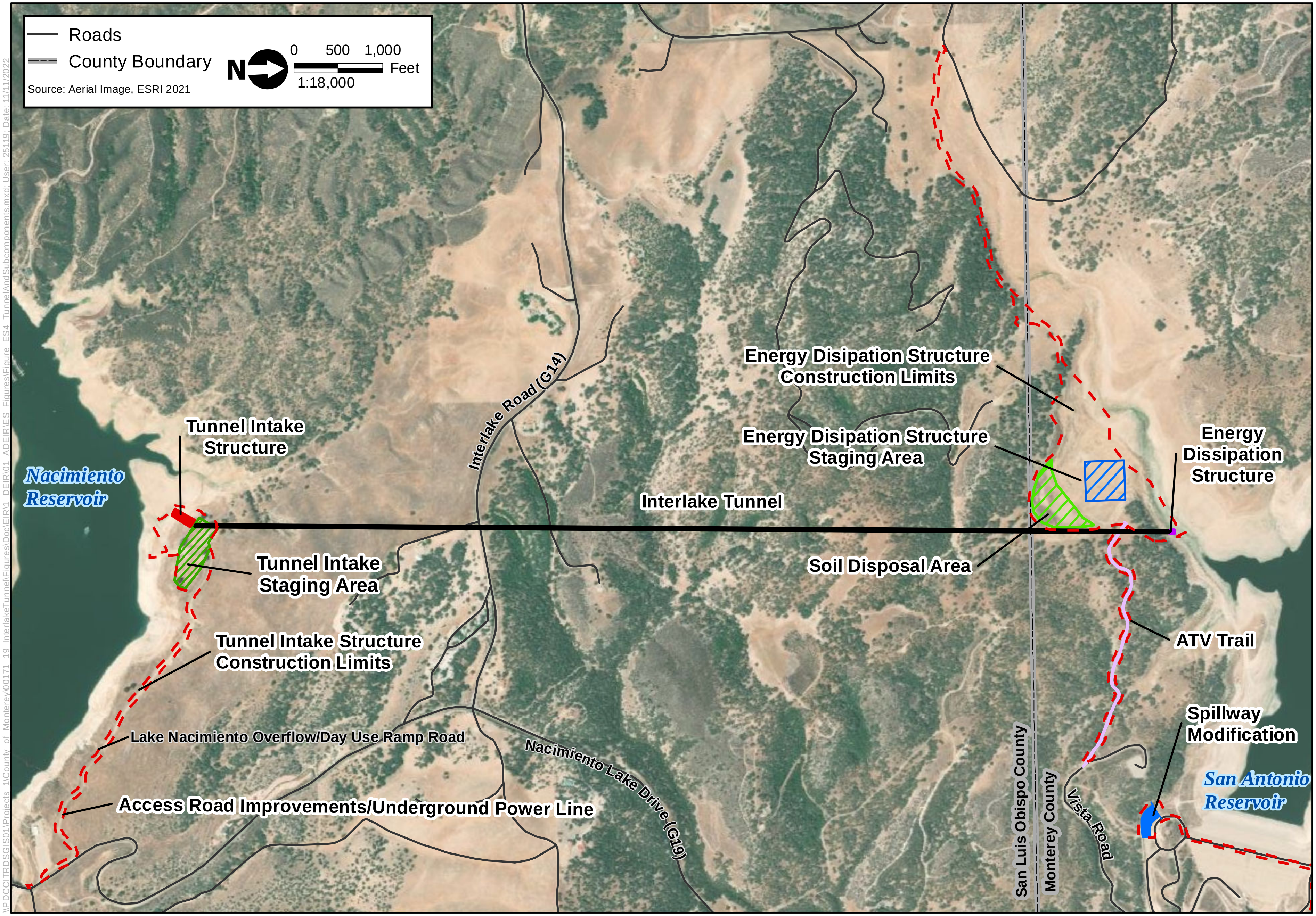

Figure ES-4
Interlake Tunnel and Associated Subcomponents

Figure ES-5
Tunnel Intake Structure and Associated Features

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Tunnel Intake Structure

The Tunnel Intake Structure at Nacimiento Reservoir is proposed to be located on the north shore of Nacimiento Reservoir, just below and abutting the Nacimiento Reservoir day-use overflow parking lot, approximately 0.8 mile upstream from Nacimiento Dam.

The Tunnel Intake Structure would be built into the shoreline of Nacimiento Reservoir, mostly below the ground surface at the shoreline, and would be constructed with reinforced concrete. Access to the Tunnel Intake Structure would be via the existing access road for the Nacimiento Reservoir/day-use overflow boat ramp. This road, along with boat ramp and parking area would be repaired or resurfaced prior to construction of the Tunnel Intake Structure. The parking area would provide a staging area for equipment and materials and, once construction is complete, it would serve as primary access to the Tunnel Intake Structure and would also provide parking for maintenance personnel and recreational users. **Figure ES-5** depicts the Tunnel Intake Structure staging area, control building, access road, underground power line, and interlake tunnel.

The Tunnel Intake Structure would include numerous features and systems to ensure optimum operational efficiency and safety. Features such as a floating debris boom, trash rack, trash rake, and fish screens would prevent white bass (*Morone chrysops*) and debris from entering the Interlake Tunnel. Bypass and isolation gates and controls and a traffic-rated door would be incorporated into the design to allow for safe access, cleaning, inspection, and maintenance. These gates and controls would also be used for emergency closure. In an emergency closure, air would be added to the tunnel through a vent, at a pressure sufficient to prevent collapse of the tunnel.

A control building to house utilities and an access pad would be constructed just north of the Tunnel Intake Structure, adjacent to the existing day-use overflow parking lot. This building would be constructed of masonry unit blocks and include two rooms, an electrical/mechanical room and a generator room, each separately accessed from the outside. The electrical/mechanical room would house electrical panels, control panels, hydraulic power unit (HPU), and mechanical heating, ventilation, and air-conditioning (HVAC) equipment. The generator room would have double doors for access to the weatherproof housing for the standby generator. The generator would power on and off through automatic transfer switches in response to an interruption in power and a subsequent restoration of power from the main power grid. Power to the control building would be supplied from the transmission line near Nacimiento Dam via new underground power lines along the day-use overflow boat ramp access road from Nacimiento Lake Drive (Road G14).

The control building would incorporate numerous safety and security features, including roof-mounted video cameras, flood lights, and security lighting. The control building and Tunnel Intake Structure would be fenced. Lighting systems would be manually operated, and all lighting would be shielded and downward facing to prevent light pollution.

Potable water and sanitary sewer utilities would not be required at the intake site or control building.

Interlake Tunnel

The proposed Interlake Tunnel would connect Nacimiento and San Antonio Reservoirs and provide gravity-flow water conveyance from Nacimiento to San Antonio Reservoir. The Interlake Tunnel would include an inlet at the Tunnel Intake Structure, as described in Section 2.3.1.1, *Tunnel Intake Structure*; an outlet at the Energy Dissipation Structure at San Antonio Reservoir, as described in Section 2.3.1.3, *Energy Dissipation Structure at San Antonio Reservoir*; and control devices (e.g., a flow meter).

The Interlake Tunnel would be approximately 11,000 feet (2.06 miles) long and have a minimum inner diameter of 10 feet. It would consist of a single-pass system of bolted, precast concrete with segmental lining, The Interlake Tunnel depth would vary from zero to approximately 680 feet below the ground surface. All Interlake Tunnel components would be designed to achieve a service life of 50 years.

In Nacimiento Reservoir, the Tunnel Intake Structure inlet would have an invert elevation (i.e., bottom elevation) of approximately 745 feet NGVD.[2] The Interlake Tunnel would be sloped downward and away from Nacimiento Reservoir at a -0.42 percent gradient to facilitate gravity-based flows toward San Antonio Reservoir. The resulting invert elevation of the Energy Dissipation Structure at San Antonio Reservoir would be approximately 699 feet.[3]

A meter to measure tunnel flow would be installed just downstream of the Tunnel Intake Structure. Data from the flow meter would be entered directly into a database, allowing incremental flow measurements and calculation of the total volume of water moved between the reservoirs. The flow meter could also be used to identify a sudden increase or decrease in tunnel flow, which could be tied to an alarm to alert the operator of a changed operating condition. The stage in each reservoir would also be monitored and recorded.

Energy Dissipation Structure at San Antonio Reservoir

The Interlake Tunnel would connect to San Antonio Reservoir at the Energy Dissipation Structure proposed for the southern shore of the Bee Canyon arm of the reservoir, approximately 0.6 mile upstream from San Antonio Dam. **Figure ES-6** shows an overview of the Energy Dissipation Structure and its associated features, which are intended to reduce the energy of water entering San Antonio Reservoir, preventing bank scour and erosion during periods when the water surface elevation (WSE) of San Antonio Reservoir is below the centerline elevation of the tunnel outlet pipe. The Energy Dissipation Structure would not require electric or other utility connections (e.g., water, sewer). A temporary source for electrical power for construction of the Interlake Tunnel would be provided from a new Pacific Gas and Electric (PG&E) overhead power service to be installed along the access road; this connection is anticipated to be utilized to supply electrical power only during construction of the Interlake Tunnel.

The Energy Dissipation Structure would be approximately 25 feet by 65 feet and founded on a concrete mat slab, with rip-rap at the end. The structure would include a security feature to allow water to be discharged from the Interlake Tunnel, while preventing unauthorized access into the Interlake Tunnel or vandalism.

[2] All elevation references in this document are based on National Geodetic Vertical Datum of 1929.

[3] Note that the tunnel outlet invert elevation is subject to change, depending on the tunnel length at final design.

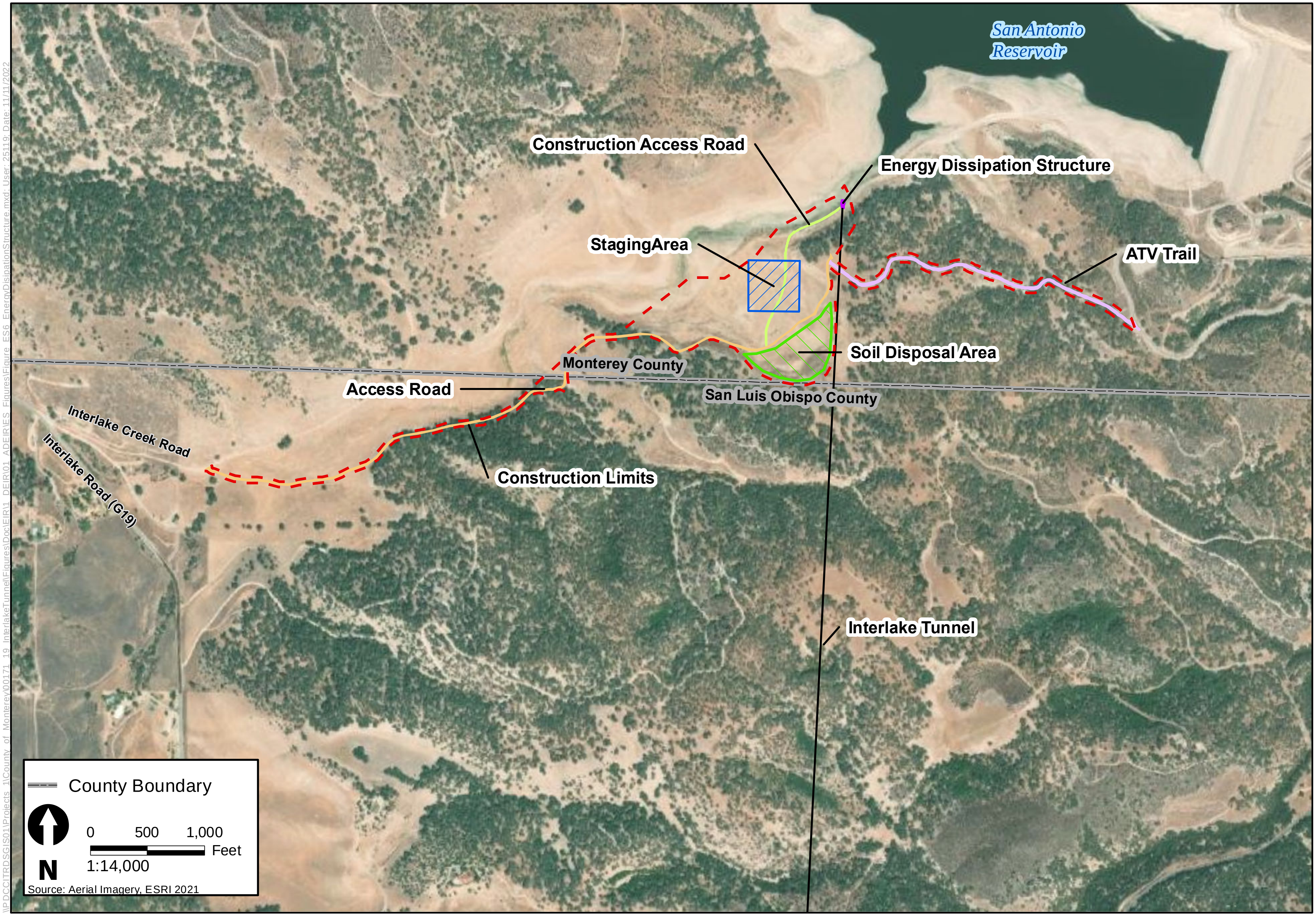

Figure ES-6
Energy Dissipation Structure and Associated Features

A gated road and an all-terrain vehicle (ATV) trail on MCWRA-owned property would be 12 feet wide after improvements and provide access to the Energy Dissipation Structure. An existing dirt access road would be regraded and resurfaced to provide MCWRA maintenance personnel access to the Energy Dissipation Structure. As shown on **Figure ES-6**, the access road would begin at the paved Interlake Road to the west and extend approximately 0.3 mile east along the existing (gravel) Interlake Creek Road, and then another 1.3 miles east/northeast to the Energy Dissipation Structure site. The ATV trail would not be accessible to the public; it would be used for MCWRA maintenance personnel only, in case the access road to Interlake Creek Road becomes impassable.

Both the ATV trail and the access road would require multiple culverts to convey local drainage. Culverts would be sized appropriately to convey flows from the area; these are expected to be no less than 16 inches in diameter. Also, both the ATV trail and the access road would be constructed to conform to pertinent standards of each respective county.

San Antonio Dam Spillway Modification

The San Antonio Dam Spillway Modification (Spillway Modification) would include removal and replacement of the existing ogee spillway crest control structure with a new labyrinth weir structure at the top of the spillway and raise the walls of the existing spillway. **Figure ES-7** shows an overview of the proposed Spillway Modification and associated features.

The Spillway Modification would provide an up to 7-foot increase in the reservoir's maximum WSE, effectively increasing San Antonio Reservoir's storage capacity by up to approximately 41,000 acre-feet without raising the height of the dam itself. This capacity increase would in turn increase the land area surrounding the reservoir that would be subject to inundation by up to approximately 442 acres. Design detail can be found in the *San Antonio Spillway Modification – Design Documentation Report, 30% Design Submittal* (McMillen Jacobs Associates 2020b).

The Spillway Modification would be accessed via existing dirt roads, which would be graded and resurfaced. Utility power, potable water, and sanitary sewer utilities would not be required at the Spillway Modification site.

Replacement Labyrinth Weir

The Spillway Modification includes demolition of the existing ogee spillway crest control structure and construction of a new labyrinth weir spillway control structure. A labyrinth weir spillway is folded, in plan view, like an accordion to provide a longer total effective spillway length for a given channel width. The labyrinth weir has advantages compared to a straight weir or ogee spillway because the total length of the weir is two-and-a-half times the channel width, for increased flow capacity.

The geometry of a labyrinth weir affects how much water can pass through the spillway. To be effective, the design of the labyrinth weir needs to be able to pass the Probable Maximum Flood (PMF), while also minimizing construction costs and complexity. For a full discussion of the replacement labyrinth weir, please refer to Section 2.3.2.1, *Replacement Labyrinth Weir*, in Chapter 2, *Project Description*.

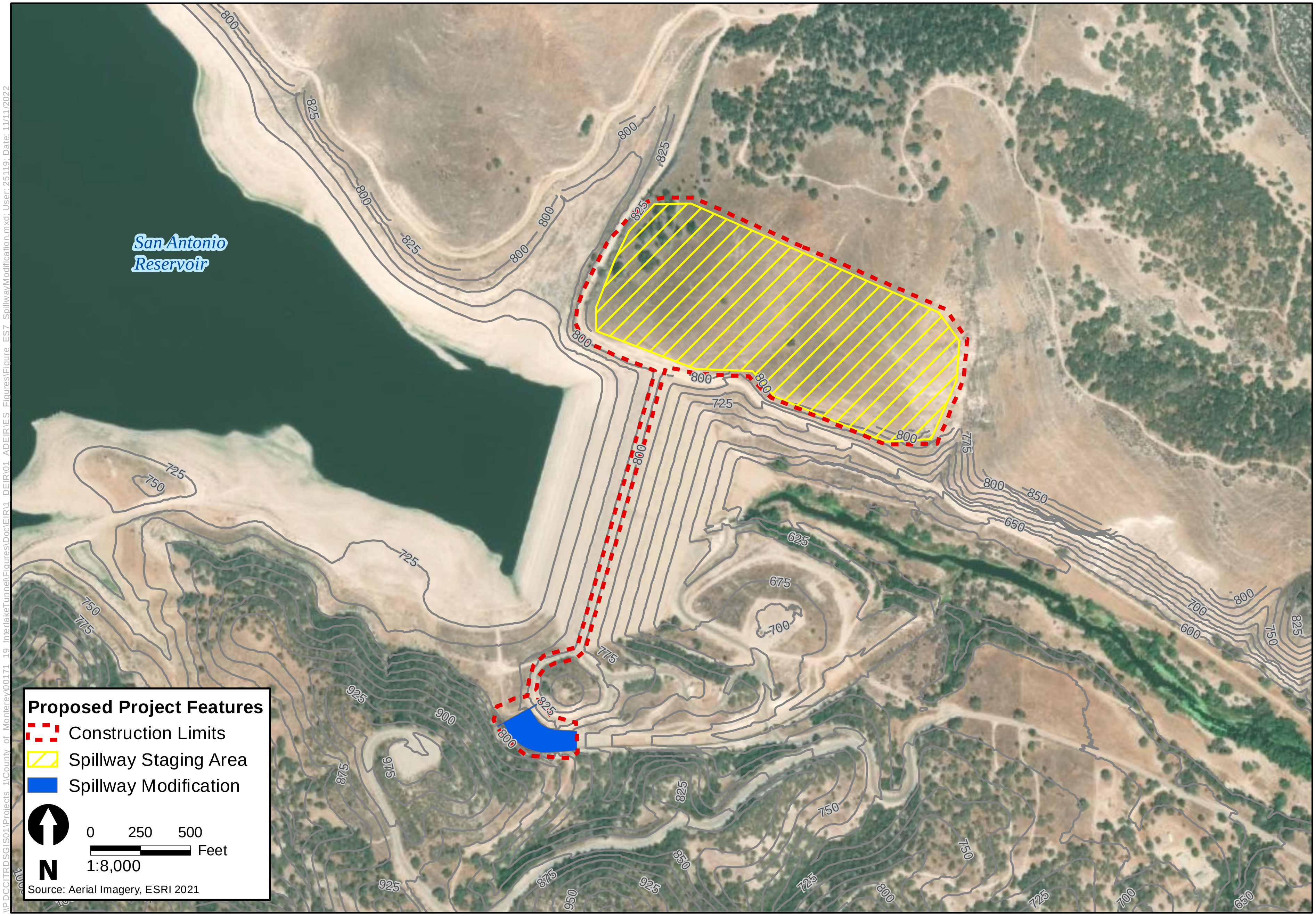

Figure ES-7
San Antonio Dam Spillway Modification

Spillway Channel and Wall Changes

In addition to the labyrinth weir, the Spillway Modification would include a modified spillway channel and new spillway walls that would connect the existing spillway to the new labyrinth weir (**Figure ES-7**). The modified spillway would account for higher PMF flows that would be passable with the labyrinth weir. Existing spillway walls along the new weir structure would either be raised or replaced to account for the higher PMF flows that would be passable by the labyrinth weir. The spillway channel modification would consist of a concrete slab and concrete walls and would be approximately 350-feet long where it would tie in with the existing spillway, at an elevation of approximately 756 feet. The entrance channel walls would drop in height at a 1:1 ratio to 25-feet high, starting at 28-feet downstream of the labyrinth weir structure. The concrete slab would be 24-inches thick at the middle of the spillway and 30-inches thick under the exterior walls. A radiused slab would connect the 3.9-percent slope of the new spillway to the 19-percent slope of the existing spillway. An expansion joint, as well as a cutoff wall, would be immediately upstream of the tie-in point to isolate two drainage systems, ensuring that the Spillway Modification and storage water level minimally affect the existing spillway drain system.

ES.4.2 Project Location and Setting

The proposed project involves two existing reservoirs that are operated by MCWRA. As shown on **Figure ES-1**, the two involved reservoirs (San Antonio and Nacimiento) are northwest of Paso Robles and immediately east of the Santa Lucia Mountains.

Nacimiento Dam and Reservoir are in northern San Luis Obispo County, approximately 20 miles inland from the coast and 12 miles upstream from the confluence of the Nacimiento and Salinas Rivers. San Antonio Dam and Reservoir are primarily in southern Monterey County, approximately 2 miles north of Nacimiento Reservoir on the east, 10 miles north on the west, and 5 miles upstream from the confluence of the San Antonio and Salinas Rivers.

The proposed project would be constructed in the immediate vicinity of Nacimiento and San Antonio Reservoirs. The area encompassing the footprint of the proposed project features is referred to as the *project site* throughout the remainder of this document.

ES.4.2.1 Hydrologic Setting

The Nacimiento and San Antonio Rivers are major tributaries to the Salinas River. The Salinas River is the largest watercourse in the central coast region of California; the river is located within the Salinas River Watershed (**Figure ES-2**). The Salinas Valley Groundwater Basin (Basin) is approximately 4,600 square miles in area. The Salinas River and the Basin comprise an interconnected surface water/groundwater hydrologic system. Generally, the Salinas River flows in a northwest direction for approximately 150 miles through San Luis Obispo and Monterey Counties before discharging to Monterey Bay and the Pacific Ocean, approximately 5 miles south of Moss Landing. The Nacimiento and San Antonio Rivers contribute approximately 200,000 acre-feet per year to the Salinas River (MCWRA and USACE 2002). In the Basin, groundwater flows generally follow that of the Salinas River, southeast to northwest, and toward Monterey Bay (MCWRA 2015).

The presence and volume of water in the Salinas River can be highly variable. Historically, the Salinas River was dry during the summer months and prone to flooding during extreme winter and spring storm events. The Salinas River remains a primary source of flood risk in Monterey County today. Nacimiento and San Antonio Reservoirs were constructed to store winter runoff, which has reduced downstream flood risks while providing an additional water supply that can be released during summer months when the river channel previously did not contain surface water. The Salinas River surface water discharge (i.e., streamflow) is highly dependent on groundwater conditions; groundwater conditions are equally dependent on recharge by precipitation (i.e., infiltration) and other streamflow contributions (MCWRA 2015). For example, groundwater pumping reduces the volume of aquifers, thereby influencing higher infiltration rates from streamflow. At the same time, seepage from fully charged aquifers contributes to more streamflows. Note, however, that there are very few places where groundwater is ever discharged to the Salinas River because of extensive groundwater pumping.

Groundwater is the source for most of the urban and agricultural water needs in the Basin. However, an ongoing imbalance between the rate of groundwater withdrawal and recharge has resulted in overdraft conditions in the Basin, leading to the intrusion of seawater from Monterey Bay to the Basin. Seawater intrusion in the Basin was detected as early as 1946, when the California Department of Water Resources (DWR) published *Bulletin No. 52, Salinas Basin Investigation*. Nacimiento and San Antonio Reservoirs were constructed to store winter runoff, thereby both reducing downstream flood risks while providing an additional water supply to address groundwater overdraft issues.

ES.4.2.2 Existing Facilities and Operations

MCWRA operates Nacimiento and San Antonio Reservoirs conjunctively for water supply (via both groundwater recharge and Salinas River surface water), flood management, and recreation. Surface water supply is used for agriculture, domestic and municipal uses, hydroelectric power, and environmental uses, including wildlife habitat and fish passage. The reservoirs are the most important elements of the region’s water infrastructure.

The combined mean annual releases for Nacimiento and San Antonio Dams total 239,858 acre-feet, with the combined annual volume of flood control releases ranging from 2,818 to 691,901 acre-feet for those years in which flood control releases were made (MCWRA 2022d).

ES.4.2.2.1 Nacimiento Dam and Reservoir

The earth-filled Nacimiento Dam has a crest elevation of 825 feet and was completed in 1957. The dam’s spillway elevation is approximately 788 feet, but can be raised to 800 feet using two inflatable Obermeyer spillway gates. At 800 feet, the maximum storage capacity of Nacimiento Reservoir is 377,900 acre-feet. Nacimiento Dam has two outlets: the high-level outlet and a low-level outlet. The high-level outlet works is composed of twin 8- by 8-foot steel slide gates and cast concrete tunnels through the center of the spillway. The low-level outlet works (LLOW) is a 53-inch-diameter pipe near the southern side of the dam. The inlet to the LLOW consists of three 42-inch butterfly valves set in a concrete structure at an elevation of 670 feet. Releases from the LLOW can be made from either manually operated valves or the hydroelectric power plant. The LLOW has a maximum capacity of 460 cubic feet per second (cfs) when the reservoir elevation is 800 feet (MCWRA 2021a). Several operational pools (i.e., physical minimum pool, operational minimum pool, conservation pool, and flood pool) have been created within Nacimiento Reservoir to aid in the management of water stored in the reservoir. The volumes listed are inclusive of storage from previous (i.e., lower-in-elevation) pools.

- The physical minimum pool, or *dead pool*, is the lowest, at an elevation between the bottom of the reservoir and 670 feet. It has 10,300 acre-feet of storage at the invert of the LLOW intake. Water cannot flow by gravity out of the reservoir below an elevation of 670 feet.
- Above the physical minimum pool is the operational minimum pool. At an elevation of approximately 688 feet, it provides 12,000 acre-feet of storage (with a combined total of 22,300 acre-feet of storage inclusive of the dead pool). Below this elevation of 688 feet, water is reserved for the sole use of San Luis Obispo County.
- The conservation pool, which extends from the operational minimum pool (approximately 688 feet) to the concrete spillway elevation of approximately 787.75 feet, is considered the operational pool. It is used to store water for eventual release to the Salinas River for groundwater recharge, fish passage, wildlife habitat, and operation of the SVWP. The total storage is 289,013 acre-feet (with a combined total of 311,313 acre-feet of storage, inclusive of the physical minimum and operational pools).
- The flood pool extends from the concrete spillway at 787.75 feet to an elevation of 800 feet, and provides 66,587 acre-feet of storage (with a combined total of 377,900 acre-feet of storage, inclusive of the physical minimum, operational, and conservation pools). This pool is intended to provide winter flood protection by maintaining the ability of the spillway to pass the PMF without overtopping of the dam (MCWRA 2021a).

Nacimiento Dam also has a hydroelectric power plant on the downstream slope at the base of the dam on the southern side. The plant, which has the capability to produce 4 megawatts, contains both large and small turbines that operate in the range of 25 to 400 cubic feet per second. Nacimiento Dam is under the jurisdiction of DWR, the DSOD, and, due to the presence of the hydroelectric power plant, FERC (MCWRA 2021a).

ES.4.2.2.2 San Antonio Dam and Reservoir

Constructed in 1967, San Antonio Dam is also an earth-filled dam. It has a crest elevation of 802 feet and a spillway crest elevation of 780 feet. When the reservoir is full (at an elevation of 780 feet), it has a maximum storage capacity of 335,000 acre-feet. San Antonio Dam has an outlet works that consist of an 84-inch-diameter, 1,085-foot-long steel conduit near the center of the dam. This conduit passes through the dam embankment from an intake structure to the Howell-Bunger type valve outlet structure.

Like Nacimiento Reservoir, San Antonio Reservoir also includes operational pools (i.e., physical minimum pool, operational minimum pool, conservation pool, and flood pool) to aid in the management of water stored at the reservoir. The volumes listed are inclusive of storage from previous (lower in elevation) pools.

- The physical minimum pool, or dead pool, is at an elevation of 645 feet, at the invert of the intake of the outlet works. It has 10,000 acre-feet of storage. Water cannot flow by gravity out of the reservoir below the minimum pool elevation of 645 feet.
- The operational minimum pool is at an elevation of 666 feet, and contains 13,000 acre-feet of storage (with a combined total of 23,000 acre-feet of storage inclusive of the physical minimum pool). Water between the elevations of 645 and 666 feet is reserved for fish and wildlife habitat.

- The conservation pool typically extends to an elevation of 774.5 feet,[4] provides 282,000 acre-feet of storage (with a combined total of 305,000 acre-feet of storage inclusive of the physical minimum and operational minimum pools), and is used to store water for later release to the Salinas River for groundwater recharge, fish passage, and operation of the SVWP.
- The flood pool typically extends from the conservation pool to the spillway elevation of 780 feet[5] and provides 30,000 acre-feet of storage (with a combined total of 335,000 acre-feet of storage, inclusive of the physical minimum, operational, and conservation pools). The flood pool is intended to provide winter flood protection by maintaining the spillway's ability to pass the PMF without overtopping the dam. San Antonio Dam is under the jurisdiction of DSOD (MCWRA 2021a).

ES.4.2.2.3 Other Related Projects and Programs

MCWRA has implemented and maintains a portfolio of projects, which are intended to sustain water supplies, assist with flood control, and enhance and protect groundwater. Although both the proposed project and the Tunnel-Only Alternative have independent utility and do not depend on implementation of other projects to be functional, because both reservoirs and their respective rivers are major elements of the Salinas River watershed, both the proposed project and Tunnel-Only Alternative would have connections to other MCWRA projects and initiatives and the ability to help achieve the objectives of other MCWRA projects and initiatives.

San Antonio Dam Spillway Rehabilitation

In 2018, MCWRA conducted a conditions assessment at the San Antonio Dam spillway foundation and structure in response to a 2017 request from DSOD, which has jurisdiction over the San Antonio Dam. The assessment identified foundation and structural deficiencies within the dam spillway that could compromise the performance of the spillway during high-flow events, which would require either major rehabilitation or full replacement of the spillway. MCWRA submitted a plan to DSOD to complete the required work no later than the November 1, 2024, deadline. MCWRA is currently considering whether to rehabilitate the existing spillway or replace the spillway at or near the current spillway location. The spillway work that could occur as part of this DSOD action would occur separately from the proposed project and proceed regardless of whether the proposed project is constructed. It should be noted that the San Antonio Spillway Rehabilitation Project is not the same as the proposed project and is not included as part of the proposed project or the Tunnel-Only Alternative.

Salinas Valley Water Project

The SVWP was developed as part of a collaborative effort between MCWRA and Salinas Valley stakeholders to improve water resource management in the Salinas Valley. SVWP's key objectives include, but are not limited to, improving flood control, enhancing the safety of Nacimiento Dam, avoiding or mitigating seawater intrusion into freshwater groundwater aquifers, and providing adequate water supplies to meet current and future demand.

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[4] The conservation pool varies, depending on the time of the year. Less water is typically stored for conservation during the winter months to provide additional capacity to accept flood-flows.

[5] Ibid.

SVWP Phase 1, completed in 2010, consists of: 1) Nacimiento Dam Spillway Modification; and 2) the Salinas River Diversion Facility. The Nacimiento Dam Spillway Modification Project increased the spillway's capacity and installed an inflatable Obermeyer spillway gate at the dam. This project was intended to address safety issues associated with floodflows, which must be conveyed through the reservoir and the spillway. The Salinas River Diversion Facility (SRDF) provided a facility to operate a seasonal rubber dam (April 1 through October 31) on the Salinas River near the city of Marina. The diversion facility provides treated (i.e., filtered and chlorinated) river water to nearby farms, thereby reducing groundwater pumping by up to 80 percent during peak agricultural demand periods, when the diversion facility is operational.

SVWP Phase 2 is a separate project that has been proposed but has yet to be implemented. SVWP Phase 2 would deliver up to 135,000 acre-feet per year of surface water to the Basin's Pressure and East Side subareas, with the intention of helping offset groundwater pumping in those areas. SVWP Phase 2 would also involve additional surface water capture and diversion facilities, or subsurface collectors, near the cities of Soledad and Salinas.

Salinas River Long-Term Management Plan

The Salinas River Long-Term Management Plan (LTMP) aims to provide a multi-benefit management program that addresses the needs of MCWRA facilities and operations while addressing issues such as those related to flood risk reduction, water supply, water quality, natural resource conservation, threatened and endangered species management, and compliance with federal and state environmental laws, including the Endangered Species Act (ESA) (MCWRA and State Coastal Conservancy 2019). The geographic scope of the plan is limited to the portion of the Salinas River watershed in which MCWRA conducts management activities. Management actions under the plan broadly include water supply management, groundwater recharge, flood management, and riverine habitat enhancement and restoration. The plan is not subject to a specific (e.g., 20- or 30-year) planning horizon; instead, it is intended to remain flexible to guide both short- and long-term management needs.

From 2007 to 2017, MCWRA had authorization to take federally listed species from the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) for much of its operations. MCWRA is currently preparing a Habitat Conservation Plan (HCP) to provide a comprehensive and durable take authorization that will provide MCWRA with regulatory certainty for decades, including a comprehensive and sustainable plan to cover water-related operations and maintenance activities for the Salinas River. The HCP will be based, in part, on the LTMP and prior biological opinions. To approve the HCP, MCWRA will need to comply with CEQA by preparing an EIR. To issue ESA Section 10(a)(1)(B) permits, both NMFS and USFWS must comply with the National Environmental Policy Act (NEPA) by preparing an Environmental Impact Statement (EIS). Preparation of the HCP EIR/EIS will follow this EIR and reflect any CEQA certification and approval of the Interlake Tunnel Project, if such actions are taken.

Salinas Valley Water Project Flow Prescription

As part of the permitting process for SVWP, in 2002, the U.S. Army Corps of Engineers (USACE) initiated formal consultation with NMFS under ESA Section 7. As a result of this consultation, in 2005, MCWRA prepared the SVWP Flow Prescription for management of south-central California coast steelhead trout in the Salinas River, which defines flow requirements and operational targets for steelhead trout and establishes three main areas of monitoring (i.e., population monitoring, flow/migration monitoring, and water quality/habitat monitoring). The Flow Prescription was incorporated into the NMFS Biological Opinion for the SVWP and MCWRA's water rights for the reservoirs (MCWRA 2015). NMFS subsequently withdrew the Biological Opinion on February 20, 2019, because the construction-related terms and conditions from the Biological Opinion had been satisfied. MCWRA has since entered into a charter with NMFS and USFWS on consultation and coordination and continues to work on the HCP as described in *Salinas River Long-Term Management Plan*, above.

Monterey County Water Recycling Projects

The Castroville Seawater Intrusion Project and the Salinas Valley Reclamation Project use treated recycled water to irrigate crops directly and replenish groundwater aquifers, thereby helping fend off saltwater intrusion.

Partnership Projects and Programs

The six interrelated projects and programs discussed below are relevant to the short- and long-term management needs of the Salinas River. MCWRA is a partner in each of these projects and programs, which are led by federal, state, or other local agencies.

Salinas River Stream Maintenance Program

MCWRA developed the Salinas River Stream Maintenance Program in collaboration with the Resource Conservation District of Monterey County, the Salinas River Channel Coalition, the Grower-Shipper Association of Central California, The Nature Conservancy, Conservation Collaborative, and other local entities and contractors (MCWRA 2022e). This program, which was fully implemented in 2016, is intended to help protect landowners and farms along the Salinas River against flooding during and after moderate storm events while enhancing the habitat value of the Salinas River. The Salinas River Stream Maintenance Program facilitates vegetation and sediment management activities conducted voluntarily by individual property owners, growers, and municipalities.

Pure Water Monterey

Pure Water Monterey is a water-recycling and groundwater-replenishment project developed by the Monterey Peninsula Water Management District and Monterey One Water (Pure Water Monterey 2022). The project, approved in 2012 and completed in 2020, reduces water use from the Carmel River and, in so doing, restores the reliability of surface water and groundwater in the region. The project utilizes existing infrastructure and newly constructed facilities to provide advanced treatment for new-source waters, which include agricultural wash water, stormwater runoff, agricultural return water, and treated wastewater, for injection into the Seaside Groundwater Basin. The injected water is later extracted and used for the potable water supply. MCWRA participated in the project's development and implementation and retains the option of utilizing new source waters from the project for irrigation supply through the Castroville Seawater Intrusion Project.

The Expanded Pure Water Monterey Groundwater Replenishment Project was approved in April 2021 to increase the capacity of the existing advanced water purification facility and increase recharge for the Seaside Groundwater Basin. The expansion project, which is currently in the design phase, includes additional water conveyance pipelines, injection well facilities, potable supply extraction and distribution facilities, and associated infrastructure (Pure Water Monterey 2021).

Groundwater Sustainability Plans

In 2014, California established the Sustainable Groundwater Management Act (SGMA), which requires local agencies to form groundwater sustainability agencies (GSAs) to manage local groundwater basins and implement 20-year groundwater sustainability plans (GSPs; DWR 2022). Within the Salinas River watershed, the GSPs, which are under various stages of development, include the Salinas Valley Basin Integrated Sustainability Plan (Salinas Valley GSA 2019), Salinas Valley Groundwater Basin Monterey Subbasin GSP (Salinas Valley Basin GSA 2022), Marina Coast Water District GSP (Marina Coast Water District GSA and Salinas Valley Basin GAS 2021), City of Marina GSP (City of Marina GSA 2020), and Arroyo Seco Draft GSP (Arroyo Seco GSA 2020). Because the hydrology and geology of these plans are somewhat intertwined due to proximity and subsurface characteristics, the GSAs leading development of the GSPs are working to coordinate efforts, particularly in establishing a common water budget that will inform the projects proposed by each plan.

WaterSMART Basin Study

The *WaterSMART Salinas and Carmel River Basins Study*, initiated in 2017, is a comprehensive water resources assessment of the Salinas and Carmel River watersheds in Monterey and San Luis Obispo Counties. The study was funded by the U.S. Bureau of Reclamation, MCWRA, Monterey Peninsula Water Management District, San Luis Obispo County Public Works, and Monterey One Water. This study assesses the general health of the Salinas River and Carmel River watersheds and groundwater basins and their ability to provide sustainable water supplies into the future with climate change over the next century. This study serves to help water managers make informed decisions on water use, plan for future water supplies, and propose adaptive strategies to mitigate the effects of climate change (Total Water Management.org 2022).

Greater Monterey County Integrated Regional Water Management Plan

The Integrated Regional Water Management Plan is an approach to water management established by state legislation to increase regional self-sufficiency and encourages local water resource managers to take a proactive leadership role in solving water management problems on a local level through collaborative regional planning (Greater Monterey County Integrated Regional Water Management Group 2018). The Integrated Regional Water Management Plan is congruent with local plans and includes current relevant elements of local water planning and water management issues common to multiple local entities in the region. This regional planning does not replace or supersede local planning; rather, local planning elements are used as the foundation for the regional planning effort. This plan was developed and approved by regional representatives from government agencies, nonprofit organizations, educational organizations, water service districts, private water companies, and organizations representing agricultural, environmental, and community interests.[6]

[6] Specifically, the plan was shaped and approved by the following 18 entities: Big Sur Land Trust; California State University, Monterey Bay; California Water Service Company; Castroville Community Services District; Central Coast Wetlands Group at Moss Landing Marine Laboratories; City of Salinas; City of Soledad; Elkhorn Slough National Estuarine Research Reserve; Environmental Justice Coalition for Water; Marina Coast Water District; Monterey Bay National Marine Sanctuary; Monterey County Agricultural Commissioner's Office; Monterey County Resource Management Agency; MCWRA; Monterey Regional Water Pollution Control Agency; Resource Conservation District of Monterey County; Rural Community Assistance Corporation; and San Jerardo Co-Operative, Inc.

Stormwater Resources Plan for Greater Monterey County

The *Stormwater Resource Plan for Greater Monterey County Integrated Regional Water Management Region*, approved June 27, 2019, addresses the entire Monterey County Integrated Regional Water Management Region, plus the portion of the Pajaro River Watershed Integrated Regional Water Management Region that lies within Monterey County, with a special focus on stormwater planning in the Salinas River, Gabilan/Tembladero, Moro Cojo, Elkhorn, and McClusky watersheds (Coastal Conservation and Research 2019). The purpose of the plan is to promote stormwater management implementation projects that provide regionally optimized benefits, such as increased water supply, improved water quality, better flood protection, enhanced environmental quality, and greater community opportunity. This plan achieves that purpose by first characterizing current stormwater dynamics in terms of source, volume, flow, timing, quality, and rights and then identifying geographically and temporally specific opportunities to divert, capture, store, treat, recharge, and reuse this resource to guide the development of implementation projects that optimize regionally integrated benefits.

ES.5 Public Involvement Process

ES.5.1 Initial Study/Notice of Preparation

In accordance with sections 15063 and 15082 of the CEQA Guidelines, on April 28, 2016, MCWRA sent an NOP and initial study to responsible and trustee agencies, interested entities, and individuals. Distribution of the NOP and initial study initiated the environmental review and CEQA scoping process. The purpose of the scoping process is to allow the public and government agencies to comment on issues and provide input on the scope of the EIR.

The NOP included a brief description of the proposed project and advised of two public scoping meetings, which MCWRA convened to receive scoping comments.[7] The initial study reflected MCWRA's preliminary environmental evaluation of the Interlake Tunnel Project and determination of the need to prepare an EIR to evaluate potentially significant impacts on the environment.

MCWRA filed the NOP with the Clerk Recorders of both the County of Monterey and the County of San Luis Obispo as well as the State Clearinghouse. The NOP mailing list included more than 400 individuals and organizations who had expressed interest in the project as well as various federal, state, and local agencies with jurisdiction and/or permit authority over the project. Notices regarding release of the NOP were placed in local newspapers. The NOP was also made available for review at four local libraries. The scoping period extended from April 28 to June 13, 2016 (46 days).

ES.5.2 Scoping Comments and Meetings

During the scoping period, MCWRA received comments from numerous individuals, agencies, and a tribal organization. Commenting agencies included the CDFW, NMFS, the San Luis Obispo County Fire Department, and many others. MCWRA has considered all comments received during the scoping period in preparing the EIR for the proposed project. Many comments from individuals expressed either support or opposition to the project. Those expressing support mentioned the

[7] Scoping meetings were held on May 16, 2016, at the Agricultural Center, 1428 Abbott Street, Salinas, CA, and on May 17, 2016, at the Bradley Union School District, 65600 Dixie Street, Bradley, CA.

increased water supply, expanded recreational opportunities at San Antonio Reservoir, and drought response. Those expressing opposition mentioned the high costs, potential economic effects on landowners, and potential loss of recreational uses at Nacimiento Reservoir. Many expressed concerns with the high cost of building the proposed project.

Written comments submitted during the scoping period related to the EIR analysis included comments in the following categories, summarized for brevity:

- *Project Description:* Several commenters requested further information related to the project description, including design and construction details, the proposed operational plan, and clarification of water rights.
- *Alternatives:* Multiple commenters provided suggestions related to alternatives to the proposed project, including the following:
    - Considering a project that would raise the spillway only
    - Considering proposals for different intake heights, spillway elevations, and tunnel sizes
    - Including power generation at San Antonio Dam to reduce releases at Nacimiento Dam
    - Pumping or siphoning excess water from Nacimiento Dam over the small hills in the Bee Rock area
    - Reconsidering Jerrett Reservoir
    - Constructing a dam downstream
    - Using existing downstream aquifers for storage
    - Considering an alternative that optimizes recovery of steelhead in the Salinas River
- *Hydrology:* Multiple comments pertained to potential impacts on hydrology, including
    - Potential impacts on reservoir operations and water availability
    - Water availability for agricultural use, water delivery and recharge within the Salinas Valley
    - Relationship to the Sustainable Groundwater Management Act
    - Groundwater availability
    - The need for operational modeling and interface with Monterey County's groundwater assessment model
    - Drought contingency planning
    - Potential for impacts on private wells due to tunnel construction and operation
- *Geology and Soils, Seismicity, and Paleontological Resources:* Potential impacts on properties and infrastructure (i.e., roads and wells) from construction of the tunnel in a fault area.
- *Biological Resources:* Multiple commenters submitted comments regarding potential impacts on biological resources, including:
    - Concern about potential transfer of white bass from Nacimiento to San Antonio Reservoir
    - Impacts on fish species related to water levels and water quality changes (dissolved oxygen levels, temperature) in both reservoirs

- Downstream effects on steelhead
- Potential for mercury transfer between reservoirs
- Impacts on special-status species, including golden eagle and other raptors

- *Cultural Resources:* The Native American Heritage Commission provided comments regarding records searches and archaeological inventory surveys. The comment letter advised that consultation with California Native American tribes affiliated with the study area should be conducted as early as possible.
- *Tribal Cultural Resources*: The comment letter from the Native American Heritage Commission described recent Assembly Bill 52 requirements for consultation with Native American tribes regarding potential impacts on "tribal cultural resources."
- *Hazards*: The San Luis Obispo County Fire Department and the California Department of Forestry and Fire Protection (CAL FIRE) provided comments regarding:
  - Wildfire safety and prevention protocols
  - Confined-space construction
  - Fire safety and prevention protocols
  - Hazardous materials handling
  - Access requirements and routes to the project site
- *Agriculture*: One commenter expressed concerns about potential impacts on grazing land from changes in water levels. Multiple commenters expressed concern about water availability for agricultural use.
- *Recreation:* Multiple commenters submitted comments concerning potential impacts on recreation activities at Nacimiento and San Antonio Reservoirs from changes in water levels.
- *Air Quality and Greenhouse Gases:* The San Luis Obispo Air Pollution Control District provided several comments concerning requirements for air quality and greenhouse gas impact analysis and mitigation.
- *Aesthetics:* Multiple commenters submitted comments concerning the aesthetic impact associated with the project components and changes in water levels.
- *Wildfire:* CAL FIRE submitted comments pertaining to implementation of appropriate fire safety and prevention protocols
- *Cumulative Impacts:* Multiple commenters stated that the EIR should consider the impacts of the project in the context of relevant regional projects, including other water projects.
- *Water Rights:* Multiple commenters submitted comments regarding potential impacts on existing water rights and water promised to San Luis Obispo communities.
- *Economic Impacts:* Multiple commenters expressed concern about potential economic impacts related to the proposed project, including concerns about the value of waterfront properties at the reservoirs.

Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* includes the NOP and public comments received in response to the NOP.

ES.5.3 Public Review of the Draft EIR

The CEQA Guidelines encourage public participation in planning and environmental review processes. The public review period for this Draft EIR is from January 20, 2023 through March 10, 2023. MCWRA will hold two public meetings during the 49-day public review period. Live webinars of both meetings will also be available (*see MCWRA website link below for details on the webinars*):

- February 1, 2023, 5:30 p.m. to 7:30 p.m. at Bradley Elementary School, 65600 Dixie Street, Bradley, CA 93426
- February 2, 2023, 5:30 p.m. to 7:30 p.m. at Greenfield City Council Chambers, 599 El Camino Real, Greenfield, CA 93927

The purpose of public circulation and the public meetings are to provide agencies and interested individuals with the opportunity to comment on or express concerns regarding the information presented in this Draft EIR. The specific date, time, and location for this meeting will also be provided in the Notice of Availability, on the project website, and through several other methods to notify as many potentially interested individuals, agencies, and entities as reasonably possible.

This Draft EIR and all attachments are available on MCWRA's website, along with details on the webinars for the public meetings: https://www.co.monterey.ca.us/government/government-links/water-resources-agency/projects-facilities/interlake-tunnel

The Draft EIR is also available for review at the following locations:

Monterey County Water Resources Agency 1441 Schilling Place, North Building Salinas, CA 93901	Paso Robles City Library 1000 Spring Street Paso Robles, CA 93446

Written comments concerning this Draft EIR can be submitted to the following physical address or e-mail address. All comments must be received by 5:00 p.m. Pacific Standard Time on the final date of public review, March 10, 2023, and directed to:

Alex Henson, Associate Water Resources Engineer
Monterey County Water Resources Agency
1441 Schilling Place, North Building
Salinas, CA 93901

Or by email to:

tunnelEIR@co.monterey.ca.us

Submittal of written comments by email (attached documents in Microsoft Word or PDF format are encouraged) would be greatly appreciated. Written comments received in response to this Draft EIR during the public review period will be addressed in the response-to-comments section of the Final EIR.

ES.5.4 Final EIR and EIR Certification

Following the close of the public comment period, MCWRA will prepare written responses to comments on the Draft EIR. This document will contain copies of all written and emailed comments received on the Draft EIR, as well as MCRWA's written responses to substantive comments and any necessary revisions to the Draft EIR.

The Draft EIR, together with the response-to-comments document, will constitute the Final EIR. MCWRA will consider the adequacy of the Final EIR as well as certification in an advertised public meeting. Certification of the Final EIR by MCWRA represents that: (1) the document has been completed in compliance with CEQA; (2) MCWRA has reviewed and considered the information contained in the Final EIR prior to taking an approval action on the proposed project; and (3) the Final EIR reflects the lead agency's independent judgment and analysis.

Although primarily a public disclosure law, CEQA also imposes a duty to mitigate any significant physical environmental effects of a project. As part of EIR certification, CEQA requires lead agencies to adopt a mitigation monitoring or reporting program as a condition of project approval to mitigate or avoid significant impacts on the environment (CEQA Guidelines sections 15097 and 21081.6).

CEQA prohibits lead agencies from approving/implementing a project unless the lead agency can demonstrate that it has incorporated all feasible mitigation measures to avoid or substantially lessen any significant physical environmental effects of the project. If all feasible mitigation measures are applied but the project still results in one or more significant physical environmental impacts, CEQA requires the lead agency to state its reasoning in writing as to why certain economic, legal, social, technological, or other factors outweigh the environmental impacts.

ES.6 Areas of Known Controversy and Issues Raised

As discussed above (Sections ES.5.1 and ES.5.2), MCWRA sent an NOP and initial study to responsible and trustee agencies, interested entities, and individuals on April 26, 2016. This initiated the scoping period. During the scoping period, MCWRA received comments from numerous individuals, agencies, and a tribal organization; these comments are summarized in Section ES.5.2. Potential areas of known controversy and issues to be resolved identified in the scoping comments include the following:

- Potential impacts on steelhead populations
- Potential introduction of white bass to San Antonio Reservoir from Nacimiento Reservoir
- Potential spread of invasive species (e.g., mussels) between reservoirs
- Potential impacts on species and habitat and related compliance with biological resources laws (e.g., ESA)
- Potential impacts on reservoir water quality
- Potential impacts on groundwater quality and groundwater supply
- Potential impacts on private wells
- Potential impacts on water availability in the watershed
- Potential impacts on recreation (both public and for property owners) due to changes in reservoir water levels
- Implications of the proposed project with respect to existing water rights
- Tunnel design (e.g., elevation, size, placement)

ES.7 Significant Impacts

Section 21100 (b)(2)(A) of the CEQA Guidelines (California Code of Regulations, Title 14, Section 15000 et seq.) requires an EIR to identify any significant environmental impacts that cannot be avoided if a project is implemented. As detailed throughout this EIR, all environmental impacts of the proposed project and Tunnel-Only Alternative would either be less than significant or reduced to a less-than-significant level with implementation of identified mitigation measures. See the evaluation of each resource topic within Chapter 4, *Introduction to the Environmental Analysis.*

ES.8 Alternatives Considered

In addition to the proposed project, this EIR evaluates the impacts of the Tunnel-Only Alternative, the Expanded Nacimiento Outlet Works Alternative, and a No Project Alternative.

ES.8.1 Tunnel-Only Alternative

The Tunnel-Only Alternative would consist of construction and operation of a Tunnel Intake Structure at Nacimiento Reservoir, a water conveyance tunnel from Nacimiento Reservoir to San Antonio Reservoir (Interlake Tunnel), and an Energy Dissipation Structure at San Antonio Reservoir. Although the Tunnel-Only Alternative includes many of the same features as the proposed project, it differs from the proposed project in that it does not include modification of the San Antonio Dam spillway. Construction of the Interlake Tunnel and related subcomponents for the Tunnel-Only Alternative would be the same as described for the proposed project. Operation of the Interlake Tunnel under the Tunnel-Only Alternative would be similar to operation under the proposed project, with the notable difference being that the Tunnel-Only Alternative would not involve an increase in the maximum WSE at San Antonio Reservoir.

ES.8.2 Expanded Nacimiento Outlet Works Alternative

The Expanded Nacimiento Outlet Works Alternative would increase the flow through Nacimiento Dam from 450 cfs to 1,250 cfs by either expanding the LLOW at Nacimiento Dam or constructing a second LLOW. The existing low-level outlet at Nacimiento Dam consists of a 53-inch-diameter pipe near the southern side of the dam (MCWRA 2021a). The LLOW intake structures are currently at the level of the physical minimum pool (or dead pool) of Nacimiento Reservoir, at an elevation of 670 feet, which has 10,300 acre-feet of storage at this level. Under this alternative, the existing outlet works would remain, and a new 8-foot-diameter microtunnel with an 800 cfs capacity would be constructed beneath the existing dam, at a depth of approximately 230 feet below the top of the Nacimiento Dam. This alternative would provide additional flood control and water supply storage at Nacimiento Reservoir; however, it would not provide the same scale of benefits as the proposed project, nor would it provide any water management benefits through the transfer of water to San Antonio Reservoir.

ES.8.3 No Project Alternative

The *No Project Alternative* is defined as what would be reasonably expected to occur in the foreseeable future if none of the other project alternatives are approved and implemented, based on current plans and consistent with available infrastructure. This alternative would involve no additional construction at the project site, and the Interlake Tunnel and San Antonio Spillway Modification would not be built. Operations at Nacimiento and San Antonio Reservoirs would proceed as they currently are and would not be altered in coordination with the project as proposed. In order to meet the definition of a “no project” alternative under CEQA, the No Project Alternative would not permit discretionary approvals, entitlements, or other environmental reviews. Existing conditions at the project site would remain the same, and no new site-access points nor circulation improvements would be constructed.

ES.8.4 Environmentally Superior Alternative

CEQA requires that an environmentally superior alternative be identified among the alternatives analyzed. In general, the environmentally superior alternative is the project that avoids or substantially lessens some or all of the significant and unavoidable impacts of a proposed project (CEQA Guidelines Section 15126.6).

The Expanded Nacimiento Outlet Works would be the environmentally superior alternative because it would avoid significant impacts related to hydrology and water quality, geology and soils, biological resources, cultural resources, tribal cultural resources, transportation, hazards and hazardous materials, greenhouse gas emissions, agricultural resources, and wildfire. However, this alternative would only partially meet the project objectives. Most notably, this alternative would not achieve the same scale of benefit as the proposed project in terms of minimizing flood control releases and increasing the overall surface water supply available from Nacimiento and San Antonio Reservoirs by maximizing the opportunity for water to be collectively stored in the reservoirs.

Among the other alternatives that better meet the project objectives, the Tunnel-Only Alternative would fully meet all basic project and other project objectives and would result in similar significant impacts as the proposed project, although without the impacts related to an increase in the maximum WSE at San Antonio Reservoir, including geology, soils, and seismicity and paleontological resources; biological resources; cultural resources; tribal cultural resources; transportation; hazards and hazardous materials; and wildfire.

The proposed project is the only alternative that would fully meet all project objectives; however, this alternative would also result in the greatest number of significant impacts amongst all the alternatives considered.

ES.9 Summary of Impacts

Table ES-1 includes the impacts and mitigation measures identified in the EIR for the proposed project and the Tunnel-Only Alternative. It also determines whether the proposed sponsor’s objectives would be met by the proposed project and the alternatives.

The information in the tables is organized to correspond with the environmental issues discussed in Chapter 4 of the EIR. **Table ES-1** is arranged in five columns: 1) significance criteria; 2) alternative (proposed project or Tunnel-Only Alternative); 3) CEQA conclusion (if applicable); 4) mitigation measures (if applicable); and 5) level of significance after mitigation (if applicable). For a complete description of potential impacts and recommended mitigation measures, please refer to the topical sections in Chapter 4 of the EIR.

Table ES-1. Summary of Impacts of Proposed Project

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Hydrology				
Impact HWQ-1: Impacts on Surface or Groundwater Quality	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact HWQ-2: Impacts on Groundwater Supplies and Recharge	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact HWQ-3: Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage Systems Capacity	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM HYD-1** **MM GSP-2**	Less than significant
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM HYD-1**	Less than significant
Impact HWQ-4: In a Flood Hazard Area, Risk Release of Pollutants due to Project Inundation	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM HYD-1**	Less than significant
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM HYD-1**	Less than significant
Impact HWQ-5: Conflict with, or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Geology, Soils, and Seismicity				
Impact GSP-1: Impacts Associated with Surface Rupture of a Known Earthquake Fault, Seismic Ground Shaking, or Seismic Ground Failure (including seismically induced landslides)	Proposed Project	Construction: No impact	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: No impact	N/A	N/A
		Operation: No impact	N/A	N/A
Impact GSP-2: Impacts of Soil Erosion or the Loss of Topsoil	Proposed Project	Construction: Significant	**MM GSP-1**	Less than significant
		Operation: Significant	**MM GSP-2**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM GSP-1**	Less than significant
		Operation: Less than significant	N/A	N/A
Impact GSP-3: Impacts as a Result of Soil Instability	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: No impact	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: No impact	N/A	N/A
Impact GSP-4: Impacts as a Result of Expansive Soil	Proposed Project	Construction: No impact	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: No impact	N/A	N/A
		Operation: No impact	N/A	N/A
Paleontological Resources				
Impact GSP-5: Impacts on Paleontological Resources	Proposed Project	Construction: Significant	**MM GSP-3** **MM GSP-4**	Less than significant
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Significant	**MM GSP-3** **MM GSP-4**	Less than significant
		Operation: Less than significant	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Biological Resources				
Impact BIO-1: Impacts on Riparian Habitat	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact BIO-2: Impacts on Listed, Candidate, Sensitive, or Special-Status Riparian Plant Species	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact BIO-3: Impacts on Terrestrial Habitat	Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2**	Less than significant
		Operation: Significant	**MM BIO-3.2**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2**	Less than significant
		Operation: Less than significant	N/A	N/A
Impact BIO-4: Impacts on Listed, Candidate, Sensitive, or Special-Status Terrestrial Plant Species	Proposed Project	Construction: Significant	**MM BIO-4.1** **MM BIO-4.2**	Less than significant
		Operation: Significant	**MM BIO-4.1** **MM BIO-4.2**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-4.1** **MM BIO-4.2**	Less than significant
		Operation: Less than significant	N/A	N/A
Impact BIO-5: Impacts on Wetland and Non-Wetland Water Habitats	Proposed Project	Construction: Significant	**MM BIO-5.1**	Less than significant
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-5.1**	Less than significant
		Operation: Less than significant	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact BIO-6: Impacts on Listed, Candidate, Sensitive, or Special-Status Wetland Plant Species	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact BIO-7: Impacts on Reservoir Fish and Wildlife Habitat	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact BIO-8a: Native Bumble Bees	Proposed Project	Construction: Significant	**MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3**	Less than significant
		Operation: Significant	**MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3**	Less than significant
		Operation: Significant	**MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3**	Less than significant
Impact BIO-8b: Smith's Blue Butterfly	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact BIO-8c: Arroyo Toad, California Red-Legged Frog, and Foothill Yellow-Legged Frog	Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4** **MM BIO-8.5** **MM BIO-8.6**	Less than significant
		Operation: Significant	**MM BIO-3.2** **MM BIO-8.6**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4** **MM BIO-8.5** **MM BIO-8.6**	Less than significant
		Operation: Less than significant	**N/A**	N/A
Impact BIO-8d: Western Spadefoot Toad and Coast Range Newt	Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
		Operation: Significant	**MM BIO-3.2** **MM BIO-8.4**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
		Operation: Less than significant	**N/A**	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact BIO-8e: Coast Horned Lizard, Northern California Legless Lizard, and San Joaquin Coachwhip	Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
		Operation: Significant	**MM BIO-3.2** **MM BIO-8.4**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
		Operation: Less than significant	N/A	N/A
Impact BIO-8f: Two-Striped Gartersnake and Western Pond Turtle	Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
		Operation: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
		Operation: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact BIO-8g: Bald Eagle and Golden Eagle	Proposed Project	<u>Construction</u>: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.8** **MM BIO-8.9** **MM BIO-8.10**	Less than significant
		<u>Operation</u>: Significant	**MM BIO-3.2** **MM BIO-8.9**	Less than significant
	Tunnel-Only Alternative	<u>Construction</u>: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.8** **MM BIO-8.9** **MM BIO-8.10**	Less than significant
		<u>Operation</u>: Significant	**MM BIO-3.2** **MM BIO-8.9**	Less than significant
Impact BIO-8h: Bank Swallow, Great Blue Heron, Least Bell's Vireo, Western Yellow-Billed Cuckoo, Yellow-Breasted Chat, Yellow Warbler, Long-Eared Owl, and Short-Eared Owl	Proposed Project	<u>Construction</u>: Less than significant	N/A	N/A
		<u>Operation</u>: Less than significant	N/A	N/A
	Tunnel-Only Alternative	<u>Construction</u>: Less than significant	N/A	N/A
		<u>Operation</u>: Less than significant	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact BIO-8i: Coast Horned Lark, Loggerhead Shrike, and Western Burrowing Owl	Proposed Project	<u>Construction</u>: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.9** **MM BIO-8.10** **MM BIO-8.11** **MM BIO-8.12** **MM BIO-8.13**	Less than significant
		<u>Operation</u>: Significant	**MM BIO-3.2** **MM BIO-8.9**	Less than significant
	Tunnel-Only Alternative	<u>Construction</u>: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.9** **MM BIO-8.10** **MM BIO-8.11** **MM BIO-8.12** **MM BIO-8.13**	Less than significant
		<u>Operation</u>: Significant	**MM BIO-8.9**	Less than significant

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact BIO-8j: Northern Harrier, Cooper's Hawk, Ferruginous Hawk, Sharp-Shinned Hawk, Prairie Falcon, and White-Tailed Kite	Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.9** **MM BIO-8.10** **MM BIO-8.11**	Less than significant
		Operation: Significant	**MM BIO-3.2** **MM BIO-8.9**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.9** **MM BIO-8.10** **MM BIO-8.11**	Less than significant
		Operation: Significant	**MM BIO-8.9**	Less than significant
Impact BIO-8k: Tricolored Blackbird	Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.11**	Less than significant
		Operation: Significant	**MM BIO-3.2**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.11**	Less than significant
		Operation: Less than significant	N/A	N/A
Impact BIO-8l: Western Snowy Plover	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact BIO-8m: Hoary Bat, Long-eared Myotis, Pallid Bat, Townsend's Big-eared Bat, Western Red Bat, Western Mastiff Bat, Western Small-Footed Myotis, Yuma Myotis, and Colonies of Non-special-status Roosting Bats	Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.14**	Less than significant
		Operation: Significant	**MM BIO-3.2**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.14**	Less than significant
		Operation: Less than significant	N/A	N/A
Impact BIO-8n: Monterey Shrew and Salinas Harvest Mouse	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact BIO-8o: American Badger, Monterey Dusky-Footed Woodrat, Salinas Pocket Mouse, and Mountain Lion	Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.9** **MM BIO-8.15**	Less than significant
		Operation: Significant	**MM BIO-3.2** **MM BIO-8.9**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.9** **MM BIO-8.15**	Less than significant
		Operation: Significant	**MM BIO-8.9**	Less than significant
Impact BIO-8p: South-central California Coast Steelhead	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM BIO-8.16**	Less than significant
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM BIO-8.16**	Less than significant

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact BIO-9: Potential to Interfere with Fish or Wildlife Species Movement	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	Less than significant
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	Less than significant
Impact BIO-10: Potential to Conflict with Local Policies or Ordinances Protecting Biological Resources	Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-4.1** **MM BIO-4.2** **MM BIO-5.1** **MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3** **MM BIO-8.5 through MM BIO-8.15**	Less than significant
		Operation: Significant	**MM BIO-3.2** **MM BIO-4.1** **MM BIO-4.2** **MM BIO-8.1** **MM BIO-8.4** **MM BIO-8.6** **MM BIO-8.9** **MM BIO-8.13** **MM BIO-8.16**	Less than significant

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
	Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-4.1** **MM BIO-4.2** **MM BIO-5.1** **MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3** **MM BIO-8.5 through MM BIO-8.15**	Less than significant
		Operation: Significant	**MM BIO-3.2** **MM BIO-4.1** **MM BIO-4.2** **MM BIO-8.1** **MM BIO-8.4** **MM BIO-8.6** **MM BIO-8.9** **MM BIO-8.13** **MM BIO-8.16**	Less than significant
Cultural Resources				
Impact CUL-1: Impacts on Archaeological Resources	Proposed Project	Construction: Significant	**MM CUL-1.1** **MM CUL-1.2** **MM CUL-1.3** **MM CUL-1.5**	Less than significant
		Operation: Significant	**MM CUL-1.3** **MM CUL-1.4** **MM CUL-1.5**	Less than significant

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
	Tunnel-Only Alternative	Construction: Significant	**MM CUL-1.1** **MM CUL-1.2** **MM CUL-1.3**	Less than significant
		Operation: No Impact	N/A	N/A
Impact CUL-2: Disturbed Human Remains	Proposed Project	Construction: Significant	**MM CUL-1.1** **MM CUL-1.2** **MM CUL-1.3** **MM CUL-2.1**	Less than significant
		Operation: Significant	**MM CUL-1.3** **MM CUL-2.1**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM CUL-1.1** **MM CUL-1.2** **MM CUL-1.3** **MM CUL-2.1**	Less than significant
		Operation: No Impact	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Tribal Cultural Resources				
Impact TCR-1: Impacts on Listed or Eligible Tribal Cultural Resources	Proposed Project	Construction: Significant	**MM-CUL-1.1** **MM-CUL-1.2** **MM-CUL-2.1** **MM-TCR-1**	Less than significant
		Operation: Significant	**MM-CUL-1.3** **MM-CUL-2.1** **MM-TCR-1**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM-CUL-1.1** **MM-CUL-1.2** **MM-CUL-2.1** **MM-TCR-1**	Less than significant
		Operation: No Impact	N/A	N/A
Transportation				
Impact TRA-1: Conflict with Transportation Program, Plan, Ordinance, or Policy	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact TRA-2: Increase Transportation Hazards	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM TRA-1**	Less than significant
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact TRA-3: Result in Inadequate Emergency Access	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM TRA-1**	Less than significant
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact TRA-4: Conflict with CEQA Guidelines Section 15064.3, Subdivision (b)	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Hazards				
Impact HAZ-1: Impacts Associated with the Transport, Use, or Disposal of Hazardous Materials	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact HAZ-2: Impacts Associated with a Release of Hazardous Materials into the Environment	Proposed Project	Construction: Significant	**MM HAZ-1**	Less than significant
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact HAZ-3: Impair or Interfere with an Emergency Response Plan or Emergency Evacuation Plan	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM TRA-1**	Less than significant
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Noise				
Impact NV-1a: Expose Sensitive Receptors to Increased Noise Levels during Project Construction	Proposed Project	Construction: Significant	**MM-NV-1a**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM-NV-1a**	Less than significant
Impact NV-1b: Expose Sensitive Receptors to Increased Noise Levels during Project Operations	Proposed Project	Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Operation: Less than significant	N/A	N/A
Impact NV-2: Generate Excessive Groundborne Vibration or	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Groundborne Noise Levels during Construction and Operations	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Air Quality				
Impact AQ-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact AQ-2: Result in a Cumulatively Considerable Increase in a Criteria Pollutant	Proposed Project	Construction: Significant	**MM AQ-1** **MM AQ-2**	Less than significant
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Significant	**MM AQ-1** **MM AQ-2**	Less than significant
		Operation: Less than significant	N/A	N/A
Impact AQ-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations	Proposed Project	Construction: Significant	**MM AQ-1** **MM AQ-2**	Less than significant
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Significant	**MM AQ-1** **MM AQ-2**	Less than significant
		Operation: Less than significant	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Greenhouse Gas Emissions				
Impact GHG-1: Generate a Substantial Amount of GHG Emissions	Proposed Project	Construction: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant
		Operation: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant
	Tunnel-Only Alternative	Construction: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant
		Operation: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant
Impact GHG-2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs	Proposed Project	Construction: N/A	N/A	N/A
		Operation: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant
	Tunnel-Only Alternative	Construction: N/A	N/A	N/A
		Operation: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant
Agricultural Resources				
Impact AG -1: Impacts from Direct or Indirect Conversion of Farmland to Nonagricultural Use	Proposed Project	Construction: No impact	N/A	N/A
		Operation: Significant	**MM HYD-1**	Less than significant
	Tunnel-Only Alternative	Construction: No impact	N/A	N/A
		Operation: Significant	**MM HYD-1**	Less than significant
Impact AG -2: Impacts from Conflicts with Existing Agricultural Zoning or a Williamson Act Contract	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM HYD-1**	Less than significant
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM HYD-1**	Less than significant

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Recreation				
Impact REC-1: Deterioration of Recreational Facilities Resulting from Project-related Intensification of Use	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact REC-2: Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Aesthetics				
Impact AES-1: Impacts on Visual Character, including Scenic Vistas	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact AES-2: Impacts on Scenic Roadways	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact AES-3: Affect Daytime or Nighttime Views	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Utilities and Service Systems				
Impact UT-1: Impacts Resulting from Construction or Relocation of Utility Infrastructure	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact UT-2: Impacts on Water Supply	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact UT-3: Impacts on Wastewater Treatment Facilities	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: No impact	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: No impact	N/A	N/A
Impact UT-4: Impacts Pertaining to Solid Waste Disposal and Conflicts with Solid Waste Regulations	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Wildfire				
Impact WF-1: Impair an Adopted Emergency Response Plan or Emergency Evacuation Plan	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Significant	**MM TRA-1**	Less than significant
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact WF-2: Increase Potential Exposure to Pollutant Concentrations from a Wildfire	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact WF-3: Include Components that Would Exacerbate Fire Risk	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A

Significance Criteria	Proposed Project/ Tunnel-Only Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact WF-4: Impacts Related to Post-fire Slope Instability or Drainage Changes	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Energy				
Impact EN-1: Result in Wasteful, Inefficient, or Unnecessary Consumption of Energy	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
Impact EN-2: Conflict with or Obstruct Plan for Renewable Energy or Energy Efficiency	Proposed Project	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A
	Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
		Operation: Less than significant	N/A	N/A

ES.10 Organization of This Draft EIR

Consistent with CEQA Guidelines sections 15120 to 15132, this EIR describes the proposed project, required approvals, and existing land use plans and policies applicable to the proposed project; identifies potential environmental impacts of the proposed project, mitigation measures where the impacts are significant, and cumulative adverse impacts to which the proposed project could make a substantial contribution; discusses growth-inducing and significant unavoidable effects of the project; and evaluates alternatives to the project that could avoid or reduce significant impacts while still meeting most of the project's objectives.

This EIR is organized as follows:

- **Executive Summary.** This chapter provides a description of the proposed project and issues of concern, proposed project alternatives, and a summary of environmental impacts and mitigation measures.
- **Chapter 1, Introduction**. This chapter provides background on the proposed project and information on related actions. It describes the purpose and organization of the EIR and its preparation, review, and certification process.
- **Chapter 2, Project Description.** This chapter summarizes the proposed project, provides a description of the project area, discusses the actions that would be taken under the proposed project, and identifies related permits and approvals associated with the activity.
- **Chapter 3, Tunnel-Only Alternative.** This chapter describes the Tunnel-Only Alternative, which is evaluated with a level of detail equivalent to the evaluation of the proposed project in Chapter 4.
- **Chapter 4, Introduction to the Environmental Analysis.** This chapter describes the environmental resource topic areas and the potential environmental impacts of the proposed project. Each section within this chapter describes the existing setting and background information for the resource topic area under consideration to aid the reader in understanding the conditions that could be affected by the proposed project and Tunnel-Only Alternative. In addition, each section includes a discussion of the criteria used in determining the significance levels of environmental impacts. Each section also provides mitigation measures to reduce, where possible, the adverse effects of potentially significant impacts.
- **Chapter 5, Other Statutory Considerations.** This chapter addresses the potential of the proposed project and Tunnel-Only Alternative to contribute to cumulative impacts, outlines the proposed project's potential to induce growth, and identifies significant, irreversible environmental changes that would result from the proposed project and Tunnel-Only Alternative.
- **Chapter 6, Alternatives**. This chapter describes the process by which alternatives to the proposed project were developed and screened, evaluates their likely environmental impacts, and identifies the environmentally superior alternative.
- **Chapter 7, Report Preparation**. This chapter lists the individuals involved in preparing this Draft EIR.
- **Chapter 8, References.** This chapter provides a bibliography of printed references, websites, and personal communications used in preparing this Draft EIR.
    - **Appendices.** The appendices include background information and supporting analysis for this EIR.

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Chapter 1
Introduction

1.1 Project Overview

The Monterey County Water Resources Agency (MCWRA) has prepared this draft environmental impact report (EIR) to provide the public, responsible agencies, and trustee agencies with information about the potential environmental effects associated with construction and operation of the proposed Interlake Tunnel and Spillway Modification Project (proposed project). This chapter provides background information about the proposed project; the project's purpose and objectives; the scope of this EIR; an overview of the California Environmental Quality Act (CEQA)[1] process, including information on how to submit comments on the EIR; and the organization of this EIR.

MCWRA operates Nacimiento and San Antonio Reservoirs, which are the most important elements of the region's water infrastructure. Together, the reservoirs are used for water supply (groundwater recharge), flood management, and recreation. Water released from the reservoirs is heavily regulated to satisfy several parallel needs, such as those related to the Salinas Valley Water Project (SVWP), environmental compliance, flood control, recreation management, and drought contingency. The combined mean annual releases for Nacimiento and San Antonio Dams total 239,858 acre-feet, with the combined annual volume of flood control releases ranging from 2,818 to 691,901 acre-feet for those years in which flood control releases were made (MCWRA 2022a).

The proposed project would connect Nacimiento Reservoir and San Antonio Reservoir with an underground water conveyance tunnel (i.e., Interlake Tunnel) and modify the spillway at San Antonio Dam (i.e., Spillway Modification.) As further detailed in Chapter 2, *Project Description*, the proposed project is intended to expand and make better use of the storage capacity at San Antonio Reservoir.

In addition to the proposed project, this EIR also evaluates the Tunnel-Only Alternative. The Tunnel-Only Alternative would provide an Interlake Tunnel but omit the Spillway Modification. Refer to Chapter 3, *Tunnel-Only Alternative*, for further information on this alternative. This EIR evaluates the Tunnel-Only Alternative with a level of detail comparable to that found in the evaluation of the proposed project. Note that the Spillway Modification would not be constructed without the Interlake Tunnel because an increase in the storage capacity of San Antonio Reservoir would not be warranted without it. In addition to the Tunnel-Only Alternative, this EIR also evaluates a reasonable range of other alternatives to the proposed project and compares the relative environmental advantages and disadvantages of each alternative to the proposed project. Refer to Chapter 6, *Alternatives*, for further discussion of these alternatives.

[1] California Public Resources Code Sections 21000 et seq. (CEQA Statute) and California Code of Regulations Title 14, Sections 15000 et seq. (CEQA Guidelines).

1.2 Project Background

MCWRA's predecessor, the Monterey County Flood Control and Water Conservation District, was created in 1947 through the Monterey County Flood Control and Water Conservation District Act (Chapter 699 of the Statutes of 1947). MCWRA was created in 1991 through the Monterey County Water Resources Agency Act (Agency Act), California Water Code, Appendix 52 (MCWRA 2022b). This act mandated MCWRA to control flood and stormwaters, conserve such waters through storage and percolation, control groundwater extraction, protect water quality, reclaim water, exchange water, and construct and operate hydroelectric power facilities. MCWRA's territory covers all of Monterey County, including the Salinas Valley Groundwater Basin (Basin) (MCWRA 2006).

MCWRA's mission is to manage, protect, store, and conserve water resources in Monterey County for beneficial uses, including environmental uses, while minimizing damage from flooding to create a safe and sustainable water supply for present and future generations. To fulfill this mission, MCWRA operates and manages numerous water-related facilities throughout the region and undertakes various improvement and maintenance projects to meet current and future needs (MCWRA 2022c). Included among its efforts are water storage facilities and hydroelectric facilities. In addition, MCWRA develops groundwater management measures to protect groundwater from the intrusion of sea water. Section 1.2.1, *Water Resource Management in the Salinas River Basin*, describes some of the efforts and projects related to the proposed project.

Climate is a critical factor in MCWRA's management activities. Monterey County, as well as the larger Central Coast region, is situated in an area with a Mediterranean climate. Mediterranean climates typically have warm, dry summers and cool, wet winters. However, from year to year, weather patterns can be highly variable. Over the past century, Monterey County has experienced years with major floods and abundant water as well as years with both short- and long-term drought conditions (MCWRA 2022d). Such variability poses significant and frequently changing water management challenges. Moreover, Monterey County is not connected to any federal or state water projects; therefore, it cannot offset water supply shortages with water imported from elsewhere.

Nacimiento and San Antonio Reservoirs are MCWRA's primary water infrastructure facilities. MCWRA's predecessor (Monterey County Flood Control and Water Conservation District) constructed Nacimiento Dam in 1957 and San Antonio Dam in 1967, with each creating its respective reservoir to control floodwaters and also release water into the Salinas River for percolation into underground aquifers throughout the summer (Greater Monterey County Integrated Regional Water Management Group 2018). Nacimiento and San Antonio Dams are under the jurisdiction of the California Department of Water Resources (DWR), Division of Safety of Dams (DSOD). Nacimiento Dam is also under the jurisdiction of the Federal Energy Regulatory Commission (FERC) because of the hydroelectric plant at the dam abutment. Both reservoirs are vital regional water storage and flood control facilities, and both offer recreational opportunities (e.g., boating, swimming, camping, fishing). The reservoirs are fed by rivers that are a part of the Salinas River watershed, which originates near Santa Margarita in San Luis Obispo County.

The Salinas River flows approximately 175 miles from its origination, and its watershed drains an approximately 4,600-square-mile area of Monterey and San Luis Obispo Counties that includes 200,000 acres of irrigated land for agriculture (Resource Conservation District of Monterey County 2022). Two of the three major tributaries to the Salinas River are the Nacimiento and San Antonio Rivers, each of which serves as the primary water source for its respective reservoir. Below Nacimiento and San Antonio Dams, each river continues until its confluence with the Salinas River.

Fertile soils in the floodplain, a highly favorable climate, and river flows for aquifer recharge and irrigation make the Salinas Valley one of the most productive agricultural regions in California (MCWRA and State Coastal Conservancy 2019). Historically, the Salinas River was dry during the summer months and prone to flooding during extreme winter and spring storm events. Levees were constructed to prevent flooding and restrict channel migration on the historic floodplain and adjacent lands. The construction of Nacimiento and San Antonio Dams further modified the natural hydrologic condition of the Salinas River. Operation of the dams has significantly altered the seasonal distribution and magnitude of streamflow in the Salinas River by reducing wet-season flows and increasing dry-season flows (MCWRA and State Coastal Conservancy 2019). Such flows provide groundwater recharge and benefit nearby agricultural water users, but they can also foster conditions (e.g., silt transport and deposit, more in-channel vegetative growth) that make the river more prone to flooding during storm events with higher flows.

Since the construction of both reservoirs, MCWRA has observed that, on average, Nacimiento Reservoir fills approximately three times faster than San Antonio Reservoir. Accordingly, when Nacimiento Reservoir reaches capacity, San Antonio Reservoir will typically have remaining capacity. However, in such situations, Nacimiento Reservoir's excess water must be released downstream because, at present, the means do not exist for conveying water between the reservoirs.

In 1991, MCWRA included the proposed project in its Water Facilities Capital Plan, presenting it as an approach for improving the management of flood and conservation flows in the Salinas River watershed (MCWRA 1991). In 2013, the proposed project was included in the Greater Monterey County Integrated Regional Water Management Plan, which was updated in 2018 (Greater Monterey County Regional Water Management Group 2018). The drought years of 2011 to 2017 rekindled interest in the project among agricultural interests and others in the region.

1.2.1 Water Resource Management in the Salinas River Basin

MCWRA manages certain surface water flows, including flood and stormwater, through its operations at Nacimiento and San Antonio Dams. It also conserves such flows through percolation and storage, monitors groundwater extraction, supports groundwater recharge of the Salinas Valley, and provides water to the agricultural and industrial communities of the Salinas Valley. Details on how MCWRA currently manages water resources in its jurisdiction are outlined in the sections that follow.

1.2.1.1 Water Supply Operations

MCWRA is authorized to conserve water in any manner as well as buy, sell, and purvey water. It is also authorized to prevent waste or water extractions that would harm the groundwater basin (i.e., subsurface flows). Through this authorization, MCWRA works as a *conjunctive-use*[2] agency, utilizing both surface (i.e., reservoirs and diversions) and subsurface (i.e., aquifer) storage facilities to ensure water supply reliability.

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[2] Conjunctive use often entails reservoir releases to groundwater recharge areas, which are either on-channel areas (i.e., in a natural streambed) or off-channel areas where water percolates into the aquifers and is stored for later extraction.

Reservoirs

Water Releases

The highest priority among MCWRA's water conservation operations is to maximize the amount of groundwater recharge in Salinas Valley aquifers through releases of water from its reservoirs and operation of the Salinas River Diversion Facility (SRDF) (described in the subsection titled *Salinas River Diversion Facility*). This is accomplished by storing winter inflow to Nacimiento and San Antonio Reservoirs so that water is available for release during the irrigation season.

Recreation

Recreational uses at the two reservoirs include boating, swimming, fishing, and camping. These uses are managed by Monterey County Public Works, Facilities & Parks (PWFP) (previously known as the Monterey County Resource Management Agency) at both Nacimiento and San Antonio Reservoirs. MCWRA operates both reservoirs in a manner that supports the recreational benefits of the reservoirs.

Groundwater Recharge

The main water source for agricultural and municipal/industrial water supply in Monterey County is groundwater (Greater Monterey County Integrated Regional Water Management Group 2018). Agricultural water use represents approximately 90 percent of all water use in the Salinas Valley (MCWRA 2006). Protecting and managing the groundwater supply is a vitally important aspect of managing water resources in Monterey County today because groundwater is critical to ensuring a long-term, sustainable, and reliable supply of good-quality water for the region, particularly for agriculture. Prior to 1957, groundwater recharge in the Salinas Valley occurred from a combination of precipitation, streamflow, and applied irrigation. With construction of Nacimiento and San Antonio Dams, MCWRA had the ability to actively manage groundwater recharge. Management of Nacimiento and San Antonio Dams is now focused primarily on the regulated release of water to maintain Salinas River streamflow to maximize groundwater recharge from the streambed. Continued management of streamflow for groundwater recharge and planned diversion to augment water supplies in the western portion of the Basin is a logical component of ongoing groundwater management. Thus, reservoir storage, releases, streamflow, and surface water quality relate directly to groundwater basin yield and the avoidance of overdraft conditions (MCWRA 2006).

1.2.1.2 Flood Management

In addition to water supply operations, MCWRA operates its two dams to provide safe conditions for downstream communities in terms of flooding. This involves managing reservoir storage to ensure that there is adequate capacity for containing high levels of projected inflow during storm events. Both Nacimiento and San Antonio Reservoirs are equipped to capture flows from the upper watershed (surface waters of the Nacimiento and San Antonio Rivers, respectively) and protect downstream reaches from flooding. Available reservoir storage capacity is maintained through a self-imposed range of operating elevations within the flood pool that allows for the safe capture of upstream floodflows while minimizing the need for flood control releases downstream.

Facilities

In addition to Nacimiento and San Antonio Dams and the SRDF, MCWRA operates and maintains drainage facilities (earthen channels) in 14 drainage maintenance zones and districts located throughout Monterey County. These drainage maintenance zones consist of approximately 57 miles of improved drainageway, eight pump stations, 9 miles of river levees, and numerous culverts, tide gates, and concrete structures.

Reservoirs

MCWRA owns and operates two dams and their associated reservoirs, Nacimiento and San Antonio. Nacimiento and San Antonio Reservoirs are managed for the combined goals of water conservation through groundwater recharge, flood protection, and recreation, with flood safety being the primary consideration. The operation of the reservoirs is guided by the Reservoir Operations Advisory Committee, which provides recommendations to MCWRA's Board of Directors (MCWRA 2022e).

Nacimiento Dam and Reservoir

Nacimiento Dam and Reservoir are located in northern San Luis Obispo County, about 20 miles from the coast. Nacimiento Dam is an earthfill dam that was completed in 1957 (MCWRA 2006). The dam crest elevation is 825 feet National Geodetic Vertical Datum of 1929 (NGVD 29),[3] with a spillway crest elevation of 787.75 feet; the spillway crest can be raised to an elevation of 800 feet by using an inflatable Obermeyer spillway gate. When the reservoir is full (elevation 800 feet), it has a maximum storage capacity of 377,900 acre-feet, is 18 miles long, and has about 165 miles of shoreline. The maximum elevation during flood stage is 825 feet, with a maximum temporary capacity of 538,000 acre-feet and a temporary surface area of 7,149 acres (MCWRA 2022e).

San Antonio Dam and Reservoir

San Antonio Dam and Reservoir are located in southern Monterey County, about 16 miles northwest of Paso Robles. San Antonio Dam is an earthfill dam that was completed in 1967 (MCWRA 2006). The dam crest elevation is 802 feet, with a spillway crest elevation of 780 feet. When the reservoir is full (elevation of 780 feet at the crest of the spillway), it has a maximum storage capacity of 335,000 acre-feet, is 16 miles long, and has about 100 miles of shoreline. The maximum elevation during flood stage is 802 feet, with a maximum temporary capacity of about 477,000 acre-feet and a temporary surface area of about 7,500 acres (MCWRA 20022e).

Salinas River Diversion Facility

The SRDF was completed in 2010 as part of the SVWP. Located near the city of Marina, approximately 5 river miles from the mouth of the Salinas River, this facility impounds water to provide additional irrigation water for nearby farms in the lower reaches of the river valley after being treated (i.e., filtered and chlorinated) and mixed with recycled wastewater, thereby significantly reducing the need to pump groundwater, except in periods of extremely high demand. The facility includes an Obermeyer inflatable dam, which is approximately 9 feet high by 230 feet long, consisting of a metal spillway gate and an inflatable air bladder. The facility also includes a screened intake and a pump station that transfers impounded water to the Salinas Valley

[3] The National Geodetic Vertical Datum of 1929 (NGVD 29) is a vertical datum established for vertical control surveying in the U.S. All elevations presented in this document are in NGVD 29.

Reclamation Project where it is filtered and disinfected prior to being blended with recycled water. The facility incorporates a fish ladder to allow fish passage up and down river when the dam is raised. The blended water produced at the Salinas Valley Reclamation Project facility then flows into distribution piping for conveyance to customers within the Castroville Seawater Intrusion Project service area (MCWRA 2022f).

Other Facilities

Additional facilities that play an integral part in flood control and water supply operations in the Salinas Valley include the following:

- Castroville Seawater Intrusion Project Irrigation Pipeline: This 48-mile-long pipeline distribution system supplies irrigation water to the areas that are most threatened by seawater intrusion; it delivers a blend of groundwater, river water, and recycled water to growers within the 12,000-acre service area surrounding Castroville (Salinas Valley Basin Groundwater Sustainability Agency Seawater Intrusion Group [SWIG] 2020).
- Blanco Drain Pump Station: This pump station, located at the downstream end of the Blanco Drain ditch, near the confluence of the Salinas River, is operated at times when the SRDF is operating and creating a backwater effect at the culvert and flapgate. The pump station lifts Blanco Drain flows past a slidegate to create adequate pressure and open the downstream flapgate. This also allows flows to enter into the gravity portion of the channel.
- Old Salinas River Slidegate: Located where Salinas River Lagoon discharges into the Old Salinas River, this slidegate regulates lagoon water levels when the sandbar at the mouth of the river is closed. It was designed to release up to 120 cubic feet per second (cfs).
- Potrero Road Tide Gates: Located within the lower Salinas Valley, the tide gates prevent tidal waters from moving upstream at the Old Salinas River, downstream of the confluence with Tembladero Slough.
- Moss Landing Road Tide Gates: Located within the lower Salinas Valley on Moss Landing Road at the confluence with Moss Landing Harbor, the gates prevent tidal waters from moving upstream into Moro Cojo Slough.
- Reclamation Ditch System: This system, constructed in 1917, includes a network of drainage channels within an approximately 157-square-mile watershed in Monterey and San Benito Counties. The Reclamation Ditch flows southeast to northwest, draining a series of natural lakes that are linked by a system of lateral ditches (tributaries). Five pumping facilities lift stormwater from low-lying areas (MCWRA 2022g).
- Pump Stations: MCWRA operates pump stations in several streams in the lower Gabilan Creek watershed. The pump stations house large instream pumps that are used for flood control and draining low-lying stream channels in agricultural areas (California Regional Water Quality Control Board 2022).

1.2.2 Related Projects and Programs

MCWRA maintains a substantial portfolio of projects that are intended to augment native water supplies, assist with flood control, and enhance and protect groundwater. Although both the proposed project and the Tunnel-Only Alternative have independent utility and do not depend on implementation of other projects to be functional, because both reservoirs and their respective rivers are major elements of the Salinas River watershed, both the proposed project and Tunnel-Only Alternative would have connections to and the ability to help achieve the objectives of other MCWRA projects and initiatives.

1.2.2.1 San Antonio Spillway Rehabilitation

In 2018, MCWRA conducted a conditions assessment of the San Antonio Spillway foundation and structure in response to a 2017 request from the California DSOD, which has jurisdiction over San Antonio Dam. The assessment identified foundation and structural deficiencies within the dam that could compromise the performance of the spillway during high-flow events. The deficiencies require either major rehabilitation or full replacement of the spillway.

DSOD requires that the spillway be fully operational by November 1, 2024; MCWRA has submitted a plan to DSOD to complete the required work by the 2024 deadline. Options currently under consideration include rehabilitating the existing spillway, replacing the spillway at or near the current spillway location, or constructing a new spillway at another location. The spillway rehabilitation or replacement work that could occur as part of this DSOD action would occur separately from the proposed project and proceed regardless of whether or not the proposed project is constructed. It should be noted that the San Antonio Spillway Rehabilitation Project is not the same as the proposed project and is not included as part of the proposed project or the Tunnel-Only Alternative.

1.2.2.2 Salinas Valley Water Project

The SVWP was developed as part of a collaborative effort between MCWRA and Salinas Valley stakeholders to improve water resource management in the Salinas Valley. Included among SVWP's key objectives are:

- Provide adequate water supplies and flexibility to meet current and future needs.
- Provide the surface water supply necessary to attain a hydrologically balanced groundwater basin in the Salinas Valley.
- Avoid/minimize/address seawater intrusion into (fresh) groundwater aquifers, a phenomenon that can occur when groundwater aquifers are depleted of fresh water.
- Recharge groundwater aquifers.
- Improve flood control.
- Enhance the safety of Nacimiento Dam.
- Improve river flow and migratory conditions for the federally endangered South-Central California Coast steelhead trout (*Oncorhynchus mykiss*).

SVWP Phase 1 was completed in 2010 and consists of: 1) Nacimiento Dam Spillway Modification; and 2) SRDF. The Nacimiento Dam Spillway Modification Project, completed in 2009, increased spillway capacity. The project also installed an inflatable Obermeyer spillway gate at the dam. This project was intended to address safety issues associated with floodflows, which must be conveyed through the reservoir and the spillway. The SRDF, completed in 2010, provided a facility to operate a seasonal rubber dam (April 1 through October 31) on the Salinas River near the city of Marina. The diversion facility provides treated (filtered and chlorinated) river water to nearby farms, thereby reducing groundwater pumping by up to 80 percent during peak agricultural demand periods when the diversion facility is operational. The SVWP includes ongoing operational and maintenance activities.

SVWP Phase 2 is a separate proposed project that has yet to be implemented; it is intended to address water supply issues in the Basin. SVWP Phase 2 would put to beneficial use the water right allocated to MCWRA by Water Right Permit 11043 by further developing and delivering up to 135,000 acre-feet per year (AFY) of surface water to the Basin's Pressure and East Side subareas, with the intention of helping offset groundwater pumping in those areas. Reduced groundwater extractions would, in turn, help to halt seawater intrusion in the Basin. SVWP Phase 2 would also involve additional surface water capture and diversion facilities, or subsurface collectors, near the cities of Soledad and Salinas. Such facilities are likely to include pipelines and pump stations. The delivery system is expected to be composed of either turnouts (if directly delivered to users) or injection wells or percolation ponds (for aquifer storage and subsequent extraction by users). The design of the delivery system would depend on the end user's treatment requirements (e.g., agricultural, urban, industrial) (MCWRA 2022h). By enhancing water storage, the proposed project and the Tunnel-Only Alternative would contribute to key objectives of the SVWP.

1.2.2.3 Salinas River Long-Term Management Plan

The Salinas River Long-Term Management Plan (LTMP) aims to provide a multi-benefit management program that addresses the needs of MCWRA facilities and operations while addressing issues such as those related to flood risk reduction, water supply, water quality, natural resource conservation, threatened and endangered species management, and compliance with the federal and state environmental laws, including the federal and state Endangered Species Acts (ESAs) (MCWRA and State Coastal Conservancy 2019). Although the Salinas River is the longest river system on the central coast of California, the geographic scope of the plan is limited to the portion of the Salinas River watershed in which MCWRA conducts management activities. Management actions under the plan broadly include water supply management, groundwater recharge, flood management, and riverine habitat enhancement and restoration. The plan is not subject to a specific (e.g., 20- or 30-year) planning horizon; instead, it is intended to remain flexible to guide both short- and long-term management needs.

From 2007 to 2017, MCWRA had authorization to take federally listed species from the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) for much of its operations. MCWRA is currently preparing a Habitat Conservation Plan (HCP) to provide a comprehensive and durable take authorization that will provide MCWRA with regulatory certainty for decades with a comprehensive and sustainable plan to cover water-related operations and maintenance activities for the Salinas River. The HCP will be based, in part, on the LTMP and the prior biological opinions. To approve the HCP, MCWRA will need to comply with the CEQA by preparing an EIR. To issue the ESA Section 10(a)(1)(B) permits, both NMFS and USFWS must comply with National Environmental Policy Act (NEPA) by preparing an Environmental Impact Statement (EIS). Preparation of the HCP EIR/EIS will follow this EIR and reflect any CEQA certification and approvals of the Interlake Tunnel Project, if such actions are taken.

1.2.2.4 Salinas Valley Water Project Flow Prescription

As part of the permitting process for SVWP, in 2002, the U.S. Army Corps of Engineers (USACE) initiated formal consultation with NMFS under Section 7 of the ESA. As a result of this consultation, in 2005, MCWRA prepared the Salinas Valley Water Project Flow Prescription (Flow Prescription) for management of south-central California coast steelhead trout in the Salinas River. The Flow Prescription defines flow requirements and operational targets for steelhead trout and establishes three main areas of monitoring, population monitoring, flow/migration monitoring, and water quality/habitat monitoring. The Flow Prescription was incorporated into the NMFS Biological Opinion for the SVWP and MCWRA's water rights for the reservoirs (MCWRA 2015). The Biological Opinion was subsequently withdrawn by NMFS on February 20, 2019, because the construction-related terms and conditions from the Biological Opinion had been satisfied. MCWRA has since entered into a charter with NMFS and USFWS on consultation and coordination and continues to work on the HCP as described in Section 1.2.2.3, *Salinas River Long-Term Management Plan*.

The proposed project and the Tunnel-Only Alternative are connected to the Flow Prescription in that the project objectives include continuing to meet downstream environmental flow requirements for south-central California coast steelhead and enhancing the regional water supply, which would provide for enhanced management of water in the Salinas River watershed.

1.2.2.5 Water Recycling Projects

The Castroville Seawater Intrusion Project and the Salinas Valley Reclamation Project use treated recycled water to irrigate fields near Castroville and reduce the use of groundwater, thereby helping fend off saltwater intrusion (MCWRA 2022i).

1.2.2.6 Partnership Projects and Programs

The six interrelated projects and programs discussed below are relevant to the short- and long-term management needs of the Salinas River. MCWRA is a partner in each of these projects and programs, which are led by federal, state, or other local agencies.

Salinas River Stream Maintenance Program

MCWRA developed the Salinas River Stream Maintenance Program in collaboration with the Resource Conservation District of Monterey County, Salinas River Channel Coalition, Grower-Shipper Association of Central California, The Nature Conservancy, the Conservation Collaborative, and other local entities and contractors (MCWRA 2022j). This program, which was fully implemented in 2016, is intended to help protect landowners and farms along the Salinas River against flooding during and after moderate storm events while enhancing the habitat value of the Salinas River. The Salinas River Stream Maintenance Program facilitates vegetation and sediment management activities conducted voluntarily by individual property owners, growers, and municipalities.

Pure Water Monterey

Pure Water Monterey is a water recycling and groundwater replenishment project developed by the Monterey Peninsula Water Management District and Monterey One Water (Pure Water Monterey 2022). The project, approved in 2012 and completed in 2020, reduces water use from the Carmel River. In so doing, it restores the reliability of surface water and groundwater in the region. The project utilizes existing infrastructure and newly constructed facilities to provide advanced treatment for new-source waters, which include agricultural wash water, stormwater runoff, agricultural return water, and treated wastewater for injection into the Seaside Groundwater Basin. The injected water is later extracted and used for the potable water supply. MCWRA participated in the project's development and implementation and retains the option of utilizing new-source waters from the project for irrigation supplies through the Castroville Seawater Intrusion Project.

The Expanded Pure Water Monterey Groundwater Replenishment Project was approved in April 2021 to increase the capacity of the existing advanced water purification facility and increase recharge for the Seaside Groundwater Basin. The expansion project, which is currently in the design phase, includes additional water conveyance pipelines, injection well facilities, potable supply extraction and distribution facilities, and associated infrastructure (Pure Water Monterey 2021).

Groundwater Sustainability Plans

In 2014, California enacted the Sustainable Groundwater Management Act (SGMA), which requires local agencies to form groundwater sustainability agencies (GSAs) to manage local groundwater basins and implement 20-year groundwater sustainability plans (GSPs) (California Department of Water Resources 2022). The proposed project overlies a portion of the Lockwood Valley Groundwater Basin, which is designated as a low-priority basin and is not subject to SGMA. Nacimiento and San Antonio Reservoirs release water to the Salinas River, which flows through and recharges the Salinas Valley Groundwater Basin. DWR divides the Salinas Valley Groundwater Basin into eight sub-basins. Groundwater in the Salinas Valley Groundwater Basin within Monterey County is managed under the Salinas Valley Basin GSA, Arroyo Seco GSA, Marina Coast GSA, Marina Coast Water District GSA, and County of Monterey GSA.

WaterSMART Basin Study

The WaterSMART Salinas and Carmel River Basins Study, initiated in 2017, is a comprehensive water resources assessment of the Salinas and Carmel River watersheds in Monterey and San Luis Obispo Counties. The study was funded by the U.S. Bureau of Reclamation, MCWRA, Monterey Peninsula Water Management District, San Luis Obispo County Public Works, and Monterey One Water. This study assesses the general health of the Salinas River and Carmel River watersheds and groundwater basins and their ability to provide sustainable water supplies into the future with respect to climate change over the next century. This study serves to help water managers make informed decisions on water use, plan for future water supplies, and propose adaptive strategies to mitigate the effects of climate change (Total Water Management.org 2022).

Greater Monterey County Integrated Regional Water Management Plan

The Integrated Regional Water Management Plan is an approach to water management established by state legislation to increase regional self-sufficiency (Greater Monterey County Integrated Regional Water Management Group 2018). This plan encourages local water resource managers to take a proactive leadership role in solving water management problems on a local level through collaborative regional planning. This regional approach is considered necessary for water managers to cope with the impending water management challenges ahead. The Integrated Regional Water Management Plan is congruent with local plans and includes current relevant elements of local water planning and water management issues common to multiple local entities in the region. This regional planning does not replace or supersede local planning; rather, local planning elements are used as the foundation for the regional planning effort. The initial Greater Monterey County Integrated Regional Water Management Plan was adopted on April 17, 2013, and then updated on September 19, 2018, to comply with the most recent guidance. This plan was developed and approved by regional representatives from government agencies, nonprofit organizations, educational organizations, water service districts, private water companies, and organizations representing agricultural, environmental, and community interests.[4]

Stormwater Resources Plan for Greater Monterey County

The Stormwater Resources Plan for the Greater Monterey County Integrated Regional Water Management Region, approved June 27, 2019, addresses the entire Greater Monterey County Integrated Regional Water Management Region plus the portion of the Pajaro River Watershed Integrated Regional Water Management Region that lies within Monterey County, with a special focus on stormwater planning in the Salinas River, Gabilan/Tembladero, Moro Cojo, Elkhorn, and McClusky watersheds (Coastal Conservation and Research 2019). The purpose of the Stormwater Resources Plan is to promote stormwater management implementation projects that provide regionally optimized benefits, such as increased water supply, improved water quality, better flood protection, enhanced environmental quality, and greater community opportunity. This plan achieves that purpose by first characterizing current stormwater dynamics in terms of source, volume, flow, timing, quality, and rights and then identifying geographically and temporally specific opportunities to divert, capture, store, treat, recharge, and reuse this resource to guide the development of implementation projects that optimize regionally integrated benefits.

1.2.3 Water Rights Actions Associated with the Project

MCWRA currently holds the following water rights that govern the diversion, storage, and use of water at Nacimiento and San Antonio Reservoirs: Water Right License 7543, Water Rights Permit 21089, and Water Right License 12624. MCWRA filed change petitions with the State Water Resources Control Board (SWRCB) in March 2021 to amend these water rights for potential operation of the proposed project. The petitions filed by MCWRA with the SWRCB would take effect only if the proposed project or the Tunnel-Only Alternative is implemented. A summary of each water right and outstanding petition filed by MCWRA follows.

Water Right License 7543 authorizes MCWRA to collect a maximum of 350,000 AFY from Nacimiento Reservoir from October 1 of each year to July 1 of the succeeding year and withdraw 180,000 AFY for irrigation as well as domestic, municipal, industrial, and recreational uses. Water Right License 7543 also establishes points of diversion at Nacimiento Dam and points of rediversion at the SRDF. Water Rights Permit 21089 authorizes MCWRA to collect an additional 27,900 AFY at Nacimiento Reservoir from October 1 of each year to July 1 of the succeeding year. In combination, MCWRA is authorized to collect up to 377,900 AFY at Nacimiento Reservoir.[5]

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[4] Specifically, it was shaped and approved by the following 18 entities: Big Sur Land Trust, California State University Monterey Bay, California Water Service Company, Castroville Community Services District, Central Coast Wetlands Group at Moss Landing Marine Laboratories, City of Salinas, City of Soledad, Elkhorn Slough National Estuarine Research Reserve, Environmental Justice Coalition for Water, Marina Coast Water District, Monterey Bay National Marine Sanctuary, Monterey County Agricultural Commissioner's Office, Monterey County Resource Management Agency, MCWRA, Monterey Regional Water Pollution Control Agency, Resource Conservation District of Monterey County, Rural Community Assistance Corporation, and San Jerardo Co-Operative, Inc.

[5] The total capacity of Nacimiento Reservoir is 377,900 acre-feet, which is equivalent to the annual maximum allowed to be collected to storage. Any water collected to storage is credited in order of water right priority, first under Water License 7543, up to 350,000 acre-feet, and then under Water Rights Permit 21089, up to 27,900 acre-feet. Therefore, following water right priorities, and under current circumstances, storage of water under Water Rights Permit 21089 would occur only if Nacimiento Reservoir were to empty almost completely (to something less than 27,900 acre-feet) and refill almost completely in 1 year (to something greater than 350,000 acre-feet).

On April 1, 2021, MCWRA filed petitions for change under Water Right License 7543 and Water Rights Permit 21089 (SWRCB 2021).[6] The petitions requested an additional point of rediversion and place of storage at San Antonio Reservoir. Additional change petitions were filed to address certain needed changes regarding place of use to provide consistency with previous change petitions associated with the SVWP. The requested change to the distribution of storage would authorize MCWRA to divert and withdraw Nacimiento River water through the Interlake Tunnel and store it at San Antonio Reservoir. If this change is granted, the total quantity of water that could be collected, stored, and withdrawn by MCWRA would remain unchanged, at 377,900 AFY.

Water Right License 12624 authorizes MCWRA to collect a maximum of 220,000 AFY from San Antonio Reservoir from October 1 of each year to July 1 of the succeeding year and use 210,000 AFY for irrigation as well as domestic, municipal, industrial, and recreational uses. The maximum capacity of San Antonio Reservoir is 335,000 acre-feet. The petition for change filed for License 12624 would change the maximum capacity of San Antonio Reservoir to give MCWRA the right to store an additional 41,000 acre-feet, for a total maximum storage capacity of 376,000 acre-feet at this reservoir. This increased capacity would be necessary with the modifications to San Antonio Dam that would be constructed as part of the proposed project described in this EIR. The existing collection-to-storage and withdrawal limitations would remain unchanged for San Antonio Reservoir.

The petitions for change described in this subsection will be processed by the State Water Resources Control Board in accordance with applicable law.

1.2.4 CDFW Memorandum of Agreement and Grant Agreement

MCWRA currently holds a Memorandum of Agreement (MOA) for the proposed project with the California Department of Fish and Wildlife (CDFW) regarding the potential transfer of white bass (*Morone chrysops*) from Nacimiento Reservoir to San Antonio Reservoir. The commitments listed in this MOA include measures for tunnel design, construction, and operation to avoid and minimize white bass passage through the proposed tunnel and inlet/outlet structures. The MOA was drafted in response to MCWRA's request for written permission from CDFW under Sections 6400 and 6400.5 of the California Fish and Game Code in the event of incidental passage of white bass from Nacimiento Reservoir to San Antonio Reservoir. The MOA describes the intent of both MCWRA and CDFW to work together during the CEQA process and lists CDFW as being the responsible agency. The MOA also includes subsequent fisheries monitoring techniques and reporting requirements that MCWRA will adhere to for the term of the agreement, which ends 25 years after the completion of project construction. Appendix A, *Memorandum of Agreement between California Department of Fish and Wildlife and the Monterey County Water Resources Agency,* includes a copy of the MOA.

In conjunction with the MOA, a grant agreement between MCWRA and CDFW was authorized by the Monterey County Board of Supervisors to construct a fish-exclusion system (i.e., fish screens) for the proposed project. The fish screens would prevent the movement of live white bass between Nacimiento and San Antonio Reservoirs. The grant award was $17 million. It would not require match or in-kind services. Construction would be completed along with the proposed project.

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[6] MCWRA filed a separate petition with SWRCB on April 1, 2021, for an extension to complete the use of water under Water Rights Permit 21089. MCWRA has been unable to complete the use of water to date.

1.3 Project Purpose and Objectives

The purpose of the proposed project is to develop a multi-benefit project for the Salinas River Basin that would improve water supply sustainability, water quality, and flood management for the basin. The proposed project is intended to meet the following objectives:

- Minimize flood control releases through the Nacimiento Dam spillway and reduce associated downstream flood damage.
- Increase the overall surface water supply available from Nacimiento and San Antonio Reservoirs by maximizing the opportunity for water to be collectively stored in the reservoirs.
- Improve the hydrologic balance of the Salinas Valley Groundwater Basin and reduce seawater intrusion.
- Continue to meet downstream environmental flow requirements for South-Central California Coast steelhead.
- Minimize the impact on existing hydroelectric production.
- Preserve recreational opportunities in the reservoirs.
- Protect agricultural viability and prime agricultural land.

1.4 Scope of This EIR

CEQA requires a lead agency[7] to prepare an EIR before making a discretionary decision to approve a project that could have a significant and unavoidable effect on the environment. An EIR is an informational disclosure document used in the planning and decision-making process. It does not recommend project approval or denial.

CEQA also imposes a duty on lead agencies to avoid or substantially lessen significant environmental effects where feasible. In addition, an EIR requires lead agencies to consider reasonable alternatives to a proposed project that might avoid, reduce, or compensate for significant environmental effects of such a proposed project. When an EIR includes mitigation measures, CEQA requires that it include a plan for implementing and monitoring the success of the identified mitigation measures. In addition, an EIR does not expand or otherwise provide independent authority to the lead agency to impose mitigation measures or avoid project-related significant environmental impacts beyond the authority already within the lead agency's jurisdiction. CEQA also sets forth specific public notice and distribution steps to facilitate public involvement in the environmental review process.

MCWRA, as the lead agency, has prepared this EIR in compliance with the provisions of CEQA and the CEQA Guidelines. This EIR analyzes the physical environmental effects associated with implementation of the proposed project. The information contained in this EIR, along with other information available through the public review processes, will be reviewed and considered by the decision-makers prior to a decision to approve, disapprove, or modify the proposed project or adopt an alternative to the proposed project.

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[7] The lead agency is the public agency that has the principal responsibility for carrying out or approving a project.

1.5 Overview of CEQA Requirements

Various provisions of the CEQA Guidelines set forth the EIR process, which includes multiple phases involving notification and input from responsible agencies and the public. A description of the main steps in this process follow.

1.5.1 Notice of Preparation of an Environmental Impact Report, Initial Study, and Scoping

In accordance with Sections 15063 and 15082 of the CEQA Guidelines, on April 28, 2016, MCWRA sent a Notice of Preparation of an EIR (NOP) and Initial Study to responsible and trustee agencies, interested entities, and individuals. This NOP initiated the environmental review and CEQA scoping process. The NOP was accompanied by an Initial Study that reflected MCWRA's preliminary environmental evaluation of the Interlake Tunnel Project and determination of the need to prepare an EIR to evaluate potentially significant impacts on the environment.

The purpose of the scoping process is to allow the public and government agencies to comment on the issues and provide input on the scope of the EIR. The NOP included a brief description of the proposed project and advised of two public scoping meetings, which MCWRA convened to receive scoping comments.[8]

MCWRA filed the NOP with both the Monterey and San Luis Obispo County Clerk Recorders and the State Clearinghouse. The NOP mailing list included more than 400 individuals and organizations who had expressed interest in the proposed project as well as various federal, state, and local agencies with jurisdiction and/or permit authority over the proposed project. Notices of the release of the NOP were placed in local newspapers. The NOP was also made available for review at four local libraries. The scoping period extended from April 28 through June 13, 2016 (46 days). Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* includes the NOP and public comments received in response to the NOP.

1.5.2 Scoping Comments

During the scoping period, MCWRA received comments from numerous individuals, agencies, and a tribal organization. Commenting agencies included the CDFW, NMFS, the San Luis Obispo County Fire Department, and many others. MCWRA has considered all comments in preparing the EIR for the proposed project. Many comments from individuals expressed either support or opposition to the proposed project. Those expressing support mentioned the increased water supply, expanded recreational opportunities at San Antonio Reservoir, and drought response. Those expressing opposition mentioned the high costs, potential economic effects on landowners, and loss of recreational uses at Nacimiento Reservoir. Many expressed concerns with the high cost of building the proposed project.

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[8] Scoping meetings were held on May 16, 2016, at the Agricultural Center, 1428 Abbott Street, Salinas, CA, and on May 17, 2016, at the Bradley Union School District, 65600 Dixie Street, Bradley, CA.

Written comments submitted during the scoping period related to the EIR analysis included comments in the following categories, summarized for brevity:

- *Project Description:* Several commenters requested further information related to the project description, including design and construction details, the proposed operational plan, and clarification of water rights.
- *Alternatives:* Multiple commenters provided suggestions related to alternatives to the proposed project, including the following:
    - Considering a project that would raise the spillway only
    - Considering proposals for different intake heights, spillway elevations, and tunnel sizes
    - Including power generation at San Antonio Dam to reduce releases at Nacimiento Dam
    - Pumping or siphoning excess water from Nacimiento Dam over the small hills in the Bee Rock area
    - Reconsidering Jerrett Reservoir
    - Constructing a dam downstream
    - Using existing downstream aquifers for storage
    - Considering an alternative that optimizes recovery of steelhead in the Salinas River
- *Hydrology:* Multiple comments pertained to potential impacts on hydrology, including
    - Potential impacts on reservoir operations and water availability
    - Water availability for agricultural use, water delivery and recharge within the Salinas Valley
    - Relationship to the Sustainable Groundwater Management Act
    - Groundwater availability
    - The need for operational modeling and interface with the County of Monterey's groundwater assessment model
    - Drought contingency planning
    - Potential for impacts on private wells due to tunnel construction and operation
- *Geology and Soils, Seismicity, and Paleontological Resources:* Potential impacts on properties and infrastructure (i.e., roads and wells) from construction of the tunnel in a fault area.
- *Biological Resources:* Multiple commenters submitted comments regarding potential impacts on biological resources, including:
    - Concern about potential transfer of white bass from Nacimiento to San Antonio Reservoir
    - Impacts on fish species related to water levels and water quality changes (dissolved oxygen levels, temperature) in both reservoirs
    - Downstream effects on steelhead
    - Potential for mercury transfer between reservoirs
    - Impacts on special-status species, including golden eagle and other raptors

- *Cultural Resources:* The Native American Heritage Commission provided comments regarding records searches and archaeological inventory surveys. The comment letter advised that consultation with California Native American tribes affiliated with the study area should be conducted as early as possible.
- *Tribal Cultural Resources*: The comment letter from the Native American Heritage Commission described recent Assembly Bill 52 requirements for consultation with Native American tribes regarding potential impacts on "tribal cultural resources."
- *Hazards*: The San Luis Obispo County Fire Department and the California Department of Forestry and Fire Protection (CAL FIRE) provided comments regarding:
  - Wildfire safety and prevention protocols
  - Confined-space construction
  - Fire safety and prevention protocols
  - Hazardous materials handling
  - Access requirements and routes to the project site
- *Agriculture*: One commenter expressed concerns about potential impacts on grazing land from changes in water levels. Multiple commenters expressed concern about water availability for agricultural use.
- *Recreation*: Multiple commenters submitted comments concerning potential impacts on recreation activities at Nacimiento and San Antonio Reservoirs from changes in water levels.
- *Air Quality and Greenhouse Gases:* The San Luis Obispo Air Pollution Control District provided several comments concerning requirements for air quality and greenhouse gas impact analysis and mitigation.
- *Aesthetics:* Multiple commenters submitted comments concerning the aesthetic impact associated with the project components and changes in water levels.
- *Wildfire:* CAL FIRE submitted comments pertaining to implementation of appropriate fire safety and prevention protocols.
- *Cumulative Impacts:* Multiple commenters stated that the EIR should consider the impacts of the project in the context of relevant regional projects, including other water projects.
- *Water Rights:* Multiple commenters submitted comments regarding potential impacts on existing water rights and water promised to San Luis Obispo communities.
- *Economic Impacts:* Multiple commenters expressed concern about potential economic impacts related to the proposed project, including concerns about the value of waterfront properties at the reservoirs.

Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* includes the NOP and public comments received in response to the NOP.

1.5.3 Public Review of the Draft EIR

The CEQA Guidelines encourage public participation in the planning and environmental review processes. The public review period for this Draft EIR is from January 20, 2023 through March 10, 2023. MCWRA will hold two public meetings during the 49-day public review period. Live webinars of both meetings will also be available (*see MCWRA website link below for details on the webinars*):

- February 1, 2023, 5:30 p.m. to 7:30 p.m. at Bradley Elementary School, 65600 Dixie Street, Bradley, CA 93426
- February 2, 2023, 5:30 p.m. to 7:30 p.m. at Greenfield City Council Chambers, 599 El Camino Real, Greenfield, CA 93927

The purpose of public circulation and the public meetings are to provide agencies and interested individuals with the opportunity to comment on or express concerns regarding the information presented in this Draft EIR. The specific date, time, and location for this meeting will also be provided in the Notice of Availability, on the project website, and through several other methods to notify as many potentially interested individuals, agencies, and entities as reasonably possible.

This Draft EIR and all attachments are available on MCWRA's website, along with details on the webinars for the public meetings: https://www.co.monterey.ca.us/government/government-links/water-resources-agency/projects-facilities/interlake-tunnel

The Draft EIR is also available for review at the following locations:

Monterey County Water Resources Agency
1441 Schilling Place, North Building
Salinas, CA 93901

Paso Robles City Library
1000 Spring Street
Paso Robles, CA 93446

Written comments concerning this Draft EIR can be submitted to the following physical address or e-mail address. All comments must be received by 5:00 p.m. Pacific Standard Time on the final date of public review, March 10, 2023, and directed to:

Alex Henson, Associate Water Resources Engineer
Monterey County Water Resources Agency
1441 Schilling Place, North Building
Salinas, CA 93901

Or by email to:

tunneleir@co.monterey.ca.us

Submittal of written comments by email (attached documents in Microsoft Word or PDF format are encouraged) would be greatly appreciated. Written comments received in response to this Draft EIR during the public review period will be addressed in the response-to-comments section of the Final EIR.

1.5.4 Final EIR and EIR Certification

Following the close of the public comment period, MCWRA will prepare written responses to comments on this Draft EIR. This document will contain copies of all written and emailed comments received on this Draft EIR as well as MCWRA's written responses to substantive comments and any necessary revisions to this Draft EIR.

This Draft EIR, together with the response-to-comments document, will constitute the Final EIR. MCWRA will consider the adequacy of the Final EIR as well as certification in an advertised public meeting. Certification of the Final EIR by MCWRA represents that (1) the document has been completed in compliance with CEQA, (2) MCWRA has reviewed and considered the information contained in the Final EIR prior to taking an approval action on the proposed project, and (3) the Final EIR reflects the lead agency's independent judgment and analysis.

Although primarily a public disclosure law, CEQA also imposes a duty to mitigate any significant physical environmental effects of a project. As part of EIR certification, CEQA requires lead agencies to adopt a mitigation monitoring or reporting program as a condition of project approval to mitigate or avoid significant impacts on the environment (CEQA Guidelines Sections 15097 and 21081.6).

CEQA prohibits lead agencies from approving/implementing a project unless the lead agency can demonstrate that it has incorporated all feasible mitigation measures to avoid or substantially lessen any significant physical environmental effects of the project. If all feasible mitigation measures are applied but the project still results in one or more significant physical environmental impacts, CEQA requires the lead agency to state its reasoning in writing why certain economic, legal, social, technological, or other factors outweigh the environmental impacts.

1.6 Organization of This EIR

Consistent with CEQA Guidelines Sections 15120 to 15132, this EIR describes the proposed project, required approvals, and existing land use plans and policies applicable to the proposed project; identifies potential environmental impacts of the proposed project, mitigation measures where the impacts are significant, and cumulative adverse impacts to which the proposed project could make a substantial contribution; discusses growth-inducing and significant unavoidable effects of the project; and evaluates alternatives to the project that could avoid or reduce significant impacts while still meeting most of the project's objectives.

This EIR is organized as follows:

- **Executive Summary**. This chapter provides a description of the issues of concern, proposed project alternatives, and a summary of environmental impacts and mitigation measures.
- **Chapter 1, Introduction**. This chapter provides background on the proposed project and information on related actions. It describes the purpose and organization of the EIR and its preparation, review, and certification process.
- **Chapter 2, Project Description**. This chapter summarizes the proposed project, provides a description of the project area, discusses the actions that would be taken under the proposed project, and identifies related permits and approvals associated with the activity.
- **Chapter 3, Tunnel-Only Alternative**. This chapter describes the Tunnel-Only Alternative, which is evaluated with a level of detail equivalent to the evaluation of the proposed project in Chapter 4.
- **Chapter 4, Introduction to the Environmental Analysis**. This chapter describes the environmental resources and potential environmental impacts of the proposed project. Each of the sections within this chapter describes the existing setting and background information for

the resource topic area under consideration to aid the reader in understanding the conditions that could be affected by the proposed project and Tunnel-Only Alternative. In addition, each chapter includes a discussion of the criteria used in determining the significance levels of environmental impacts. Each chapter also provides mitigation measures to reduce, where possible, the adverse effects of potentially significant impacts.

- **Chapter 5, Other Statutory Considerations**, addresses the potential of the proposed project and Tunnel-Only Alternative to contribute to cumulative impacts, outlines the potential to induce growth, and identifies significant irreversible environmental changes that would result from the proposed project and Tunnel-Only Alternative.
- **Chapter 6, Alternatives**, describes the process by which alternatives to the proposed project were developed and screened, evaluates their likely environmental impacts, and identifies the environmentally superior alternative.
- **Chapter 7, Report Preparation**, lists the individuals involved in preparing this EIR.
- **Chapter 8, References**, provides a bibliography of printed references, websites, and personal communications used in preparing this EIR.
- **Appendices**. The appendices include background information and supporting analysis for this EIR.

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Chapter 2
Project Description

2.1 Overview

This chapter describes the proposed project in detail, including the project location, the project's physical facility components that would be installed, the construction process, how these new facilities would be operated and maintained, and how MCWRA would manage reservoir releases following project completion. This chapter also discusses avoidance and minimization measures to be incorporated as project features as well as permits and approvals that would be required to construct and/or operate the project.

2.2 Location and Setting

The proposed project involves two existing reservoirs operated by MCWRA. As shown on **Figure 2-1**, the two involved reservoirs (San Antonio and Nacimiento) are located northwest of Paso Robles, and immediately east of the Santa Lucia Mountains.

The Nacimiento Dam and Reservoir are in northern San Luis Obispo County, approximately 20 miles inland from the coast and 12 miles upstream from the confluence of the Nacimiento and Salinas Rivers. The San Antonio Dam and Reservoir are in southern Monterey County, approximately 2 miles north of Nacimiento Reservoir on the east, 10 miles north on the west, and 5 miles upstream from the confluence of the San Antonio and Salinas Rivers.

The proposed project would be constructed within, between, and adjacent to Nacimiento and San Antonio Reservoirs, connecting the reservoirs with a tunnel approximately 2 miles long. The area encompassing the proposed project features at Nacimiento Reservoir and San Antonio Reservoir is referred to as the project site throughout the remainder of this document.

2.2.1 Hydrologic Setting

The Nacimiento and San Antonio Rivers are major tributaries to the Salinas River. The Salinas River is the largest watercourse in the central coast region of California; the river is located within the Salinas watershed (**Figure 1-1**). The Salinas Valley Groundwater Basin (Basin) comprises approximately 4,600 square miles in area. The Salinas River and the Basin comprise an interconnected surface water/groundwater hydrologic system. Generally, the Salinas River flows in a northwest direction for approximately 150 miles through San Luis Obispo and Monterey Counties before discharging to Monterey Bay and the Pacific Ocean approximately 5 miles south of Moss Landing. The Nacimiento and San Antonio Rivers contribute, on average, approximately 200,000 AFY to the Salinas River (MCWRA and USACE 2002). In the Basin, groundwater flow generally follows that of the Salinas River, southeast to northwest, toward Monterey Bay (MCWRA 2015a).

Figure 2-1
Project Location

The presence and volume of water in the Salinas River is highly variable. Historically, the Salinas River was dry during the summer months and prone to flooding during extreme winter and spring storm events. The Salinas River remains a primary source of flood risk in Monterey County today. Nacimiento and San Antonio Reservoirs were constructed to store winter runoff, which has reduced downstream flood risk while providing additional water supplies that can be released during summer months when the river channel previously did not contain surface water. The Salinas River surface water discharge (streamflow) is highly dependent on groundwater conditions; groundwater conditions are also dependent on recharge by precipitation (infiltration) and other streamflow contributions (MCWRA 2015a). For example, groundwater pumping reduces the aquifer storage, thereby influencing higher infiltration rates from streamflow. At the same time, seepage from fully charged aquifers contributes to more stream flows. Note, however, that there are very few places where groundwater is ever discharged to the Salinas River because of extensive groundwater pumping.

Groundwater is the source for most of the agricultural and municipal/industrial water supply needs in the Basin. An ongoing imbalance between the rate of groundwater withdrawal and recharge has resulted in overdraft conditions in the Basin, leading to intrusion of seawater from Monterey Bay into the Basin. Seawater intrusion in the Basin was detected as early as 1946 when the DWR published *Bulletin No. 52, Salinas Basin Investigation*. Nacimiento and San Antonio Reservoirs were constructed to store winter runoff, thereby reducing the downstream flood risk while also providing additional water supplies to address groundwater overdraft issues.

For more information about both surface water and groundwater, see Section 4.1, *Hydrology and Water Quality*.

2.2.2 Surrounding Land Uses

Lands surrounding Nacimiento and San Antonio Reservoirs are lightly developed and include extensive areas for cattle grazing and recreational uses. Several low-density residential communities are located adjacent to Nacimiento Reservoir; grazing properties are scattered around and near both reservoirs. The reservoirs offer a variety of public and private recreational opportunities, including camping, fishing, boating, and other water-related activities. Although many of the facilities are open year-round, the peak recreation season falls between Memorial Day and Labor Day.

In the Salinas Valley, agricultural uses of water are quite prevalent. Many agricultural properties border the Salinas River and are highly dependent on surface flows and/or groundwater conditions, which are influenced by releases from Nacimiento and San Antonio Reservoirs.

2.2.3 Roadways and Access Routes

As shown on **Figure 2-1**, U.S. Highway 101 (U.S. 101) is the primary regional transportation route, generally following the course of the Salinas River from north of Paso Robles to the City of Salinas. As shown on **Figure 2-2**, Nacimiento Lake Drive (Road G19) is the primary road that provides access to the reservoirs from the east. Interlake Road (also referred to as County Road G14) runs roughly east-west and connects to Nacimiento Lake Drive (Road G19) and further south toward Paso Robles. Interlake Road provides access to the north side of Nacimiento Reservoir. Vista Road provides access to San Antonio Dam (the dam itself is closed to public access).

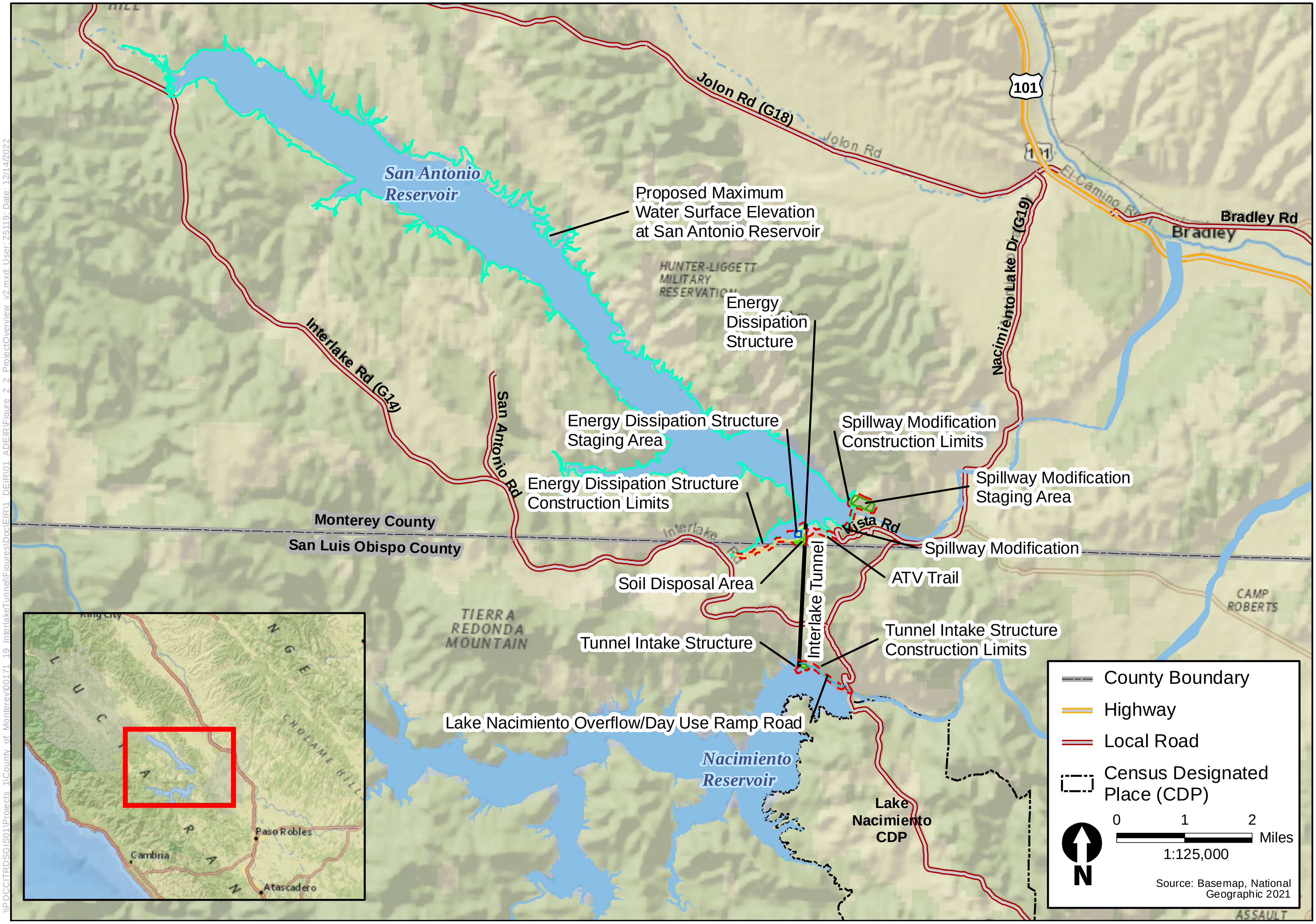


Figure 2-2
Proposed Project Components

The northwest side of San Antonio Reservoir also can be accessed from Jolon Road (also referred to as County Road G18), which connects U.S. 101 to Lockwood Valley and United States Army Garrison of Fort Hunter Liggett. Lake Nacimiento Overflow/Day Use Ramp Road is a relatively narrow road in poor condition that leads from Nacimiento Lake Drive (Road G19) to a boat ramp on the northeast side of Nacimiento Reservoir.

2.2.4 Existing Facilities and Operations

MCWRA operates Nacimiento and San Antonio reservoirs, conjunctively, for water supply (via both groundwater recharge and Salinas River surface water), flood management, and recreation. Surface water supply is used for agriculture, domestic and municipal uses, hydroelectric power, and environmental uses, including wildlife habitat and fish passage. The reservoirs are considered the most important elements of the region's water infrastructure. Detail on each reservoir follows.

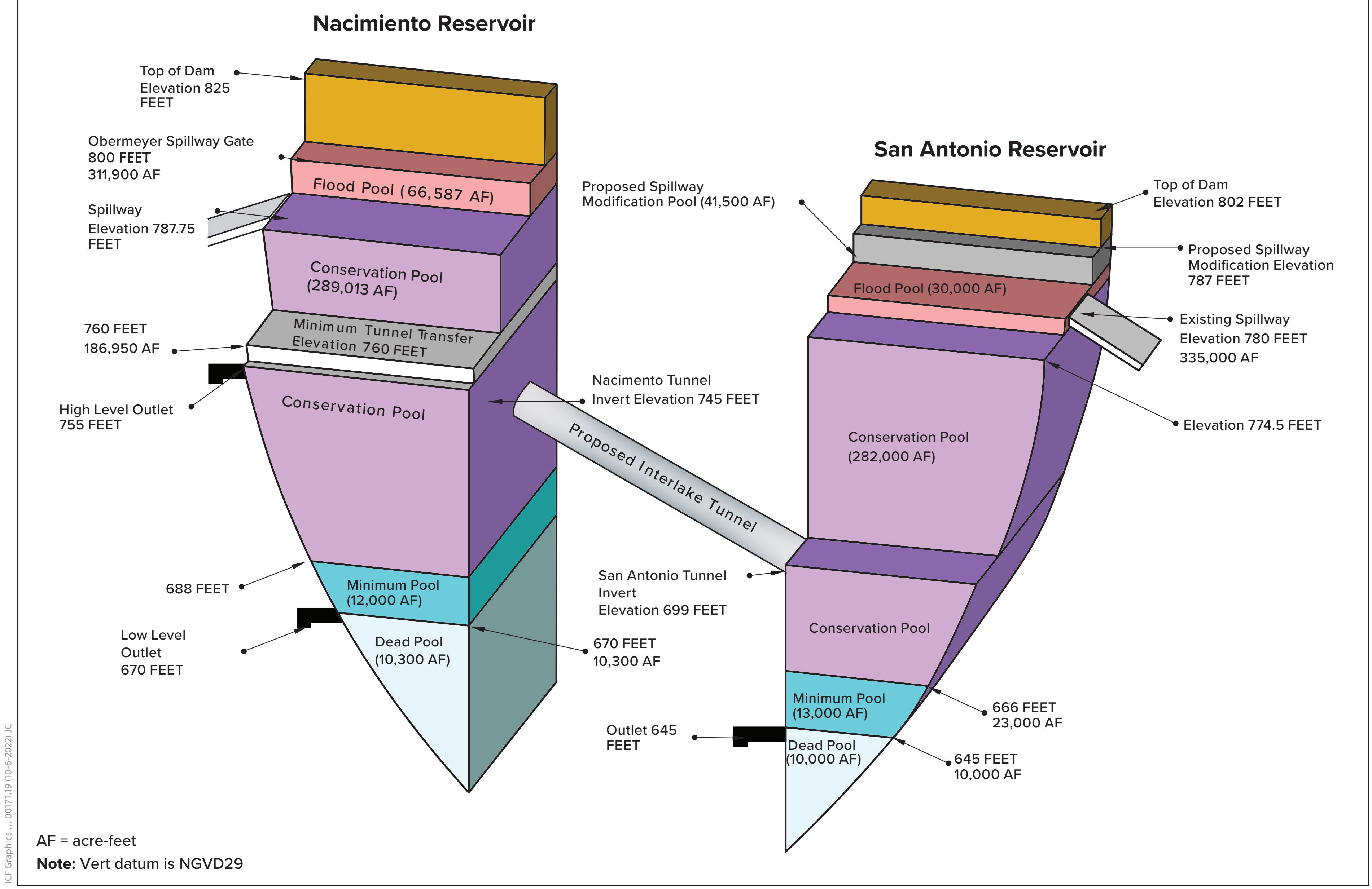
The combined mean annual releases for Nacimiento and San Antonio Dams total 239,858 acre-feet, with the combined annual volume of flood control releases ranging from 2,818 to 691,901 acre-feet for those years in which flood control releases were made (MCWRA 2022a). MCWRA utilizes operational pools to aid the management of water being stored at each reservoir. **Figure 2-3** provides a vertical cross-sectional view of these pools.

2.2.4.1 Nacimiento Dam and Reservoir

Nacimiento Dam, an earth-filled dam completed in 1957, has a crest elevation of 825 feet. The dam's spillway elevation is approximately 788 feet but can be raised to 800 feet using two inflatable Obermeyer spillway gates. At 800 feet, the maximum storage capacity of Nacimiento Reservoir is 377,900 acre-feet. Nacimiento Dam has two outlets: a high-level outlet and a low-level outlet. The high-level outlet works is composed of twin 8-foot by 8-foot steel slide gates and cast concrete tunnels under the center of the spillway.

The low-level outlet works (LLOW) is a 53-inch-diameter pipe near the southern side of the dam. The inlet to LLOW consists of three 42-inch butterfly valves set in a concrete structure at an elevation of 670 feet. Releases from the LLOW can be made from either manually operated valves or the hydroelectric power plant. The LLOW has a maximum capacity of 460 cfs when the reservoir elevation is 800 feet (MCWRA 2021a). As depicted on **Figure 2-3**, several operational pools have been created within Nacimiento Reservoir to aid in the management of water being stored in the reservoir: the physical minimum pool, operational minimum pool, conservation pool, and flood pool. The volumes listed are inclusive of storage from previous (lower-in-elevation) pools.

- The physical minimum pool or dead pool is the lowest at an elevation between the bottom of the reservoir and 670 feet and has 10,300 acre-feet of storage at the invert of the intake structure of the LLOW. Water cannot flow by gravity out of the reservoir below an elevation of 670 feet.
- Above the physical minimum pool is the operational minimum pool; at an elevation of approximately 688 feet, it provides 12,000 acre-feet of storage (with a combined total of 22,300 acre-feet of storage inclusive of the dead pool). Below this elevation of 688 feet, water is reserved for the sole use of San Luis Obispo County.



AF = acre-feet

Note: Vert datum is NGVD29

Figure 2-3
Nacimiento and San Antonio Reservoir Operational Pools

- The conservation pool, which extends from the operational minimum pool (approximately 688 feet) to the concrete spillway elevation of approximately 787.75 feet, is considered the operational pool that is used to store water for eventual release to the Salinas River for groundwater recharge, fish passage and wildlife habitat, and operation of the SVWP. The total storage is 289,013 acre-feet (with a combined total of 311,313 acre-feet of storage, inclusive of the physical minimum and operational pools).
- The flood pool extends from the concrete spillway at 787.75 feet to an elevation of 800 feet and provides 66,587 acre-feet of storage (with a combined total of 377,900 acre-feet of storage inclusive of the physical minimum, operational, and conservation pools). This pool is intended to provide winter flood protection by maintaining the ability of the spillway to pass the Probable Maximum Flood (PMF) without overtopping of the dam (MCWRA 2021a).

Nacimiento Dam also has a hydroelectric power plant on the downstream slope at the base of the dam on the south side. The plant has the capability of producing 4 megawatts and contains both large and small turbines that operate in the range of 25 to 400 cubic feet per second. Nacimiento Dam is under the jurisdiction of DWR, DSOD, and, due to the presence of the hydroelectric power plant, FERC (MCWRA 2021a).

2.2.4.2 San Antonio Dam and Reservoir

Completed in 1967, the San Antonio Dam is also an earth-filled dam. It has a crest elevation of 802 feet and a spillway crest elevation of 780 feet. When the reservoir is full (at the elevation of 780 feet), it has a maximum storage capacity of 335,000 acre-feet. The San Antonio Dam has an outlet works consisting of an 84-inch-diameter, 1,085-foot-long steel conduit located near the center of the dam. This conduit passes through the dam embankment from a small intake structure to an outlet structure, which supports a concrete house.

Like Nacimiento Reservoir, San Antonio Reservoir also includes operational pools created to aid in the management of water stored on the reservoir: the physical minimum pool, operational minimum pool, conservation pool, and flood pool. The volumes listed are inclusive of storage from previous (lower in elevation) pools.

- The physical minimum pool or dead pool is at an elevation of 645 feet at the invert of the intake structure of the outlet works and contains 10,000 acre-feet of storage. Water cannot flow by gravity out of the reservoir below the minimum pool elevation of 645 feet.
- The operational minimum pool is at an elevation of 666 feet and contains 13,000 acre-feet of storage (with a combined total of 23,000 acre-feet of storage inclusive of the physical minimum pool). Water between the elevations of 645 feet and 666 feet is reserved for fish and wildlife habitat.
- The conservation pool typically extends to an elevation of 774.5 feet,[1] provides 282,000 acre-feet of storage (with a combined total of 305,000 acre-feet of storage inclusive of the physical minimum and operational minimum pools), and is used to store water for later release to the Salinas River for groundwater recharge, fish passage, and operation of the SVWP.

[1] The conservation pool varies, depending on the time of year. Less water is typically stored for conservation during the winter months to provide additional capacity to accept floodflows.

- The flood pool typically extends from the conservation pool to the spillway elevation of 780 feet[2] and provides 30,000 acre-feet of storage (with a combined total of 335,000 acre-feet of storage inclusive of the physical minimum, operational, and conservation pools). The flood pool is intended to provide winter flood protection by maintaining the ability of the spillway to pass the PMF without overtopping the dam. San Antonio Dam is under the jurisdiction of DSOD (MCWRA 2021a).

2.3 Project Components

The proposed project is composed of two separate but interrelated components:

- A water conveyance tunnel from Nacimiento Reservoir to San Antonio Reservoir (Interlake Tunnel)
- Modifications to the existing spillway at San Antonio Reservoir (San Antonio Dam Spillway Modification)

A description of the project components, along with all subcomponents and associated activities, follows. The project components are shown on **Figure 2-2.**

2.3.1 Interlake Tunnel

As shown on **Figure 2-4** and detailed in the discussions that follow, the Interlake Tunnel consists of:

- A Tunnel Intake Structure at Nacimiento Reservoir
- An Interlake Tunnel that would link the Nacimiento and San Antonio Reservoirs
- An Energy Dissipation Structure at San Antonio Reservoir

Design detail for the Interlake Tunnel and associated subcomponents is provided in the *Interlake Tunnel – Design Documentation Report, 60% Design Submittal* (McMillen Jacobs Associates 2020a).

2.3.1.1 Tunnel Intake Structure

The Tunnel Intake Structure at Nacimiento Reservoir is proposed to be located on the north shore of Nacimiento Reservoir just below and abutting the Nacimiento Reservoir Day-Use Overflow Parking Lot, approximately 0.8 mile upstream from Nacimiento Dam.

Figure 2-5 provides an overview of the Tunnel Intake Structure. **Figure 2-6** and **Figure 2-7** provide plan and profile views of the Tunnel Intake Structure that depict key features, such as an entrance channel (i.e., wet well), debris and fish prevention elements, a bypass gate, an isolation gate, internal access features, a control building, and utilities.

The Tunnel Intake Structure would be built into the shoreline of Nacimiento Reservoir, mostly buried below the ground surface at the shoreline. The top of the Tunnel Intake Structure would be at the same grade as the Nacimiento Reservoir Day Use Overflow Parking Lot, allowing maintenance vehicles to access the Tunnel Intake Structure from the adjacent parking lot.

[2] Ibid.

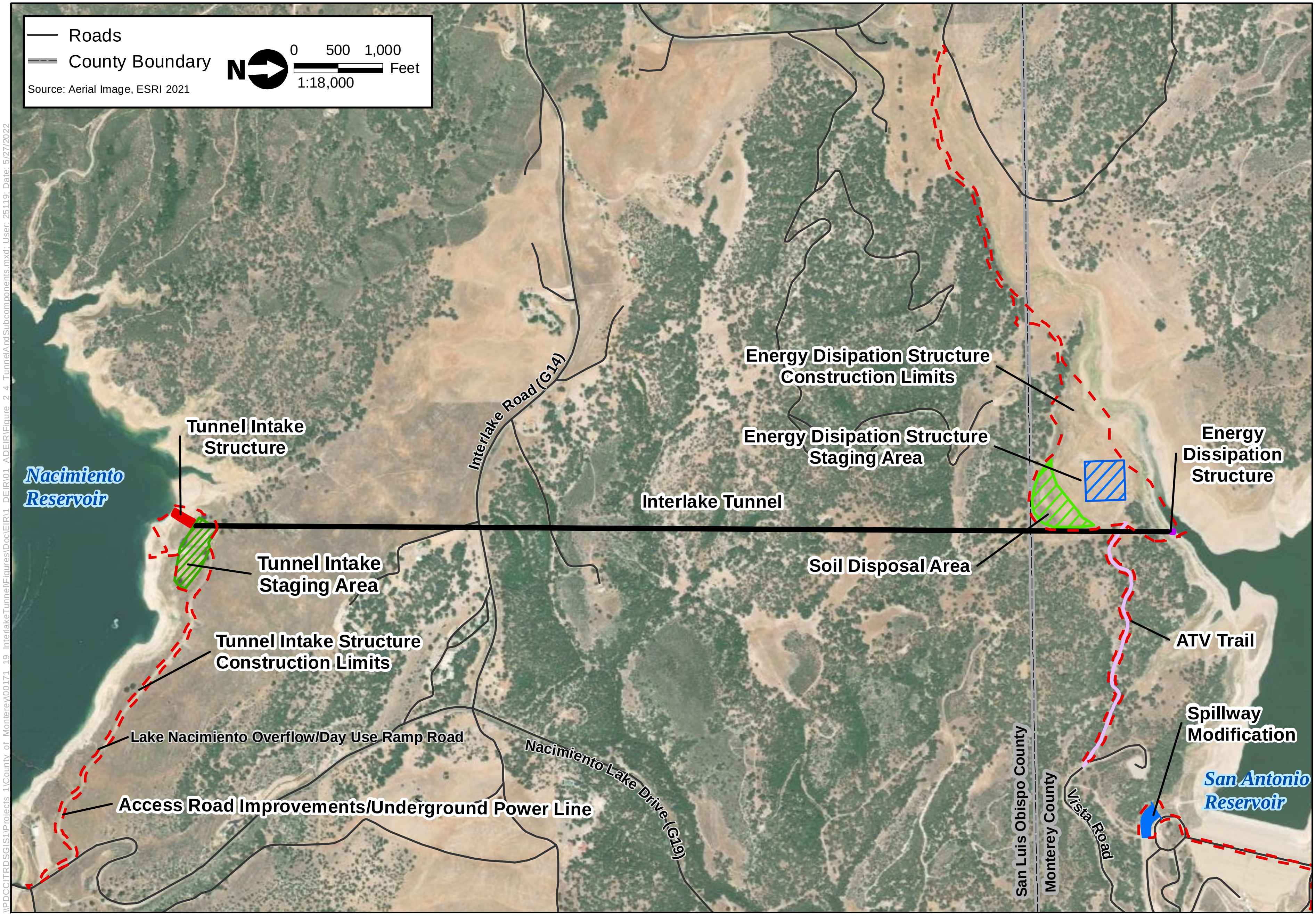
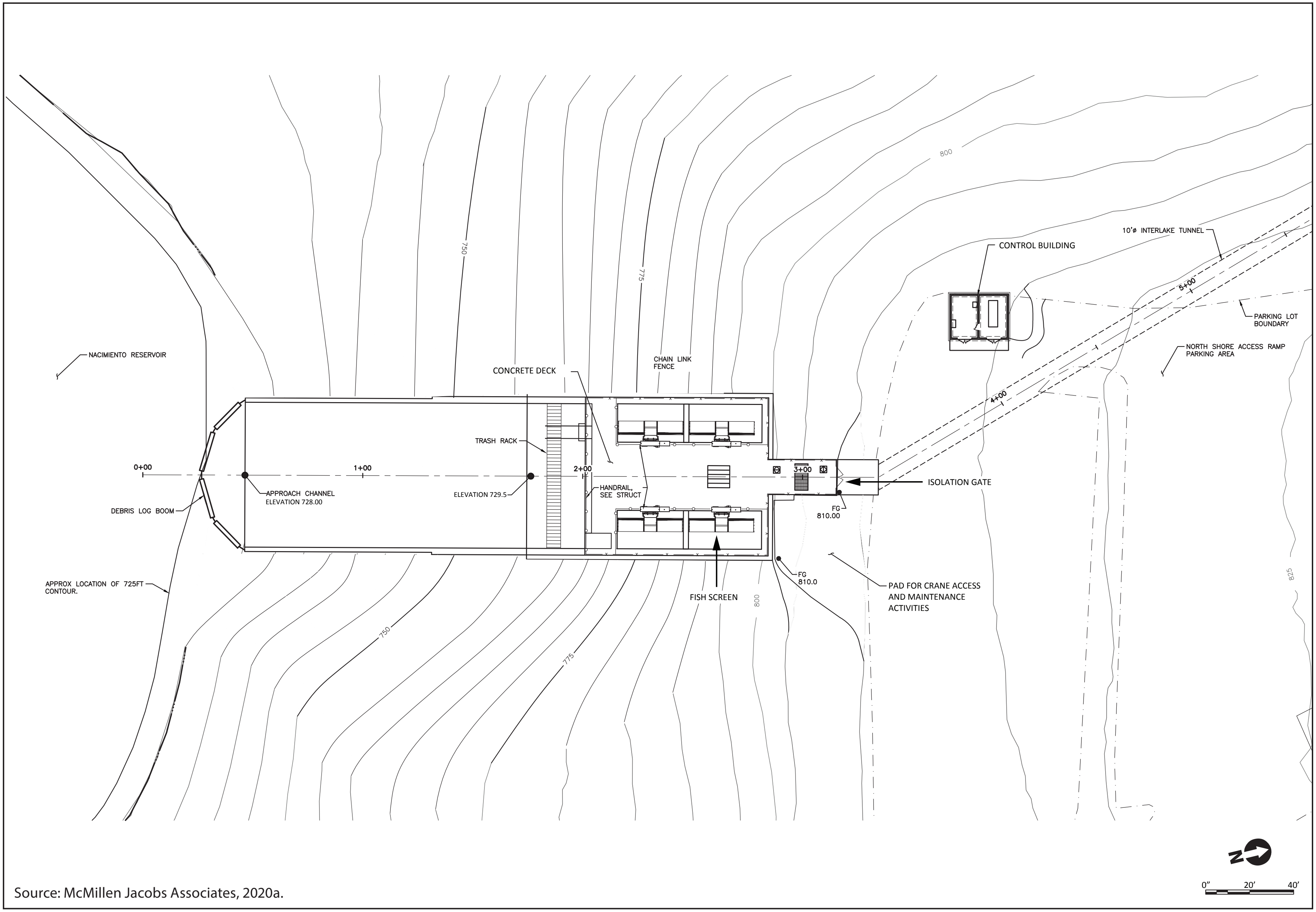


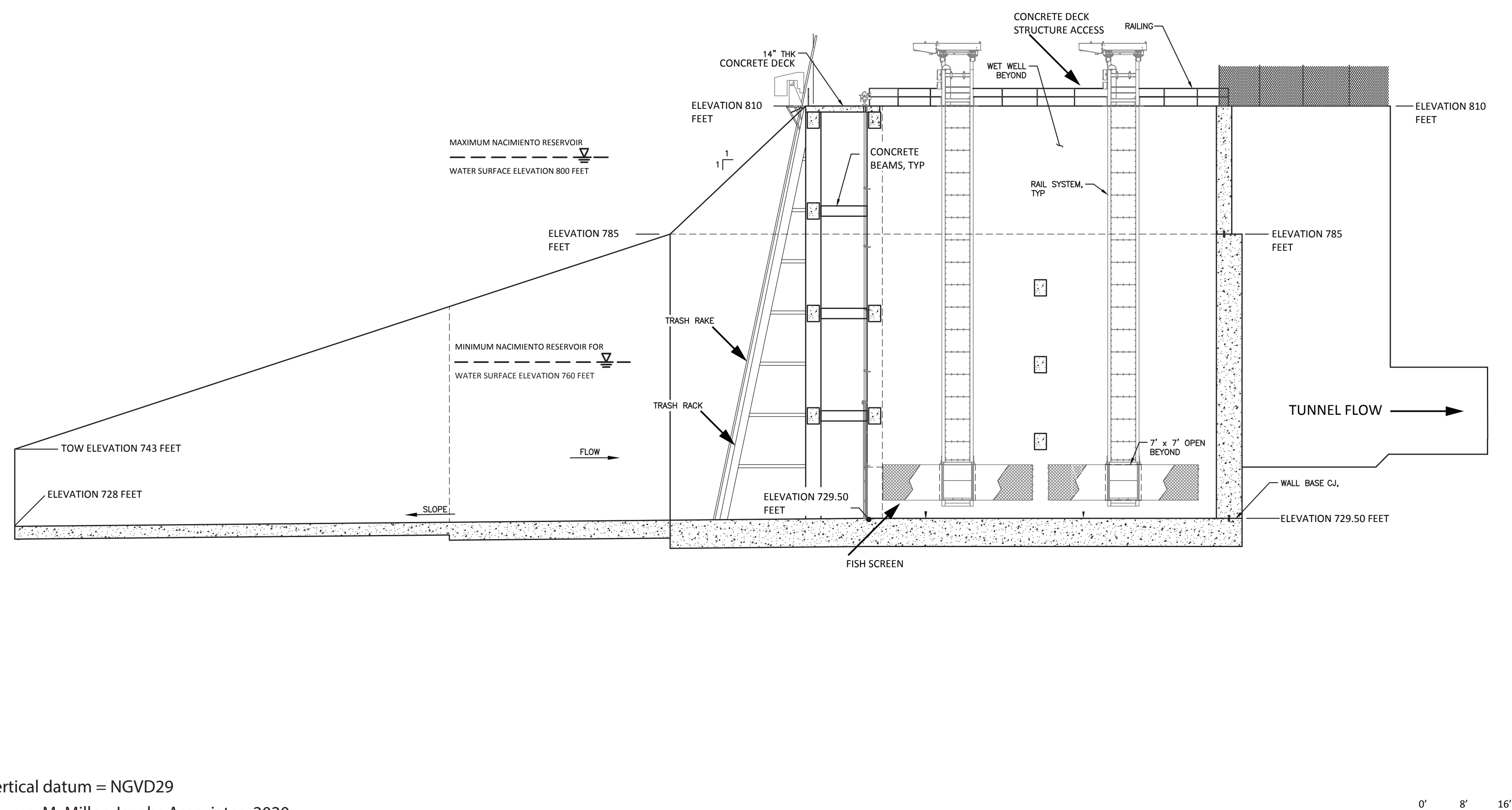
Figure 2-4
Interlake Tunnel and Associated Subcomponents

Figure 2-5
Tunnel Intake Structure and Associated Features



Source: McMillen Jacobs Associates, 2020a.

Figure 2-6
Tunnel Intake Structure Plan View



Vertical datum = NGVD29

Source: McMillen Jacobs Associates, 2020a.

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Figure 2-7
Tunnel Intake Structure Cross-Section View

Reinforced concrete would comprise the foundation slab, walls, and elevated slabs. The Tunnel Intake Structure would have an area of approximately 72 feet by 251 feet, with a floor elevation of 729.5 feet, extending to an operating platform elevation of 810 feet. Slabs and walls would be between 2 feet and 5.5 feet thick.

Exterior walls would be braced with concrete compression struts to support the large wall panels. Within the exterior walls, an approximately 31-foot by 70-foot concrete-walled approach channel (or wet well), would support fish screens and the operating level slab. The floor of the Tunnel Intake Structure would be sloped to drain freely into the Interlake Tunnel.

A construction contractor would resurface the Nacimiento Reservoir Day-Use Boat Ramp and Parking Area prior to initiating construction of the Tunnel Intake Structure. This parking area would serve as primary access to the Tunnel Intake Structure once constructed. Fencing designed to meet MCWRA requirements would be provided around the Tunnel Intake Structure to preclude unwanted access.

The Tunnel Intake Structure would be operational when Nacimiento Reservoir's water surface elevation (WSE) exceeds 760 feet. Water would flow into the intake channel past a floating debris boom attached to the approach channel, through the trash rack and fish screens, before entering the Interlake Tunnel. The Tunnel Intake Structure would connect to the 10-foot-diameter Interlake Tunnel opening at an elevation of 745 feet.

Debris and Fish Prevention

The Tunnel Intake Structure would include a debris boom, trash rack, and a fish screen to prevent fish and debris (e.g., vegetation, trash) from entering the Interlake Tunnel. A detailed description of each of these subcomponents follows.

Debris Boom

As shown on **Figure 2-6**, the entrance of the Tunnel Intake Structure would feature a floating debris boom to keep large debris (e.g., tree branches) out of the Interlake Tunnel. Though fixed to the Tunnel Intake Structure, the floating boom section and an underslung debris curtain would accommodate fluctuation in reservoir levels while maintaining its position at the entrance of the approach channel.

The boom is intended to divert debris to the adjacent shores of Nacimiento Reservoir, where such debris would be removed and processed. The debris boom itself would be designed to operate without the need for day-to-day maintenance.

Trash Rack and Trash Rake

As shown on **Figures 2-6** and **2-7**, a trash rack would be mounted behind the debris boom, extending across the entire width of the approach channel. The trash rack would remove smaller woody debris and other detritus from entering the Interlake Tunnel. Upper reaches of the trash rack (760–810 feet) would be covered by a solid steel plate. During flood events, this would limit surface debris from entering the Interlake Tunnel. The lower portion of the trash rack (729.5–760 feet) would consist of a metal bar grate structure with 1.5-inch clear space openings.

A trash rake would periodically remove debris stuck on the trash rack. The trash rake would be a telescoping boom with an articulating claw-like basket at the end, intended to operate in an automatic or a manual cleaning mode. The trash rake would lift debris from in front of the trash rack onto a conveyor belt where it would be transported to the side of the Tunnel Intake Structure and deposited into a debris bin. The debris bin would be periodically removed with a loader and truck to allow for proper disposal of the accumulated debris.

Fish Screens

The project is designed to eliminate the passage of white bass (*Morone chrysops*), their eggs, and larvae from Nacimiento Reservoir to San Antonio Reservoir. This would be accomplished through the use of four cylindrical wedge wire fish screens, approximately 7 feet in diameter and 30 feet long, with a slot size of 1.75 millimeters, located within the Tunnel Intake Structure. As shown on **Figure 2-7**, these four fish screen assemblies would be installed downstream of the trash rack. The fish screen's isolation slide gates would be approximately 7 feet wide by 7 feet tall and would be installed behind each of the four fish screens. The slide gates would be flush-mounted to the inside of the wet well walls and would normally be open, closing only when the measured head differential across the fish screens is greater than 2 feet.[3] During normal operation, a total of four fish screen assemblies would be in operation; however, one screen assembly can be removed for maintenance and cleaning with the use of an isolation gate while the remaining three assemblies continue to screen and pass water into the tunnel. The fish screen assemblies would include built-in automatic cleaning systems that can also be operated in manual mode.

Bypass and Isolation Gates and Controls

To allow access for maintenance crews when the tunnel is not in operation, a single bypass slide gate would be flush mounted on the upstream wall of the wet well, downstream of the trash rack. Gates would be installed behind each fish screen to facilitate stopping flow through the screen during cleaning and maintenance of the individual screens.

A wheeled tunnel isolation gate would be installed immediately upstream of the Interlake Tunnel. This would allow for isolating the tunnel from Nacimiento Reservoir for tunnel inspection and maintenance when the reservoir level exceeds the level of the intake floor. The tunnel isolation gate would be an approximately 10.5-foot by 10.5-foot roller gate operated by a wire rope hoist for lifting. The gate would be normally closed until the reservoir reaches a pre-set WSE, at which point it would raise to the fully open position, thus enabling water to flow to San Antonio Reservoir. The gate could also provide for emergency closure, either by manual activation by the operator or automatically based on preset operation parameters. Emergency closure of the isolation gate requires adding air to the tunnel through an air vent to prevent negative pressures that could damage or collapse the tunnel. Accordingly, the intake structure includes an air vent to provide emergency closure pressure, resulting in an air vent velocity of 70 feet per second, which would generate a noise with the intensity of 81 decibels at 16.4 feet (5 meters) from the air vent (Falvey 1980).

[3] Measured head differential is the energy necessary to force water through the fish screen to overcome friction. In this circumstance, the fish screens can be damaged when the measured head differential exceeds 2 feet in height, and therefore the fish screen isolation slide gates would be closed.

Control Building and Utilities

As shown on **Figure 2-5**, a control building would be constructed just north of the Tunnel Intake Structure, adjacent to the existing day use overflow parking lot. The control building would be constructed of masonry unit blocks and would measure 13 feet by 25 feet, with a 5-foot-wide access pad along the entrance side. The control building would include two rooms, an electrical/mechanical room, and a generator room, each separately accessed from the outside. Power would be supplied to the control building from the transmission line located near Nacimiento Dam via new underground power lines routed along the existing Nacimiento Reservoir Overflow/Day Use Ramp Road from Nacimiento Lake Drive (Road G14).

The electrical/mechanical room would house electrical panels, control panels, the wheel gate hydraulic power unit (HPU), and mechanical heating, ventilation, and air conditioning equipment. HPU equipment would use food-grade vegetable oil, or an equivalent, to minimize possible adverse environmental effects in the event of a hydraulic leak into the reservoir. Hydraulic lines connecting the HPU to the wheel gate control valve would be welded stainless steel.

The generator room would have double doors to allow access and provide weatherproof housing for a 125-kilowatt-hour standby generator. This generator would provide power to the Tunnel Intake Structure in the event of a power loss from the main power grid. An automatic transfer switch would provide for a switching of power from the main power grid to the standby generator if the external power feed were interrupted. The generator would automatically shut down and power supply would revert to the grid once power is restored and maintained for an acceptable period.

Potable water and sanitary sewer utilities would not be required for the Tunnel Intake Structure or control building. Video cameras would be mounted on top of the building to provide video monitoring of the Tunnel Intake Structure and the surrounding site and fencing would be provided around the control building for security purposes. Flood lights would be installed at the Tunnel Intake Structure to enable the maintenance staff to observe operations at night. Lighting systems would be manually operated. Security lighting would be placed at the entry to the control building. All lighting would be shielded and downward facing to minimize light trespass into adjacent open space areas.

Tunnel Intake Structure Access

The Tunnel Intake Structure would be accessed via the existing Nacimiento Reservoir Overflow/Day Use Ramp Road. This road is currently unpaved and would be repaired or resurfaced, depending on the requirements of San Luis Obispo County. At the terminus of the existing road, the existing overflow parking lot would be improved with a layer of aggregate. During construction, this area would provide a staging area for equipment and materials. Once construction is complete, this area would provide parking for maintenance staff and recreational users. The improved access road would also accommodate maintenance equipment access, such as a mobile crane, which would be used to help with maintenance, removal of debris, and trash rack and/or fish screen repair or replacement.

As shown on **Figures 2-6** and **2-7**, a concrete deck at the top elevation of the Tunnel Intake Structure would provide access when needed for maintenance purposes. A 10-foot by 10-foot traffic-rated door would be located in the concrete deck to provide maintenance access to the interior of the Tunnel Intake Structure (i.e., wet well, fish screens, trash rack) and the Interlake Tunnel.

2.3.1.2 Interlake Tunnel

The proposed Interlake Tunnel would connect the Nacimiento and San Antonio Reservoirs and provide for water conveyance from the Nacimiento to the San Antonio Reservoir. The Interlake Tunnel includes an inlet at the Tunnel Intake Structure described in Section 2.3.1.1, *Tunnel Intake Structure*, an outlet at the Energy Dissipation Structure at San Antonio Reservoir described in Section 2.3.1.3, *Energy Dissipation Structure at San Antonio Reservoir*, and control devices (a flow meter). The Interlake Tunnel would be a gravity flow water conveyance tunnel approximately 11,000 feet (2.06 miles) long with a minimum inner diameter of 10 feet. All Interlake Tunnel components are designed to achieve a service life of 100 years.

The tunnel would consist of a single-pass system of bolted, precast-concrete with segmental lining. This single-pass system with a tunnel boring machine (TBM) would rely on the bolted and gasketed concrete segmental lining for both initial ground support and final support. The lining would be designed to be watertight using bolted and gasketed, precast-concrete segments and sized for handling internal pressure, external loadings, and seismic forces. In this system, a steel pipe lining would be required at the upstream and downstream portals. The final excavation and support system required would be developed in final design.

Figure 2-8 shows a conceptual depth profile of the proposed Interlake Tunnel. In the Nacimiento Reservoir, the Tunnel Intake Structure inlet would have an invert elevation (i.e., bottom elevation) of approximately 745 feet. The Interlake Tunnel would be sloped downward and away from Nacimiento Reservoir at a -0.42 percent gradient in order to achieve gravity-based flows toward San Antonio Reservoir. The resulting invert elevation of the Energy Dissipation Structure at San Antonio Reservoir would be approximately 699 feet.[4] The Interlake Tunnel depth would vary from zero to approximately 680 feet below the ground surface.

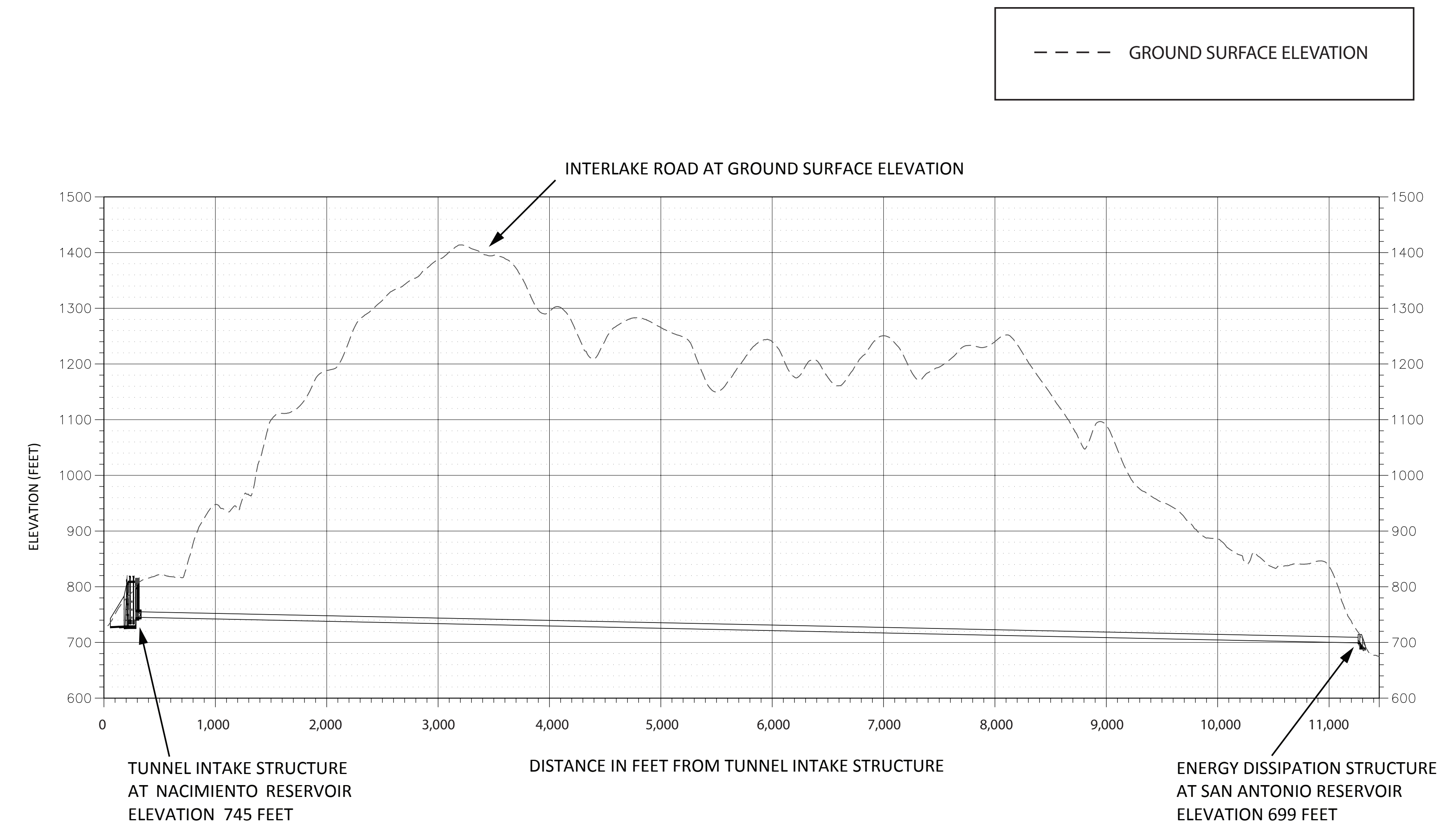
A meter to measure tunnel flow would be installed just downstream of the Tunnel Intake Structure. The data from the flow meter would be entered directly into a database, allowing incremental flow measurement and calculation of the total volume of water moved between the reservoirs. The flow meter could also be used to identify a sudden increase or decrease in tunnel flow, which could be tied to an alarm to alert the operator of a changed operating condition. The stage in each reservoir would also be monitored and recorded.

2.3.1.3 Energy Dissipation Structure at San Antonio Reservoir

The Interlake Tunnel would connect to San Antonio Reservoir at an Energy Dissipation Structure proposed for the south shore of the Bee Canyon arm of the reservoir, approximately 0.6 mile upstream from San Antonio Dam. **Figure 2-9** shows an overview of the Energy Dissipation Structure and its associated features. The Energy Dissipation Structure would reduce the energy of water entering San Antonio Reservoir, preventing bank scour and erosion during periods when the WSE of San Antonio Reservoir is below the centerline elevation of the tunnel outlet pipe. The Energy Dissipation Structure would not require electric or other utility connections (e.g., water, sewer).

The Energy Dissipation Structure would consist of a concrete, hydraulic jump stilling basin and baffle blocks. The Energy Dissipation Structure would measure approximately 25 feet by 65 feet and would be founded on a concrete mat slab bearing directly on a prepared subgrade near the Interlake Tunnel outlet. Refer to **Figure 2-10** for a plan view and **Figure 2-11** for a cross-section view of the Energy Dissipation Structure.

[4] Note that the tunnel outlet invert elevation is subject to change depending on the tunnel length at final design.



NOTE: X AND Y-AXIS ARE NOT TO THE SAME SCALE
Vertical datum = NGVD29
Source: McMillen Jacobs Associates, 2020a.

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Figure 2-8
Interlake Tunnel Depth Profile

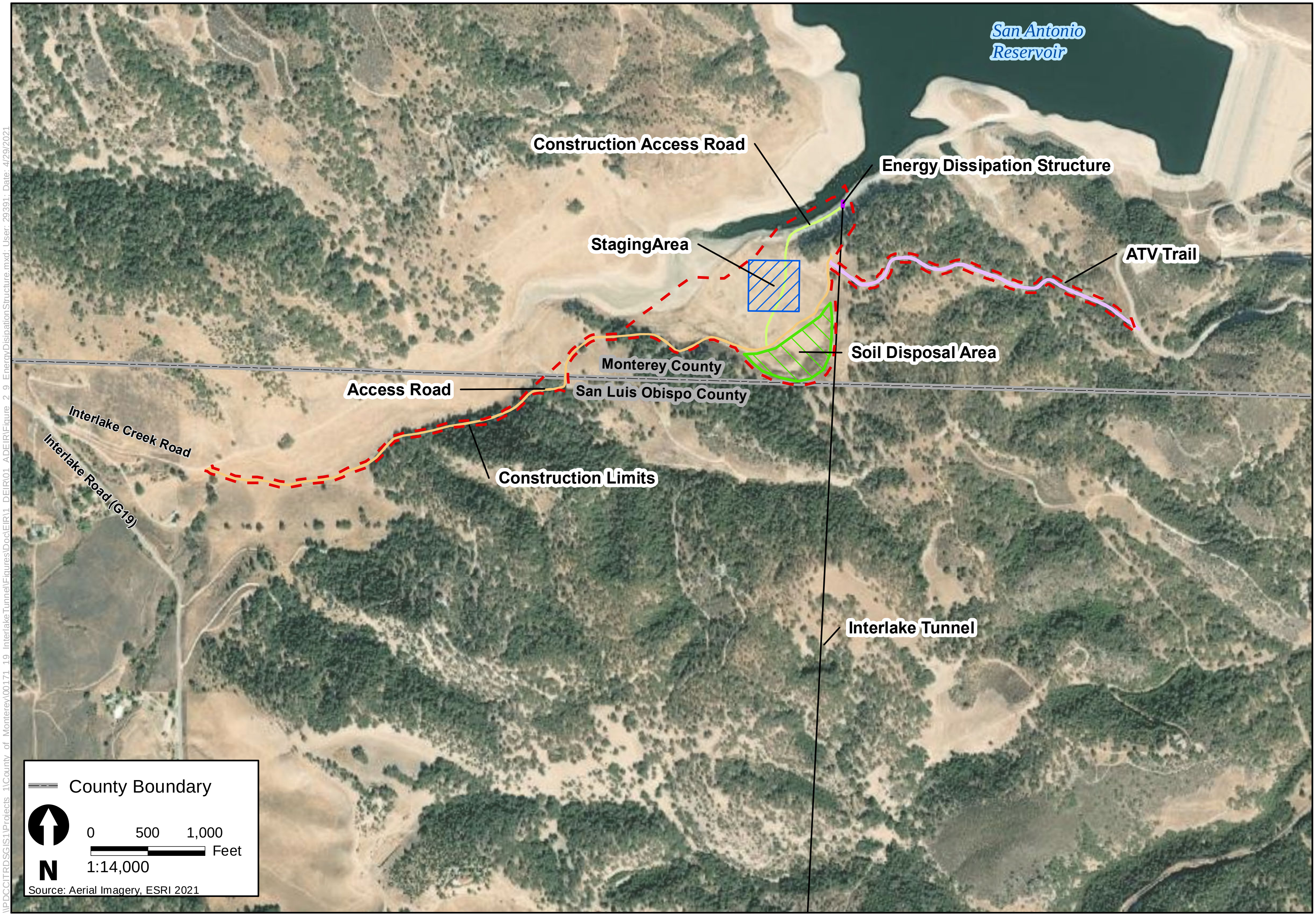

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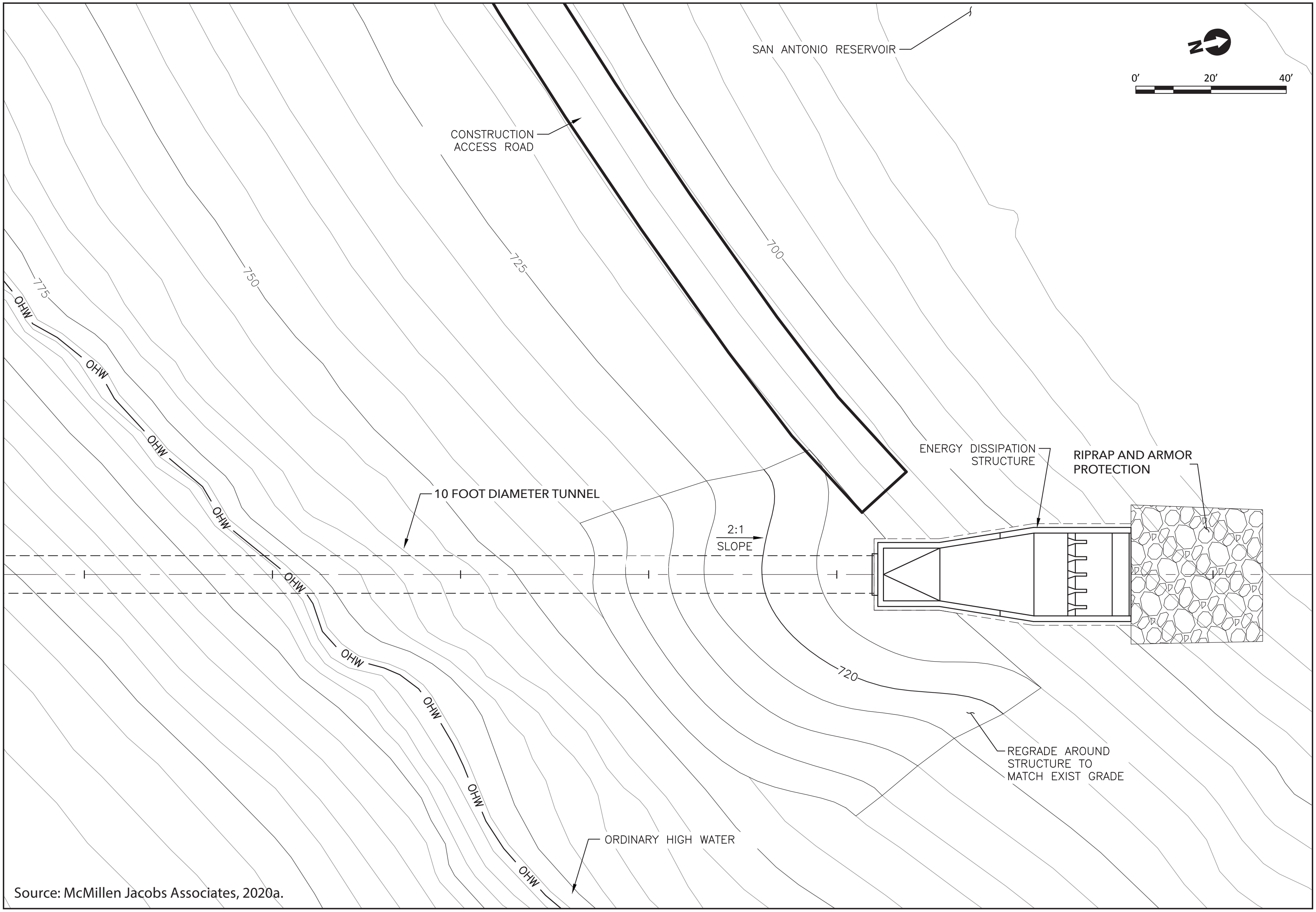
Figure 2-9
Energy Dissipation Structure and Associated Features



Source: McMillen Jacobs Associates, 2020a.

Figure 2-10
Energy Dissipation Structure Plan View

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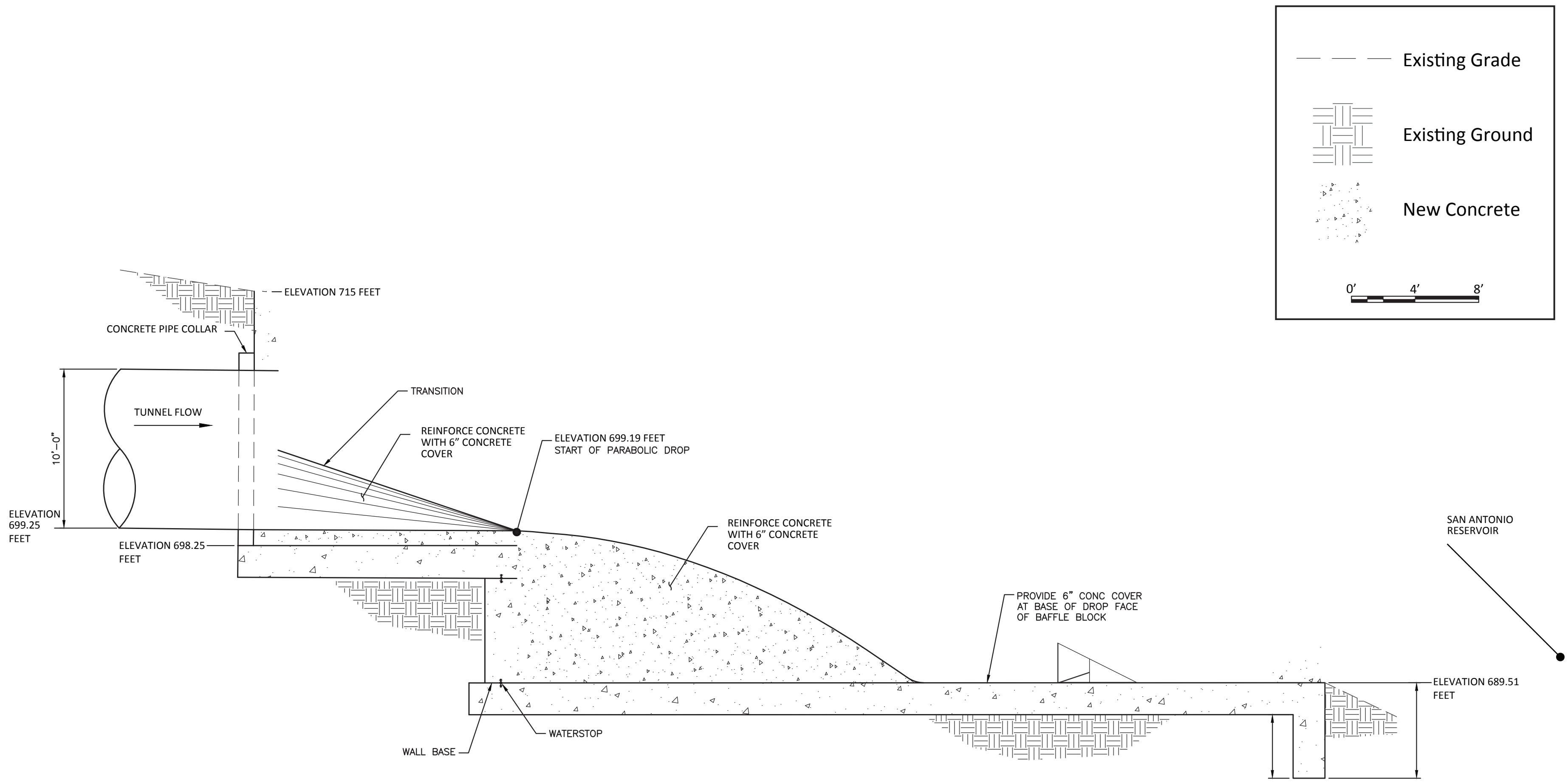

Vertical datum = NGVD29

Source: McMillen Jacobs Associates, 2020a.

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Figure 2-11
Energy Dissipation Structure Cross-Section View

Water would flow out of the Interlake Tunnel into a 40-foot-long transition chute and through a 25-foot-long parabolic drop, then through a 25-foot-long by 22-foot-wide stilling basin with 5-foot-long baffle blocks and an end sill. Riprap would be placed at the end of the Energy Dissipation Structure. The dissipation structure would include a security feature to allow water to be discharged from the Interlake Tunnel while preventing unauthorized access into the Interlake Tunnel or vandalism.

The bottom of the tunnel outlet opening would be at an elevation of approximately 699 feet, or approximately 90 feet below the proposed maximum reservoir elevation. The base of the Energy Dissipation Structure (i.e., base of the riprap) would be 10 feet lower, at approximately 689 feet. The downstream side of the Energy Dissipation Structure would be open to the San Antonio Reservoir, enabling direct flow into the reservoir.

A road and a trail would each provide access to the Energy Dissipation Structure. Each is located on MCWRA-owned property. An existing dirt access road would be regraded and resurfaced to provide MCWRA maintenance access to the Energy Dissipation Structure. As shown on **Figure 2-9**, the access road would begin at the paved Interlake Road to the west and would extend for approximately 0.3 mile east along the existing (gravel) Interlake Creek Road, then another 1.3 miles east/northeast to the Energy Dissipation Structure site. After resurfacing with new aggregate, the road would be approximately 12 feet wide. Portions of the road that are currently below the high-water mark would be graded to be above the area located within both 1) the San Antonio Reservoir ordinary high-water (OHW) mark so as to allow access to the outlet and 2) the Energy Dissipation Structure to ensure access when reservoir levels are high. These facilities would not need to be accessed when the road is below water. The roadway alignment and profile would be modified at the west end to provide all-weather access outside of the inundation zone. Due to an existing culvert along the road, a channel crossing would be required. The access road would be gated to prevent unauthorized entry. A temporary source for electrical power for construction of the Interlake Tunnel would be provided from a new Pacific Gas and Electric (PG&E) overhead power service to be installed along the access road; this connection is anticipated to be used to supply electrical power only during construction of the Interlake Tunnel.

As shown on **Figure 2-9**, the Energy Dissipation Structure would include a new 0.6-mile all-terrain vehicle (ATV) trail to allow the MCWRA maintenance staff additional/redundant access in the event the access road connecting to Interlake Creek Road is impassable. The ATV trail would not be accessible to the public. The 8-foot wide ATV trail would be established by regrading and resurfacing an existing trail between San Antonio Dam and the Energy Dissipation Structure.

Construction of the ATV trail would require a combination of fill and excavation to match existing trail grades. The ATV trail would be constructed of native material topped with aggregate approximately 8 inches in depth and sloped to drain freely. The vegetation would serve to filter water that might flow back toward or infiltrate into San Antonio Reservoir. The ATV trail would be at or above the OHW mark of San Antonio Reservoir so that it would continue to be useful when the reservoir is full.

Both the ATV trail and the access road would require multiple culverts to convey local drainage. Culverts would be sized to convey flows appropriate for the area but are expected to be no less than 16 inches in diameter. The ATV trail and the access road would be constructed to conform with pertinent standards of each respective county.

2.3.1.4 Easements on Properties Potentially Affected by the Interlake Tunnel

Construction and operation of the proposed Interlake Tunnel and its associated subcomponents have the potential to affect nearby properties. **Figure 2-12a** through **Figure 2-12c** overlay the Interlake Tunnel project site and the construction footprint with parcel boundaries. As shown on these figures, MCWRA owns the land where construction of the Tunnel Intake Structure and Energy Dissipation Structure work would occur. Therefore, no temporary construction easements on land owned by others would be needed. However, MCWRA would need to obtain permanent underground easements for lands under which the Interlake Tunnel would be located. **Table 2-1** lists all properties potentially affected by various elements of the Interlake Tunnel and its associated subcomponents.

Table 2-1. Properties Potentially Affected by the Interlake Tunnel and Subcomponents

APN	Ownership	General Plan Designation	Zoning	Project Use
Monterey County				
424-091-064-000	MCWRA	Public/Quasi Public; Rivers and Water Bodies	Public/ Quasi-Public	Energy Dissipation Structure, Interlake Tunnel, ATV trail, access road, and temporary work area
San Luis Obispo County				
080-034-003	MCWRA	Recreation	Recreation	Energy Dissipation Structure, access road and associated temporary work area
080-035-002	Private	Rural lands	Rural Lands	Partial overlap with soil disposal area for Energy Dissipation Structure
080-035-006	Private	Rural lands	Rural Lands	Interlake Tunnel, partial overlap with soil disposal area for Energy Dissipation Structure
080-035-009	Private	Rural lands	Rural Lands	Interlake Tunnel
080-038-002	Private	Rural lands	Rural lands	Interlake Tunnel
080-038-006	MCWRA	Recreation, open space	Recreation, open space	Tunnel Intake Structure work area, access road, and utilities; Interlake Tunnel
080-038-009	Private	Rural lands	Rural Lands	Interlake Tunnel
080-038-010	Private	Rural lands	Rural Lands	Interlake Tunnel
080-038-012	Private	Rural lands	Rural lands	Interlake Tunnel
080-041-014	MCWRA	Recreation, open space	Recreation, open space	Tunnel Intake Structure, access road and utilities
080-091-022	MCWRA	Recreation	Recreation	Tunnel Intake Structure, access road and utilities

Sources: San Luis Obispo County 2014, 2017; Monterey County 2010, 2017.
APN=assessor's parcel number; ATV=all-terrain vehicle; MCWRA=Monterey County Water Resources Agency

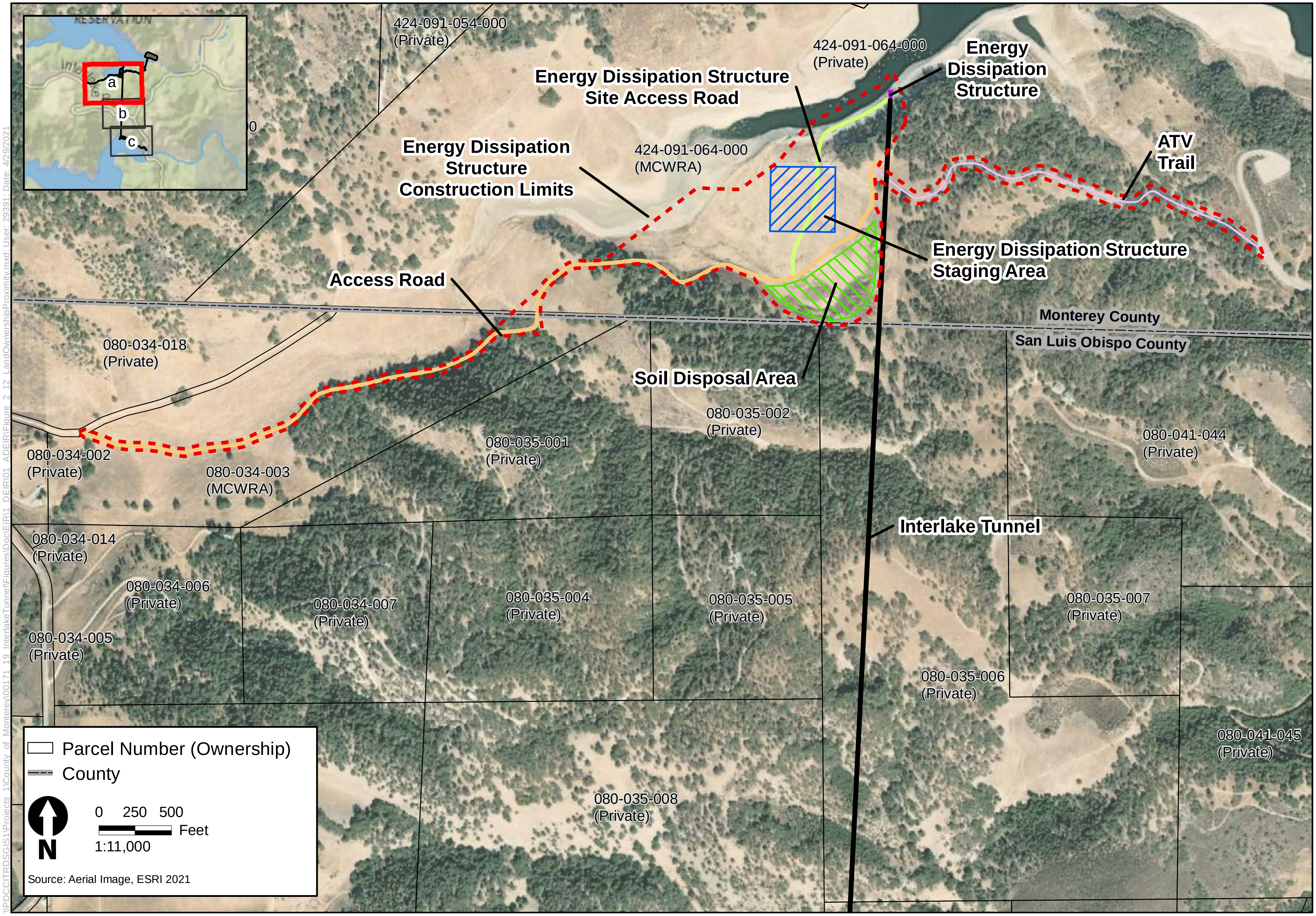


Figure 2-12a
Interlake Tunnel Project Components and Affected Parcels

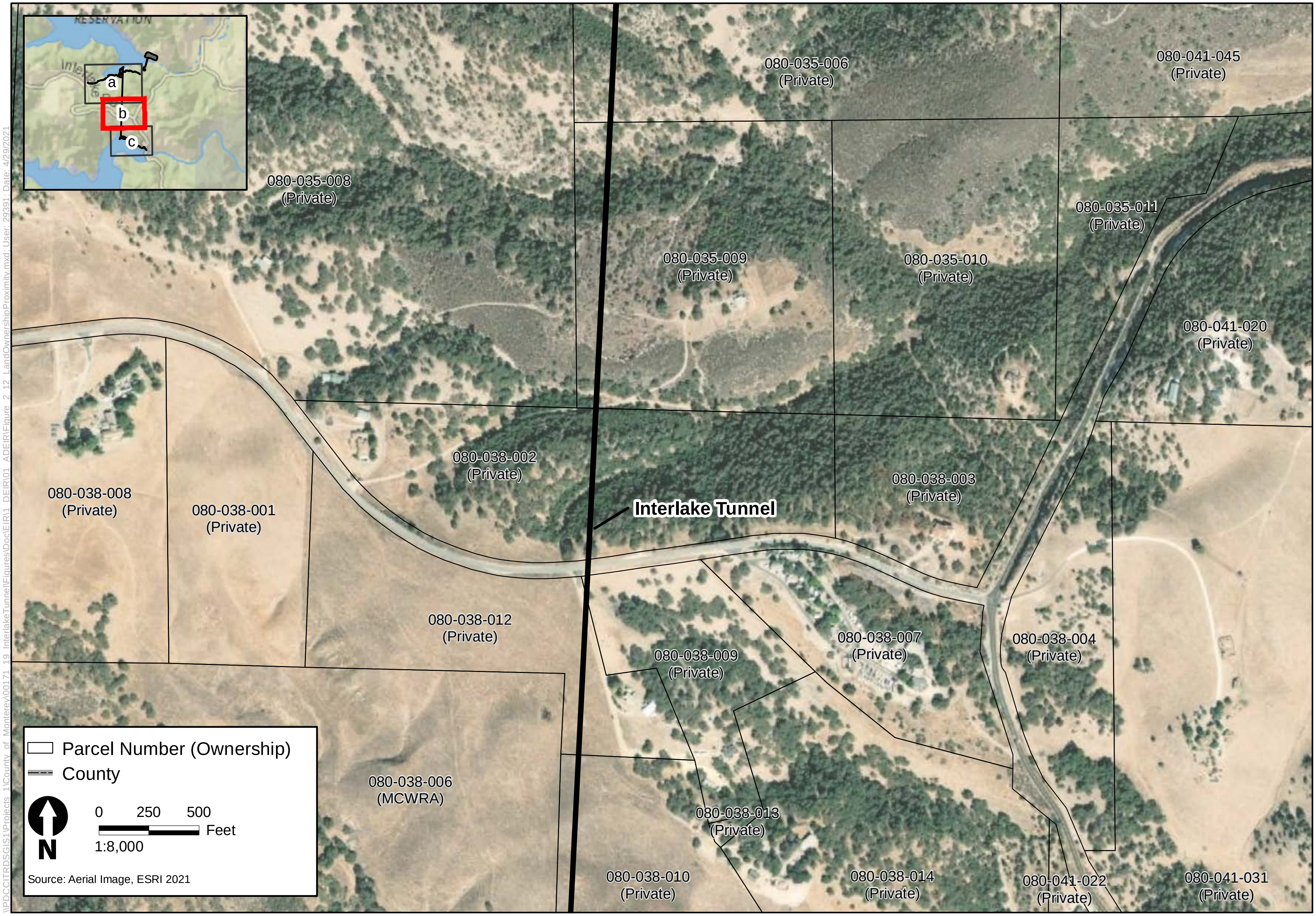


Figure 2-12b
Interlake Tunnel Project Components and Affected Parcels

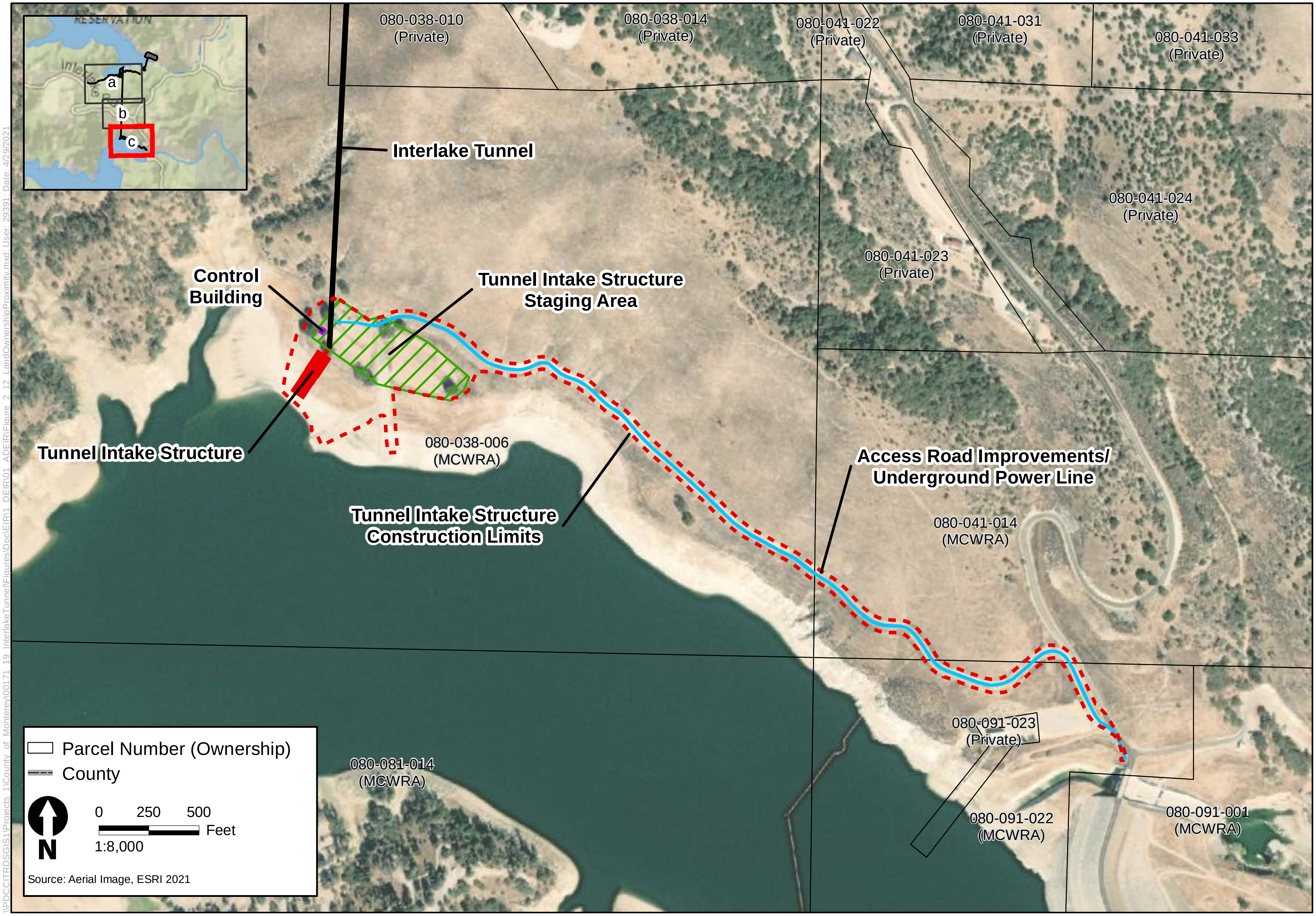


Figure 2-12c
Interlake Tunnel Project Components and Affected Parcels

2.3.2 San Antonio Dam Spillway Modification

The San Antonio Dam Spillway Modification (Spillway Modification) would remove and replace the existing ogee spillway crest control structure with a new labyrinth weir structure at the top of the spillway and raise the walls of the existing spillway. **Figure 2-13** shows an overview of the proposed Spillway Modification and associated features, **Figure 2-14** shows a plan view of the proposed Spillway Modification conceptual design, and **Figure 2-15** shows a cross-section of the proposed Spillway Modification conceptual design.

The Spillway Modification would provide an up to 7-foot increase in the reservoir's maximum WSE, effectively increasing San Antonio Reservoir's storage capacity by up to approximately 41,000 acre-feet without raising the height of the dam itself. This capacity increase would in turn increase the land area surrounding the reservoir that would be subject to inundation by up to approximately 442 acres. Design detail can be found in the *San Antonio Spillway Modification – Design Documentation Report* (McMillen Jacobs Associates 2020b).

The Spillway Modification would be accessed via adjacent existing earthen access roads, which would be graded and resurfaced with an aggregate base. Utility power, potable water, and sanitary sewer utilities would not be required at the Spillway Modification site. Details regarding the replacement labyrinth weir and Spillway Modification follow.

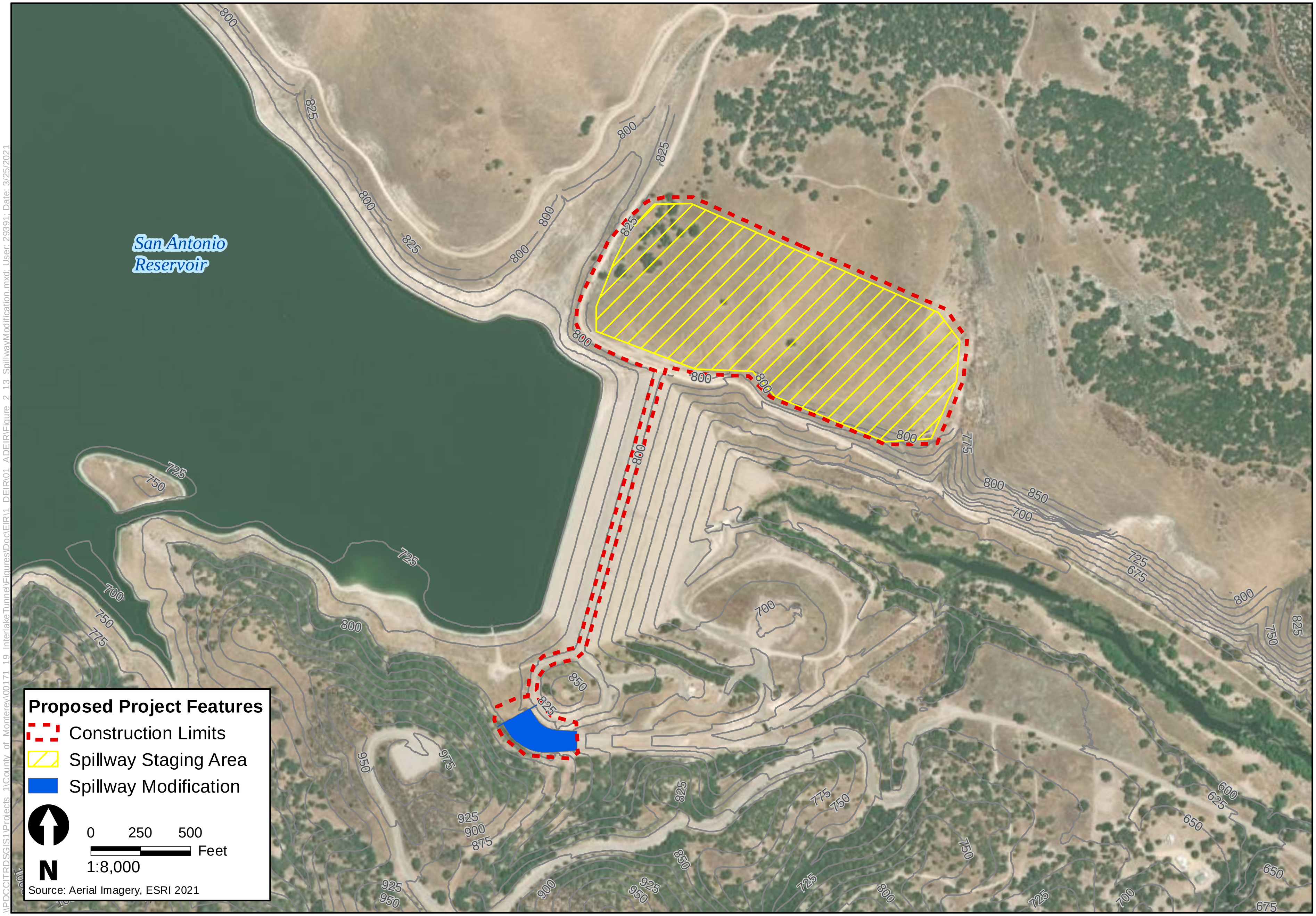


Figure 2-13
San Antonio Dam Spillway Modification

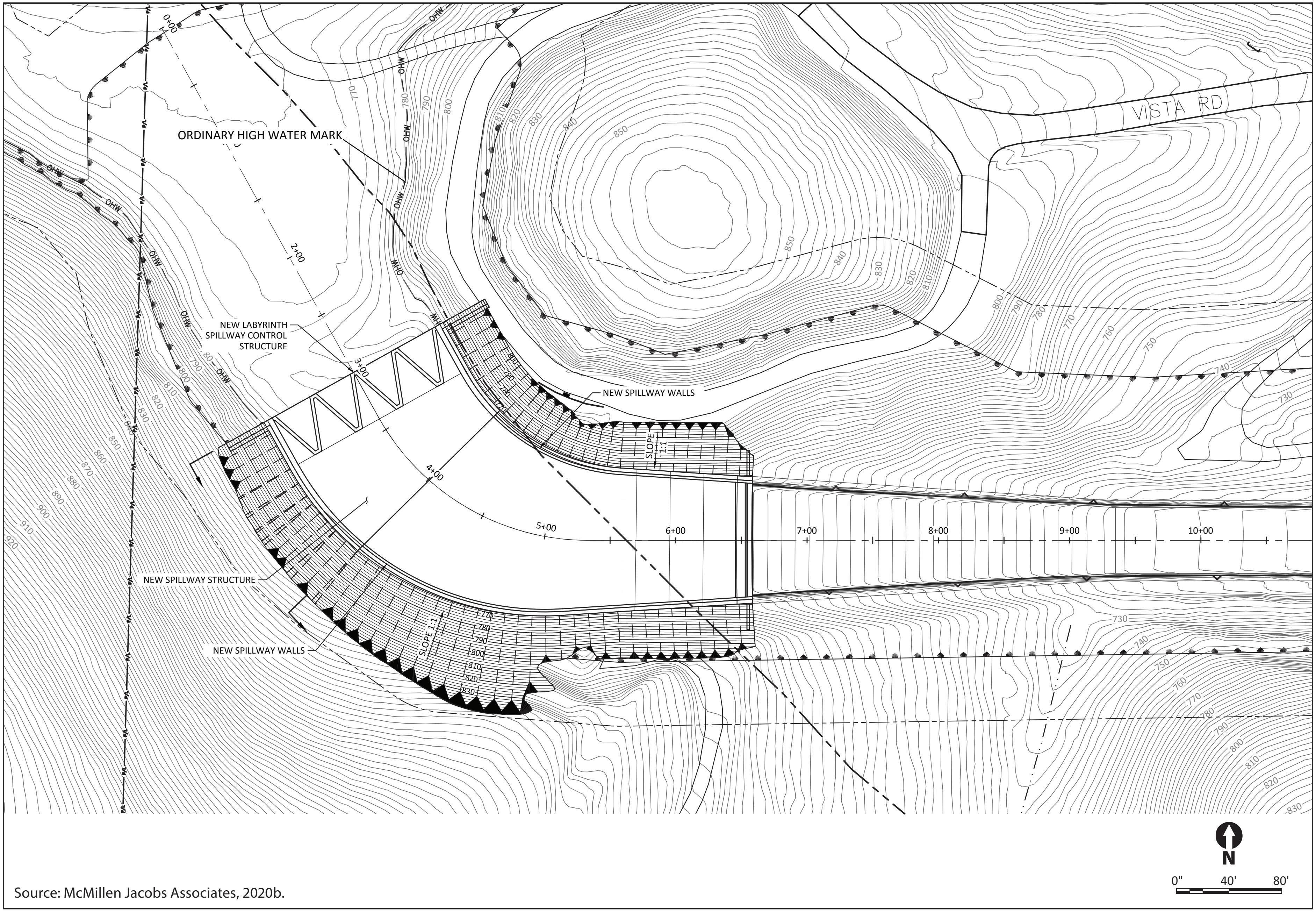
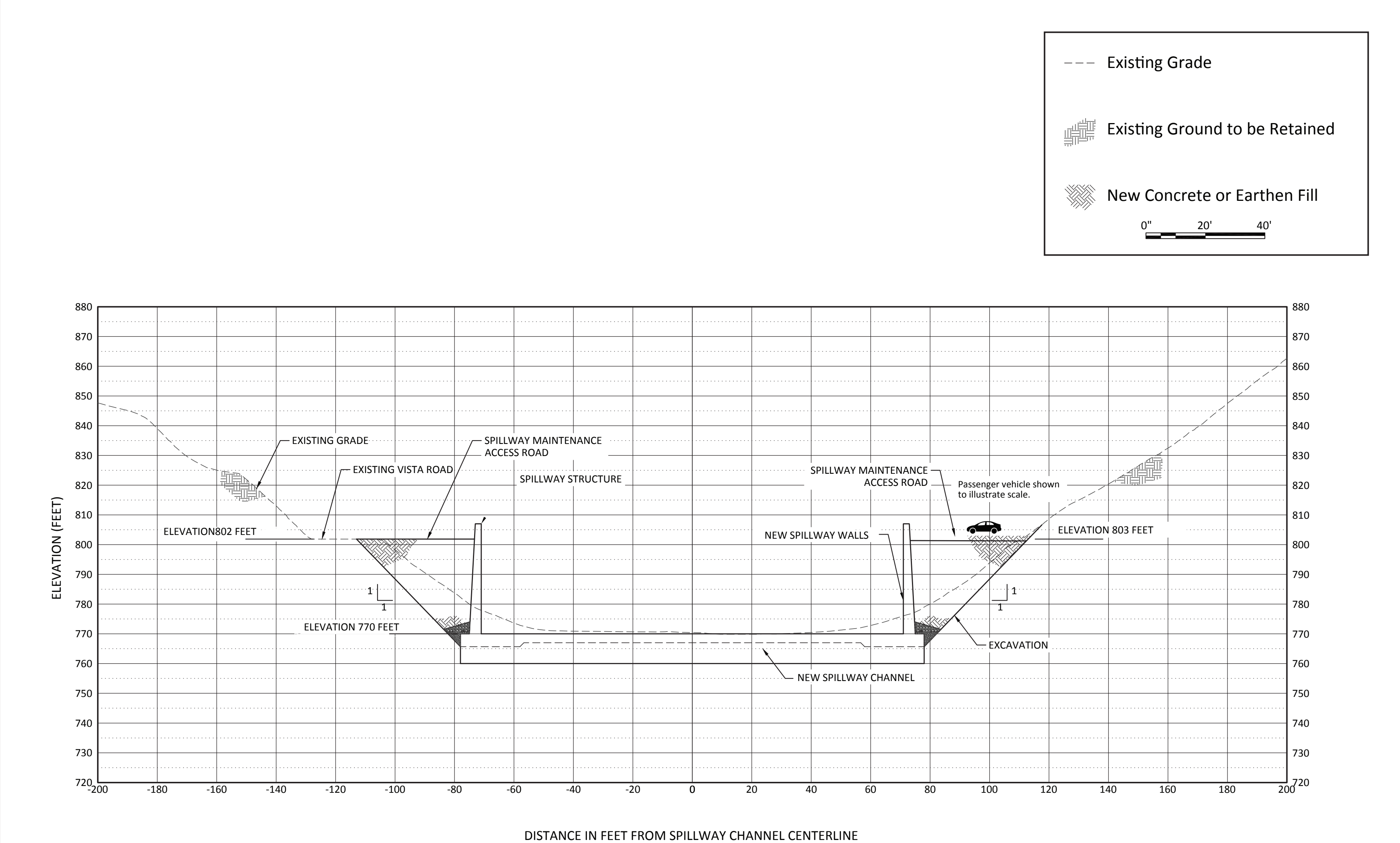


Figure 2-14
Spillway Modification Plan View



Vertical datum = NGVD29

Source: McMillen Jacobs Associates, 2020b.

Figure 2-15
Cross-Section of San Antonio Spillway and Weir with Proposed Modification

2.3.2.1 Replacement Labyrinth Weir

The Spillway Modification includes demolishing the existing ogee spillway crest control structure and constructing a new labyrinth spillway control structure. A labyrinth weir spillway is a weir folded in plan view, like an accordion, that can provide a longer total effective spillway length for a given channel width (**Figure 2-16**). The labyrinth weir has advantages compared to a straight weir or ogee spillway, because the total weir length of the weir is two and a half times the channel width for increased flow. The geometry of a labyrinth weir affects how much water can be passed through the spillway. To be effective, the design of the labyrinth weir needs to be able to pass the PMF while also minimizing construction costs and complexity.

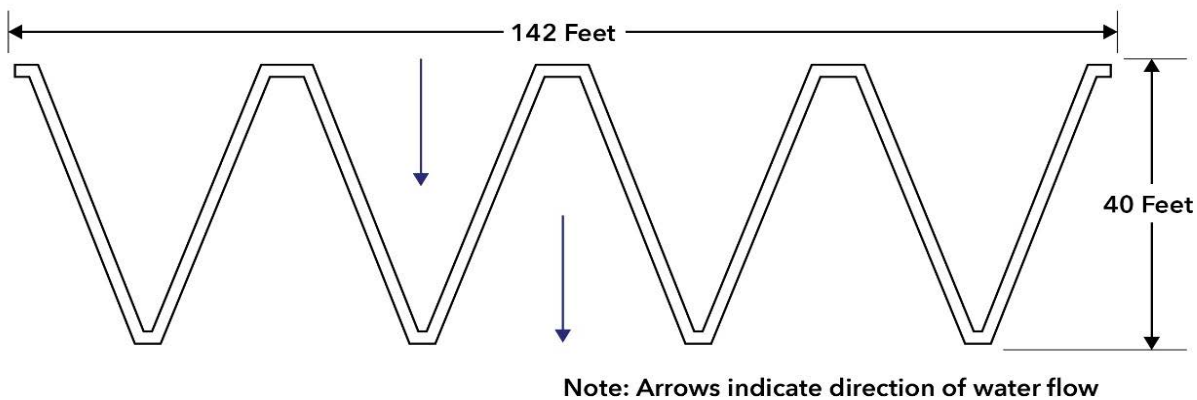


Figure 2-16. Plan View of Labyrinth Weir

The weir would be 17 feet tall, 142 feet long, and 40 feet deep; its top would be at 787 feet. The concrete walls for the weir would taper from a width of 30 inches at the bottom to 24 inches at the top. The cutoff walls as well as the chute walls at the entrance would be 37 feet high to allow for adequate freeboard in PMF conditions. The weir would connect to the exterior chute walls. To protect against seepage, cutoff and grout walls would be placed along the entire length of the slab structure. Each cutoff wall would continue past the exterior walls (at a top of wall elevation equal to the exterior walls) and would continue approximately 40 feet in each direction to terminate when the grade is at an elevation of 801 feet. These exterior cutoff walls would ensure no water is able to pass around the spillway.

2.3.2.2 Spillway Channel and Wall Changes

In addition to the labyrinth weir, the Spillway Modification would include a modified spillway channel and new spillway walls. These structures would connect the existing spillway to the new labyrinth weir (**Figure 2-14**). Existing spillway walls along the new weir structure would either be raised or replaced to account for the higher PMF flows that would be passable by the labyrinth weir. The spillway channel modification would consist of a concrete slab and concrete walls and would be approximately 350 feet long where it would tie in with the existing spillway at an elevation of approximately 756 feet. The full spillway would then be approximately 1,500 feet long and would vary in width from 142 feet at the entrance structure to approximately 100 feet at the tie-in with the existing spillway. From the tie-in point the existing spillway would then taper again to 50 feet wide at the end of the spillway.

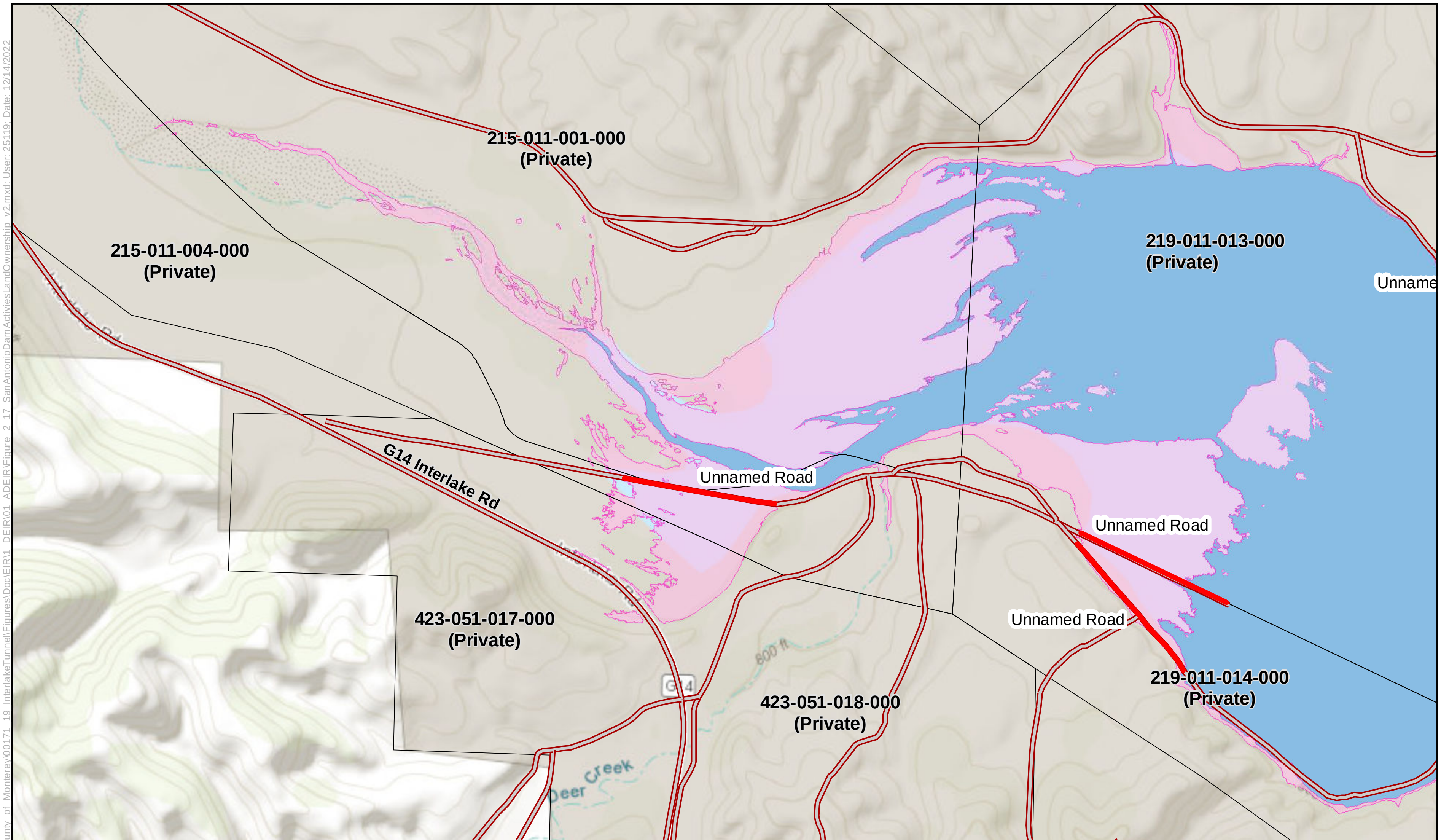
The entrance channel walls would drop in height at a 1:1 ratio to 25 feet high starting at 28 feet downstream of the labyrinth weir structure. The concrete slab would be 24 inches thick at the middle of the spillway and 30 inches thick under the exterior walls. A radiused slab would connect the 3.9-percent slope of the new spillway to the 19-percent slope of the existing spillway. An expansion joint as well as a cutoff wall would be located immediately upstream of the tie-in point to isolate the two drainage systems, ensuring the Spillway Modification and storage water level minimally affect the existing spillway drain system.

2.3.2.3 Easements on Properties Potentially Affected by the Spillway Modification

MCWRA owns most of the land along the perimeter of San Antonio Reservoir, the majority of which is open space and used for livestock grazing. As shown on **Figure 2-17a** through **Figure 2-17k**, there are a few recreational areas around the reservoir perimeter that are maintained by PWFP. Lands around the upstream perimeter of San Antonio Reservoir are federally owned and used by Fort Hunter Liggett. The remaining properties surrounding the reservoir are privately owned. All construction work areas would be on MCWRA-owned lands; therefore, no temporary construction easements would be needed during construction of the Spillway Modification.

MCWRA holds floodage[5] easements on nine privately owned parcels along the perimeter of San Antonio Reservoir, and for five parcels owned by the federal government on the portion of Fort Hunter Liggett adjacent to San Antonio Reservoir. The floodage easements held by MCWRA allow for inundation up to a maximum WSE of 801 feet, which exceeds the maximum WSE of 787 feet that could result from the Spillway Modification. Accordingly, the project would not entail the need for MCWRA to obtain any new or modified floodage easements. However, some properties contain existing infrastructure or activity use areas around the perimeter of San Antonio Reservoir in a zone of elevation between the current maximum reservoir elevation of 780 feet and the possible maximum elevation of 787 feet with the Spillway Modification that could be inundated at the higher WSE. **Table 2-2** summarizes all properties potentially affected by the Spillway Modification, including a description of infrastructure that could potentially be inundated at a maximum WSE of 787 feet compared to the existing maximum WSE of 780 feet. **Figure 2-17a** through **Figure 2-17k** show the potential new high-water elevation overlain with parcel boundaries, as well as infrastructure potentially inundated at the proposed maximum WSE of 787 feet compared to the existing maximum WSE of 780 feet.

[5] *Floodage* refers to flood inundation. A floodage easement effectively permits facilities operated by the easement holder (in this case, the reservoirs owned by MCWRA) to flood a particular property owned by another entity.



Potentially Subject to Inundation at 787 Feet

Potentially Subject to Inundation at 787 Feet

Proposed Maximum Water Surface Elevation at San Antonio Reservoir (787 Feet)

Existing Maximum Water Surface Elevation at San Antonio Reservoir (780 Feet)

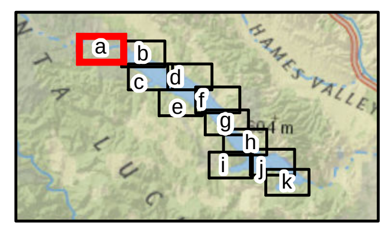
Roads

Parcel Number (Ownership)

N

0 1,000 2,000 Feet

1:14,000 Source: Basemap, ESRI 2021



Figures 2-17a

San Antonio Dam Spillway Modification: Maximum Water Surface Elevation and Land Ownership

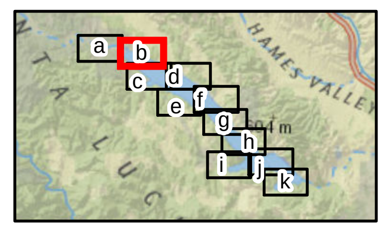
\\PDCCITRDSGIS01\Projects_1\County_of_Monterey\00171_19_InterlakeTunnel\Figures\Doc\EIR\1_DEIR\01_ADEIR\Figure_2_17_SanAntonioDamActiviesLandOwnership_v2.mxd; User: 25119; Date: 12/14/2022

- Potentially Subject to Inundation at 787 Feet (point)
- Potentially Subject to Inundation at 787 Feet (line)
- Proposed Maximum Water Surface Elevation at San Antonio Reservoir (787 Feet)
- Existing Maximum Water Surface Elevation at San Antonio Reservoir (780 Feet)
- Roads
- Parcel Number (Ownership)

N

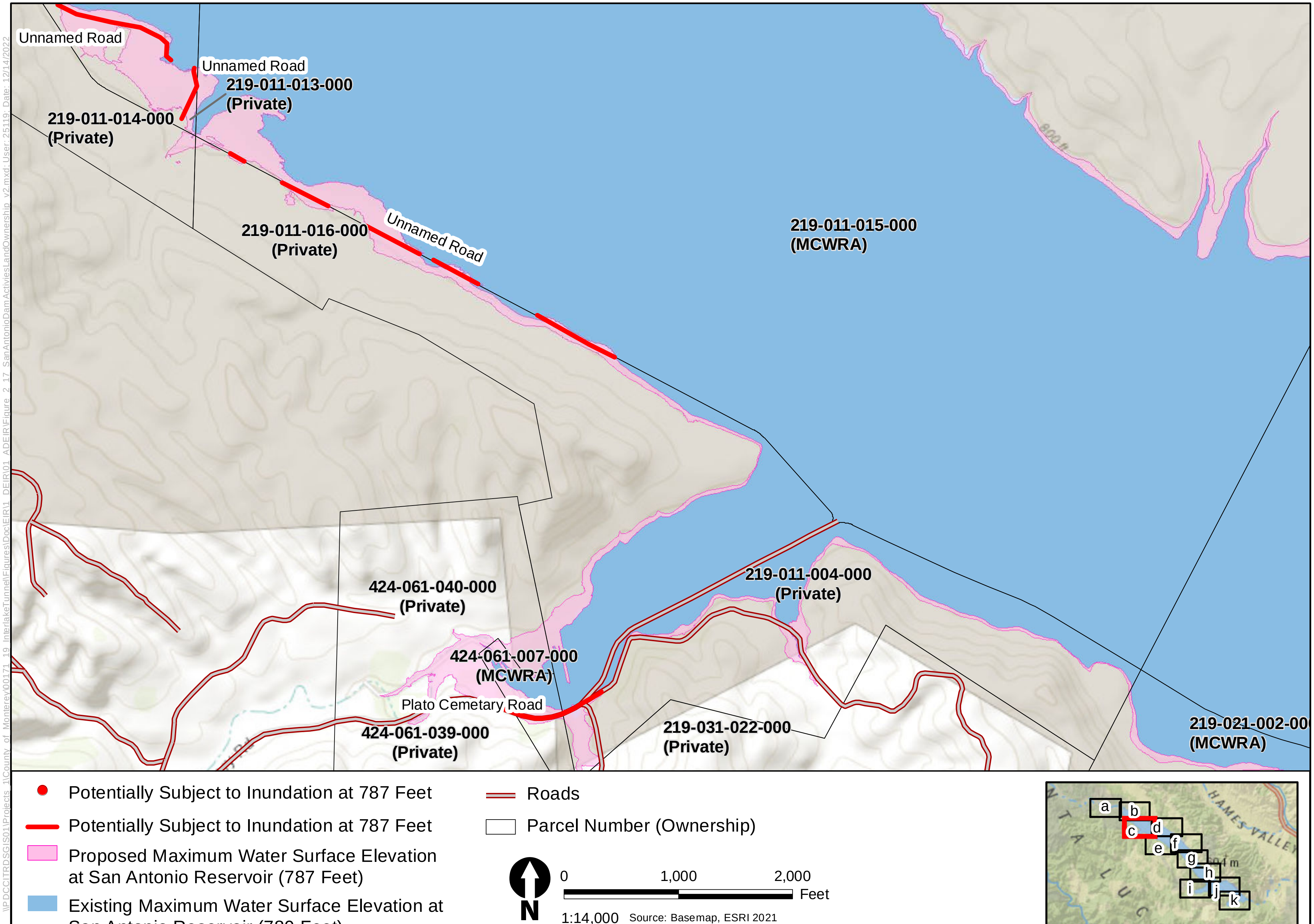
0 1,000 2,000 Feet

1:14,000 Source: Basemap, ESRI 2021

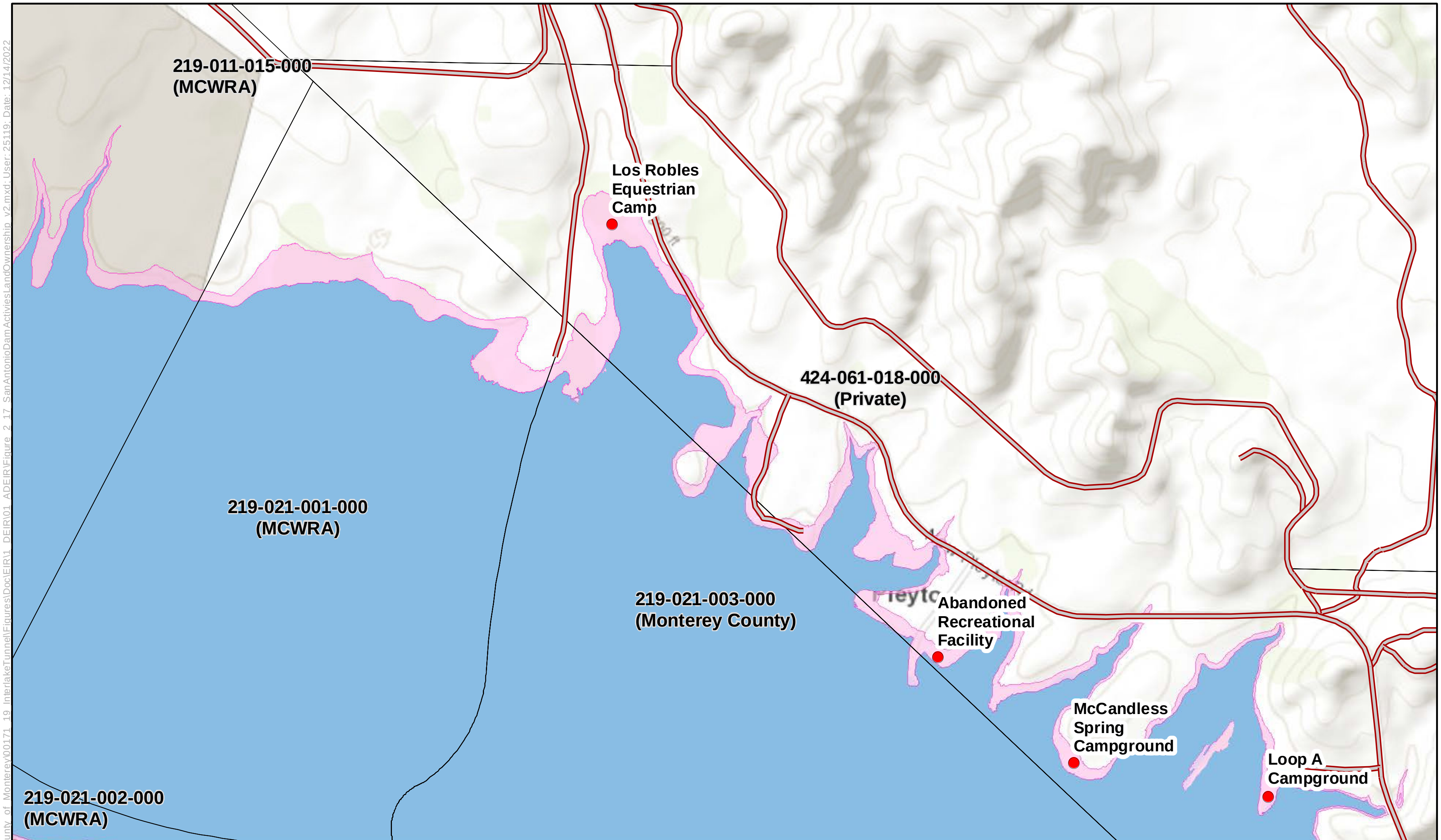


Figures 2-17b

San Antonio Dam Spillway Modification: Maximum Water Surface Elevation and Land Ownership



Figures 2-17c
San Antonio Dam Spillway Modification: Maximum Water Surface Elevation and Land Ownership



Potentially Subject to Inundation at 787 Feet

Potentially Subject to Inundation at 787 Feet

Proposed Maximum Water Surface Elevation at San Antonio Reservoir (787 Feet)

Existing Maximum Water Surface Elevation at San Antonio Reservoir (780 Feet)

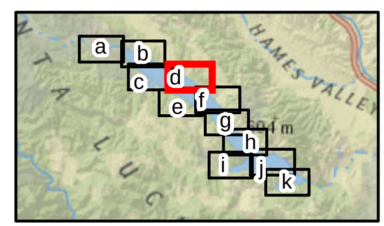
Roads

Parcel Number (Ownership)

N

0 1,000 2,000 Feet

1:14,000 Source: Basemap, ESRI 2021



Figures 2-17d

San Antonio Dam Spillway Modification: Maximum Water Surface Elevation and Land Ownership

Potentially Subject to Inundation at 787 Feet

Potentially Subject to Inundation at 787 Feet

Proposed Maximum Water Surface Elevation at San Antonio Reservoir (787 Feet)

Existing Maximum Water Surface Elevation at San Antonio Reservoir (780 Feet)

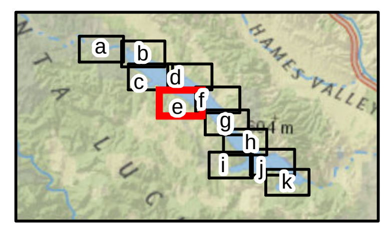
Roads

Parcel Number (Ownership)

N

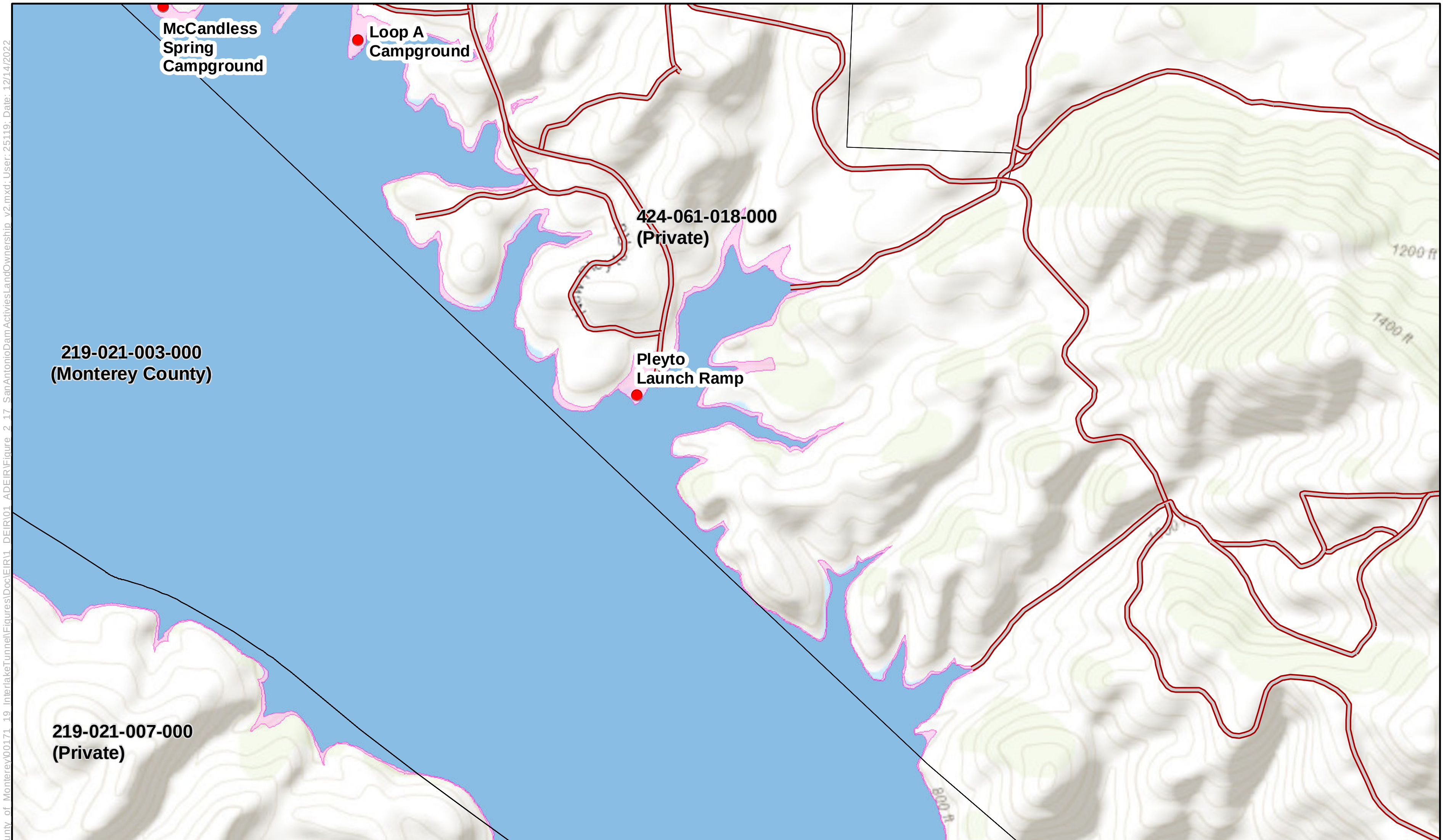
0 1,000 2,000 Feet

1:14,000 Source: Basemap, ESRI 2021



Figures 2-17e

San Antonio Dam Spillway Modification: Maximum Water Surface Elevation and Land Ownership



Potentially Subject to Inundation at 787 Feet

Potentially Subject to Inundation at 787 Feet

Proposed Maximum Water Surface Elevation at San Antonio Reservoir (787 Feet)

Existing Maximum Water Surface Elevation at San Antonio Reservoir (780 Feet)

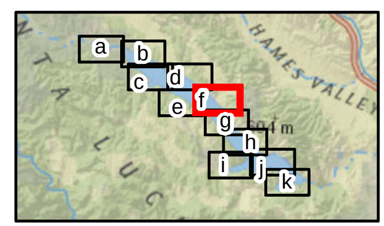
Roads

Parcel Number (Ownership)

N

0 1,000 2,000 Feet

1:14,000 Source: Basemap, ESRI 2021



Figures 2-17f

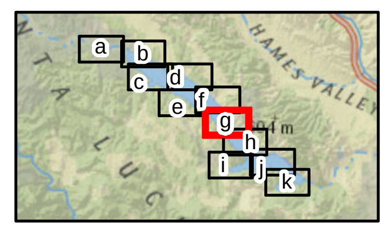
San Antonio Dam Spillway Modification: Maximum Water Surface Elevation and Land Ownership

- Potentially Subject to Inundation at 787 Feet (point)
- Potentially Subject to Inundation at 787 Feet (line)
- Proposed Maximum Water Surface Elevation at San Antonio Reservoir (787 Feet)
- Existing Maximum Water Surface Elevation at San Antonio Reservoir (780 Feet)
- Roads
- Parcel Number (Ownership)

N

0 1,000 2,000 Feet

1:14,000 Source: Basemap, ESRI 2021



Figures 2-17g

San Antonio Dam Spillway Modification: Maximum Water Surface Elevation and Land Ownership

Potentially Subject to Inundation at 787 Feet

Potentially Subject to Inundation at 787 Feet

Proposed Maximum Water Surface Elevation at San Antonio Reservoir (787 Feet)

Existing Maximum Water Surface Elevation at San Antonio Reservoir (780 Feet)

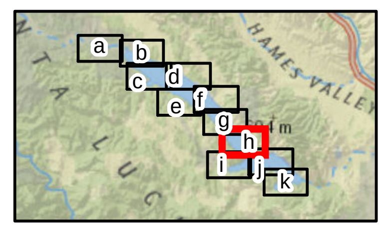
Roads

Parcel Number (Ownership)

N

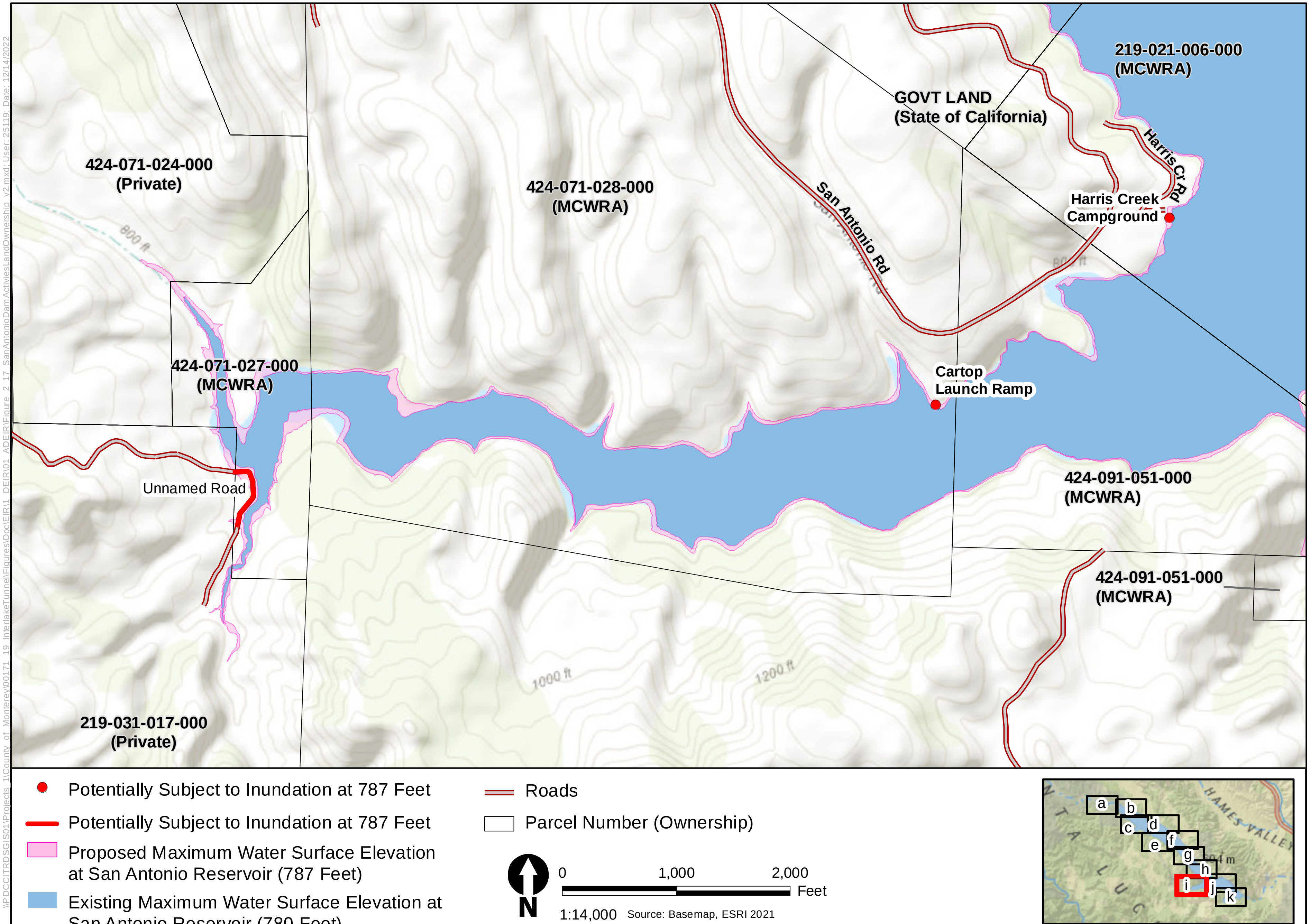
0 1,000 2,000 Feet

1:14,000 Source: Basemap, ESRI 2021



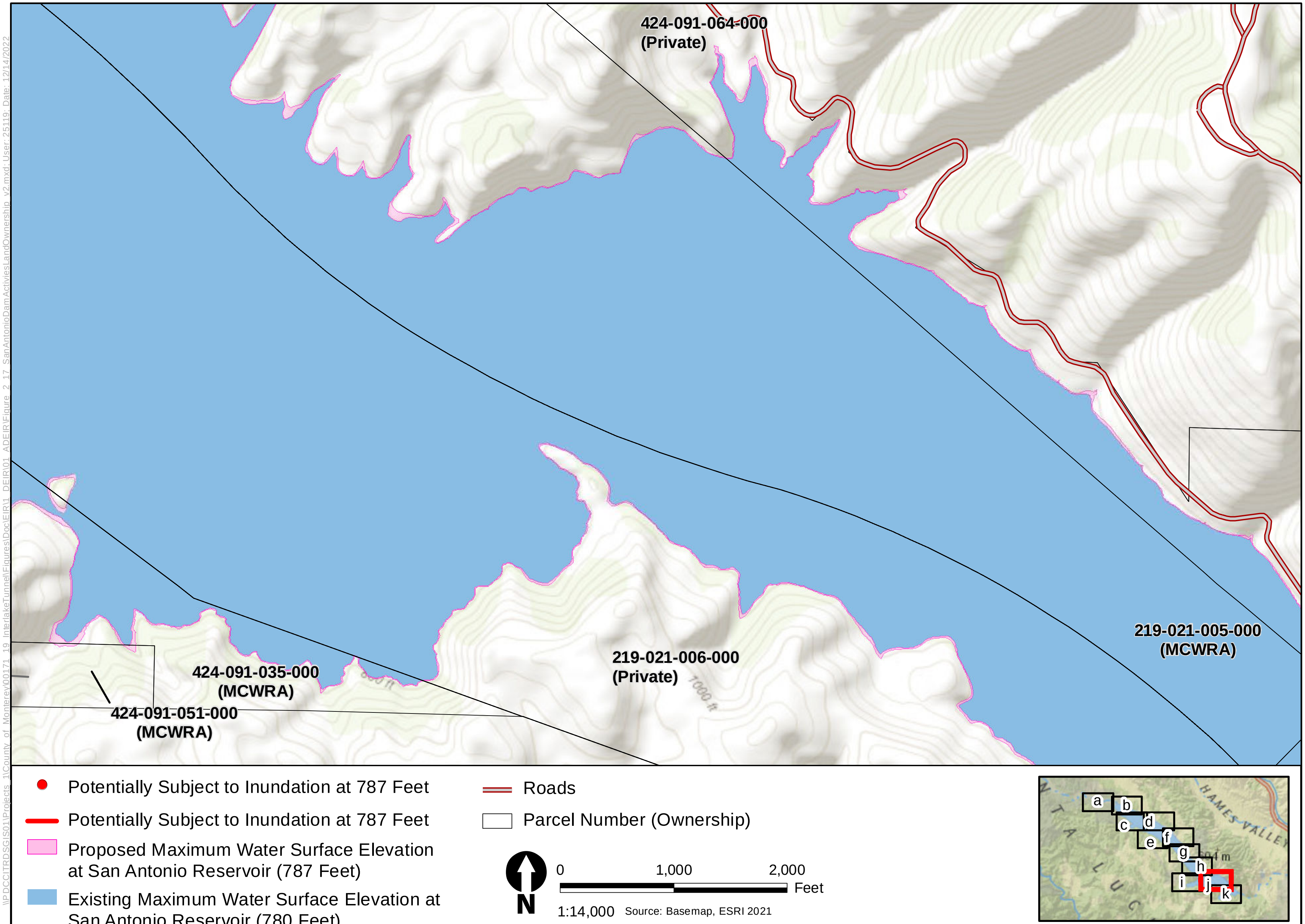
Figures 2-17h

San Antonio Dam Spillway Modification: Maximum Water Surface Elevation and Land Ownership

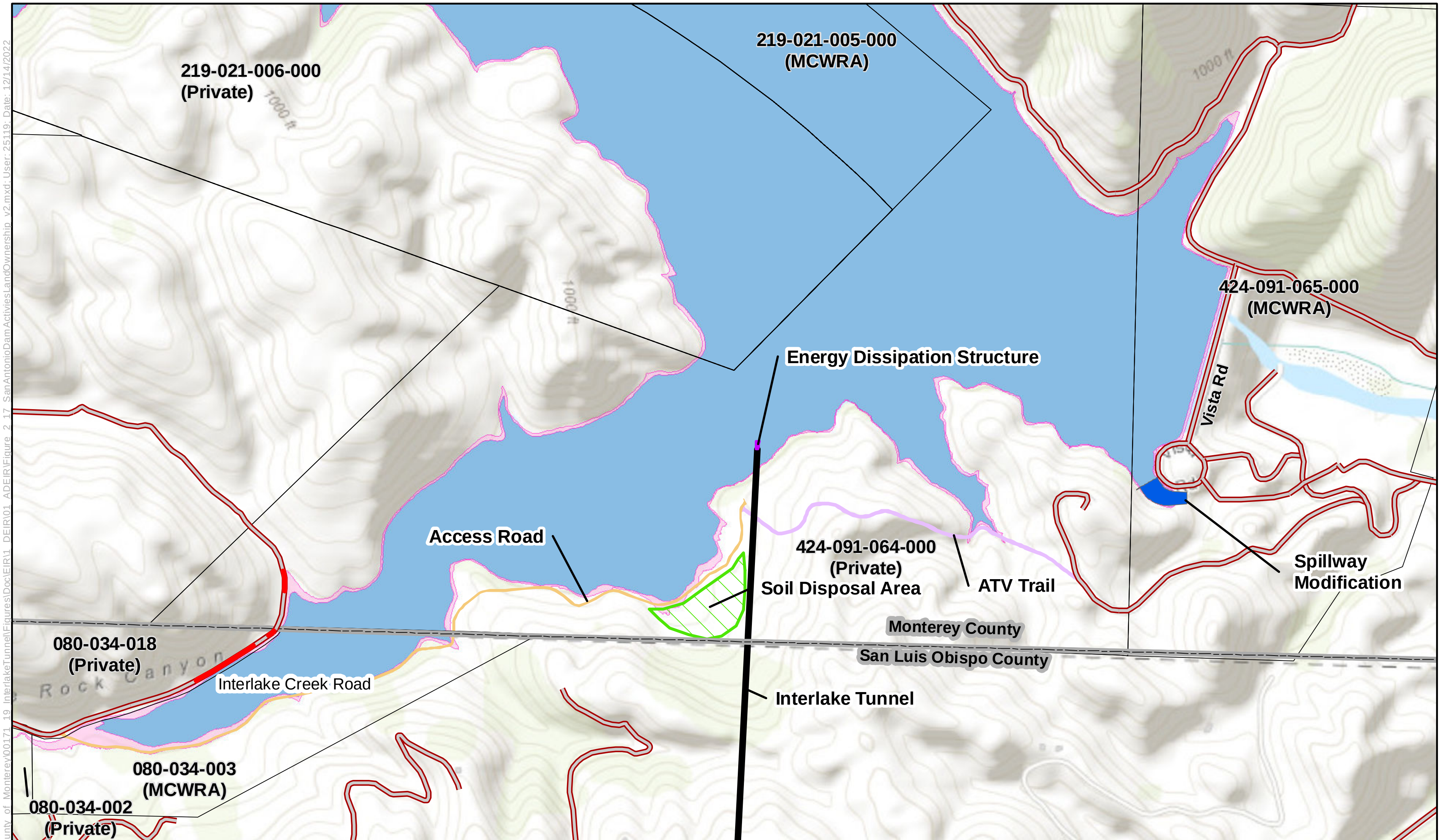


Figures 2-17i

San Antonio Dam Spillway Modification: Maximum Water Surface Elevation and Land Ownership



Figures 2-17j
San Antonio Dam Spillway Modification: Maximum Water Surface Elevation and Land Ownership

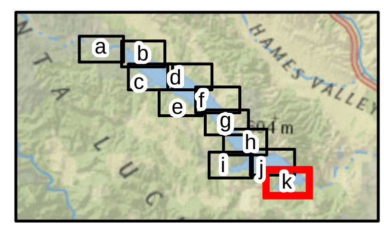


- Potentially Subject to Inundation at 787 Feet
- Potentially Subject to Inundation at 787 Feet
- Proposed Maximum Water Surface Elevation at San Antonio Reservoir (787 Feet)
- Existing Maximum Water Surface Elevation at San Antonio Reservoir (780 Feet)
- Roads
- Parcel Number (Ownership)
- County Boundary

N

0 1,000 2,000 Feet

1:14,000 Source: Basemap, ESRI 2021



Figures 2-17k

San Antonio Dam Spillway Modification: Maximum Water Surface Elevation and Land Ownership

Table 2-2. Properties Potentially Affected by the San Antonio Dam Spillway Modification[a]

APN	Ownership	General Plan Designation	Zoning	Potential Inundation at 787 Feet
Monterey County				
215-011-001-000	USA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.
215-011-004-000	USA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Portions of Pleyto Cemetery Road: • Approximately 1,000 feet of this road on the west shore of San Antonio Reservoir would be inundated at 787 feet.
219-011-004-000	MCWRA	Public/Quasi-Public	Public/ Quasi-Public	Portions of Pleyto Cemetery Road: • Approximately 1,000 feet of this road on the west shore of San Antonio Reservoir would be inundated at 787 feet.
219-011-013-000	USA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Portions of multiple unpaved, unnamed roads would be inundated at 787 feet.
219-011-014-000	USA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Portions of multiple unpaved, unnamed roads would be inundated at 787 feet.
219-011-015-000	MCWRA	Rivers and Waterbodies	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.
219-011-016-000	MCWRA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Portions of multiple unpaved, unnamed roads would be inundated at 787 feet.
219-021-001-000	MCWRA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.
219-021-002-000	MCWRA	Public/Quasi-Public	Public/ Quasi-Public	Portions of an unpaved road would be inundated at 787 feet.
219-021-003-000	MCWRA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.
219-021-005-000	MCWRA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.
219-021-006-000	MCWRA	Public/Quasi-Public, Rivers, and Waterbodies	Public/ Quasi-Public	Harris Creek Campground: • The restrooms, fish cleaning station, and boat launch would be inundated at 787 feet.

APN	Ownership	General Plan Designation	Zoning	Potential Inundation at 787 Feet
219-021-007-000	MCWRA	Public/Quasi-Public	Public/ Quasi-Public	Lake San Antonio Resort: Portions of Beach Road and Beach Parking Lot, a portion of the water lines at the filter plant/lift station, underground/aboveground fuel storage area, a small portion of the weather station, portions of the Lake San Antonio Resort boat launch and boat launch parking lot would be inundated at 787 feet.
219-031-017-000	Private	Rural Grazing	Rural Grazing	Inundation at 787 feet would not affect any known infrastructure.
219-031-022-000	Private	Rural Grazing	RG/40	Inundation at 787 feet would not affect any known infrastructure.
423-051-017-000	Private	Rural Grazing	RG/40	Inundation at 787 feet would not affect any known infrastructure.
423-051-018-000	USA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.
424-061-007-000	MCWRA	Public Quasi-Public	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.
424-061-018-000	MCWRA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Pleyto Launch Ramp • Portions of the launch ramp, restrooms, fish cleaning station, lift station, and parking lot would be inundated at 787 feet. Los Robles Equestrian Camp • Portions of the grounds and a horse ring would be inundated at 787 feet. McCandless Spring Campground • Portions of some campsites would be inundated at 787 feet. Loop A Campground • Portions of some campsites and the loop road would be inundated at 787 feet.
424-061-039-000	Private	Permanent Grazing	PG/40	Inundation at 787 feet would not affect any known infrastructure.
424-061-040-000	Private	Permanent Grazing	PG/40	Inundation at 787 feet would not affect any known infrastructure.
424-071-024-000	Private	Permanent Grazing	PG/40	Inundation at 787 feet would not affect any known infrastructure.
424-071-027-000	Private	Public/Quasi-Public	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.

APN	Ownership	General Plan Designation	Zoning	Potential Inundation at 787 Feet
424-071-028-000	MCWRA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Cartop Launch Ramp: Approximately 10 horizontal feet of the upper end of this launch ramp would be inundated at 787 feet.
424-091-035-000	MCWRA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.
424-091-051-000	MCWRA	Public/Quasi-Public	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.
424-091-064-000	MCWRA	Rivers and Waterbodies	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.
424-091-065-000[b]	MCWRA	Public/Quasi-Public, Rivers and Waterbodies	Public/ Quasi-Public	Inundation at 787 feet would not affect any known infrastructure.
San Luis Obispo County				
080-034-002	Private	Rural Lands	Rural Lands	Inundation at 787 feet would not affect any known infrastructure.
080-034-003	MCWRA	Recreation	Recreation	Interlake Creek Road: Approximately 1,200 feet of this road to the east of the junction with Interlake Road on the west shore of San Antonio Reservoir would be inundated at 787 feet.
080-034-018	Private	Recreation and Rural lands	Recreation and Rural Lands	Interlake Creek Road: Approximately 1,200 feet of this road to the east of the junction with Interlake Road on the west short of San Antonio Reservoir would be inundated at 787 feet.

Source: San Luis Obispo County 2017; Monterey County 2017.

[a] All parcels have floodage easements due to increased storage elevation unless otherwise noted.

[b] This property has no floodage easement; however, a portion of it would be utilized for the San Antonio Dam Spillway Modification work area.

APN=assessor's parcel number; MCWRA=Monterey County Water Resources Agency; PG=permanent grazing; RG=rural grazing

2.4 Construction

This section describes the construction activities associated with the project. Construction is described separately for each of the two major project components: the Interlake Tunnel, which includes the Tunnel Intake Structure, Interlake Tunnel, and Energy Dissipation Structure; and the Spillway Modification. This is because the two components could be constructed at separate times as part of separate bid packages. Moreover, the two major project components and their respective subcomponents would be located entirely in Monterey County, entirely in San Luis Obispo County, or in some cases, in both counties. Accordingly, construction of each component and subcomponent would be expected to adhere to pertinent construction regulations for one or both counties where applicable. For the purposes of this EIR, construction of the Interlake Tunnel and associated subcomponents and the Spillway Modification are assumed to occur concurrently.

The Safety and Environmental Awareness Program (SEAP) would be common to both project components and is described first. A description of the construction activities associated with each the two components of the project follows the SEAP.

2.4.1 Safety and Environmental Awareness Program

MCWRA would require that the construction contractor selected for each major project component prepare a SEAP and tailor details as needed to address component-specific activities and sensitive resources to be protected or avoided. In general, MCWRA would expect the SEAP to outline training for project workers on topics including:

- General safety procedures
- General environmental procedures
- Fire safety
- Protection of biological, cultural, and paleontological resources
- Hazardous materials protocols and Best Management Practices (BMPs)
- Stormwater pollution prevention plan (SWPPP) requirements
- Noise abatement

2.4.2 Interlake Tunnel and Subcomponents

Construction of the Interlake Tunnel would utilize the opening (portal) developed for the Energy Dissipation Structure. Accordingly, construction of the Interlake Tunnel and Energy Dissipation Structure would necessarily overlap. Construction of the Tunnel Intake Structure *may* overlap with the Energy Dissipation Structure and Interlake Tunnel but would not be completed until construction of the Interlake Tunnel itself has been completed. A discussion of the construction schedule for the Interlake Tunnel and related subcomponents is followed by a description of construction activities for each subcomponent; land disturbance, site access and work areas; materials management and disposal; utility infrastructure; fire safety and emergency access, and workforce and equipment requirements.

2.4.2.1 Construction Schedule

Construction of the Interlake Tunnel and associated subcomponents is expected to span 3 calendar years, commencing in 2023 and concluding in 2025. The bulk of the work is expected to be completed in 2024. Tunnel workers would operate in single, double, or triple shifts depending on availability of resources (up to three 8-hour shifts per day), 5 days per week (Monday through Friday). Tunnel Intake Structure and Energy Dissipation Structure construction would be performed by workers one shift per day 5 days per week. **Table 2-3** provides a preliminary construction schedule, including the basic assumptions for construction sequencing.

Table 2-3. Preliminary Construction Schedule for the Interlake Tunnel and Associated Subcomponents

Year	Construction Activity
2023	• Contractor installs underground electrical transmission line and fiber optic line. • Contractor improves access roads to Tunnel Intake Structure and Energy Dissipation Structure. • Contractor mobilizes at work areas for Tunnel Intake Structure and Energy Dissipation Structure. • PG&E installs electrical transmission line on wood poles to Energy Dissipation Structure to support tunneling operations. • Contractor clears and grubs tunnel work area, performs site grading, clears soil disposal area, installs silt fencing and temporary utilities. • Contractor clears and grubs Tunnel Intake Structure work area, performs site grading, clears soil disposal area, installs silt fencing and temporary utilities. • Contractor sets up offices, staging areas, and portable generators; installs temporary water facility and sewage holding tanks; mobilizes tunneling equipment and sets up batch plant at tunnel work area. • Contractor constructs tunnel portal headwalls and mobilizes tunnel equipment and materials to the work site. • Contractor sets up tunnel mining equipment or TBM. • Contractor excavates tunnel portal reception site at Tunnel Intake Structure.
2024	• Contractor commences tunneling. • Contractor clears and grades Energy Dissipation Structure site, performs site grading, clears soil disposal area, installs silt fencing and temporary utilities. • Contractor constructs Energy Dissipation Structure. • Contractor completes tunneling (and removes TBM, if applicable) at Tunnel Intake Structure site. • Contractor constructs Tunnel Intake Structure, including structural elements, mechanical systems, control building, and pipe connection from tunnel to intake. • Contractor demobilizes tunneling plant. • Contractor installs intake, clean up tunnel work areas, and demobilize at Tunnel Intake Structure. • Contractor revegetates Energy Dissipation Structure and Tunnel Intake Structure work areas.
2025	• Contractor completes site demobilization and re-vegetation • Contractor installs fencing and security systems.

2.4.2.2 Tunnel Intake Structure Construction

Construction of the Tunnel Intake Structure would involve the following major steps:

- Roadway modifications (repair/surface) per San Luis Obispo County requirements
- Work/staging area preparation
- Installation of buried power lines extending from the Nacimiento Dam powerhouse at Nacimiento Lake Drive (Road G14) underneath the existing Nacimiento Reservoir Overflow/Day Use Ramp Road to the work area

- Site excavation at the work area
- Installation of a cast-in-place Tunnel Intake Structure
- Construction of the adjoining concrete approach channel and side walls

As shown on **Figure 2-5**, the work/staging area would encompass approximately 4.3 acres. Refer to Section 2.4.2.5, *Land Disturbance, Access, and Work Area,* for further details.

Construction is expected to span at least one wet and dry season. Accordingly, reservoir water levels would be expected to fluctuate while construction is underway. Therefore, up to two temporary cofferdams would be installed to protect the construction work area for the intake entrance channel and Tunnel Intake Structure from inundation when reservoir levels are greater than, or are expected to approach, WSE 724 feet during construction. The construction contractor would be required to have a groundwater control system to handle potential fluctuations related to additional groundwater seepage. However, the soils at the site are relatively impermeable, and it is anticipated that groundwater control may be achieved through sumps or short wells extending below the base of excavation. Dewatering pumps would be placed on the inside of the cofferdam to collect seepage and pump it to a disposal area in the boat ramp parking lot area where the flows can be run through a straw or fiber wattle filter system prior to discharging back to Nacimiento Reservoir. The cofferdam(s) would be removed once construction of the Tunnel Intake Structure and Interlake Tunnel is complete.

After the cofferdams are installed the foundation for the Tunnel Intake Structure would be excavated and filled with concrete. After the concrete foundation has sufficiently cured, the remainder of the Tunnel Intake Structure would be framed and cast-in-place. The final construction stage of the Tunnel Intake Structure would involve installation of the control building and associated equipment, fencing and security lighting, and parking area improvements near the Nacimiento Reservoir Overflow/Day Use Ramp Road. Concrete for construction of the Tunnel Intake Structure would be delivered to the staging area from an off-site concrete batch plant.

2.4.2.3 Interlake Tunnel Construction

Construction of the Interlake Tunnel would require establishment of two tunnel entrance portals, one at the Energy Dissipation Structure at San Antonio Reservoir, and the other at the Tunnel Intake Structure at Nacimiento Reservoir. The Interlake Tunnel would be excavated from north to south, from the Energy Dissipation Structure toward the Tunnel Intake Structure. **Figure 2-9** shows the work area around the Energy Dissipation Structure. The work area includes a soil disposal site (for tunnel muck) as well as construction access roads. **Figure 2-5** shows the Tunnel Intake Structure work area.

Excavation for the tunnel entrance portals would likely consist of an anchored wall-type system and require regrading of the existing adjacent slopes. Where there is inadequate space to lay the slopes back, appropriate excavation support systems would be required. Such systems would consist of struts and bracing, tieback walls, secant pile walls, soldier pile and lagging walls, or soil nails and shotcrete. Excavations would need to be designed for lateral earth pressures exerted by the existing soil/rock, hydrostatic pressure (for undrained structures), and surcharge pressures from construction equipment and other loads adjacent to the excavations, such as seismic loads and sloping ground above the portals. Design criteria for tunnel entrance portal excavations would be developed during final design.

Construction of the tunnel would begin with improvement of the access road and preparation of the work area at the outlet portal as described in the preceding sections, including the soil disposal area shown on **Figure 2-9**. As described in Section 2.3.1.2, *Interlake Tunnel*, the Interlake Tunnel would consist of a single-pass system of bolted, precast-concrete with segmental lining. The Interlake Tunnel would be constructed in a variety of geologic conditions. Conditions range from soil to hard rock to very weak rock with soil-like properties. Conditions in the area are expected to have a broad range of ground behavior that would be aggravated by groundwater, inflow potential, and the potential for hazardous gases.

Due to the potential for groundwater inflows, ground instability, and hazardous gas, an earth pressure balance (EPB) TBM that can accommodate the range of ground conditions is anticipated to be used during construction of the Interlake Tunnel. This TBM includes a circular shield with a cutterhead in front to excavate the ground. Crushed rock is passed through the machine's cutterhead on to a conveyor belt, which transports the excavated material out of the tunnel. Backfill grout would be used to preserve the exterior of the tunnel and would be nominally 12 inches thick, with a minimum thickness of 8 inches. The grouting would occur through the face of the TBM through ports in the TBM header. With the road head cutter, the grouting would be done in advance of the cutter excavation. The excavation will be supported by a lining technique that would include water barriers and performance requirements to prevent groundwater from entering the tunnel at unacceptable rates[6]. Groundwater entering the tunnel would be collected and treated using one or more Baker tanks[7] located in the aboveground work area, which would allow any suspended sediment to settle prior to discharge into the San Antonio Reservoir. The interior of the Interlake Tunnel would be treated with a polyurethane or epoxy lining after the TBM excavation is complete to protect against corrosive elements.

Construction of the Interlake Tunnel would include use of equipment and facilities to support tunneling efforts. Such equipment and facilities include but are not limited to ventilation fans, air compressors, electrical generators, shotcrete and grout batch plants, mechanical and electrical shops, office trailers, and laydown areas for pre-cast segments, reinforcing steel, and tunnel supplies. Cement and aggregate would be transported to, and stored at, the staging area for the Energy Dissipation Structure. All construction would be conducted in accordance with California Occupational Safety and Health Administration Tunnel Safety Orders requiring specific ventilation and air quality facilities. Tunnel ventilation during construction would be provided by reversible high-volume electric fans located at the tunnel portal exhausting air from the tunnel heading through a ventilation duct in the crown of the tunnel. Booster fans would be installed in the tunnel at various locations to maintain the required air flow in the tunnel and at the heading.

Tunnel boring is expected to advance approximately 20 feet per day, depending on geological conditions encountered and other contributing factors. Excavated materials (spoils or muck) would be transferred via conveyor belt or muck trucks to the soil disposal area. Once the tunnel is complete, the Energy Dissipation Structure would be constructed, as described in Section 2.4.2.4. *Energy Dissipation Structure Construction*.

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[6] Performance requirements specify that groundwater must not enter the tunnel at a rate of more than 1 gallon per minute per 1,000 feet of tunnel.

[7] Baker tanks are portable liquid containment vessels.

2.4.2.4 Energy Dissipation Structure Construction

Construction of the Energy Dissipation Structure at San Antonio Reservoir would involve the following general steps:

- Installation of the drain
- Construction of the energy dissipater
- Installation of pipe connecting the tunnel portal to the energy dissipater

If needed, a cofferdam would be installed at the beginning stages of construction to avoid inundation of the Energy Dissipation Structure work area when the San Antonio Reservoir WSE exceeds 680 feet. Dewatering pumps would then be placed inside the cofferdam and the outlet construction area to collect seepage and pump it to a disposal area where the flows can be run through a straw or fiber wattle filter system prior to discharging back to San Antonio Reservoir. If used, the temporary cofferdam would be removed following the completion of the construction. Concrete for construction of the Energy Dissipation Structure would be delivered to the staging area or the project site from an off-site concrete batch plant or produced at the staging area. Construction of the Energy Dissipation Structure would utilize the same staging area and access as shown on **Figure 2-9**.

2.4.2.5 Land Disturbance, Access, and Work Areas

Construction of the Interlake Tunnel and its subcomponents would result in both temporary and permanent land disturbance. Overall, construction of the Tunnel Intake Structure would temporarily disturb 12.79 acres and permanently disturb 3.15 acres. Construction of the Energy Dissipation Structure, which includes the staging for construction of the Interlake Tunnel, would temporarily disturb 38.56 acres and permanently disturb 9.35 acres. Areas subject to temporary disturbance during construction would be revegetated with native plant mixes above OHW. Below OHW, the reservoir banks would be restored to match existing, exposed cobbles. Areas of project disturbance are summarized in **Table 2-4** and described further in the sections that follow.

Table 2-4. Summary of Land Disturbance for Interlake Tunnel[a]

Project Feature	Temporary Disturbance (acres)	Permanent Disturbance (acres)
Tunnel Intake Structure		
Access Road	0.00	1.38
Staging, Stockpiles, etc.	12.79	0.00
Project Facilities	0.00	1.77
Subtotal	*12.79*	*3.15*
Interlake Tunnel and Energy Dissipation Structure		
Access Road and ATV Trail	0.00	3.00
Staging, Stockpiles, etc.	38.56	0.00
Project Facilities	0.00	6.35
Subtotal:	*38.56*	*9.35*
Total:	**51.35**	**12.50**

Source: McMillen Jacobs Associates 2020a.

Notes:

a. Only surficial disturbance is reported in this table.

Access Roads

The project work areas would be accessed primarily using established roads, including Nacimiento Lake Drive (Road G14) and Interlake Road. The Tunnel Intake Structure work area would be accessed from Nacimiento Lake Drive and the Nacimiento Reservoir Overflow/Day Use Ramp Road, which is part of Lake Nacimiento Resort, located on land owned by MCWRA, leased by PWFP, and operated by a park concessionaire. The tunneling and Energy Dissipation Structure work area would be accessed from Interlake Road and remnant existing roads and trails within MCWRA property.

The following activities would be performed to maintain and establish or improve access roads for the Tunnel Intake Structure and Energy Dissipation Structure work areas:

- Clear, trim, or mow any overgrown vegetation using a mowing skid steer, weed whacker, or hand tools if required
- Remove vegetation material and dispose of off-site or cut and spread nearby
- Resurface and smooth the access road where necessary with a grader
- Transfer, add, or compact fill material (e.g., soil or gravel) with earth-moving equipment
- Water the roadway with a water truck to compact the road and control dust
- Install water bars and dissipaters or refresh existing dissipaters (e.g., replacing riprap or cleaning out riprap or accumulated silt) where needed

Following the completion of construction, all access roads would be improved to meet or exceed Monterey and San Luis Obispo County standards and continue to serve as permanent access routes for project operation and maintenance.

Temporary Work Areas

After improvements to access roads, the construction contractor would establish staging areas at the sites for the Tunnel Intake Structure and Energy Dissipation Structure. Each staging area would include the following elements:

- An office trailer, approximately 10 feet wide by 30 feet long
- Three to four corrugated metal storage containers (each approximately 8 feet wide by 20 feet long)
- A material storage area measuring approximately 150 feet by 200 feet
- A graveled employee parking area approximately 100 feet by 30 feet
- Parking for a fuel storage truck
- Baker tanks for dewatering (at the intake and energy dissipation structures)
- Space for other equipment storage
- Portable restrooms
- Perimeter fencing
- Security lights

Figure 2-5 and **Figure 2-9** depict the locations of each work site and staging area related to construction of the Interlake Tunnel.

At the end of construction, the construction contractor would clean and restore all temporarily disturbed areas to preconstruction conditions. The contractor would remove all construction materials and debris from the project site and recycle or otherwise dispose of materials at an off-site disposal facility according to regulatory requirements. In addition, as part of final construction activities, the contractor would:

- Repave or repair all previously paved surfaces that were damaged as a result of project construction
- Restore vegetation as necessary
- Replace any damaged or removed fencing
- Remove all construction materials from the construction site

2.4.2.6 Materials Management and Disposal

Imported Materials

Construction of the Interlake Tunnel and related subcomponents would require delivery of materials to the Tunnel Intake Structure and Energy Dissipation Structure work sites. Loose imported materials would consist of clean soil fill; bioretention drain rock, sand, and topsoil; road base aggregate; chip seal, and concrete. The construction contractor would reuse material generated by site grading and other excavation work where possible, however for the purposes of this EIR MCWRA assumes that all material excavated may have to be transported to and disposed of at the soil disposal area. Excavated material that is assumed to be nonreusable is described in the following section, *Spoils Management*.

Table 2-5 lists approximate quantities of loose imported materials needed by project component. Other imported materials needed for construction of the Interlake Tunnel and related subcomponents include pre-made steel structures such as the tunnel isolation gate, trash rack, rebar, fish screens, handrails and doors; pre-cast concrete culverts for roadway improvements; geotextile fabric for soil erosion control; and various electrical and mechanical equipment that would be installed within the control building at the Tunnel Intake Structure site.

Table 2-5. Estimated Quantities of Loose Imported Material Required for Construction of the Interlake Tunnel and Subcomponents

Import Material by Project Element	Estimated Quantity (CY)
Tunnel Intake Structure	
Clean Fill Soil	29,000
Bioretention drain rock, sand, topsoil	1,118
Aggregate (Road Base)	2,316
Chip Seal	3,444
Concrete and Cement	9,493
Subtotal:	*45,371*

Import Material by Project Element	Estimated Quantity (CY)
Interlake Tunnel	
Clean Fill Soil	7,720
Concrete and Cement	6,256
Subtotal:	*13,976*
Energy Dissipation Structure	
Clean Fill Soil	3,115
Rip rap and bedding	210
Aggregate (Road Base)	6,429
Concrete and Cement	449
Subtotal:	10,203
Total:	**69,550**

Source: McMillen Jacobs Associates 2021.
CY=cubic yard

Spoils Management

Ground clearing, grading, dewatering, and tunneling would produce waste material (spoils) that would require permanent disposal. **Table 2-6** provides estimates of spoils. This material would be disposed of in the area labeled as the Soil Disposal Area on **Figure 2-9.** All spoils would be tested and treated accordingly prior to discharge to the soil disposal area. The soil disposal area would be revegetated following the completion of construction. Any contaminated spoils, including on-site soils that become contaminated by products used by heavy construction equipment (e.g., from a hydraulic fluid leak), would be hauled to an appropriate off-site disposal area in compliance with federal, state, and local regulations. (Refer to *Hazardous Materials and Waste Management* for more detail regarding waste disposal.)

Table 2-6. Spoils Estimates by Project Element

Project Element	Cut (CY)
Tunnel Intake Structure	76,327
Interlake Tunnel	108,066[a]
Energy Dissipation Structure	19,450
Total:	**203,843**

Source: McMillen Jacobs Associates 2021.

a. Tunnel excavation is anticipated to yield 86,453 cy of in-place natural material. The in-place soil volume would be less than the volume once it has been excavated. Accordingly, a swell factor of 1.25 was used to determine the excavated volume of 108,066 cy.

CY=cubic yards

Management of Non-Hazardous and Hazardous Materials

Non-hazardous materials that cannot be reused, recycled, or donated would be disposed of at an appropriate licensed disposal facility. Spoils would likely be transported to the Paso Robles Landfill, which is approximately 27 route-miles away from the eastern end of the project site. Spoils disposed of at the Paso Robles Landfill would likely involve use of Vista Road, Nacimiento Lake Drive (Road G14), Godfrey Road, 24th Street, CA 46, and Union Road.

The only hazardous materials anticipated to be present on the project site are diesel fuel and gasoline required for heavy equipment operation. Bio-friendly liquids and materials such would be utilized on this project where possible to limit impacts from possible spills. Hazardous materials would be stored in designated areas at staging areas, away from drainage areas and ignition hazards, such as electrical outlets or overhead hazards. Fuels would remain stored and transported on mobile 500-gallon refuelers that would travel to individual staging yards to refuel equipment. These refueling tanks would travel in the morning to get more fuel and would refuel equipment at the individual staging yards at the end of the workday. The empty refueling tanks would then be stored on-site overnight. Secondary containment would be provided for storage tanks containing 55 gallons or more, such as spill trays, lined basins or double-walled tanks, or other containment devices.

No contaminated soils are anticipated to be excavated during construction. However, it is possible that excavated materials could become contaminated by leakage of fluids or fuels. Should such materials need to be disposed of the construction contractor would likely transport them to the Chicago Grade Landfill, which is approximately 30 route-miles away from the work areas.

2.4.2.7 Utilities

Electrical Power

Electrical power would be required to operate construction equipment, including the tunnel boring equipment, and supporting infrastructure (e.g., construction trailers, security lighting). At the Tunnel Intake Structure site, the construction contractor would install underground electrical transmission lines from the existing transmission line near Nacimiento Dam at Nacimiento Lake Drive (Road G14) underneath the Nacimiento Reservoir Overflow/Day Use Ramp Road described in Section 2.4.2.5, *Land Disturbance, Access, and Work Areas*. PG&E would install the project service transformers, all primary cables from its pole to the project service transformer location, all service lateral cables from there to the service disconnect, the meter and circuit transformer, and any other riser materials and utility equipment. The underground transmission line would supply electrical power for both construction and operation activities at the Tunnel Intake Structure.

An aboveground transmission line would be installed by PG&E on permanent wood poles within the roadway right-of-way or on MCWRA property to supply electrical power for tunneling activities. MCWRA would engage PG&E to install service transformers, all primary cables from its pole to the project service transformer location, all service lateral cables from there to the service disconnect, the meter and circuit transformer, and any other riser materials and utility equipment.

Several temporary power poles may be needed for power distribution within each of the work sites and staging areas. Poles within the staging areas installed for the temporary construction power supply would be removed following the completion of construction.

Water Use

Construction would require water use for dust control, on-site grout batch plants, increasing moisture content in soil used as compacted fill, fire suppression, and irrigation for erosion control or revegetation efforts. During construction, watering for dust control would generally occur every 2 to 4 hours using approximately three water trucks. Factors such as wind speed, precipitation, and temperature could affect (increase or decrease) the quantity of water required for the Interlake Tunnel and associated subcomponents. Water needed for dust control purposes is anticipated to range from 500 to 1,000 gallons per week during construction. The quantities of water to assist with compacted fill, fire suppression, and temporary construction-period irrigation is unknown and would vary depending on the season, and needs (i.e., whether there is a fire). All water needs for these purposes would be drawn from the reservoirs.

Water would also be required for the preparation of concrete at off-site locations. Water utilized at these off-site concrete vendors is anticipated to be supplied by municipal sources serving those facilities.

Erosion Control

To obtain coverage under the Construction Storm Water General Permit (CGP), MCWRA or its contractor would submit Permit Registration Documents, including a Notice of Intent, to the SWRCB and develop a SWPPP that complies with the CGP requirements. MCWRA or the contractor would also need to obtain a SWRCB-issued Waste Discharger Identification number before starting construction activities. The construction contractors would implement the SWPPP during construction, which would include requirements for inspections and monitoring, BMPs, and requirements to revise the SWPPP and implement revisions as needed to protect stormwater quality. The SWPPP describes:

- The proposed project location, site features, area of disturbance, dates of construction, and types of materials and activities that may result in pollutant discharges
- BMPs to implement during construction, which are selected to control erosion, discharge of sediments, and other potential impacts associated with construction activities
- An inspection and maintenance program for BMPs
- A sampling and analysis plan for monitoring pollutant discharges to waterbodies, if required

MCWRA or its contractor must submit a Notice of Termination to the SWRCB after completing a project subject to the CGP in order to be relieved of the permit requirements. Final soil stabilization throughout the project site must be achieved before the SWRCB would approve the Notice of Termination. In addition, ordinances and general plan policies in both Monterey County and San Luis Obispo County require measures to control erosion. The construction contractor would be required to comply with erosion requirements of the appropriate jurisdiction (as relevant to the project component being constructed) during construction of the proposed project.

2.4.2.8 Fire Safety and Emergency Access

During project construction, MCWRA and its contractor(s) would comply with the California Department of Forestry and Fire Protection's (CAL FIRE) various requirements regarding fire safety and emergency access. The key compliance activities follow.

- Prior to tunnel construction:
  - Preparation of a confined space/trench rescue plan and a wildland fire/vegetation management plan; review and approval by CAL FIRE/San Luis Obispo County Fire Department
  - Preparation of Fire Safety Plan, addressing employee training, record keeping, and hazard communication and drills to be completed prior to construction

- During construction:
  - Assurance of availability of an operational water supply system throughout the construction phase at each project element
  - Use of spark arresters on construction equipment
  - Maintenance of adequate clearance around welding operations
  - Implementation of smoking restrictions
  - Provision of readily accessible fire extinguishers at all construction sites

All access routes would be required to meet CAL FIRE's grade requirements to facilitate the movement of fire suppression equipment. For emergency access purposes, the contractor would install Knox key boxes on all access gates. **Table 2-11**, in Section 2.6, *Avoidance and Minimization Measures*, summarizes the preceding fire safety and emergency access measures.

2.4.2.9 Workforce and Equipment

Up to a maximum of approximately 110 workers would be employed on the project, working primarily during the daytime. Night work would be limited to tunneling operations from the tunnel's north portal, with a workforce of approximately 20 workers during the peak construction period (estimated at approximately 1 year from the construction contractor's notice to proceed). Mobile construction equipment used for construction of the proposed project would depend on the selected contractor's planned operations, but may include the following types of equipment:

- Tunneling equipment
- Cranes (various types and sizes)
- Scrapers
- Bulldozers
- Cement and mortar mixes
- Compactors
- Water trucks
- Off-road hauling trucks
- Wheel loader cat
- Pickup trucks
- Mine truck
- Getman buggy
- Vibrating roller
- Generators
- Welding equipment
- Ventilation fans
- Pumps and piping (including grout pump-moyno/mixer)
- Excavators
- Forklifts
- Dozer cats
- Graders
- Rollers
- Conveyors
- Highway trucks
- Front-end loaders/tractors/backhoes
- Concrete delivery trucks
- Pipe carrier
- Communications and safety equipment
- Rail flat car and muck car
- 12 ton/120 horse-power locomotive
- Air compressors
- Hydraulic and pneumatic drills
- Back-up lighting systems
- Vehicle maintenance trucks (mechanics trucks)
- Miscellaneous equipment customary to the mechanical and electrical crafts, and vehicles used to deliver equipment and materials

2.4.3 San Antonio Dam Spillway Modification

Construction for the Spillway Modification would include initial site preparation and staging, demolition, and excavation at the top of the spillway; construction of a new labyrinth weir structure; and concrete work to raise the spillway walls. Site preparation would include setting up the construction work and staging areas for an office trailer and employee parking, and fenced equipment and materials storage (see **Figure 2-13**). All staging areas would be located north of the dam in previously disturbed areas. Existing roads at San Antonio Dam would be used for construction access (see Section 2.4.2.5, *Land Disturbance, Access, and Work Areas*, for a description of access improvements). The work site and staging area at the top of the dam would encompass approximately 36.79 acres and be located adjacent to the spillway and the dam.

Once site preparation has been completed, the existing spillway crest would be demolished. A new passive weir structure approximately 140 feet wide would be constructed upstream of the demolished spillway crest. Concrete for construction of the new labyrinth weir, modified spillway channel and spillway walls would be delivered to the construction site by a vendor operating an off-site concrete batch plant.

The final work on the Spillway Modification would include construction of the concrete walls and the labyrinth weir at the spillway crest, along with joint repair on the spillway. The areas surrounding the spillway structure that are disturbed during construction would be revegetated with native plant mixes.

2.4.3.1 Construction Schedule

Construction of the Spillway Modification is estimated to commence in 2023 and conclude in 2024. Construction would be performed by workers one shift per day 5 days per week. **Table 2-7** provides a preliminary construction schedule, including the basic assumptions for construction sequencing.

Table 2-7. Preliminary Construction Schedule for the Spillway Modification

Year	Construction Activity
2023	• Contractor mobilizes equipment, clears and grubs work area, performs site grading, clears soil disposal area, installs silt fencing and temporary utilities
2024	• Contractor removes existing spillway crest and existing concrete structures • Contractor excavates spillway walls and structure • Contractor installs and upgrades subsurface drainages systems • Contractor constructs new spillway structure, walls, and labyrinth control structure • Contractor improves spillway chute, if required, at the connection between the existing spillway and the spillway modification • Contractor clears work site and demobilizes equipment

2.4.3.2 Land Disturbance, Access, and Work Areas

Excavation, site access, and temporary work areas for the Spillway Modification would temporarily disturb 35.72 acres and permanently disturb 1.07 acres, as summarized in **Table 2-8** and described in further detail following the table. Construction work for the Spillway Modification would occur entirely within areas previously disturbed for construction of the original San Antonio Dam spillway.

Table 2-8. Summary of Land Disturbance for the Spillway Modification

Project Feature	Temporary Disturbance (acres)	Permanent Disturbance (acres)
Construction Staging, Stockpiles, etc.	35.72	0.0
Project Facilities	0.0	1.07
Total:	**35.72**	**1.07**

Source: McMillen Jacobs Associates 2020b.

Access Roads

The Spillway Modification work area would be accessed from Nacimiento Lake Drive (Road G14) and Vista Road along an existing paved access road. An access roadway would be created along the walls of the spillway structure to enable MCWRA access during and after construction. Following the completion of construction, these access roads would be improved to meet or exceed Monterey and San Luis Obispo County standards and continue to serve as permanent access routes for operation and maintenance.

Temporary Work Areas

Establishment and cleanup of the work site and staging area would mirror that identified for the Interlake Tunnel as addressed in Section 2.4.2.5, *Land Disturbance, Access, and Work Areas*. **Figure 2-13** depicts the locations of the Spillway Modification work and staging areas.

2.4.3.3 Materials Management and Disposal

As shown on **Figure 2-13**, a staging area would be located on the north site of the San Antonio Dam. Construction of the Spillway Modification, including preparation of the staging area, would require excavation of approximately 66,667 cubic yards of soil and vegetation from clearing and grading activities. The construction contractor would reuse material generated by site grading and other excavation work where possible, however for the purposes of this EIR, MCWRA assumes that all material excavated may have to be transported to and disposed of at the Energy Dissipation Structure soil disposal site (see **Figure 2-4**). All excess material would be tested and treated accordingly. Materials that could not be reused, recycled, or donated would be disposed of at an appropriate licensed disposal facility. Presently, the Paso Robles Landfill would serve for construction waste disposal. Hazardous materials used in construction of the Spillway Modification would be treated consistently with those for the Interlake Tunnel. This detail is addressed under Section 2.4.2.6, *Materials Management and Disposal*. Construction of the spillway modification would also require the import of 18,478 cubic yards of clean fill and 11,289 cubic yards of new concrete related to the chute, walls, and labyrinth weir.

2.4.3.4 Utilities

Electrical Power

The construction contractor would require electrical power to operate construction equipment and supporting infrastructure (e.g., construction trailers, security lighting) during construction of the Spillway Modification. The electric power requirements for construction of the Spillway Modification are anticipated to be supplied by generators.

Water Use

Similar to construction related to the Interlake Tunnel, construction of the Spillway Modification would require water use related to dust control, increasing moisture content in soil used as compacted fill, fire suppression, and irrigation for erosion control or revegetation efforts. Water needed for dust control purposes is anticipated to range from 500 to 1,000 gallons per week during construction. The quantity of water needed to assist with compacted fill, fire suppression, and temporary construction-period irrigation would vary, depending on the season and needs (e.g., whether there is a fire). All water needs for these purposes would be drawn from one of the reservoirs. During construction, watering would generally occur every day using approximately three water trucks. Factors such as wind speed, precipitation, and temperature could affect (increase or decrease) the quantity of water required for the proposed project. Water would also be required for the preparation of concrete at off-site locations. Water utilized at these off-site concrete vendors is anticipated to be supplied by municipal sources serving those facilities.

Erosion Control

Construction of the Spillway Modification would require the construction contractor to receive a CGP from the SWRCB prior to construction. CGPs are required for construction projects that result in greater than 1 acre of soil disturbance. The CGP requires temporary and post-construction BMPs to prevent erosion and reduce sediment discharges from construction sites. The construction contractor would be required to submit a Notice of Intent to comply with the CGP for Construction Activity with the SWRCB. In addition to obtaining a CGP, prior to issuance of a grading/land clearing permit by Monterey County for the Spillway Modification, the construction contractor would be required to submit an Erosion Control Plan (ECP) to the Monterey County Housing and Community Development. The ECP will include methods for controlling runoff, erosion, and sediment movement. The ECP will include, at a minimum, the measures required under sections 16.12.070, 16.12.090, and 16.12.110 of the Monterey County Code of Ordinances. No grading or clearing may take place on-site prior to approval of an ECP. All runoff control will be sized using the 10-year storm per Section 16.12.070 of the Monterey County Code of Ordinances.

2.4.3.5 Fire Safety and Emergency Access

The requirements described for the Interlake Tunnel in Section 2.4.2.8, *Fire Safety and Emergency Access*, would also apply to the Spillway Modification, except for the Confined Space/Trench Rescue Plan.

2.4.3.6 Workforce Equipment

Up to approximately 20 workers would be on-site during daytime only during the peak construction period (estimated at approximately 14 months from the contractor's notice to proceed). Mobile construction equipment used for construction of the proposed project would depend on the selected contractor's planned operations, but may include the following types of equipment:

- Backhoe cat
- Dozer cat
- Wheel loader cat
- Trucks (mine truck, pickup trucks, and water truck)
- Pile hammer
- Vibrating roller

2.5 Operations and Maintenance

This section describes the distinct operations related to each subcomponent of the proposed project, each of which involve interrelated functionalities. Operation of the Interlake Tunnel would result in increased storage at San Antonio Reservoir and, in conjunction with the Spillway Modification, an overall increase in San Antonio Reservoir capacity. Releases from the Nacimiento and San Antonio reservoirs are currently governed by the Nacimiento Dam Operation Policy and the San Antonio Dam Operation Policy. The purpose of these policy documents is to consolidate all existing operational procedures, permits, and requirements into a single, concise report, including the different types of releases that are required of each reservoir and the priority, quantity, and flow rates of each release type (MCWRA 2018).

2.5.1 Interlake Tunnel

2.5.1.1 Operations

The Interlake Tunnel would operate as a full-flow conveyance tunnel. Full-flow conveyance is defined as flow through the tunnel in which water fills the entire cross-section of the tunnel, and there is no portion of the 10-foot diameter tunnel which is not wetted along its perimeter. As part of the Tunnel Intake Structure, reservoir flow through the Interlake Tunnel would be regulated via a control valve (refer to Section 2.3.1.1, *Tunnel Intake Structure*). The Interlake Tunnel would generally operate when the WSE in Nacimiento Reservoir is greater than an elevation of 760 feet and when transfers through the tunnel would not result in a WSE in San Antonio Reservoir that would exceed internal operational parameters, also defined as an operational rule curve.[8] The operational parameters delineate the storage space needed throughout the year to permit satisfactory regulation of flood control releases and balances safety and permit requirements for reservoir operation. The flow through the tunnel would fluctuate, dependent upon the WSE in both reservoirs. When the tunnel is in operation, according to the operational parameters, the valve

[8] Operational rule curves are time-dependent restrictions governing the maximum and minimum water levels of a reservoir.

would be adjusted to maintain a full tunnel flow and slightly positive pressure throughout the tunnel when San Antonio Reservoir level is below 712 feet and Nacimiento Reservoir is below 780 feet; the valve would be completely open when the level at Nacimiento Reservoir is above 780 feet. All minimum flow requirements from the reservoirs would continue to be met during operation of the proposed project.

Hydrologic Modeling

MCWRA completed hydrologic modeling to provide a point of comparison that can be used to isolate effects of individual changes to the modeled groundwater/surface water system, such as addition of the proposed project. Simulation models, such as the hydrologic modeling used for this project, are simplified representations of complex real-world systems. Models cannot accurately depict the multitude of processes in every case but can provide valuable information for evaluating the effects of proposed projects such as the Interlake Tunnel. When known interrelationships among variables are utilized as model inputs, estimations of how a given quantity or variable might change due to a project can be made. In this way, models can be useful investigative frameworks when evaluating project effects.

Two models are germane to the work conducted for this project: the Salinas Valley Integrated Hydrologic Model (SVIHM) and Salinas Valley Operational Model (SVOM)[9]. The SVIHM is an integrated groundwater/surface water model calibrated to historical conditions, including, but not limited to, groundwater elevations, reservoir releases, and seawater intrusion. The SVIHM is built using the U.S. Geological Survey (USGS) MODFLOW One-Water Hydrologic Flow Model software. The SVIHM comprises four submodels, with each focusing on specific components of the integrated model: the Salinas Valley Geologic Model (hydrogeology and lithology), the Basin Characterization Model (climate), the Salinas Valley Watershed Model (hydrologic watershed processes), and a representation of land use, based on multiple historical datasets and recent data from the California Pesticide Use Reporting (CalPUR) program. Each of the submodels uses robust historical data that, when combined, form the SVIHM and allow the user to simulate conditions with historical climate, groundwater and surface water conditions, recharge, runoff, inflow from ungaged watersheds, reservoir releases, groundwater pumping, and land use for the period from October 1, 1967, to December 31, 2014.

The SVOM is a derivative of the SVIHM that inherits the calibrated properties (e.g. aquifer hydraulic parameters, crop coefficients) and structure (e.g. geology, watersheds) of the SVIHM and couples that with the Surface Water Operations (SWO) module to operate the reservoirs using current procedures with adherence to water rights and flow prescriptions. With the addition of SWO, the SVOM can be used to simulate new projects, alternative operational approaches, or other deviations from historical or current conditions in a complex system, in this instance, the Interlake Tunnel.

For the entire simulation period (1967–2014, or 47 years), the SVOM combines historical climate, 2014 land use, and all currently implemented projects (Castroville Seawater Intrusion Project, SRDF). As applied for this project, the SVOM provides a model baseline that models conditions at the beginning of the project planning period (land use, water demands, and current reservoir operations) over a relevant, albeit extended, time range using a 47-year historical climate and

[9] See the United States Geological Survey November 2021 project progress report for additional information regarding the SVIHM and SVOM models, available at: https://www.co.monterey.ca.us/home/showpublisheddocument/112893/637914934699070000

hydrologic dataset. The model baseline provides a hypothetical condition that is a metric to compare potential benefits from the project and a means of refining operations to minimize project impacts. The SVOM is not simulating 47 years of historical conditions; rather, it is simulating existing conditions under a realistic 47-year climatic time series that captures a representative hydrologic cycle, including wet periods, drought, and everything in between.

The results are depicted in a time-step of 5 or 6 days and do not reflect historical conditions. Instead, the results provide a variety of metrics from the modeled "world" (groundwater levels, stream flows, etc.) that would result under existing conditions across a range of hydrologic and climatic conditions. For example, the model output simulated in "1998" is not trying to match what happened historically in 1998; rather, it is showing what happens in year 32 of a 47-year hydrologic time series when those hydrologic data are applied to existing conditions (refer to the subsection titled *Methods for Evaluating Impacts* in Chapter 4, *Introduction to the Environmental Analysis*, for a further description of how the model results were incorporated into the CEQA analysis in this EIR).

The SVOM was used to simulate outcomes for different scenarios: one in which the Basin is simulated with the current operational approach over an extended period, forced by a realistic hydrologic cycle, and another in which the proposed project is added to the Basin and operated by a rigid set of pre-determined operational parameters. Results of the hydrologic modeling offer an indication of long-term conditions if no changes are made to the current operational approach. Simulated changes, such as tunnel transfer volumes, reservoir drawdowns, and reservoir water surface elevations that would occur due to the proposed project, provide guidance that allowed MCWRA to refine the proposed project and operational approach.

Operational Decision-Making

The hydrologic model provides useful output for comparing different operating scenarios, but it cannot capture the fluid nature of real-time decision-making that is necessary to guide actual MCWRA operational decisions, especially under extreme wet or dry hydrologic conditions. Such "real-time" reservoir operations rely upon variables such as weather patterns, weather forecasts, downstream river stages, and other factors that inform decisions on reservoir releases. For example, **Figure 2-18** reflects modeled and actual releases from Nacimiento Reservoir in 1969, a wet water year. In this scenario, the historical (actual) peak reservoir release magnitude was notably lower than the peak reservoir release magnitude predicted by the model and had a prolonged taper of releases that was not reflected in the model. **Figure 2-19** reflects modeled and actual releases from Nacimiento Reservoir in 1980, also a wet water year. In this scenario, historical (actual) reservoir releases occurred much earlier than the model depicts water being released, which then allowed for reservoir elevations to be lowered to create additional available storage early in the wet season. In addition, the historical (actual) peak magnitude was lower than the modeled peak magnitude, with a prolonged taper of releases that was not captured by the model. Thus, application of the simulated model results does not consider the full breadth of operational actions available to MCWRA and employed during actual operation of Nacimiento and San Antonio Reservoirs.

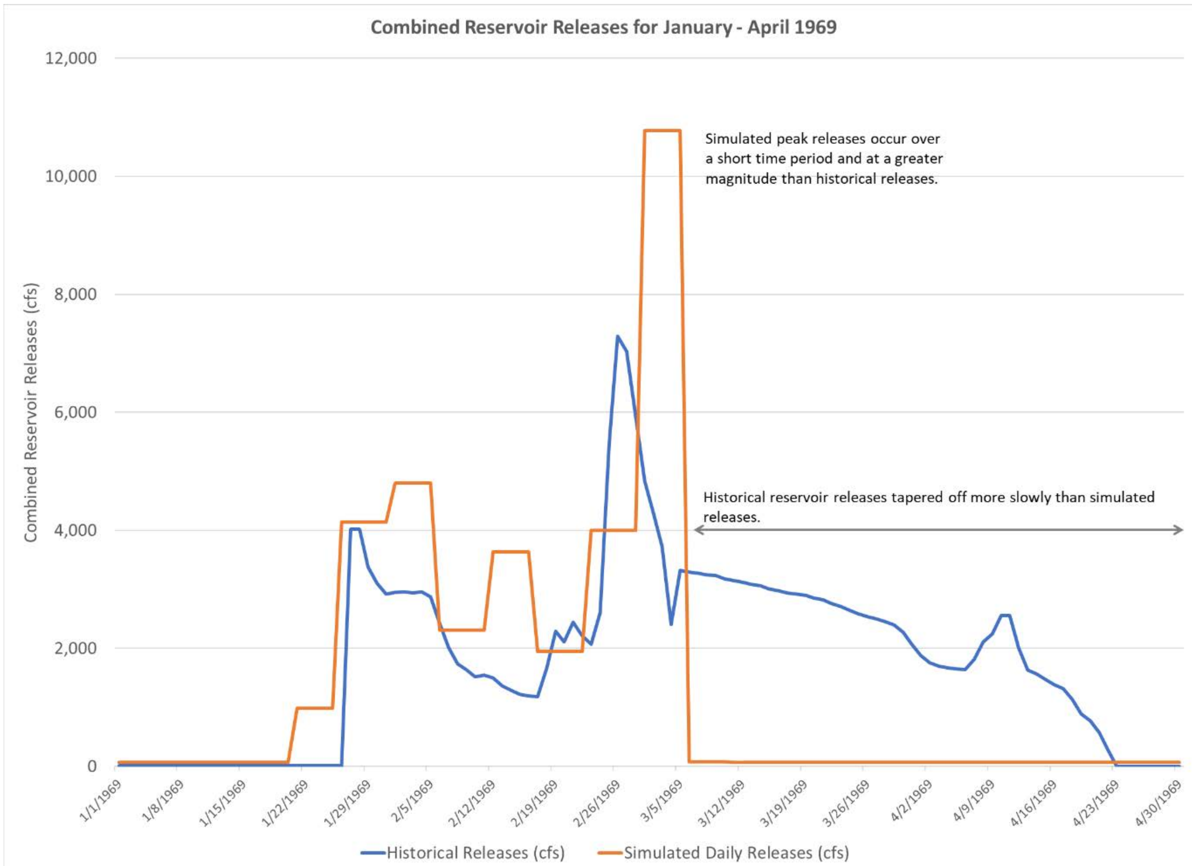

Figure 2-18. Historical Nacimiento Reservoir Releases vs. SVOM Modeled Releases in 1969, a Wet Water-Year Type

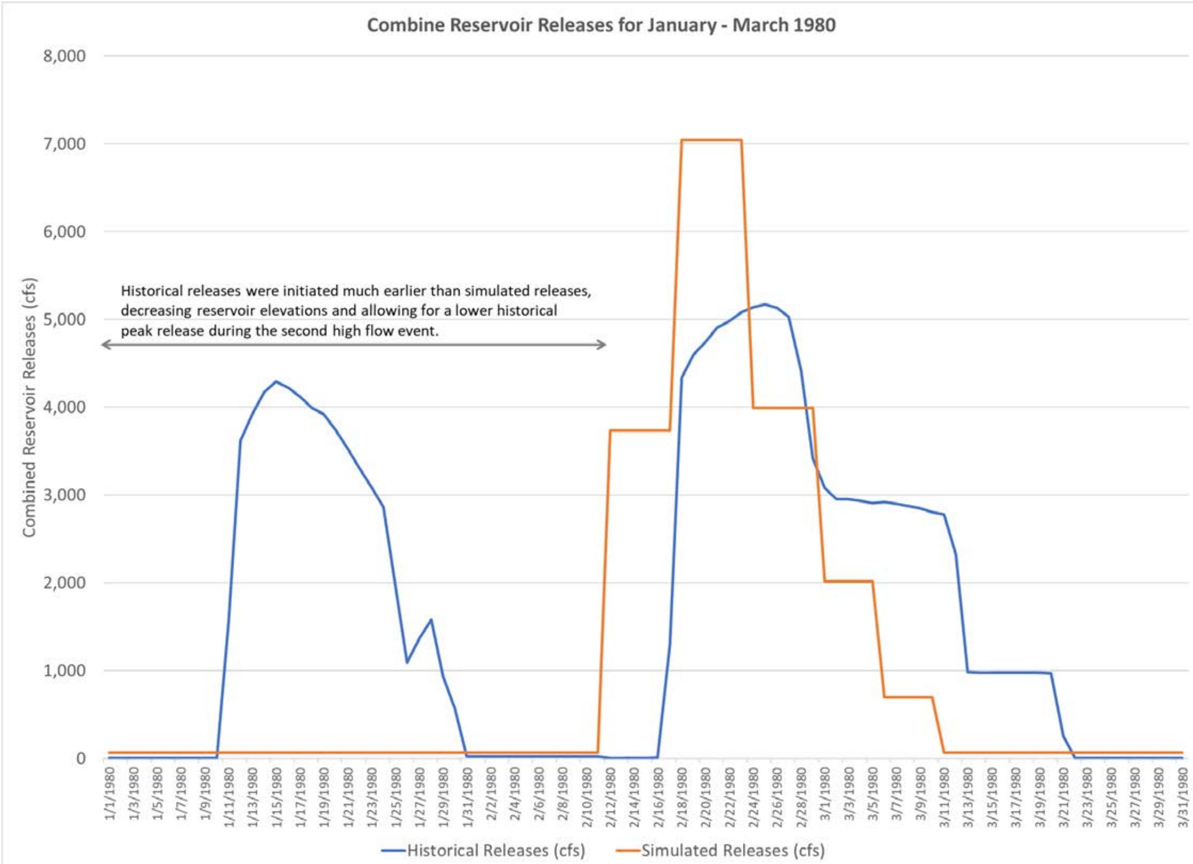

Figure 2-19. Historical Nacimiento Reservoir Releases vs. SVOM Modeled Releases in 1980, a Wet Water-Year Type

MCWRA currently utilizes key inputs during the decision-making process when determining release schedules for San Antonio and Nacimiento Reservoirs (**Table 2-9**). Current measures of the values in **Table 2-9**, as well as estimated future values, are utilized in current reservoir operations decision-making. These inputs and processes would also be used for the proposed project and would generally minimize peak flows during storms compared to model outputs, similar to the differences depicted on **Figures 2-17** and **2-18**. The California Nevada River Forecast Center streamflow estimates and National Weather Service forecast total storm volumes are analyzed and discussed preceding and during storm events to inform reservoir operations, sometimes as often as several times per day. When changes to reservoir operations are required or when there is potential for flood control releases due to storm activity, weather and reservoir storage forecasts are typically discussed during regular MCWRA staff meetings. Long-term forecasting and available storage projections are discussed during monthly meetings of the MCWRA Reservoir Operations Advisory Committee.

Table 2-9. Key Inputs for San Antonio and Nacimiento Reservoir Operation Decision-Making Process

Decision-Making Input
San Antonio Reservoir inflow
Nacimiento Reservoir inflow
Forecasted storm volume
Predicted timing of peak stormflow
Precipitation at numerous gages in the Salinas River watershed
Moisture conditions
San Antonio Reservoir elevation
Nacimiento Reservoir elevation
Peak flow, Upper Salinas River
Peak flow, Arroyo Seco River
Salinas River Lagoon elevation
Salinas River mouth status
Downstream flows (USGS gages, Bradley to Spreckels)
Travel times between various points in the Salinas River watershed
San Antonio Reservoir, low-level outlet capacity and rating curve
San Antonio Reservoir, spillway capacity and rating curve
Nacimiento Reservoir, low-level outlet capacity and rating curve
Nacimiento Reservoir, high-level gate outlet capacity and rating curve
Nacimiento Reservoir, Obermeyer gate outlet elevation, capacity, and rating curve
Downstream infrastructure flow capacity without damage
Interlake Tunnel inflow (future input)
Interlake Tunnel gate position (future input)
Interlake Tunnel outflow (future input)

Historical MCWRA operations demonstrate the use of these processes to effectively manage reservoir releases. In 2017, these decision-making processes were used when developing release plans for San Antonio and Nacimiento Reservoirs during large storms from January through March of that year. The January 2017 Reservoir Operations Advisory Committee meeting included a discussion regarding the potential for flood control releases and illustrated winter-spring forecasting and historical review work completed by MCWRA in anticipation of storms and required releases (MCWRA 2017). MCWRA would employ a similar process with operation of the proposed project.

The Interlake Tunnel would be operated utilizing the inputs identified in **Table 2-9** to support flood management, groundwater recharge, operation of the SRDF, water supply, fish migration, fish habitat requirements, agriculture, and recreation. All reservoir operations policies, water rights requirements, agreements, and downstream obligations would continue to be met with implementation of the proposed project. The key considerations for operation of the Interlake Tunnel and Nacimiento and San Antonio Reservoirs would include:

- The operations of the Interlake Tunnel and Nacimiento and San Antonio Reservoirs would be closely coordinated to maximize storage for future beneficial use.
- During storm events, precipitation and streamflow forecasts would be used to estimate inflow volume, rate, and timing. This information would then guide the facilities' operational plans.

- As feasible, operations would keep San Antonio Reservoir releases from exceeding 1,500 cfs. To avoid releasing at a rate greater than 1,500 cfs, reservoir elevations may temporarily be allowed to exceed operating rule curve elevations to attenuate and reduce anticipated peak flood control releases. However, in the event that San Antonio Reservoir levels approach the spillway crest elevation and continue rising, outlet releases greater than 1,500 cfs may be required to prevent uncontrolled spillway releases.
- Reduction or delay of Interlake Tunnel transfers would also be considered to prevent the following at San Antonio Reservoir: elevations from exceeding the operating rule curve, the need for releases greater than 1,500 cfs, and uncontrolled spillway releases. This would result in storage of water in Nacimiento Reservoir until later in the year when the delayed water transfer could be completed.
- During storm events, Salinas River watershed conditions would factor into operational decision-making. For example, peak flows from tributaries, including the Arroyo Seco River and San Lorenzo Creek, as well as upper Salinas River flows, would be monitored, and flood control releases could be decreased or delayed to reduce impacts from those releases potentially coinciding with other peak flows in the watershed.
- Bass spawning usually begins in May or early June, and often at somewhat different times in Nacimiento and San Antonio reservoirs. MCWRA would continue to make an effort not to exceed a maximum decrease in reservoir elevation, through either releases or tunnel transfers, of 1 foot per week for a three-week period during bass spawning. A goal of 6 inches per week or less would be used when practical. MCWRA would continue to coordinate with CDFW for the timing of these efforts.
- To minimize the impacts of tunnel transfers and reservoir releases on reservoir levels and boat ramp access during peak recreational periods, MCWRA would, to the extent possible, adjust transfers and releases to equalize the rate of decline in elevation between the reservoirs during the Memorial Day, Fourth of July, and Labor Day holiday periods.
- Modeled tunnel transfer results suggest that the bulk of tunnel transfers would occur between January and June when reservoir elevations are highest (**Figure 2-20**). At WSE 730 feet, most of the public boat ramps around the reservoir are useable. To the extent feasible, MCWRA would operate Nacimiento Reservoir to WSE 730 feet during the recreational period. However, there may be years where MCWRA may be required to release additional water for conservation releases and meet San Luis Obispo County obligations or regulatory requirements.

Comparison of Modeling Results to Existing Conditions

Using the hydrologic modeling results, mean reservoir water surface elevations for the proposed project were compared to existing conditions. The modeled results demonstrate that the proposed project would result in similar mean monthly WSE values at Nacimiento Reservoir during all year types compared to existing conditions, with water levels during dry years representing a slightly greater drop than those during wet and normal years (**Figure 2-21**). Conversely, the modeled results at San Antonio Reservoir demonstrate that the proposed project would result in mean monthly WSE values higher than existing conditions during all water year types (**Figure 2-22**).

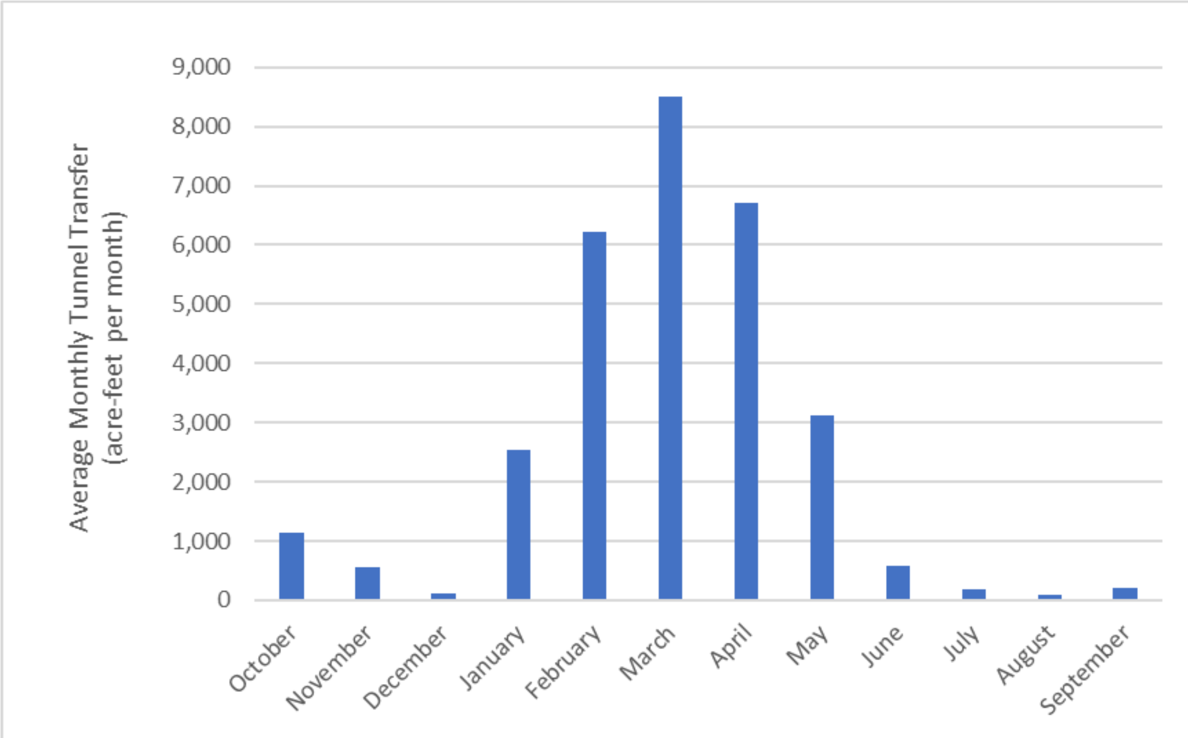

Figure 2-20. Modeled Mean Monthly Tunnel Transfer Volumes for the Proposed Project

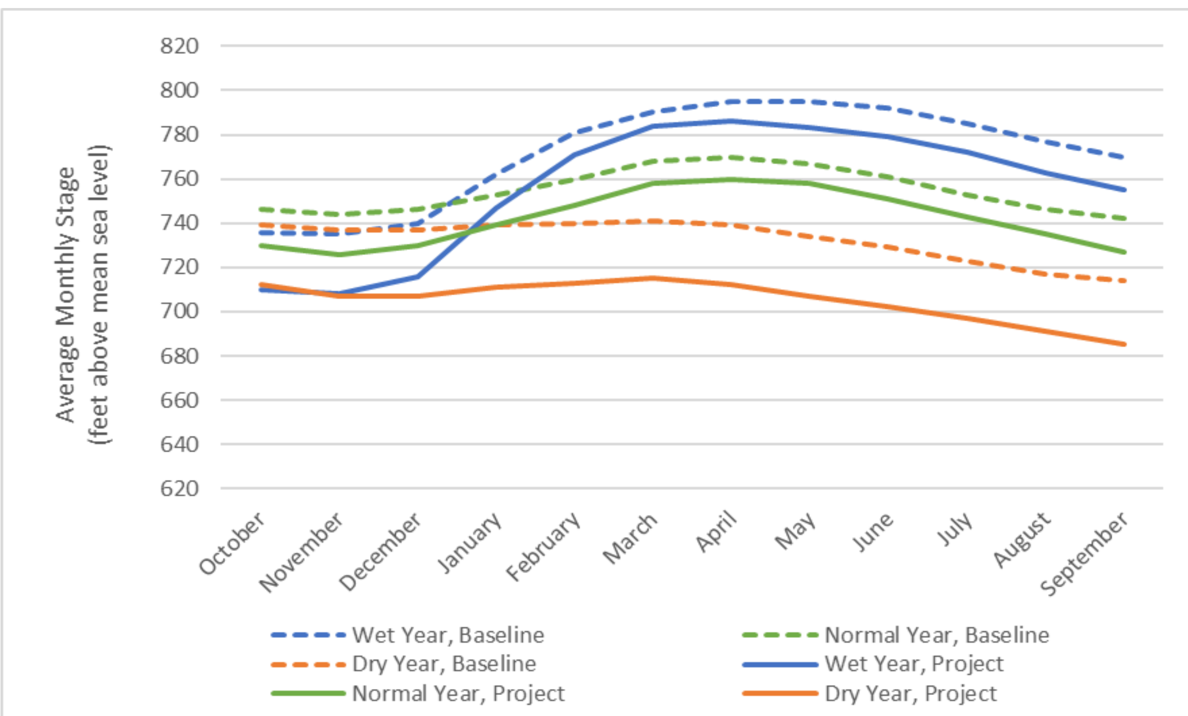

Figure 2-21. Modeled Mean Water Surface Elevations at Nacimiento Reservoir for the Proposed Project

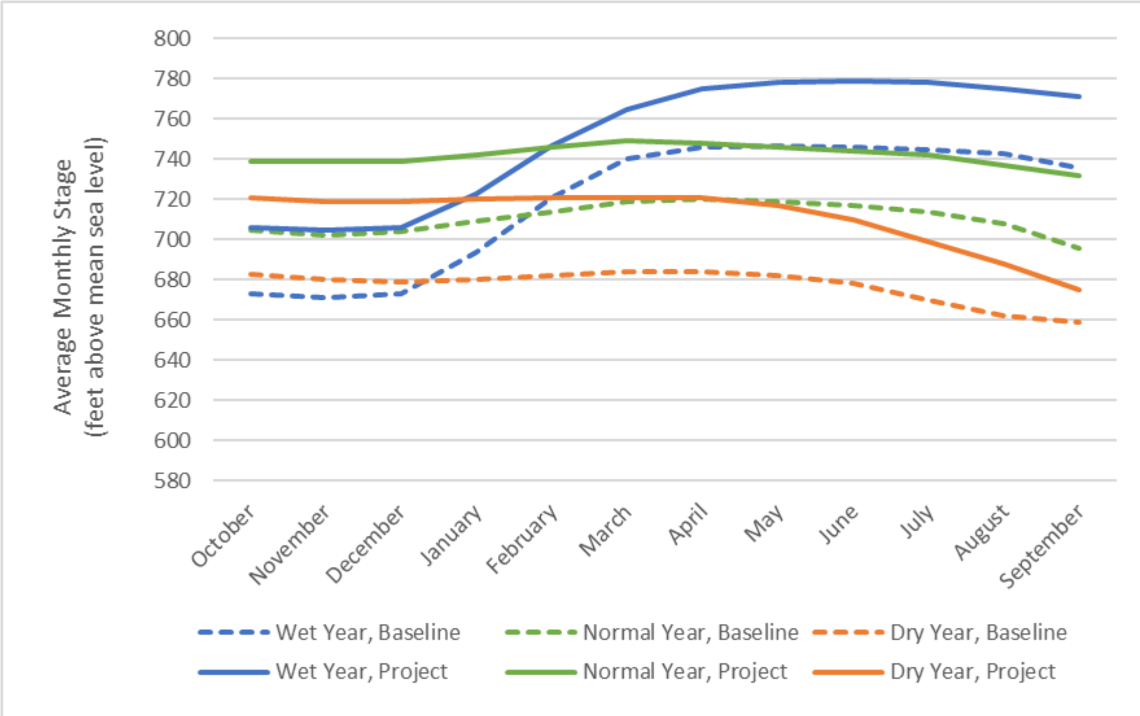

Figure 2-22. Modeled Mean Water Surface Elevations at San Antonio Reservoir for the Proposed Project

Modeled mean annual reservoir releases would increase in dry years for the combined reservoirs and decrease for all other water years (**Table 2-10**). However, the release volumes would generally be different for each release type. Modeled mean annual flood control releases for the combined reservoirs and the proposed project for all years would be approximately 30 percent less (approximately 17,200 AFY) than existing conditions. Modeled mean annual conservation releases, which are composed of releases for diversion at the SRDF and to supplement groundwater recharge, for the combined reservoirs and the proposed project would be approximately 14 percent more (approximately 19,300 AFY) than existing conditions for all water years. Modeled mean annual diversions at the Salinas River Diversion Facility (a portion of conservation releases) would be approximately 1,230 AFY more than existing conditions for all water years with the proposed project and the combined reservoirs. Modeled mean annual environmental releases, which consist of fish passage releases and fish and wildlife habitat releases, for the combined reservoirs and the proposed project would be less (approximately 3,080 AFY) than existing conditions for all water years. Modeled mean annual fish passage releases (as required by CDFW and NMFS to adhere to permit conditions) for the proposed project would be more than existing conditions (approximately 1,910 AFY), and modeled mean annual fish and wildlife habitat releases (as specified in the flow prescription to provide adequate spawning and rearing habitat in the Nacimiento River) for the proposed project would be approximately 5,000 AFY less than existing conditions for the combined reservoirs and all water years.

Table 2-10. Modeled Mean Annual Reservoir Releases for the Proposed Project Compared to Baseline and the Tunnel-Only Alternative

Average Annual Release by Category and Subcategory (in AFY), Proposed Project Release Scenario												
	Nacimiento				San Antonio				Combined			
Water Year Type	**All**	**Wet**	**Normal**	**Dry**	**All**	**Wet**	**Normal**	**Dry**	**All**	**Wet**	**Normal**	**Dry**
Average Annual Total Release	152,404	227,706	155,905	64,407	93,293	89,791	74,928	130,756	245,697	317,497	230,833	195,163
Difference from Baseline	*-27,004*	*-84,530*	*-228*	*-13,775*	*24,337*	*32,048*	*-11,293*	*81,304*	*-2,668*	*-52,483*	*-11,520*	*67,529*
Difference from Tunnel Only	*131*	*-2,118*	*872*	*1,209*	*-990*	*-1,054*	*-2,596*	*2,025*	*-858*	*-3,172*	*-1,723*	*3,233*
Flood Control Release	27,877	92,318	5,005	0	12,595	40,900	2,739	0	40,472	133,218	7,744	0
Difference from Baseline	*-27,398*	*-79,464*	*-11,575*	*0*	*10,279*	*34,378*	*1,650*	*-8*	*-17,119*	*-45,087*	*-9,925*	*-8*
Difference from Tunnel Only	*847*	*3,123*	*-35*	*0*	*-6,293*	*-8,520*	*-8,410*	*0*	*-5,446*	*-5,397*	*-8,445*	*0*
Environmental Release [a]	31,638	25,389	39,291	24,378	8,202	4,016	12,169	5,465	39,840	29,404	51,460	29,843
Difference from Baseline	*-4,519*	*-2,206*	*-3,557*	*-8,787*	*1,440*	*-397*	*3,552*	*-442*	*-3,079*	*-2,603*	*-5*	*-9,229*
Difference from Tunnel Only	*356*	*-19*	*842*	*-131*	*107*	*328*	*55*	*-37*	*463*	*309*	*898*	*-168*
Fish Passage Release [a]	6,454	778	13,259	125	3,860	190	7,976	289	10,314	968	21,235	415
Difference from Baseline	*36*	*-77*	*117*	*9*	*1,876*	*13*	*3,902*	*181*	*1,912*	*-64*	*4,019*	*191*
Difference from Tunnel Only	*314*	*14*	*661*	*3*	*-170*	*29*	*-383*	*6*	*144*	*44*	*278*	*9*
Fish and Wildlife Habitat Release [a,b]	25,185	24,610	26,032	24,253	4,342	3,825	4,193	5,175	29,527	28,436	30,225	29,428
Difference from Baseline	*-4,555*	*-2,129*	*-3,674*	*-8,797*	*-437*	*-410*	*-350*	*-623*	*-4,991*	*-2,539*	*-4,024*	*-9,420*
Difference from Tunnel Only	*42*	*-33*	*182*	*-134*	*277*	*298*	*438*	*-43*	*318*	*265*	*620*	*-177*
Conservation Release	86,876	103,126	104,817	36,378	67,206	41,987	56,685	113,815	154,082	145,113	161,502	150,193
Difference from Baseline	*6,588*	*-2,901*	*18,021*	*-4,095*	*12,708*	*1,276*	*-12,970*	*72,167*	*19,295*	*-1,625*	*5,051*	*68,072*
Difference from Tunnel Only	*-1,036*	*-4,979*	*-11*	*1,356*	*5,176*	*6,686*	*6,132*	*1,788*	*4,140*	*1,708*	*6,121*	*3,144*
SRDF Diversion from Conservation Release [c]	--	--	--	--	--	--	--	--	8,792	9,635	9,083	7,345
Difference from Baseline	--	--	--	--	--	--	--	--	*1,228*	*401*	*511*	*3,438*
Difference from Tunnel Only	--	--	--	--	--	--	--	--	*89*	*89*	*52*	*157*
Conservation Release to Recharge/Evapotranspiration above SRDF [d]	--	--	--	--	--	--	--	--	145,290	135,478	152,419	142,849
Difference from Baseline	--	--	--	--	--	--	--	--	*18,067*	*-2,026*	*4,540*	*64,633*
Difference from Tunnel Only	--	--	--	--	--	--	--	--	*4,051*	*1,618*	*6,068*	*2,987*
Over-Release [e]	6,012	6,874	6,792	3,651	5,290	2,888	3,335	11,476	11,302	9,761	10,127	15,127
Difference from Baseline	*-1,675*	*41*	*-3,116*	*-893*	*-90*	*-3,209*	*-3,525*	*9,587*	*-1,765*	*-3,168*	*-6,641*	*8,695*
Difference from Tunnel Only	*-36*	*-244*	*77*	*-16*	*20*	*452*	*-373*	*274*	*-15*	*208*	*-296*	*257*

Source: MCWRA 2021b

Notes:

[a] Environmental release is composed of fish passage release and fish and wildlife habitat release.

[b] Fish and wildlife habitat releases would be met more frequently through conservation releases under the proposed project than under current conditions. Therefore, the reduction in fish and habitat releases indicated in this table does not suggest that less water is available for this purpose, but rather that less water is needed for this purpose.

[c] Conservation release is composed of SRDF diversion from conservation release and conservation release to Recharge/Evapotranspiration above SRDF. SRDF diversion is measured at the location of the diversion facility and is not differentiated by reservoir. Numbers presented here do not include SRDF diversion that is supplied by other sources, including natural flow and agricultural return flow.

[d] The difference between the amount of conservation release and that portion diverted at SRDF is lost along the journey (required bypass flows are accounted for as part of the fish passage releases). The model does not account for direct precipitation into and evaporation from the stream system; therefore, this water must all be exchanged with the subsurface.

[e] Over-release represents water released from the reservoirs over and above any requirement in place. This release typically leaves the system and flows out to Monterey Bay.

2.5.1.2 Maintenance

The isolation gate at the Tunnel Intake Structure would allow for isolation of the tunnel from Nacimiento Reservoir for tunnel inspection and maintenance when the reservoir level is above the floor elevation of the Tunnel Intake Structure. The isolation gate would be normally closed until the reservoir reaches a pre-set WSE, at which point it would raise to the fully open position, thereby transferring flow to San Antonio Reservoir. It could also provide for emergency closure, either by manual activation by the operator or automatically, based on preset operation parameters. Emergency closure of the intake gate requires adding air to prevent damage to and possible collapse of the Interlake Tunnel that could result from the creation of a vacuum when the isolation gate is closed while water is in the Interlake Tunnel. Under an emergency scenario (such as a debris blinding event), the tunnel intake bypass gate could allow flow to be bypassed around the fish screen assemblies to prevent their structural failure. Under this scenario, the bypass gate would open to pass flow until the isolation gate is closed.

Regular inspections and maintenance would occur on the Interlake Tunnel facilities to prevent deterioration. These measures would include, but would not be limited to:

- Inspecting and removing brush, trees, or other debris from the Tunnel Intake Structure and Energy Dissipation Structure, especially near the boom, trash rack, automated trash rake, and conveyor belt (daily during operation of the Interlake Tunnel [monthly otherwise])
- Inspecting and repairing soil adjacent to the Tunnel Intake Structure and Energy Dissipation Structure, looking for cracks, slumps, slides, depressions, or bulges (daily during operation of Interlake Tunnel [monthly otherwise])
- Inspecting concrete structures and repairing as needed (e.g., crack or joint sealing [twice per year])
- Inspecting electric panels to verify breakers in correct position (daily during operation of Interlake Tunnel [monthly otherwise])
- Inspecting and repairing, as necessary, security locks and security fencing (daily during operation of the Interlake Tunnel [monthly otherwise])
- Inspecting and repairing animal burrows (periodically during operation of the Interlake Tunnel [monthly otherwise])
- Inspecting and repairing lighting infrastructure at intake facility (daily during operation of the Interlake Tunnel [monthly otherwise])
- Inspecting gates and valves and repairing, as needed (daily during operation of the Interlake Tunnel [monthly otherwise])
- Managing vegetation, including mowing or weeding (inspect biweekly during operation of the Interlake Tunnel [monthly otherwise]; conduct weeding as necessary)
- Observing debris boom at intake, looking for disconnected or sinking logs; removing debris from debris boom; and repairing, as needed (daily during operation of the Interlake Tunnel [monthly otherwise])
- Inspecting and repairing, as needed, the fish screens, screen-cleaning brush system, lifting mechanism, and rail system (daily during operation of the Interlake Tunnel [monthly otherwise])

The MCWRA engineering staff, or a qualified engineering consultant, would perform at least one periodic inspection per year of all project components (Tunnel Intake Structure, Interlake Tunnel, and Energy Dissipation Structure). These inspections would consist of a review of relevant project drawings, specifications, operational criteria, prior assessment and/or inspection reports, and recent climate data and reservoir elevations, followed by site visits to and visual inspections of each project component. The results of these inspections would be documented in a report and delivered to the MCWRA Chief Dam Safety Engineer and the MCWRA Operations Manager. Inspections may be completed in one day, or may span multiple days, depending on staff availability.

Access into the Interlake Tunnel for maintenance inspection and/or repair would occur at the Tunnel Intake Structure. Stoplogs would be installed, or the isolation gate employed, to seal the Interlake Tunnel from Nacimiento Reservoir if such inspections or repair activities occur when the WSE is above the invert of the Tunnel Intake Structure. Access into the Interlake Tunnel would occur through a maintenance access vault hatch or through the wet well gate at the Tunnel Intake Structure.

2.5.1.3 Fire Safety and Emergency Access

During project operations and maintenance, MCWRA would adhere to the Confined Space/Trench Rescue Plan and the Wildland Fire/Vegetation Management Plan. A Fire Safety and Evacuation Plan would also be prepared for operation of the Tunnel Intake Structure and Energy Dissipation Structure.

2.5.2 San Antonio Dam Spillway Modification

2.5.2.1 Operations

The Spillway Modification would be a static (i.e., no moving parts) labyrinth weir structure requiring inspections, maintenance, and repair. The labyrinth weir would not have gates, valves, or moving parts of any kind. Although the labyrinth weir itself would not have operating procedures, San Antonio Reservoir operations regarding maximum flow and rule curves would continue.

2.5.2.2 Maintenance

The MCWRA staff, or a qualified engineering consultant, would conduct periodic preventive maintenance and safety inspections to verify the structure is functioning optimally and that no concrete cracking or damage is present. Periodic preventive measures would include, but would not be limited to:

- Inspecting and removing brush, trees, or other debris from the labyrinth weir and spillway channel (daily when the WSE is at the spillway crest [monthly otherwise])
- Inspecting and removing soil adjacent to spillway, looking for cracks, slumps, slides, depressions, or bulges (daily during operation [monthly otherwise])
- Inspecting concrete structures and repairing, as needed (e.g., crack or joint sealing [twice per year])
- Inspecting and repairing animal burrows (bi-weekly during operation [monthly otherwise])

- Managing vegetation, including mowing or weeding (inspect bi-weekly during operation [monthly otherwise]; conduct weeding as necessary)
- Observing debris boom, looking for disconnected or sinking logs; removing debris from debris boom; and repairing, as needed (daily during operation, weekly otherwise)

The MCWRA engineering staff, or a qualified engineering consultant, would perform at least one periodic inspection per year of all project components (labyrinth weir, spillway channel, spillway walls). These inspections would consist of a review of relevant project drawings, specifications, operational criteria, prior assessment and/or inspection reports, and recent climate data and reservoir elevations, followed by site visits to and visual inspections of each project component. The results of these inspections would be documented in a report and delivered to the MCWRA Chief Dam Safety Engineer. Inspections may be completed in one day, or may span multiple days, depending on staff availability.

2.6 Avoidance and Minimization Measures

The activities undertaken as part of this project incorporate a range of measures to minimize undesired environmental effects. **Table 2-11** summarizes avoidance and minimization measures (AMM) that would be implemented during construction and/or operation of the proposed project.

Table 2-11. Avoidance and Minimization Measures Applicable to the Proposed Project

Measure Number	Measure Title	Description
GEN-1	Spill Prevention and Control	The construction contractor will develop and submit a spill prevention and response plan for approval by both counties prior to the commencement of construction activities. This plan will include, but not be limited to, the following: • Make equipment and materials for cleanup of spills available on-site, immediately clean up spills and leaks, and dispose of them according to guidelines stated in the spill prevention and response plan. • Ensure that spill response kits will always be in proximity when using hazardous materials (e.g., at crew trucks and other logical locations). Advise all field personnel of these locations. • The MCWRA staff will inspect the work site quarterly to verify that spill prevention and response measures are properly implemented and maintained. • For small spills on impervious surfaces, use absorbent materials to remove the spill rather than hosing it down with water. For small spills on pervious surfaces, such as soil, excavate and properly dispose of the spill rather than burying it. Collect absorbent materials and dispose of them properly and promptly. • Report immediately, as required by law, all significant releases of hazardous materials, including oil, to the Governor's Office of Emergency Services Warning Center, (800) 852-7550.

Measure Number	Measure Title	Description
GEN-2	Equipment Maintenance and Fueling	During construction, MCWRA and/or its contractor will: • Follow equipment maintenance and fueling procedures to ensure that no fluids are discharged into watercourses and that any spills are promptly cleaned up, reported (if necessary), and properly disposed of. • Designate a separate area for equipment maintenance and fueling, away from any slopes, watercourses, or drainage facilities. Where equipment is expected to be stored for more than a few days, keep cleanup materials and tools nearby and available for immediate use. Do not store equipment in areas that will potentially drain to watercourses or drainage facilities. If equipment must be stored in areas with the potential to generate runoff, then drip pans, berms, sandbags, or absorbent booms will be employed to contain any leaks or spills. • Maintain all equipment free of petroleum leaks. Inspect all vehicles operating within 250 feet of the reservoirs daily for leaks and, if necessary, repair them before leaving the staging area. Document inspections to provide a record that is available for review on request.
GEN-3	Hazardous Materials Containment	During construction, MCWRA and/or its contractor will: • Label all hazardous materials and hazardous wastes (e.g., pesticides, paints, thinners, solvents, fuel, oil, antifreeze) in accordance with city, county, state, and federal regulations. • Store hazardous materials and wastes in water-tight containers and appropriate secondary containment and cover at the end of every workday or during wet weather or when rain is forecast. • Follow manufacturers' application instructions for hazardous materials. Do not apply chemicals outdoors when rain is forecast within 24 hours. • Arrange for appropriate disposal of all hazardous wastes.
GEN-4	Waste Management	During construction, MCWRA and/or its contractor will: • Cover waste disposal containers securely with tarps during wet weather. • Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on the construction site. • Clean or replace portable toilets and inspect them frequently for leaks and spills. • Dispose of all wastes and debris properly. Recycle materials and wastes that can be recycled (e.g., asphalt, concrete, aggregate base materials, wood, gyp board, pipe). • Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste. • Remove all temporary fences, barriers, and/or flagging from work sites and properly dispose of them on completion of construction activities.

Measure Number	Measure Title	Description
GEN-5	Maintenance and Parking of Construction Vehicles	During construction, MCWRA and/or its contractor will: • Designate an area fitted with appropriate environmental management measures for vehicle and equipment parking and storage. • Perform major maintenance, repair jobs, and vehicle and equipment washing off-site. • If vehicle maintenance must be performed on-site, work away from storm drains and over a drip pan big enough to collect fluids. • Recycle or dispose of fluids as hazardous waste. • Do not perform vehicle or equipment cleaning on-site.
GEN-6	Staging, Stockpiling of Soil, and Access	During construction, MCWRA and/or its contractor will: • Locate staging, access, and parking areas outside of sensitive habitats, to the extent feasible. • Locate stockpiled soils away from waterways and surround the stockpile with a straw wattle or other erosion control material until it is disposed of or used. During both construction and operations, MCWRA and/or its contractor will: • Use existing roads and access ramps to access routine maintenance sites.
GEN-7	Vehicle Idling and Maintenance	During construction, MCWRA and/or its contractor will: • Minimize idling times either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes. Provide clear signage related to idling for construction workers at all access points. • Maintain construction equipment and properly tune it in accordance with manufacturers' specifications. A certified mechanic will check all equipment and determine it to be running in proper condition with as-needed certification verified by MCWRA staff members.
GEN-8	Dust Management Controls	During construction, MCWRA and/or its contractor will implement applicable mitigation measures identified by the MBARD CEQA Guidelines (2008) at the construction work areas, as applicable: • Water all active construction areas at least twice daily. Frequency should be based on type of operation, soil, and wind exposure. • Prohibit all grading activities during periods of high wind (i.e., over 15 miles per hour). • Apply nontoxic chemical soil stabilizers according to manufacturers' specifications on inactive construction areas (i.e., disturbed lands within construction projects that are unused for at least 4 consecutive days). • Apply nontoxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area. • Haul trucks will maintain at least 2 feet of freeboard. • Cover all trucks hauling dirt, sand, and other loose materials. • Cover inactive storage piles.

Measure Number	Measure Title	Description
		• Sweep streets if visible soil material is carried out from a construction site. • Post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints. The telephone number of MBARD will be visible to ensure compliance with Rule 402 (Nuisance). • Limit the area under construction at any one time.
GEN-9	Confined Space/ Trench Rescue Plan	All confined space and tunnel-related work operations will be completed in accordance with applicable Title 8 California Code of Regulations (Cal/OSHA Title 8 California Code of Regulations [T8 CCRs]). Where required, it shall be the responsibility of the contractor to provide and manage qualified personnel and required equipment in accordance with applicable Cal/OSHA T8 CCRs. During routine maintenance activities, MCWRA and any contractors will conduct work in accordance with the County of Monterey Water Resources Agency Confined Space Entry Program and applicable Cal/OSHA T8 CCRs (MCWRA 2022b).
GEN-10	Fire Safety and Evacuation Plan	Prior to construction, MCWRA and/or its contractor will develop a fire safety plan in accordance with California Fire Code sections 404.3 (Evacuations Plans) and 404.3 (Fire Safety Plans). The plan will address employee training, record keeping, hazard communication, and drills. The plan will include, but not be limited to, the following: • Emergency egress or escape routes from the intake and outlet facilities. • Procedures for employees who must remain to operate critical equipment before evacuating. • Procedures for accounting for employees after evacuation has been completed. • The preferred and any alternative means of reporting fires and other emergencies to the fire department or designated emergency response organization. • A description of emergency voice/alarm communication system alert tone. • Steps that should be taken in the event of inundation emergencies. • Site plans, including the occupancy assembly point, locations of fire hydrants, and normal routes of fire department vehicle access.
GEN-11	Wildfire Protection Plan and Safety Measures	Prior to construction, MCWRA and/or its contractor will develop and implement a wildland fire/vegetation management plan to address ways to minimize and mitigate potential for loss from wildfire exposure. This plan will be developed and submitted to CAL FIRE/San Luis Obispo County Fire Department for approval. • The intake structure and energy dissipation structure will have a 100-foot clearance free of flammable vegetation, consistent with Pub. Res. Code 4291.

Measure Number	Measure Title	Description
		• Aboveground buildings will be constructed and designed to withstand a wildfire. • Landscaping within the project site will be fire resistive, preferably natives.
GEN-12	Fire Safety Measures During Construction	An operational water supply system that provides immediate emergency water access for fire suppression purposes at each construction area will be available throughout the duration of project construction. During construction, the contractor(s) will comply with California Fire Code section 503.1, which addresses use of spark arresters, adequate clearance around welding operations, and smoking restrictions and require establishment of extinguishers on work sites.
GEN-13	Emergency Access Measures	During project construction and operation, all access points (gates) will have a Knox key box installed for fire department emergency access.
GEN-14	Private Well Protection Measures	Prior to construction, MCWRA and/or its contractor will develop a groundwater management plan that will include, but not be limited to, the following: • A baseline inventory of wells and their existing condition • Preconstruction monitoring of wells. • Groundwater modeling to evaluate potential groundwater inflows into the tunnel and probable effects to well. • Consideration of the placement of supplemental storage tanks on property where it is determined that wells may be affected to make up for potential shortfalls during construction. • Development of a notification system for property owners to report any changes in well conditions during and after construction. • A contingency plan for the provision of supplemental water for wells that are determined to be affected by the project; this water could be a combination of potable water for human consumption and non-potable water for landscaping and livestock.
BIO-1	Worker Environmental Awareness Program	A worker environmental training program (WEAP) will be implemented by qualified personnel and presented to all staff members working on-site prior to construction. The WEAP will require training of all construction crews and contractors for protection and avoidance of biological and other sensitive resources, such as cultural resources. The WEAP will ensure that all staff members on-site will work together to minimize impacts within and adjacent to the to the project site.
BIO-2	Construction Best Management Practices and Monitoring for Fish, Wildlife, and Plant Species	Prior to construction, a construction monitoring plan for sensitive biological resources and in-water construction activities will be prepared and implemented by a qualified biologist. Measures such as daily preclearance surveys, informative tailgate meetings to discuss daily biological avoidance measures, use and maintenance of exclusion fencing around sensitive habitats, erosion control, dust suppression measures, biological monitoring in special-status

Measure Number	Measure Title	Description
	Habitats and Natural Communities	species' habitats, and other standard BMPs for construction personnel to implement to protect biological resources will be included and followed during construction.
BIO-3	Decontamination of Equipment for Aquatic and Terrestrial Invasive Species	Protocols set forth by USFWS (2005) and CDFW (2013) for all equipment shall be followed, and equipment shall be decontaminated prior to entering the site to avoid the spread of terrestrial and aquatic pathogens. This will ensure the control of aquatic invasive species at the project site.
BIO-4	Control of Invasive Plant Species during Construction and Operation	Prior to and during construction, preclearance plant surveys will be conducted and will include identification of invasive plant infestations, measures for handling removed invasive plants during construction.
BIO-5	Restoration of Temporarily Disturbed Areas	All temporarily disturbed areas within the construction footprint shall be restored to pre-project conditions utilizing native seed mix introduction.

CAL FIRE=California Department of Forestry and Fire Protection
CEQA=California Environmental Quality Act
MBARD=Monterey Bay Air Resources District
MCWRA=Monterey County Water Resources Agency

2.7 Permits and Approvals

In addition to MCWRA, this EIR would be used by various regulatory agencies issuing permits, as well as other approvals and consultations for the proposed project. Specifically, information about the proposed project and the environmental analysis would be used by several agencies as part of their decision-making process regarding regulations applicable to the proposed project. The permits and regulatory approvals for the proposed project are described by permitting agency in **Table 2-12**.

Table 2-12. Applicable Permit and Regulatory Requirements

Regulatory Agency	Law/Regulation	Purpose	Permit/ Authorization Type
USACE	CWA Section 404	Regulates placement of dredge and fill materials into waters of the U.S., including wetlands	Separate permits for construction of the Interlake Tunnel and San Antonio Dam Spillway Modification
USFWS/NMFS	FESA/Magnuson-Stevens Fishery Conservation and Management Act	Consultation with USFWS and NMFS if threatened or endangered species might be affected by the project	FESA Section 7 for project construction and/or Section 10 Incidental Take Permit for project operation[a]
State Office of Historic Preservation	Section 106 of the National Historic Preservation Act	USACE would consult with the State Historic Preservation Officer if historic properties or prehistoric archaeological sites might be affected by the project	Consultation in conjunction with USACE Section 404 compliance
DWR, DSOD	California Water Code Division 3 (Dams and Reservoirs), Part 1, Chapter 5, Article 1	Requires applicant to submit application prior to modifying a dam	Approval of San Antonio Dam Spillway Modification
SWRCB	California Water Code (Division 2)	Requires applicant to submit petitions for change prior to diverting water	Approval of Petition for Change regarding storage capacity under License 12624 (Application 16761); Approval of Petitions for Change to add a point of diversion to off-stream storage and a point of rediversion under water right License 7543 (Application 16124) and/or Permit 21089 (Application 30532)

Regulatory Agency	Law/Regulation	Purpose	Permit/ Authorization Type
Central Coast Regional Water Quality Control Board	CWA Section 402 Porter-Cologne Water Quality Control Act	NPDES program regulates discharges of pollutants.	NPDES General Permit Construction Permit
Central Coast Regional Water Quality Control Board	CWA Section 401/ Porter-Cologne Water Quality Control Act	Water quality certification for placement of dredge and fill materials into waters of the U.S., including wetlands	Separate CWA Section 401 Water Quality Certification/Waste Discharge Requirements for construction and operation of the Interlake Tunnel and San Antonio Dam Spillway Modification
CDFW	CESA (F&G Code Section 2081(b))	Regulates "take" of species listed under CESA as threatened or endangered	Incidental Take Permit, if necessary
CDFW	F&G Code Section 1602 (Lake and Streambed Alteration Program)	Applies to activities that would substantially modify a river, stream, or lake, including activities that propose surface water diversion and rediversion Includes reasonable conditions necessary to protect those resources	Separate 1602 Permits for construction and operation of the Interlake Tunnel and San Antonio Dam Spillway Modification
CDFW	Memorandum of Understanding with MCWRA	Avoid transfer of white bass from Nacimiento Reservoir through proposed tunnel.	N/A
Monterey Bay Unified Air Quality Management District	Monterey Bay Unified Air Quality Management District	Review of project emissions that might affect regional air quality	Permit to construct the project, if necessary
San Luis Obispo County APCD	San Luis Obispo County APCD's Rules and Regulations	Review of project construction and operational emissions that might affect regional air quality	Permit to construct the project, if portable equipment (50 horsepower or greater) used Permit for project operations if portable equipment (50 horsepower or greater), electrical generation plants, and internal combustion engines

Regulatory Agency	Law/Regulation	Purpose	Permit/ Authorization Type
MCWRA (lead agency), and Central Coast Regional Water Quality Control Board, CDFW, DSOD, and SWRCB (responsible agencies)	CEQA	Ensure consideration of potential direct and indirect environmental impacts associated with the proposed project.	Certification of Final EIR Adoption of CEQA Findings Notice of Determination
County of Monterey	General Plan, Land Use Plan, Zoning Ordinance, Environmental Health Department	Ensure safe construction and operating conditions.	Permits for planning, grading, building, Hazardous Materials Business Plan, use permit
County of San Luis Obispo	General Plan, County Codes, Inland Land Use Ordinance, Environmental Health Department	Ensure safe construction and operating conditions.	Permits for grading; construction; Hazardous Materials Business Plan; site plan review, if necessary; and Conditional Use Permit

APCD=Air Pollution Control District; CDFW=California Department of Fish and Wildlife; CEQA=California Environmental Quality Act; CESA=California Endangered Species Act; CWA=Clean Water Act; DSOD=Division of Safety of Dams; DWR=California Department of Water Resources; EIR=environmental impact report; F&G Code=California Fish and Game Code; FESA=Federal Endangered Species Act; MCWRA=Monterey County Water Resources Agency; N/A=not applicable; NMFS=National Marine Fisheries Service; NPDES=National Pollutant Discharge Elimination System; SWRCB=State Water Resources Control Board; USACE=U.S. Army Corps of Engineers; USFWS=U.S. Fish and Wildlife Service

Notes:

a. MCWRA is working on a habitat conservation plan that could provide coverage for the proposed project under Section 10 of the FESA.

In addition to the permits and approvals listed in **Table 2-12**, MCWRA is required to comply with Pub. Res. Code Section 21080.3, also referred to as Assembly Bill (AB) 52. AB 52 requires lead agencies to provide tribes with a traditional and cultural affiliation with a project site an opportunity to consult with the lead agency regarding their issues and concerns as soon as a project is defined. As described in more detail in Chapter 4, Section 4.5, *Tribal Cultural Resources,* MCWRA has complied with AB 52 requirements throughout the EIR process.

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Chapter 3
Tunnel-Only Alternative

3.1 Overview

This chapter describes the Tunnel-Only Alternative, including the location, physical facility components that would be installed, construction process, how the new facilities would be operated and maintained, and how MCWRA would manage Nacimiento Reservoir and San Antonio Reservoir water levels and downstream water supply releases following completion. This chapter also discusses avoidance and minimization measures to be incorporated as project features as well as permits and approvals that would be required to construct and/or operate the project.

The Tunnel-Only Alternative would consist of construction and operation of a Tunnel Intake Structure at Nacimiento Reservoir, a water conveyance tunnel from Nacimiento Reservoir to San Antonio Reservoir (Interlake Tunnel), and an Energy Dissipation Structure at San Antonio Reservoir. The Tunnel-Only Alternative differs from the proposed project in that it does not include modification of the San Antonio Dam Spillway. This chapter relies upon information presented for the proposed project in Chapter 2, *Project Description*, to the extent that the detailed descriptions provided in that chapter are pertinent to the Tunnel-Only Alternative. Where relevant, such information is referenced but is not repeated in this chapter.

3.2 Location and Setting

The Tunnel-Only Alternative would be constructed within, between, and adjacent to Nacimiento and San Antonio Reservoirs, connecting the reservoirs with a tunnel approximately 2 miles long. The location of these reservoirs is shown on **Figure 2-1**. Further detail regarding the hydrologic setting, surrounding land uses, roadways and access routes, and existing facilities and operations, is provided in Section 2.2, *Location and Setting*.

3.3 Tunnel-Only Alternative Components

As with the proposed project, the Tunnel-Only Alternative would include construction of a Tunnel Intake Structure at Nacimiento Reservoir, a water conveyance tunnel between Nacimiento Reservoir and San Antonio Reservoir (Interlake Tunnel), and an Energy Dissipation Structure at San Antonio Reservoir. These components would be the same as described for the proposed project in Section 2.3.1, *Interlake Tunnel*, and the corresponding subsections for each component. Each of these components are shown on **Figure 2-4**.

MCWRA owns the land on which the Tunnel Intake Structure and Energy Dissipation Structure would be constructed; therefore, no temporary construction easements on land owned by others would be needed during construction of these components. MCWRA would need to obtain permanent underground easements for lands traversed by the Interlake Tunnel as shown in Chapter 2 on **Figure 2-12a** through **Figure 2-12c** and as indicated in **Table 2-1**.

3.4 Construction

Construction of the Interlake Tunnel and related subcomponents for the Tunnel-Only Alternative would be the same as described for the proposed project in Section 2.4.2, *Interlake Tunnel and Subcomponents*. The description provided in that section addresses the construction schedule and activities required for each subcomponent; land disturbance, site access, and work areas; materials management and disposal requirements; utility infrastructure; fire safety and emergency access requirements, and workforce and equipment requirements. In addition, the Safety and Environmental Awareness Program described in Section 2.4.1, *Safety and Environmental Awareness Program*, is also applicable to the Tunnel-Only Alternative.

3.5 Operations and Maintenance

3.5.1 Operations

Operation of the Interlake Tunnel under the Tunnel-Only Alternative would be similar to operation of the proposed project, as described in Section 2.5.1.1, *Operations*, with the notable difference that the Tunnel-Only Alternative would not involve an increase in the maximum WSE at San Antonio Reservoir. Therefore, private and public lands surrounding San Antonio Reservoir and the infrastructure on those lands would not be exposed to a level of inundation beyond what is currently possible with the existing spillway infrastructure at San Antonio Dam at an elevation of 780 feet. However, lands at or below the existing maximum WSE of 780 feet would most likely experience increased frequency and duration of inundation compared to existing conditions as a result of the water resources that would be conveyed from Nacimiento Reservoir to San Antonio Reservoir via the Interlake Tunnel. A discussion of the differences in reservoir operations and average water levels compared to the proposed project follows.

Hydrologic modeling[1] was completed to estimate the tunnel transfer volumes, reservoir drawdowns, and reservoir WSE elevations that would occur due to implementation of the proposed project and the Tunnel-Only Alternative. Simulation models, such as the hydrologic modeling used for this project, are simplified representations of complex real-world systems. Models cannot accurately depict the multitude of processes in every case but can provide valuable information for evaluating the effects of proposed projects such as the Interlake Tunnel. When known interrelationships among variables are utilized as model inputs, estimations of how a given quantity or variable might change due to a project can be made. In this way, models can be useful investigative frameworks when evaluating project effects.

As with the proposed project, results for the Tunnel-Only Alternative suggest that the bulk of tunnel transfers would occur between January and June when reservoir elevations are highest (**Figure 3-1**). Mean annual transfer volumes would very likely range from less than 4,000 AFY in dry years to more than 25,000 AFY in wet years, with mean values just below 10,000 AFY for all year types.

Mean water surface elevations at Nacimiento Reservoir would be similar to those for the Tunnel-Only Alternative and the proposed project; they would also be lower than elevations under existing conditions during all water year types (**Figure 3-2**). Conversely, the Tunnel-Only Alternative, and proposed project would result in San Antonio Reservoir mean monthly WSE values similar to each other, but higher than existing conditions during all water year types (**Figure 3-3**).

[1] Hydrologic modeling is described in Section 2.5.1.1, *Operations*.

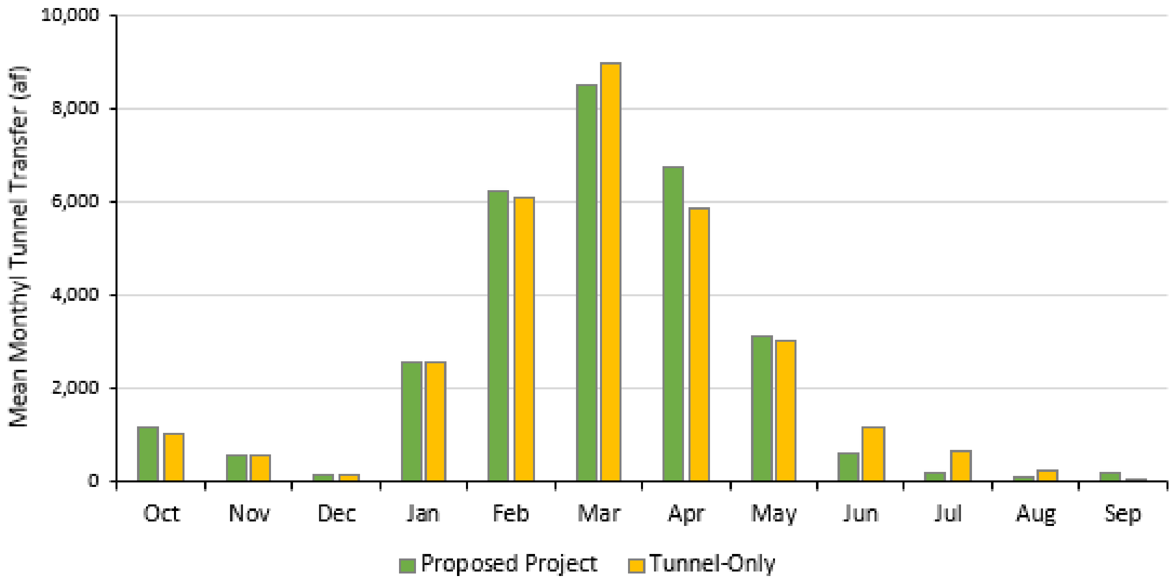

Figure 3-1. Modeled Mean Monthly Tunnel Transfer Volumes Comparing the Tunnel-Only Alternative to the Proposed Project

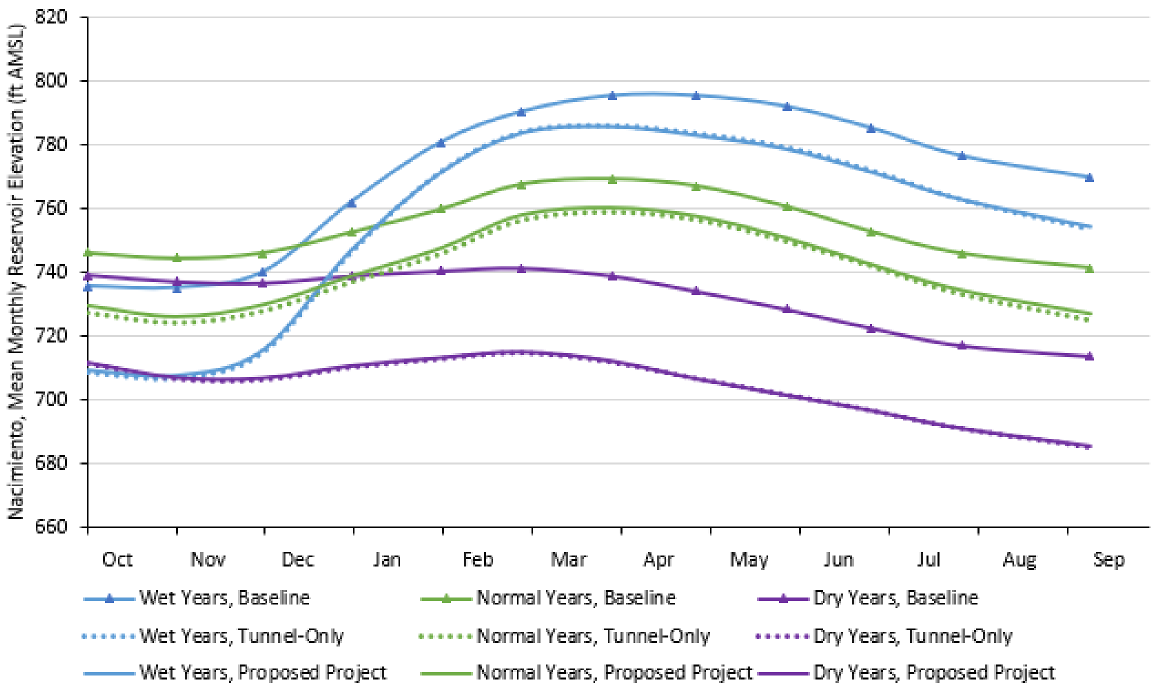

Figure 3-2. Modeled Mean Water Surface Elevations at Nacimiento Reservoir Comparing the Tunnel-Only Alternative to the Proposed Project

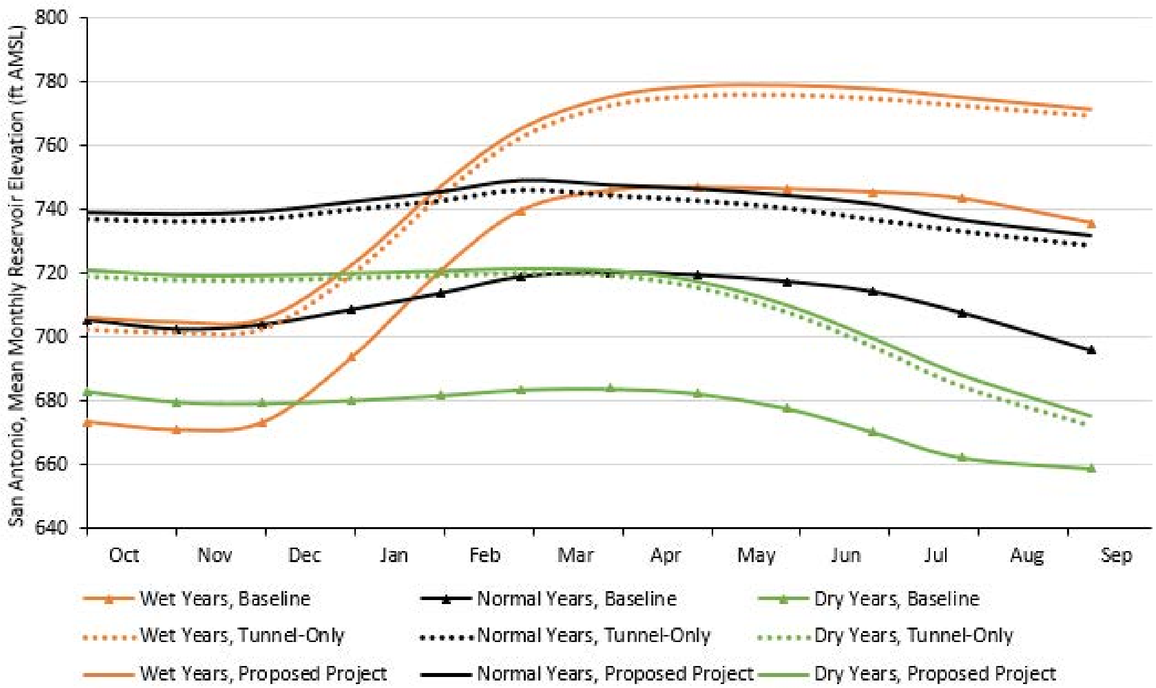

Figure 3-3. Modeled Mean Water Surface Elevations at San Antonio Reservoir Comparing the Tunnel-Only Alternative to the Proposed Project

Total mean annual reservoir releases (both reservoirs and all release types) would be similar under the Tunnel-Only Alternative, proposed project, and existing conditions (**Table 3-1**). However, the release volumes would generally be different for each release type. Mean annual flood control releases under the Tunnel-Only Alternative would be approximately 5,400 AFY greater than releases under the proposed project. Mean annual conservation releases under the Tunnel-Only Alternative would be approximately 4,100 AFY less than releases under the proposed project. Mean annual environmental releases, which consist of fish passage releases and fish and wildlife habitat releases, under the Tunnel-Only Alternative would be approximately 500 AFY less than releases under the proposed project. Mean annual fish passage and wildlife habitat releases under the Tunnel-Only Alternative would be slightly less than releases under the proposed project. Mean annual Salinas River Diversion Facility releases would be approximately 90 AFY less than releases under the proposed project.

Under the Tunnel-Only Alternative, the Tunnel-Only Alternative would be operated in the same manner as the proposed project. The Interlake Tunnel would generally operate only when the WSE in Nacimiento Reservoir is above 760 feet and when transfers through the tunnel would not result in a WSE in San Antonio Reservoir that would exceed internal operational parameters (operational rule curve). As with the proposed project, the operations team would utilize the inputs identified in **Table 2-9** to support flood management, groundwater recharge, operation of the SRDF, water supply, fish migration, fish habitat requirements, agriculture, and recreational uses. All reservoir operations policies, water rights requirements, agreements, and downstream obligations would continue to be met with implementation of the Tunnel-Only Alternative, and the operations team would apply the same key considerations described for the proposed project in the subsection titled *Operational Decision-Making* in Section 2.5.1.1, *Operations*.

Table 3-1. Modeled Mean Annual Reservoir Releases for the Tunnel-Only Alternative Compared to Baseline and the Proposed Project

	Nacimiento Reservoir Releases (AFY)				San Antonio Reservoir Releases (AFY)				Combined Reservoir Releases (AFY)			
Water Year Type	**All**	**Wet**	**Normal**	**Dry**	**All**	**Wet**	**Normal**	**Dry**	**All**	**Wet**	**Normal**	**Dry**
Average Annual Total Release	152,272	229,824	155,032	63,199	94,283	90,845	77,524	128,731	246,555	320,669	232,556	191,929
Difference from Baseline	-27,136	-82,412	-1,100	-14,984	25,326	33,102	-8,697	79,279	-1,809	-49,310	-9,797	64,296
Difference from Proposed Project	-131	2,118	-872	-1,209	990	1,054	2,596	-2,025	858	3,172	1,723	-3,233
Flood Control Release	27,030	89,195	5,040	0	18,888	49,420	11,149	0	45,918	138,615	16,189	0
Difference from Baseline	-28,245	-82,587	-11,540	0	16,572	42,897	10,060	-8	-11,673	-39,690	-1,480	-8
Difference from Proposed Project	-847	-3,123	35	0	6,293	8,520	8,410	0	5,446	5,397	8,445	0
Environmental Release[a]	31,282	25,407	38,448	24,510	8,095	3,688	12,114	5,501	39,378	29,095	50,562	30,011
Difference from Baseline	-4,875	-2,188	-4,400	-8,656	1,333	-725	3,497	-405	-3,542	-2,912	-903	-9,061
Difference from Proposed Project	-356	19	-842	131	-107	-328	-55	37	-463	-309	-898	168
Fish Passage Release[a]	6,140	764	12,598	123	4,030	161	8,360	283	10,169	925	20,958	406
Difference from Baseline	-278	-92	-544	7	2,046	-16	4,286	175	1,768	-108	3,742	182
Difference from Proposed Project	-314	-14	-661	-3	170	-29	383	-6	-144	-44	-278	-9
Fish and Wildlife Habitat Release[a,b]	25,143	24,643	25,850	24,387	4,065	3,527	3,754	5,218	29,208	28,170	29,605	29,605
Difference from Baseline	-4,596	-2,096	-3,856	-8,663	-713	-709	-789	-580	-5,310	-2,805	-4,644	-9,243
Difference from Proposed Project	-42	33	-182	134	-277	-298	-438	43	-318	-265	-620	177
Conservation Release[c]	87,912	108,105	104,829	35,022	62,030	35,301	50,553	112,027	149,942	143,406	155,382	147,049
Difference from Baseline	7,624	2,077	18,033	-5,451	7,531	-5,410	-19,102	70,379	15,155	-3,332	-1,069	64,928
Difference from Proposed Project	1,036	4,979	11	-1,356	-5,176	-6,686	-6,132	-1,788	-4,140	-1,708	-6,121	-3,144
SRDF Diversion from Conservation Release[c]	--	--	--	--	--	--	--	--	8,703	9,546	9,031	7,188
Difference from Baseline	--	--	--	--	--	--	--	--	1,139	312	459	3,282
Difference from Proposed Project	--	--	--	--	--	--	--	--	-89	-89	-52	-157
Conservation Release Lost above SRDF[d]	--	--	--	--	--	--	--	--	141,239	133,860	146,350	139,861
Difference from Baseline	--	--	--	--	--	--	--	--	14,016	-3,645	-1,528	61,646
Difference from Proposed Project	--	--	--	--	--	--	--	--	-4,051	-1,618	-6,068	-2,987
Over Release[e]	6,048	7,117	6,715	3,667	5,269	2,436	3,708	11,202	11,318	9,553	10,423	14,869
Difference from Baseline	-1,640	285	-3,193	-876	-110	-3,661	-3,152	9,313	-1,750	-3,376	-6,345	8,437
Difference from Proposed Project	36	244	-77	16	-20	-452	373	-274	15	-208	296	-257

Source: MCWRA 2021

[a] Environmental release is composed of fish passage release and fish and wildlife habitat release.

[b] Fish and wildlife habitat releases would be met more frequently through conservation releases under the proposed project than under current conditions. Therefore, the reduction in fish and habitat releases indicated in this table does not suggest that less water is available for this purpose, but rather that less water is needed for this purpose.

[c] Conservation release is composed of SRDF diversion from conservation release and conservation release lost above SRDF. SRDF diversion is measured at the location of the diversion facility and is not differentiated by reservoir. Numbers presented here do not include SRDF diversion that is supplied by other sources, including natural flow and agricultural return flow.

[d] The difference between the amount of conservation release and that portion diverted at SRDF is lost along the journey (required bypass flows are accounted for as part of the fish passage releases). The model does not account for direct precipitation into and evaporation from the stream system; therefore, this water must all be exchanged with the subsurface.

[e] Over-release represents water released from the reservoirs over and above any requirement in place. This release typically leaves the system and flows out to Monterey Bay.

3.5.2 Maintenance

Maintenance activities associated with the Tunnel-Only Alternative would be the same as described for the proposed project. These activities are described in detail in Section 2.5.1.2, *Maintenance*.

3.5.3 Fire Safety and Emergency Access

Fire safety and emergency access during operation of the Tunnel-Only Alternative would be the same as described for the proposed project. These are described further in Section 2.5.1.3, *Fire Safety and Emergency Access*.

3.6 Avoidance and Minimization Measures

Impact AMMs would be the same for the Tunnel-Only Alternative as for the proposed project. These are described further in Section 2.6, *Avoidance and Minimization Measures*.

3.7 Permits and Approvals

Permits and approvals would be the same for the Tunnel-Only Alternative as for the proposed project, with the exception of the following: Approval of San Antonio Dam Spillway Modification by DWR and DSOD, pursuant to California Water Code Division 3 (Dams and Reservoirs), part 1, Chapter 5, Article 1. The Tunnel-Only Alternative does not include any modification to the San Antonio Dam Spillway; therefore, approval by the DWR and DSOD is not relevant to this alternative. Because the maximum WSE at San Antonio Reservoir would not increase compared with existing conditions, Tunnel-Only Alternative impacts on species habitat would be reduced relative to the proposed project. All other permits and approvals for the Tunnel-Only Alternative are anticipated to be the same as described in Section 2.7, *Permits and Approvals*.

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Chapter 4
Introduction to the Environmental Analysis

4.0.1 Overview

This chapter describes the environmental resources and potential environmental impacts of the proposed project and the Tunnel-Only Alternative at an equivalent level of detail. Each section includes an overview of the environmental resource topic; relevant local laws, regulations, and policies, including a summary of the consistency of the proposed project and Tunnel-Only Alternative with the laws, regulations, and policies; existing setting information; the methodology for evaluating impacts, including the criteria used in determining the significance levels of such impacts; mitigation measures, where necessary and feasible; and a summary of environmental impacts. A listing of the resource topics evaluated in this EIR is followed by additional information on the organization and information provided in each subsection and a discussion of the environmental topics that were eliminated from further analysis.

4.0.2 Environmental Resource Topics Evaluated in This EIR

Chapter 4 presents environmental resource topics as follows:

- **Section 4.1**, Hydrology and Water Quality
- **Section 4.2**, Geology, Soils, and Seismicity and Paleontological Resources
- **Section 4.3**, Biological Resources
- **Section 4.4**, Cultural Resources
- **Section 4.5**, Tribal Cultural Resources
- **Section 4.6**, Transportation
- **Section 4.7**, Hazards and Hazardous Materials
- **Section 4.8**, Noise
- **Section 4.9**, Air Quality
- **Section 4.10**, Greenhouse Gas Emissions
- **Section 4.11**, Agricultural Resources
- **Section 4.12**, Recreation
- **Section 4.13**, Aesthetics and Visual Resources
- **Section 4.14**, Utilities and Service Systems
- **Section 4.15**, Wildfire
- **Section 4.16**, Energy

Technical appendices attached to this EIR provide detailed, resource-specific background information, data, and other evidence supporting analysis for these resource topics.

4.0.3 Chapter 4 Organization and Content

This chapter divides each environmental resource topic section into the subsections described below.

4.0.3.1 Overview

The overview presents the issues considered in the analysis for the environmental resource topic, defines the study area, identifies scoping comments, defines terminology relevant to the resource topic, and describes data sources used in the preparation of the analysis. This section also identifies separate technical appendices that support the analysis, as applicable, and other related environmental resource sections where this topic is discussed.

4.0.3.2 Regulatory Setting

The regulatory setting identifies the legal and regulatory framework applicable to the proposed project and Tunnel-Only Alternative in the context of the specific environmental resource topic in which this section appears. Applicable federal and state laws are included, along with regional and local laws and plans. MCWRA would be required to comply with federal and state law. Therefore, the proposed project and Tunnel-Only Alternative are assumed to be fully compliant and consistent with applicable law. The CEQA Guidelines[1] require that an EIR discuss any inconsistencies between a project and applicable general plans, specific plans, and regional plans (CEQA Guidelines, (14 California Code of Regulations [CCR]) Section 15125[d]). Accordingly, this section provides a summary of potential inconsistencies or conflicts between the proposed project and Tunnel-Only Alternative in relation to applicable regional and local land use plans and other regulations. A detailed inventory and discussion of potential inconsistencies is provided in Appendix C, *Consistency with Local Laws, Regulations, and Policies*.

4.0.3.3 Environmental Setting

Under CEQA, the existing environmental setting normally serves as the baseline for determining the environmental effects of a project. In accordance with CEQA Guidelines Section 15125, for purposes of an EIR, the environmental setting is defined as the existing physical conditions in and around the project site at the time the NOP is published. To provide the most accurate estimate of possible impacts, a lead agency is permitted to define existing conditions by referencing historic conditions or the conditions expected when the project becomes operational, or both, as long such conditions are supported by substantial evidence. However, an existing-conditions baseline should not include hypothetical conditions, such as those that might be allowed but have never actually occurred under existing permits or plans, as the baseline. The NOP for this EIR was published in 2016; therefore, the environmental setting section and the CEQA baseline for environmental analyses in this EIR generally correspond with conditions that existed in and around the project site in 2016. However, some resource sections describe where updates to the environmental setting have been made that do not reflect 2016 conditions.

MCWRA conducts existing operation and maintenance activities for water supply and flood management purposes, as described in Chapter 1, *Introduction*, and Chapter 2, *Project Description*. As such, these ongoing activities are considered a part of the baseline conditions. The impact

[1] *CEQA Guidelines* refers to the California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387.

analysis in this EIR focuses on the increment of change in operations and maintenance that would result from constructing and operating the proposed project and the Tunnel-Only Alternative. For instance, vehicle operation by MCWRA staff members assigned to carry out existing maintenance and routine inspections of Nacimiento and San Antonio Reservoirs and the existing spillway at San Antonio Reservoir emits air quality pollutants under current conditions. Rather than evaluate all potential air quality pollutants emitted from staff vehicle use, this EIR evaluates the impacts of any changes in the existing operations (e.g., additional staff and vehicles) and air quality pollutant sources that would result from implementing the proposed project or the Tunnel-Only Alternative.

4.0.3.4 Impact Analysis

The impact analysis section describes the impacts that could result from construction and operation of both the proposed project and the Tunnel-Only Alternative.

Methods for Evaluating Impacts

This section describes the methods used to evaluate impacts for the resource topic, including a description of the potential mechanisms for direct and indirect impacts specific to the resource topic. Per Section 15358 of the CEQA Guidelines, direct impacts include those caused by a project that occur at the same time and place as the project. Indirect impacts include those caused by a project that are later in time or farther removed in distance but still reasonably foreseeable.

Criteria for Determining Significance

CEQA requires a lead agency to determine the significance of all environmental impacts (Pub. Res. Code Section 21082.2; 14 CCR [CEQA Guidelines] Section 150641). A threshold of significance for a given environmental impact defines the level of effect above which the lead agency will normally consider impacts to be significant and below which it will normally consider impacts to be less than significant (see CEQA Guidelines Section 15064.7[a]). Thresholds of significance, otherwise known as significance criteria, may be defined either as quantitative or qualitative standards, whichever is most applicable to each specific type of environmental impact. CEQA significance criteria are identified for each environmental resource topic in this EIR to establish whether implementation of the proposed project or Tunnel-Only Alternative would result in a significant environmental impact when evaluated against the baseline conditions as described in the environmental setting. The significance criteria employed in this EIR were generally drawn from Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.), except as noted in resource sections where modified criteria were used. Each significance criterion corresponds to numbered impact titles in the subsection for each environmental resource topic (e.g., Impact HWQ-1, *Impacts to Surface or Groundwater Quality*).

In general, impacts can be either significant (above threshold) or less than significant (below threshold). In some cases, a significant impact will be identified as significant and unavoidable if no feasible mitigation measure(s) is/are available to reduce the impact to a less-than-significant level. Separate significance conclusions are provided for the proposed project and the Tunnel-Only Alternative to inform the reader of the prospective impacts that could occur if one or the other were approved and constructed. This EIR uses the following terminology to establish impact significance:

- A finding of **no impact** is made when the analysis concludes that there would be no effect on the particular environmental resource or issue.
- An impact is considered **less than significant** if the analysis concludes that there would be no substantial adverse change in the environment and that no mitigation is needed.

- An impact is considered **significant** if the analysis concludes that there would be a substantial adverse effect on the environment. This finding requires the consideration of mitigation to avoid, reduce, or compensate for the effect.
- An impact is considered **less than significant with mitigation** if the analysis concludes that there would be no substantial adverse change in the environment with the inclusion of the mitigation measure(s) described.
- An impact is considered **significant and unavoidable** if the analysis concludes that there would be a substantial adverse effect on the environment and that no feasible mitigation measures are available to reduce the impact to a less-than-significant level.
- An impact is considered **beneficial** if the analysis concludes that there would be a positive change in the environment.

Because the term “significant” has a specific definition in evaluating impacts under CEQA, it is used only to describe the significance of impacts and is not used in other contexts within this document. In such instances, synonyms such as “substantial” are used when not discussing the significance of an environmental impact.

Avoidance and Minimization Measures

Chapter 2, *Project Description*, of this EIR includes AMMs that would be implemented as part of the design of the proposed project or Tunnel-Only Alternative, either during project construction and/or operation as appropriate. The determination in this EIR of whether an environmental impact would be significant is made in the context of these AMMs, and each impact discussion references the relevant AMMs in its analysis.

Impacts and Mitigation Measures

The impact analyses in this EIR focus on impacts on the environment from both construction and operations activities. Construction impacts consist of temporary effects that would result from construction activities, such as fugitive dust generated by the movement of earth as well as the permanent effects that would result from the construction of new infrastructure, such as the impacts from clearing trees and vegetation to construct the Tunnel Intake Structure on the bank of the Nacimiento Reservoir. Operation of the proposed project and Tunnel-Only Alternative would consist of periodic maintenance activities, such as worker visits to clear debris from the Tunnel Intake Structure, and ongoing operation of project facilities such as the operation of the Tunnel Intake Structure once installed as well as any changes to water releases from Nacimiento and San Antonio Dams. Operation impacts for the Tunnel-Only Alternative also include effects related to the periodic inundation of the area surrounding San Antonio Reservoir up to an increased maximum WSE of 787 feet, compared to the existing maximum WSE of 780 feet at that reservoir.

As noted above, AMMs are assumed to be part of the proposed project and Tunnel-Only Alternative and, therefore, are applied prior to the determination of impact significance. Separate significance conclusions are provided for construction and operation impacts, as well as for the proposed project and Tunnel-Only Alternative. Some impacts may be significant for the proposed project but not Tunnel-Only Alternative, or vice versa.

For impacts that are found to be significant, feasible mitigation measures are proposed, as available, to avoid, minimize, repair or restore, reduce over time, or compensate for significant impacts. The description of each mitigation measure identifies whether it applies to the proposed project, the

Tunnel-Only Alternative, or both. A discussion of potential secondary impacts, if any, resulting from the implementation of each mitigation measure follows the full text of each measure (CEQA Guidelines Section 15126.4[a][1][D]).

As the CEQA lead agency, MCWRA would be responsible for ensuring that mitigation measures identified in this EIR and adopted by MCWRA are fully implemented. Although MCWRA would be responsible for ensuring that all mitigation measures are implemented, some mitigation measures would be implemented by the contractor on behalf of MCWRA. Contract documents for the contractor for the proposed project would identify the obligations of the contractor, including adopted relevant mitigation measures. MCWRA would require that the contractor provide the agency with documentation verifying that it has adequately implemented its contractual obligations, including all applicable mitigation measures, as outlined in a project-specific Mitigation Monitoring and Reporting Program (MMRP). Thus, in the descriptions of the mitigation measures provided in the sections that follow, although MCWRA may be the only party referenced in implementing a mitigation measure (i.e., the measure states "MCWRA will"), this is intended to be inclusive of the contractor's role in implementing certain mitigation measures during construction or as part of design.

Impact Summary

This section includes a table that summarizes all construction and operations impacts and CEQA significance determinations for the proposed project and Tunnel-Only Alternative. The table lists each impact title, reports the level of significance of each impact prior to mitigation, indicates mitigation measures that have been developed to reduce significant impacts where appropriate, and identifies the level of significance after mitigation measures are implemented.

4.0.4 Environmental Resource Topics Eliminated from Further Analysis

The following environmental resource topics identified in the CEQA Guidelines Appendix G were eliminated from further analysis based on the nature and scope of the proposed activities: land use and planning, mineral resources, population and housing, and public services. This information is supported by the Initial Study that was published with the NOP in 2016, with refinements to some of the conclusions, as noted in the Land Use and Planning and the Population and Housing sections that follow. The NOP and Initial Study are included in Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments*. A summary and description of these resource topics are provided below.

4.0.4.1 Land Use and Planning

Under CEQA, a project could result in a significant impact related to land use and planning if it would (1) physically divide an established community, (2) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating and environmental effect, or (3) conflict with any applicable habitat conservation plan or natural community conservation plan.[2] The first criterion was dismissed from

[2] The CEQA Guidelines, Appendix G, utilized in the 2016 Initial Study evolved between the NOP and preparation of this EIR. The Land Use and Planning topic in Appendix G of the CEQA Guidelines used in the 2016 Initial Study included the criterion "conflict with any applicable habitat conservation plan or natural community conservation plan;" however, in the 2020 CEQA Guidelines, Appendix G, the criterion was modified and included with the Biological Resources topic.

further analysis because physical environmental effects would be confined to the reservoir areas, the Nacimiento River, Salinas River, and, at San Antonio Reservoir, lands immediately adjacent to the existing reservoir footprint. The Interlake Tunnel would also be underground and would therefore not divide an established community. For the second criterion, the Initial Study concluded that the proposed project would have the potential to conflict with land use policies or plans adopted for the purpose of avoiding or mitigating an environmental effect and noted that the EIR would include an assessment of such conflicts. The proposed project would be consistent with policies and goals from local planning documents for each environmental resource topic; these are detailed in Appendix C, *Consistency with Local Laws, Regulations, and Policies*. With respect to the third criterion, the Initial Study concluded the proposed project would not be located in an area covered by a habitat conservation plan or natural community conservation plan. Therefore, the proposed project and Tunnel-Only Alternative would have **no impact** related to land use and planning.

4.0.4.2 Mineral Resources

Under CEQA, a project could result in a significant impact related to mineral resources if it would (1) result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or (2) result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. No known mineral resource zones, mines or quarries are located within the project work areas around San Antonio Reservoir (County of Monterey 2010). According to Exhibit 4.5.1 of the Monterey County General Plan EIR, a few oil wells and non-metallic mineral mines are located within the vicinity of the southeastern end of San Antonio Reservoir (County of Monterey 2010). No mines or other known resources are located within the vicinity of Nacimiento Reservoir work areas (County of San Luis Obispo 2010). Implementation of the proposed project and Tunnel-Only Alternative elements and activities would not directly impact oil wells or non-metallic mines present in the project vicinity. Physical environmental effects of the proposed project and Tunnel-Only Alternative would be confined to the reservoir areas, the Nacimiento River, Salinas River, and, at San Antonio Reservoir, lands immediately adjacent to the existing reservoir footprint. The underground portion of the proposed project and Tunnel-Only Alternative would be located in areas that do not include known mineral resource deposits and therefore would not prevent future availability of mineral resources in the project vicinity. As a result, the project would have **no impact** on mineral resources.

4.0.4.3 Population and Housing

Under CEQA, a project could result in a significant impact related to population and housing if it would (1) induce substantial unplanned population growth in an area, either directly or indirectly, or (2) displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.[3] The Initial Study found that the proposed project would have potentially significant impacts with respect to both of these criteria. With respect to the first criterion, construction activities would temporarily employ staff at the project site. It is anticipated that regional labor could meet the construction workforce requirements; however, some staff

[3] The CEQA Guidelines, Appendix G, utilized in the 2016 Initial Study evolved between the NOP and preparation of this EIR. The Population and Housing topic in Appendix G of the CEQA Guidelines used in the 2016 Initial Study included three criteria; however, these were refined and distilled into two separate criteria in the 2020 CEQA Guidelines, Appendix G.

members might temporarily relocate from other areas, resulting in minor and short-term (approximately 2 years) increases in population. Existing MCWRA staff would conduct long-term operation and maintenance of the project facilities and therefore operations of the proposed project and Tunnel-Only Alternative would have no impact on population growth. In addition, the proposed project would not result in the construction of new homes and, with the exception of any new access roads leading to project facilities (e.g., intake structure at Nacimiento Reservoir) and relocating any existing roads around the perimeter of San Antonio Reservoir, the proposed project would not extend new roads into undeveloped areas. No new long-term employment opportunities or substantial population growth would occur in the project area due to construction of the proposed project and Tunnel-Only Alternative.

Once construction is complete, reservoir operations would result in increased water storage in the two reservoirs. Increased water storage could indirectly induce population growth in the surrounding areas under the first criterion; however, the water management benefits of the proposed project and Tunnel-Only Alternative, including improving the reliability of water supplies and reducing flood damage, would not increase the availability of allocated water for residential development. Therefore, the proposed project and Tunnel-Only Alternative have no impact on inducing population growth in the project vicinity, as it would not reallocate existing water resources for residential uses. Indirect effects of the proposed project and Tunnel-Only Alternative on population growth are discussed in detail in Chapter 5*, Other Statutory Considerations.*

With respect to the second criterion, the proposed project and Tunnel-Only Alternative would include construction of improvements to Nacimiento and San Antonio Reservoirs, with the objective of more effectively managing the water supply between these two facilities and reducing flood releases from Nacimiento Reservoir, along with associated downstream flood damage. Construction activities would not occur within or directly adjacent to any existing housing, and operation of either the proposed project or Tunnel-Only Alternative are anticipated to reduce the potential for flood-related damage downstream of the reservoirs. Operation of the proposed project would result in an increase in the maximum WSE at San Antonio Reservoir which in turn could result in the temporary inundation of certain local roadways during high water events, however the temporary inundation of those local roadways would not substantially interfere with movement to residences around San Antonio Reservoir because they are not the primary access routes to those residences and alternate access routes exist when those roadways would be inundated. Further information regarding temporary roadway inundation during operation of the proposed project is provided in Section 4.6, *Transportation*. Therefore, construction and operation of the proposed project and the Tunnel-Only Alternative would not have the potential to displace substantial numbers of people or housing. The proposed project and Tunnel-Only Alternative would have **no impact** related to population and housing.

4.0.4.4 Public Services

Under CEQA, a project could result in a significant impact related to public services if it would result in substantial adverse physical effects associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, in order to maintain acceptable service ratios, response times, or other performance objectives. The proposed project and Tunnel-Only Alternative do not involve a housing component or otherwise anticipate any substantial increase to the existing local population, therefore there would not be an increase in the service population that could require the construction or alteration of public services. It should be noted that portions of the recreational facilities may be inundated as a result of the San Antonio Dam Spillway Modification included as part of the proposed project. Impacts on parks and recreational resources that could occur due to a corresponding increase in the maximum WSE at San Antonio Reservoir are discussed in Section 4.12, *Recreation*.

Construction activities would include the addition of up to approximately 130 staff members on-site during any day or night shift throughout the peak construction period; construction activities overall would last for a period of approximately 2 years. MCWRA anticipates hiring construction staff members from within Monterey and/or San Luis Obispo Counties (i.e., driving distance from the project site). During construction, potential incidents could require law enforcement, fire protection, or emergency services; however, any increases in incidents would not be anticipated to be of a magnitude that would adversely affect response times or other performance objectives of such public services. Construction activities would require the addition of trucks and staff vehicles on local roadways; however, the relatively low volume of additional traffic would not obstruct emergency responders or result in delays that would prevent emergency personnel from responding to incidents in a timely manner. Refer to Section 4.6, *Transportation,* for discussion regarding the potential effects of the proposed project and Tunnel-Only Alternative on emergency access during the construction period. Operation and maintenance activities would be similar to other ongoing maintenance activities and include routine inspection of the Nacimiento intake facility, San Antonio Reservoir outlet facility, tunnel, and modified spillway at San Antonio Reservoir. As a result, the proposed project and Tunnel-Only Alternative would not result in substantial increases in the demand for police protection, fire protection, schools, or other public services that might necessitate the construction of new facilities or modifications to existing facilities. For these reasons, impacts on schools, fire and police protection services, and other public services would be **less than significant**.

Note that secondary effects on public services are discussed in the EIR's growth analysis, see Chapter 5, *Other Statutory Considerations*. Potential conflicts with emergency response plans and access for emergency responders are addressed in Section 4.6, *Transportation,* and Section 4.15, *Wildfire*; potential impacts on parks and recreational facilities as a result of raising the spillway at San Antonio Reservoir are discussed in Section 4.12, *Recreation*.

4.1 Hydrology and Water Quality

4.1.1 Overview

This section describes the environmental and regulatory setting and potential impacts from construction and operation of the proposed project and Tunnel-Only Alternative on surface water hydrology, water quality, geomorphology, and groundwater. Where significant impacts are identified, this section provides mitigation measures to avoid, minimize, and/or reduce these impacts.

4.1.1.1 Study Area

The surface and groundwater hydrology study area (study area) consists of Nacimiento and San Antonio Reservoirs and the vicinity of the following proposed project features: the Interlake Tunnel and associated subcomponents as well as all associated construction work areas, including staging areas, access roads, and the soil disposal area; the newly proposed San Antonio Reservoir inundation area that would result from project operations; and the Spillway Modification and associated subcomponents as well as all areas within the construction work limits, including the staging area. The study area also includes the Lockwood Valley Groundwater Basin underlying San Antonio Reservoir; the area surrounding the Nacimiento Reservoir is not within a recognized groundwater basin. **Figure 4.1-1** shows the entire study area, including key downstream hydrologic features, discussed below.

To assess potential indirect impacts on hydrologic resources downstream of the reservoirs, the study area also includes the downstream portions of the San Antonio and Nacimiento Rivers east of the reservoir dams; the Salinas River, starting from its confluence with the Nacimiento River and ending at the Salinas River Lagoon; the Salinas River Lagoon and any associated floodplains along the waterway; and the Salinas Valley Groundwater Basin, starting at the confluence of the Salinas River and Nacimiento River and ending at the basin boundary at the Pacific Ocean. The study area for this analysis includes the portion of the Salinas Valley Groundwater Basin that starts from the confluence of the Salinas River and Nacimiento River and ends at the basin boundary at the Pacific Ocean. The study area is primarily focused on MCWRA Benefit Zone 2C, which largely straddles the Salinas River within Monterey County (see **Figure 4.1-2**). Zone 2C consists of seven subareas: Above Dam, Below Dam, Upper Valley, Arroyo Seco, Forebay, East Side, and Pressure. The principal focus of the analysis is the four primary water-producing subareas: the Pressure, East Side, Forebay (including Arroyo Seco), and Upper Valley Subareas (MCRMA 2015). These four subareas include most of the land area and nearly all of the reported groundwater usage within Zone 2C. These downstream portions are included in the study area because the proposed project has a potential to affect the timing and quantity of water flowing through these river sections which could result in indirect impacts on surface and groundwater hydrology (flow rates and volumes) and water quality. The study area is divided by the county line separating southern Monterey and northern San Luis Obispo counties and is located within the Salinas River watershed.

Figure 4.1-1
Key Hydrologic Features in the Study Area

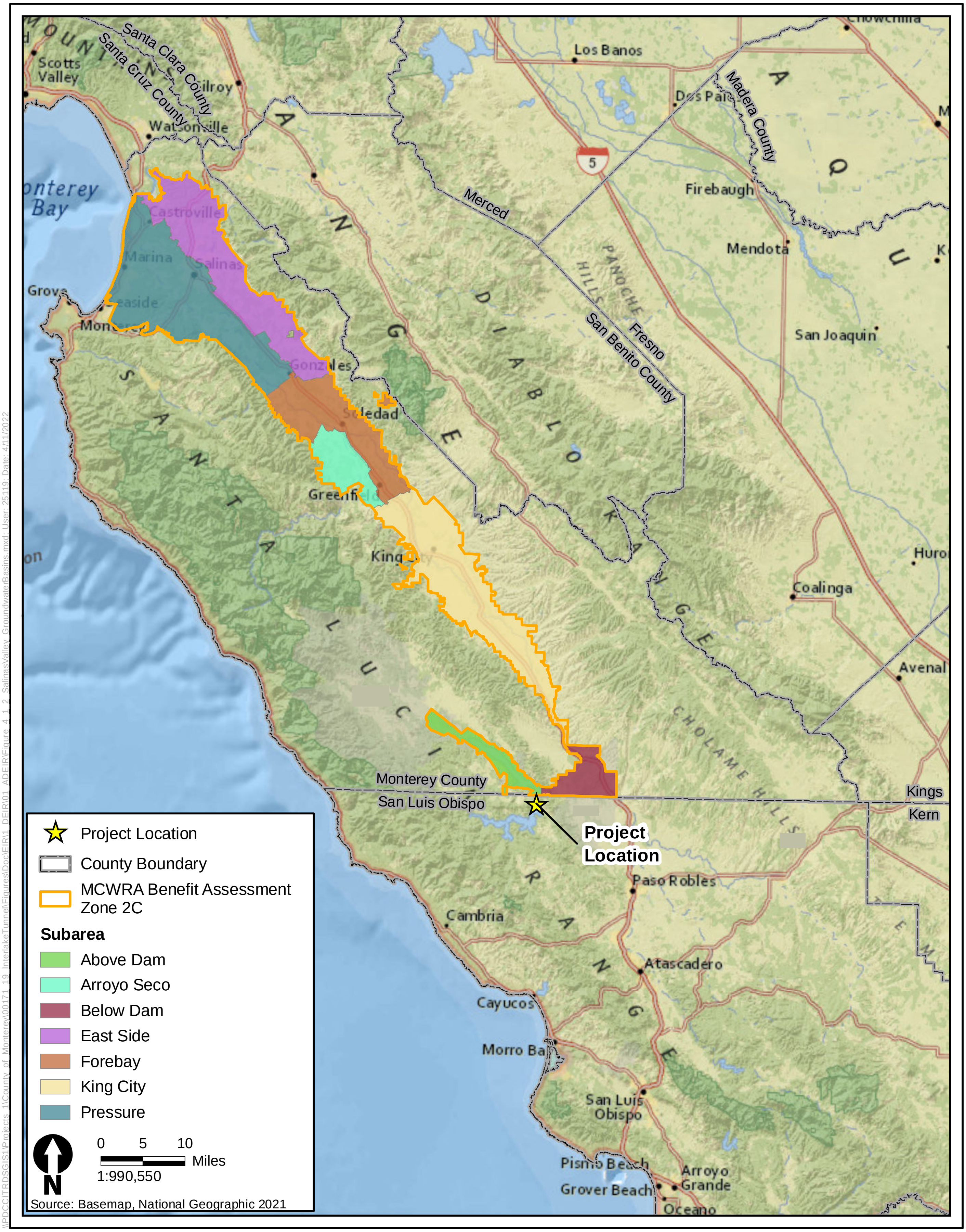


Figure 4.1-2
Salinas Valley Groundwater Basin

4.1.1.2 Scoping Comments

Table 4.1-1 summarizes the scoping comments received regarding surface water hydrology, groundwater hydrology, water quality and geomorphology impacts and identifies how and where these comments have been addressed. Refer to Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* for a complete list of public comments received during the public scoping period.

Table 4.1-1. Scoping Comments Related to Hydrology and Water Quality Impacts

Summary of Comment	Location Where Comment Is Addressed
Scoping Comments Related to Surface Water Hydrology Impacts	
Concerns regarding hydrologic impacts of transferring surface water from the Nacimiento Creek watershed to the San Antonio Creek watershed (Blois, Central Coast RWQCB, CDFW, Green, Norton, Otter Project, Potthoff, Virsik).	Impact HWQ-1, *Impacts on Surface or Groundwater Quality*; Impact HWQ-2, *Impacts on Groundwater Supplies and Recharge*
Concerns regarding release of water to the San Antonio Creek, Nacimiento Creek, and Salinas River watersheds (Beech, Blois, CDFW, Otter Project, Virsik).	Impact HWQ-1, *Impacts on Surface or Groundwater Quality*; Impact HWQ-2, *Impacts on Groundwater Supplies and Recharge*; Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity*
Analyze the full extent of flood protection the proposed project may offer (Bunn, Gularte, Monterey County Farm Bureau, Salinas Valley Water Coalition).	Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity*; Impact HWQ-4, *In a Flood Hazard Area, Risk Release of Pollutants Due to Project Inundation*
Analyze reoperation parameters and changes in spill occurrences, water transfer, and flow releases at the reservoirs throughout the year and during times of drought (Blois, CDFW, Monterey County Farm Bureau, SLO County Public Works, Otter Project, Potthoff, Salinas Valley Water Coalition, SWRCB).	The effects of the changed magnitudes and durations of floodflows in receiving rivers are discussed in Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity* See also Section 4.3, *Biological Resources*
Concern regarding the height of the tunnel inlet and associated flow rate (Blois, CAL-Shasta, CDFW, Freeman, Kauker, Pothoff, Pritchard, Tri-Counties Club).	Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity*
Scoping Comments Related to Groundwater Hydrology Impacts	
Concern that groundwater wells and aquifers in the vicinity of the proposed tunnel alignment will be disrupted by the project; if lost, will need to be replaced (Beswick, Blois, Heath, Kauker, Nielsen, Potthoff, SLO County Public Works).	Impact HWQ-2, *Impacts on Groundwater Supplies and Recharge*
How and when downstream groundwater recharge releases would occur and how will this effect reservoir water levels (SLO County Public Works).	Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity*

Summary of Comment	Location Where Comment Is Addressed
Whether and how groundwater recharge benefits would be delivered to the north end of the Salinas Valley where they are most needed (Bengard, Gularte, Virsik).	Impact HWQ-2, *Impacts on Groundwater Supplies and Recharge*
Need to consider new Monterey County groundwater assessment model for the Salinas River Groundwater Basin (Carrothers, Monterey County Farm Bureau).	The hydrologic modeling tools employed in this EIR are discussed in Section 2.5.1.1, *Operations*, and Impact HWQ-1, *Impacts on Surface or Groundwater Quality*[1]
Connection/applicability of the project to the Sustainable Groundwater Management Act (Carrothers, NMFS, Virsik).	Section 4.1.2.2, *State Laws, Regulations, and Policies*, and Impact HWQ-5: *Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan*
Scoping Comments Related to Water Quality and Geomorphology Impacts	
Consider potential releases of mercury-contaminated sediments and aquatic species downstream of the reservoirs and ultimately into the Salinas River.	Impact HWQ-1, *Impacts on Surface or Groundwater Quality*
Consider the impacts on dissolved oxygen and temperature within the reservoir due to the placement of the tunnel.	Impact HWQ-1, *Impacts on Surface or Groundwater Quality*
What is the potential for transfer of mercury from Nacimiento Reservoir into San Antonio Reservoir.	Impact HWQ-1, *Impacts on Surface or Groundwater Quality*
Will increased water temperature occur due to lower average water levels in Nacimiento Reservoir?	Impact HWQ-1, *Impacts on Surface or Groundwater Quality*
Consider lateral and downcutting scour in the creek channels downstream of the reservoirs from Project-related reservoir releases.	Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity*

[1] The Salinas Valley Integrated Hydrologic Model and Salinas Valley Operational Model are the most recent models available. There is no "Monterey County Groundwater Assessment Model."

4.1.2 Regulatory Setting

4.1.2.1 Federal Laws, Regulations, and Policies

Clean Water Act

The Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The CWA directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis. The U.S. Environmental Protection Agency (EPA) has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the NPDES program (discussed below), to the SWRCB and the RWQCBs. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and state water quality statutes and regulations. Key sections of the CWA include the following.

Section 303(d)

The CWA contains two strategies for managing water quality. One is a technology-based approach that includes requirements to maintain a minimum level of pollutant management using the best available technology (BAT). The other is a water quality-based approach that relies on evaluating the condition of surface waters and setting limitations on the amount of pollution that the waters can be exposed to without adversely affecting the beneficial uses of those waters. Section 303(d) of the CWA bridges these two strategies. Section 303(d) requires that the states make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list (and where the EPA Administrator deems they are appropriate), the states are to develop total maximum daily loads (TMDLs). TMDLs are established at the level necessary to implement the applicable water quality standards. The CWA does not expressly require the implementation of TMDLs. However, federal regulations require that an implementation plan be developed along with the TMDLs and Sections 303(d), and 303(e) and their implementing regulations require that approved TMDLs be incorporated into basin plans. EPA has established regulations (40 Code of Federal Regulations [CFR] 122) that require that NPDES permits be revised to be consistent with any approved TMDL.

Section 401

CWA Section 401 requires that an applicant pursuing a federal permit to conduct an activity that may result in a discharge of a pollutant obtain a Water Quality Certification (or waiver). A Water Quality Certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the United States. The CWA section 401 program follows a general approach of: (1) impact avoidance as a first priority, (2) minimization of impacts if avoidance is not possible, and (3) mitigation to compensate for unavoidable permanent impacts and ensure no net loss of water resources occurs. Water Quality Certifications are issued by one of the nine geographically separated Regional Water Quality Control Boards (RWQCBs) in California. Under the CWA, the RWQCB must issue or waive a Section 401 Water Quality Certification for a project to be permitted under CWA Section 404. The proposed project would require a Section 401 Water Quality Certification from the Central Coast RWQCB for its work within the Nacimiento and San Antonio Reservoirs (e.g., constructing the tunnel and raised spillway), which would involve discharges to these water bodies and require a Section 404 permit from the USACE.

Section 402

CWA Section 402 regulates stormwater discharges to surface waters through the NPDES, which is officially administered by the EPA, which has granted the State of California (SWRCB and RWQCBs) primacy in administering and enforcing the provisions of CWA and the NPDES program. NPDES is the primary federal program that regulates point-source and nonpoint-source discharges to waters of the United States. The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual (activity- or project-specific) permits.

General Permit for Construction Activities

Most construction projects that disturb one acre or more of land are required to obtain coverage under the NPDES General Permit for Construction Activities (Construction General Permit). The SWRCB has issued a statewide Construction General Permit (Order 2009-0009-DWQ NPDES No. CAR000002 as amended by 2010-0014-DWQ and 2012-0006-DWQ). Construction activities subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation, that result in soil disturbances of at least 1 acre of total land area. The Construction General Permit requires the applicant to file a notice of intent (NOI) to discharge stormwater and to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must include a site map and a description of the proposed construction activities; demonstrate compliance with relevant local ordinances and regulations; and present an overview of the BMPs that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminant nearby water resources. Permittees are further required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and are effective in controlling the discharge of construction-related pollutants.

Section 404

CWA Section 404 of the CWA regulates the placement of dredge or fill material into waters of the United States. Section 404 permits are administered by the USACE. The USACE issues permits under general categories of Nationwide Permits (NWPs) or issues individual permits on a case-by-case basis. USACE 404 permits generally require mitigation for loss of wetlands or aquatic resources.

Federal Energy Regulatory Commission Regulations

The Federal Energy Regulatory Commission (FERC) is an independent agency that regulates the interstate transmission of natural gas, oil, and electricity, as well as natural gas and hydropower projects. Because Nacimiento Dam has a hydropower component, FERC has jurisdiction over its operation and safety. FERC regulations pertaining to water power projects (18 CFR Part 12) include requirements for reporting of safety-related incidents, preparation and implementation of emergency action plans (EAPs), inspection of dams/hydropower facilities, installation of warning and safety devices, and testing of spillway gates. Many of these requirements are designed to limit the potential for events that may adversely affect life or property, including dam failure and associated flooding.

Under FERC regulations, hydropower facilities must be periodically inspected (every 5 years) and evaluated by or under the responsibility and direction of at least one independent consultant to identify any actual or potential deficiencies (e.g., seepage, deterioration, seismicity, slope stability, adequacy of spillways, etc.). FERC regulations also contain requirements for quality control, monitoring instrumentation, and warning systems. FERC regulations also provide that implementation of quality control programs may be required for any construction, repair, or modification work. Although the Nacimiento Hydroelectric Plant remains subject to the safety and inspection requirements described above, it was granted a metering exemption in 2017 due to a technical issue that prevents direct reading of the meter.

Federal Emergency Management Agency National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) is responsible for determining, based on USACE studies, flood elevations and floodplain boundaries. FEMA is tasked with preparing for, protecting against, responding to, recovering from and mitigating hazards and natural disasters, including flooding. Congress established the National Flood Insurance Program (NFIP) to provide access to federally backed flood insurance protection for property owners and to address the need to reduce the destructive consequences of flooding. FEMA administers the NFIP and works closely with State and local officials to identify flood hazard areas and flood risks. FEMA is also responsible for distributing the Flood Insurance Rate Maps (FIRMs), which are used in the NFIP. These maps identify the locations of special flood hazard areas, including the 100-year floodplain. FEMA allows non-residential development in the floodplain; however, construction activities are restricted within the flood hazard areas, depending on the potential for flooding within each area. Under the NFIP, if a community adopts and enforces a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, flood insurance will be made available within the community. Floodplain management ordinances are designed to prevent new development from increasing the flood threat and to protect new and existing buildings from anticipated flooding. The proposed project would not be directly subject to the NFIP; it is intended to minimize flood releases from Nacimiento Reservoir and reduce associated downstream flood damages.

Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River

The Salinas Valley Water Project (SVWP) was developed by MCWRA in coordination with various interested parties. It was intended to provide for the long-term management and protection of groundwater resources in the basin by meeting the following objectives: stopping seawater intrusion, providing adequate water supplies and flexibility to meet current and future (year 2030) needs, and provides surface water supply for a hydrologically balanced groundwater basin of the Salinas Valley (MCWRA 2022a). The SVWP included modifications to the Nacimiento Dam spillway, reoperation of Nacimiento and San Antonio Reservoirs, and installation of a diversion facility (Salinas River Diversion Facility [SRDF]) along the Salinas River (MCWRA 2022a). Construction of the Nacimiento Spillway Modification was completed in 2009 and SRDF began operation in April 2010. See additional discussion of the SVWP in Chapter 1, *Introduction*. Through consultation with the National Marine Fisheries Service (NMFS), MCWRA developed a flow prescription for steelhead trout in the Salinas River as part of the SVWP operational requirements (SVWP Flow Prescription). The SVWP Flow Prescription includes flow parameters for different steelhead life stages/behaviors, as shown in **Table 4.1-2**.

The SVWP Flow Prescription also includes requirements for monitoring, including the following three primary categories (MCWRA 2022b):

- Population Monitoring: Quantify the presence of the threatened steelhead trout in the lower Salinas River system.
- Migration Monitoring: Manage river flows to ensure adequate water for fish passage.
- Habitat Monitoring: Monitor water quality to determine habitat suitability.

Operation of the proposed project and Tunnel-Only Alternative would be subject to the SVWP Flow Prescription, such that releases from Nacimiento and San Antonio Reservoirs would need to continue to meet the flow prescription requirements.

Table 4.1-2. Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River – Criteria and Flow Requirements Summary

Flow Prescription	Time Period	Required Reservoir Storage Condition	Flow Triggers	Flow Requirement/Criteria
Adult Upstream Migration	February 1 to March 31	220,00 AF, or higher, combined storage in Nacimiento and San Antonio Reservoirs	• Mean daily flow of 340 cfs, or higher, at Arroyo Seco near Soledad, CA (USGS stream gage 11152000) AND • Mean daily flow of 173 cfs, or higher, at Arroyo Seco below Reliz Creek near Soledad, CA (USGS stream gage 11152050)	• 260 cfs, or higher, mean daily flow at Salinas River near Chualar for five or more consecutive days
Smolt Outmigration	March 15 through May 31, depending on year type[1]	150,000 AF, or higher, combined storage in Nacimiento and San Antonio Reservoirs	• Mean daily flow of 125 cfs, or higher, at Nacimiento River below Sapaque Creek near Bryson, CA (USGS stream gage 11148900) OR • Mean daily flow of 70 cfs or higher, at Arroyo Seco below Reliz Creek near Soledad, CA (USGS stream gage 11152050)	Block-Flow Criteria[2] • Mean daily flow of 700 cfs, or higher, for five consecutive days (Days 1 through 5) at Salinas River at Soledad, CA (USGS stream gage 11151700), THEN • Mean daily flow of 300 cfs, or higher, for Day 6 and beyond at Salinas River near Spreckels, CA (USGS stream gage 11152500)
Juvenile Passage to the Salinas River Lagoon[3]	April 1 through June 30	220,000 AF, or higher, combined storage in Nacimiento and San Antonio Reservoirs	• If an engineered block flow does not occur and the lagoon is open to the ocean	• 45 cfs flow to the lagoon for 10 days and 15 cfs to the lagoon thereafter through June 30
			• If an engineered block flow does occur	• 15 cfs to the lagoon for the period after the post-block flow of 45 cfs ceases (through June 30)
		Less than 220,000 AF combined storage in Nacimiento and San Antonio Reservoirs	N/A	• 2 cfs to the lagoon as long as SRDF irrigation diversions are occurring or conservation releases from Nacimiento and/or San Antonio Reservoirs are being made to the Salinas River
Salinas River Lagoon	Year-round	N/A	• If the lagoon is closed to the ocean	• Lagoon water surface elevation to be maintained at a maximum of 3 feet
			• If the lagoon is open to the ocean	• Lagoon water surface elevation may fluctuate from approximately 2 to 6 feet

Flow Prescription	Time Period	Required Reservoir Storage Condition	Flow Triggers	Flow Requirement/Criteria
Nacimiento River below Nacimiento Dam	June 1 until the following year's spawning flow criteria are met	Surface elevation of Nacimiento Reservoir remains above 687.8 feet, the reservoir's minimum pool	N/A	• 60 cfs minimum "rearing flow"[4]
San Antonio River below San Antonio Dam	Year-round	Surface elevation of San Antonio Reservoir is at or below 666 feet, the reservoir's minimum pool	N/A	• 3 cfs minimum release flow

Source: MCWRA 2005

AF = acre-feet; cfs = cubic feet per second; SRDF = Salinas River Diversion Facility; USGS = United States Geological Service

1 The SVWP Flow Prescription states that on March 15 of each year, when combined water storage in Nacimiento and San Antonio Reservoirs is 150,000 AF or more, MCWRA will categorize the year type, based on an indexing of unimpaired annual mean flows at Arroyo Seco near the Soledad USGS stream gage (11152000). If the year type is determined to be a "normal" category (dry-normal or wet-normal), then smolt outmigration triggers apply through May 31. If on March 15 the year type is determined to be a "dry" or "wet" category, then smolt outmigration triggers, as well as flow releases from the reservoirs to supply a block flow (see definition below), will not be in effect and thus no action will be taken by MCWRA to supply block flows. When the March 15 year-type determination results in a "dry" or "wet" category, the year type will be re-evaluated on April 1. If on April 1 the year type is determined to be a "normal" category (dry-normal, normal, wet-normal), then smolt outmigration trippers apply through May 31. If on April 1 the year type is determined to be a "dry" or "wet" category, then smolt outmigration triggers, as well as reservoir releases to supply a block flow, will not be in effect for the remainder of the year. In "normal" category year types, if triggers are met, reservoir releases to supply a block flow will occur only once.

2 A block flow is a minimum of 20 days. Block-flow days occur as follow:

- Day 1 is the first day that a mean daily flow of 700 cfs or higher occurs on the Salinas River at Soledad, after flow triggers occur between March 15 and May 31
- The following block-flow criteria must be met according to the following start dates: if Day 1 begins between March 15 and April 1, block-flow criteria must be met until April 20 (the total number of block-flow days in this scenario may range from 20 to 45); if Day 1 begins after April 1, block-flow criteria must be met for 20 days.

Block-Flow Day	Block-Flow Criteria
Day 1 through Day 5	700 cfs, or higher, mean daily flow on the Salinas River at Soledad
Day 6 through April 20	300 cfs, or higher, mean daily flow on the Salinas River near Spreckels

3 The smolt outmigration passage period overlaps the juvenile passage period from April 1 through as late as June 20. When the flow in the mainstem of the Salinas River is enough for steelhead smolt to pass downstream to the ocean, flow conditions are also adequate for juvenile steelhead passage to the lagoon. Therefore, smolt outmigration flow triggers and criteria, when they occur, will govern the flow for juvenile downstream passage.

4 The SVWP Flow Prescription states that an adequate rearing flow for the Nacimiento River below Nacimiento Dam has not been determined. Therefore, MCWRA will conduct a Steelhead Rearing Habitat Flow Study for this reach of the river. The document states that the 60 cfs minimum "rearing flow" will be in effect until such study is completed and a minimum rearing habitat flow is identified and concurred with by the NMFS biology staff.

Division of Safety of Dams Requirements

The Division of Safety of Dams (DSOD) is a division of the California Department of Water Resources created following the catastrophic failure of the St. Francis Dam in Southern California in 1928. DSOD engineers and engineering geologists review and approve plans and specifications for the design of dams and oversee their construction to ensure compliance with the approved plans and specifications, and also inspect dams to ensure adequate performance and maintenance.

DSOD requires that outlets at major dams have the capacity to draw down the reservoir during an emergency. For reservoirs that impound over 5,000 acre-feet (AF) of water, the outlet system should be capable of lowering the maximum storage depth by 10 percent within 7 or 10 days and draining its full contents within 90 or 120 days, respectively (DWR 2022). Both Nacimiento and San Antonio Dams are under DSOD jurisdiction; however, Nacimiento Dam has a waiver because it does not meet the DSOD drawdown requirement. The proposed spillway modifications are required to achieve compliance with DSOD requirements for reservoir drawdown capability. They will be constructed to comply with DSOD standards.

4.1.2.2 State Laws, Regulations, and Policies

Porter–Cologne Water Quality Act

The 1969 Porter–Cologne Water Quality Control Act (Porter–Cologne Act) is established and implemented by the SWRCB and the nine RWQCBs. Under the Porter-Cologne act, "waters of the State" are defined more broadly than "waters of the United States" under the CWA; they are defined as any surface water or groundwater, including saline waters, within the boundaries of the state. This includes waters in both natural and artificial channels. The Porter-Cologne Act requires projects that are discharging, or proposing to discharge, wastes that could affect the quality of the state's water to file a waste discharge report with the appropriate Regional Water Board.

The Porter–Cologne Act requires that the RWQCBs develop and adopt water quality control plans for the protection of water quality and update every 3 years. These water quality control plans specify region-wide and water body–specific beneficial uses and set narrative and numerical water quality objectives for several substances and parameters in numerous surface waters and groundwater basins in its region. Beneficial uses represent the services and qualities of a water body (i.e., the reasons that the water body is considered valuable). Water quality objectives reflect the standards necessary to protect and support those beneficial uses. Water quality control plan standards are implemented primarily by regulating waste discharges so that water quality objectives are met.

Central Coast Basin Plan

The Central Coast RWQCB oversees the central coast region of the state, including the area of the proposed project. The Water Quality Control Plan for the Central Coastal Basin (Basin Plan) (Central Coast RWQCB 2019) identifies beneficial uses for surface and groundwaters within the region and specifies water quality standards necessary to protect and support those beneficial uses.

Statewide Mercury Provisions

The SWRCB adopted Resolution 2017-0027, which approved "Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions." Resolution 2017-0027 provides a consistent regulatory approach throughout the state by setting mercury limits to protect the beneficial uses associated with the consumption of fish by both people and wildlife. In addition, the SWRCB established three new beneficial use definitions for use by SWRCB and RWQCBs in designating Tribal Traditional Culture (CUL), Tribal Subsistence Fishing (T-SUB), and Subsistence Fishing (SUB) beneficial uses to inland surface waters, enclosed bays, or estuaries in the state. The SWRCB approved one new narrative and four new numeric mercury objectives to apply to those inland surface waters, enclosed bays, and estuaries of the state that have any of the following beneficial use definitions: Commercial and Sport Fishing (COMM), CUL, T-SUB, Wildlife Habitat (WILD), Marine Habitat (MAR), Rare, Threatened, or Endangered Species (RARE), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), Estuarine Habitat (EST), or Inland Saline Habitat (SAL), with the exception of water bodies or water body segments with site-specific mercury objectives. These provisions will be implemented through NPDES permits, water quality certifications, WDRs and waivers of WDRs.

Inland Surface Waters, Enclosed Bays, and Estuaries Plan Trash Amendment

On April 7, 2015, the SWRCB adopted an amendment to the Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Final Resolution No. 2015-0019). Referred to as the “Trash Amendment,” this amendment prohibits the presence of trash in inland surface waters, enclosed bays, estuaries, and along shorelines in amounts that adversely affect beneficial uses or cause nuisance. Compliance with this prohibition is achieved through compliance with NPDES permit limitations, WDRs, and waivers. Discharges that are not subject to these regulatory requirements are also required to comply.

The Trash Amendment also requires that trash is eliminated from all stormwater and non-stormwater discharges from construction activities regulated under the Construction General Stormwater Permit. If this is not economically feasible, dischargers must meet alternative requirements. Existing NPDES permits must be modified or reissued to include the requirements of the Trash Amendment within 18 months of adoption of the amendment. Permittees must submit an implementation plan within 3 months of adoption of the implementing permit.

Municipal Separate Storm Sewer System (MS4) permittees must achieve full compliance with the requirements of the Trash Amendment within 10 years of the effective date of the first implementing permit and must achieve interim milestones during the first 10 years to show progress toward achieving full implementation.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act of 2014 is a comprehensive three-bill package that Governor Jerry Brown signed into State law in September 2014. SGMA provides a framework for sustainable management of groundwater supplies by local authorities, with provisions for State intervention if necessary to protect the resource. SGMA is intended to ensure a reliable groundwater water supply for California for years to come. SGMA authorizes the formation of local Groundwater Sustainability Agencies (GSAs), which are required to adopt groundwater sustainability plans (GSPs) to manage the sustainability of groundwater basins. GSAs for all high- and medium-priority basins, as identified by the California Department of Water Resources (DWR), must adopt a GSP, or submit an alternative to a GSP. SGMA requires GSAs in high- and medium-priority basins to manage such basins in a manner that achieves the goal of sustainability within prescribed time limits. GSPs for critically overdrafted high- and medium-priority basins were due to DWR by January 31, 2020.[1] GSPs for other high- and medium-priority basins were due to DWR by January 31, 2022.

The Interlake Tunnel and Spillway Modification Project overlies a portion of the Lockwood Valley Groundwater Basin, which is designated as a low-priority basin and is not subject to SGMA. Nacimiento and San Antonio Reservoirs release water to the Salinas River which flows through and recharges the Salinas Valley Groundwater Basin. DWR divides the Salinas Valley Groundwater Basin into eight sub-basins. Groundwater in the Salinas Valley Groundwater Basin within Monterey County is managed under the Salinas Valley Basin GSA, the Arroyo Seco GSA, Marina Coast GSA, Marina Coast Water District GSA, and County of Monterey GSA. Established in 2017, the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) drafted subbasin GSPs in accordance with SGMA's requirements. GSP information and SGMA priority designations for all subbasins within the Salinas Valley Groundwater Basin are summarized in **Table 4.1-3**. The SVBGSA is the lead agency for a GSP covering the majority of the 180-/400-Foot Aquifer Subbasin, pursuant to an agreement with the Marina Coast Water District (MCWD) GSA, which is the exclusive GSA within its jurisdictional boundaries. The County of Monterey GSA also adopted the GSP prepared by SVBGSA for a portion of the 180-/400-foot Aquifer Subbasin and was determined by DWR to be the Exclusive GSA for this area. A coordination agreement between the SVBGSA and the Arroyo Seco GSA covers the Forebay Subbasin. The County of San Luis Obispo GSA – Paso Robles Area is responsible for managing groundwater in the portions of the Paso Robles Area Subbasin.

Table 4.1-3. Basins and SGMA Basin Prioritization – Salinas Valley Groundwater Basin

Subbasin Name	Basin Priority	GSP Status
180-/400-Foot Aquifer[1]	High	GSP adopted January 9, 2020;[2] approved June 3, 2021
East Side Aquifer	High	GSP completed January 2022[3]
Forebay Aquifer	Medium	GSP completed January 2022[4]
Upper Valley Aquifer	Medium	GSP completed January 2022[5]
Paso Robles Area[1]	High	GSP adopted November 20, 2019[6]
Seaside Area	Very low	Not subject to SGMA
Langley Area	High	GSP completed January 2022[7]
Monterey/Corral de Tierra Area	Medium	GSP completed September 2021[8]

Source: California DWR 2021
[1] Critically overdrafted groundwater basin
[2] SVBGSA 2022a
[3] SVBGSA 2022b
[4] SVBGSA 2022c
[5] SVBGSA 2022d
[6] San Luis Obispo County n.d.
[7] SVBGSA 2022e
[8] MCWDGSA and SVBGSA 2021

[1] The current status of GSA activities in the affected portion of the Salinas Basin is viewable at the following link: https://svbgsa.org.

The County of San Luis Obispo serves as the GSA for a portion of the Salinas Valley Groundwater Basin that is located within the County of San Luis Obispo and outside the jurisdictional boundaries of other local agencies. The Paso Robles Area Subbasin has been designated critically overdrafted by DWR; the Paso Robles Area Subbasin GSP was adopted on November 20, 2019 and submitted to DWR prior to the January 31, 2020 deadline.

Figure 4.1-3 shows the groundwater basins within the study area.

CASGEM Basin Prioritization

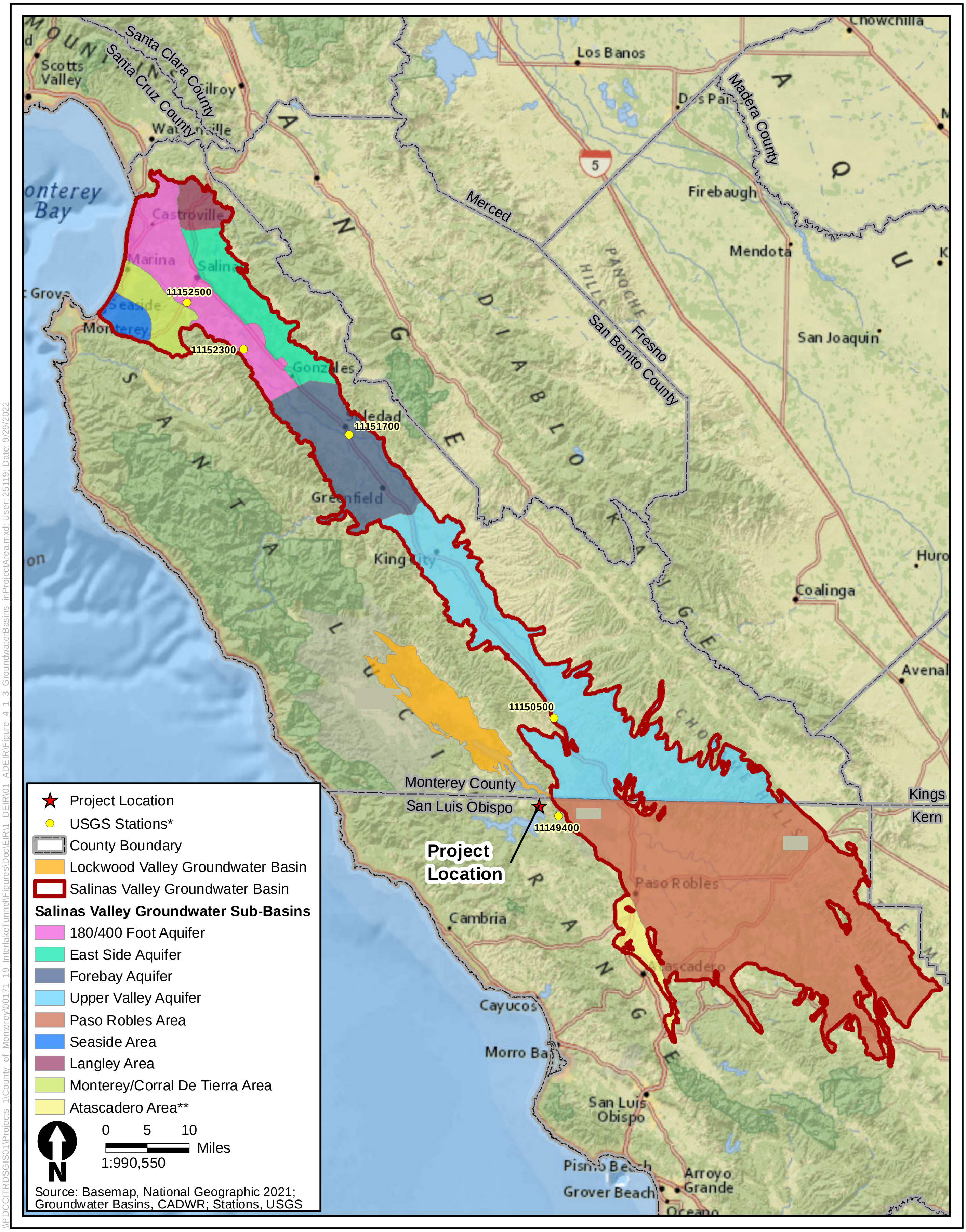
In 2009, the State Legislature amended the Water Code with SBx7-6, which mandates a statewide groundwater elevation monitoring program to track seasonal and long-term trends in groundwater elevations in California. Pursuant to this amendment, DWR established the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. The CASGEM program, which preceded SGMA, establishes the framework for regular, systematic, and locally managed monitoring in all of California's groundwater basins. To facilitate implementation of the CASGEM program and focus limited resources, as required by the California Water Code, DWR ranked all of California's basins by priority: High, Medium, Low, and Very Low. DWR's basin prioritization rankings for sub-basins within the Salinas Valley Groundwater Basin are shown in **Table 4.1-3**. MCWRA's approved CASGEM Monitoring Plan includes use of a monitoring network comprising 48 wells located throughout the Salinas Valley Groundwater Basin.[2] MCWRA is the designated Monitoring Entity under the CASGEM program for seven high- and medium-priority groundwater basins in Monterey County, including those listed in **Table 4.1-3** (all but the Paso Robles Area Subbasin are in Monterey County).

4.1.2.3 Local Laws, Regulations, and Policies

NPDES General Municipal Stormwater Permit

CWA Section 402 mandates permits for municipal stormwater discharges, which are regulated under the NPDES General Permit for Municipal Separate Storm Sewer Systems (MS4s). Phase I MS4 regulations cover municipalities with more than 100,000 residents, certain industrial processes, or construction activities that disturb an area of 5 acres or more. Phase II "small" MS4 regulations require stormwater management plans to be developed by municipalities with fewer than 100,000 residents and construction activities that disturb 1 or more acres of land. The SWRCB adopted a Statewide Phase II Small MS4 General Permit in 2013 to efficiently regulate discharges from numerous qualifying small MS4s under a single permit. Small MS4s were categorized as either "traditional" or "nontraditional." Traditional MS4s operate throughout a community. Nontraditional MS4s are similar to traditional MS4s but operate at a separate campus facility. Most nontraditional MS4s in California are not designated as having to comply with the Statewide Phase II Small MS4 General Permit, although the SWRCB reserved the right to allow the RWQCBs to designate through due process any single nontraditional MS4 if it deemed necessary.

[2] Additional information regarding MCWRA's CASGEM monitoring program is available online at https://www.co.monterey.ca.us/government/government-links/water-resources-agency/programs/california-statewide-groundwater-elevation-monitoring-casgem.



*USGS Stations: 11150500 - Bradley, 11152300 - Chualar, 11152500 - Spreckels, 11149400 - Nacimiento River, 11151700 - Soledad
** The Atascadero Area sub-basin is within the larger Salinas Valley Groundwater basin but due to its upstream location is not affected by the project.

Figure 4.1-3
Groundwater Basins in the Study Area

MS4 permits require cities and counties to develop and implement programs and measures, including management practices, control techniques, system design and engineering methods, and other measures, as appropriate, to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible. As part of permit compliance, permit holders have created Storm Water Management Plans (SWMPs) for their respective locations. These plans outline the requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. The requirements may include multiple measures to control pollutants in stormwater discharges. During implementation of specific projects under the program, project applicants are required to follow the guidance contained in the SWMPs, as defined by the permit holder in that location.

The SWRCB is advancing low-impact development (LID) in California as a means of complying with municipal stormwater permits. LID incorporates site design, including, among other things, the use of vegetated swales and retention basins and minimizing impermeable surfaces, to manage stormwater and maintain a site's predevelopment runoff rates and volumes.

SWRCB Phase II MS4 General Permit. Both Monterey and San Luis Obispo Counties are considered traditional small MS4 permittees under the SWRCB's waste discharge requirements (WDRs) for stormwater discharges from small MS4s (NPDES Order No. 2013-001-DWQ; General Permit No. CAS000004). Traditional small MS4 permittees are required to comply with Section E of the Statewide Phase II MS4 Permit, which specifies requirements for site design measures, LID design standards, a post-construction stormwater management program, and operation and maintenance (O&M) of post-construction stormwater management measures as part of a Post-Construction Stormwater Management Program (Provision E.12). The Statewide Phase II MS4 Permit specifies criteria for site design measures and stormwater treatment measures. Compliance with stormwater quality regulations would be addressed during the planning and construction phases. MCWRA would ensure that all new projects are reviewed with respect to the applicability of construction and post-construction stormwater controls. The County of Monterey is a participating member of the Monterey Regional Storm Water Management Program (MRSWMP). Participating members collaborate on projects and other Permit-related activities to satisfy a number of their individual Phase II Small MS4 General Permit requirements.

LID design standards are required to be implemented for all development (or redevelopment) projects that create and/or replace 5,000 square feet (sf) or more of impervious surface. Redevelopment is any land-disturbing activity that results in the creation, addition, or replacement of an exterior impervious surface area on a site where some past development has occurred. If a redevelopment project increases the impervious surface of an existing development by more than 50 percent, runoff from the entire project, including all existing, new, and/or replaced impervious surfaces, must be included to the extent feasible. If a redevelopment project increases the impervious surface of an existing development by less than 50 percent, only runoff from the new and/or replaced impervious surface of the project must be included.

Waste Discharge Requirements for Dewatering and Other Low-threat Discharges to Surface Waters

CWA Section 402 includes WDRs for dewatering activities. Small amounts of construction-related dewatering are covered under the Construction General Permit. The SWRCB also issued the Statewide General Waste Discharge Requirements (WDRs) for Discharges to Land with a Low Threat to Water Quality (General WDRs; Order NO. 2003-0003-DWQ) which prohibits the discharge of any waste to surface waters. Although a discharge may be eligible for coverage under the General WDRs, if the RWQCB has established WDRs or a conditional waiver, General WDRs are not applicable.

The Central Coast RWQCB has regulations specific to dewatering activities that typically involve reporting and monitoring requirements. All low-threat discharges that contain minimal amounts of pollutants and pose little or no threat to water quality and the environment throughout the Central Coast Region are required to comply with Central Coast RWQCB requirements. The Central Coast RWQCB issued Waste Discharge Requirements NPDES General Permit for Discharges with Low Threat to Water Quality (Order No. R3-2017-0042, NPDES NO. CAG993001), which covers certain categories of dewatering which are either 6 months or less in duration or have a daily average discharge flow that does not exceed 0.3 million gallon per day. The Central Coast RWQCB also issued a General Waiver for Specific Types of Discharge (R3-2019-0089). Discharges covered under the order include sediment removal from Waters of the State and treated groundwater.

Several categories covered by the Statewide General Order are nearly identical to those covered by Order R3-2019-0089. For those categories that are also covered by the Statewide General Order, the waiver only applies to those discharges that represent the very lowest threat to water quality. As a result, categories for discharges of drilling muds, well pumping test water, and swimming pool discharges, are restricted to those instances which represent the lowest threat to water quality. Coordination with the Central Coast RWQCB will be required prior to obtaining the appropriate dewatering permit, with consideration of the project schedule.

Monterey County

Monterey County General Plan

The Monterey County General Plan (2010) guides land use and development in the county's unincorporated areas, and contains goals and policies directing growth, for land use development decisions, and protecting natural resources. The following goals and policies in the Conservation and Open Space Element and Safety Element related to hydrology, water quality, and flooding that may apply to the proposed project:

- **Goal OS-3**: Prevent soil erosion to conserve soils and enhance water quality.
    - **Policy OS-3.1:** Best Management Practices (BMPs) to prevent and repair erosion damage shall be established and enforced.
    - **Policy OS-3.3:** Criteria for studies to evaluate and address, through appropriate designs and BMPs, geologic and hydrologic constraints and hazards conditions, such as slope and soil instability, moderate and high erosion hazards, and drainage, water quality, and stream stability problems created by increased stormwater runoff, shall be established for new development and changes in land use designations.
    - **Policy OS-3.5:** The County shall regulate activity on slopes to reduce impacts on water quality and biological resources.
    - **Policy OS-3.7:** Voluntary preparation and implementation of a coordinated resource management plan shall be encouraged in watersheds of State-designated impaired waterways.

- ○ **Policy OS-3.8:** The County shall cooperate with appropriate regional, State, and federal agencies to provide public education/outreach and technical assistance programs on erosion and sediment control, efficient water use, water conservation and re-use, and groundwater management. This cooperative effort shall be centered through the Monterey County Water Resources Agency.

- **Goal OS-4**: Protect and conserve the quality of coastal, marine, and river environments, as applied in areas not in the coastal zone.
    - ○ **Policy OS-4.2**: Direct and indirect discharges of harmful substances into marine waters, rivers or streams shall not exceed State or federal standards.
    - ○ **Policy OS-4.3:** Estuaries, salt and freshwater marshes, tide pools, wetlands, sloughs, river and stream mouth areas, plus all waterways that drain and have impact on State-designated Areas of Special Biological Significance (ASBS) shall be protected, maintained, and preserved in accordance with State and federal water quality regulations.
- **Goal OS-5**: Conserve listed species, critical habitat, habitat and species protected in area plans; avoid, minimize and mitigate significant impacts on biological resources.
    - ○ **Policy OS-5.22:** In order to preserve riparian habitat, conserve the value of streams and rivers as wildlife corridors and reduce sediment and other water quality impacts of new development, the County shall develop and adopt a Stream Setback Ordinance.
- **Goal** S-**2:** Reduce the amount of new development in floodplains and, for any development that does occur, minimize the risk from flooding and erosion.
    - ○ **Policy S-2.1:** Land Use planning to avoid incompatible structural development in flood prone areas shall be the primary means of minimizing risk from flood hazards.
    - ○ **Policy S-2.2:** Uses such as agriculture, passive to low intensity recreation, and open space/conservation are the most acceptable land uses in the 100-year floodplain to lessen the potential for loss of life, injury, property damage, and economic and social dislocations to the maximum extent feasible.
    - ○ **Policy S-2.3:** All new development, including filling, grading, and construction, within designated 100-year floodplain areas shall conform to the guidelines of FEMA and the National Flood Insurance Program and ordinances established by the County Board of Supervisors. With the exception of the construction of structures, Routine and Ongoing Agricultural Activities shall be exempt from this policy.
    - ○ **Policy S-2.4:** Monterey County shall strive to improve its National Flood Insurance Program Community Rating System classification.
    - ○ **Policy S-2.6:** Drainage and flood control improvements needed to mitigate flood hazard impacts associated with potential development in the 100-year floodplain shall be determined prior to approval of new development and shall be constructed concurrently with the development.
    - ○ **Policy S-2.8:** Alternative project designs and densities to minimize development in the floodplain shall be considered and evaluated.
    - ○ **Policy S-2.9:** New insurable buildings on existing lots of record shall be located outside the flood plain where possible.

- **Policy S-2.11:** All insurable buildings rebuilt or remodeled within a FEMA designated 100-year floodplain shall be elevated consistent with the guidelines of the National Flood Insurance Program if the cumulative work over a 10-year period exceeds 50 percent of the appraised value of the structure. Relocation to locations outside of the 100-year floodplain shall be encouraged.

- **Goal S-3:** Ensure effective storm drainage and flood control to protect life, property, and the environment.
  - **Policy S-3:** Post-development off-site peak flow drainage from the area being developed shall not be greater than pre-development peak flow drainage. On-site improvements or other methods for storm water detention shall be required to maintain post-development, off-site, peak flows at no greater than predevelopment levels, where appropriate, as determined by the Monterey County Water Resources Agency.
  - **Policy S-3.2**: Best Management Practices to protect groundwater and surface water quality shall be incorporated into all development.
  - **Policy S-3.3**: Drainage facilities to mitigate the post-development peak flow impact of new development shall be installed concurrent with new development.
  - **Policy S-3.4**: A County Flood Management Program that helps reduce flood risks shall be established consistent with FEMA requirements at a minimum. The program shall consider both structural and non-structural solutions to address flooding.
  - **Policy S-3.5**: Runoff Performance Standards that result in an array of site planning and design techniques to reduce storm flows plus capture and recharge runoff shall be developed and implemented, where appropriate, as determined by the Monterey County Water Resources Agency.
  - **Policy S-3.6**: An inventory of areas where there is a high probability of accelerated erosion, sedimentation, and/or chemical pollution shall be maintained as part of the County's GIS mapping database.
  - **Policy S-3.9**: In order to minimize urban runoff affecting water quality, the County shall require all future development within urban and suburban areas to implement Best Management Practices (BMPs) as approved in the Monterey Regional Storm Water Management Program which are designed to incorporate Low Impact Development techniques. BMPs may include, but are not limited to, grassy swales, rain gardens, bioretention cells, and tree box filters. BMPs should preserve as much native vegetation as feasible possible on the project site.

Monterey County Groundwater Management Plan

In 2006, MCWRA published its Groundwater Management Plan (GWMP) for Monterey County, prepared in accordance with the Groundwater Management Act (California Water Code Part 2.7, Section 10753; AB 3030, as amended by SB 1938). The purpose of the GWMP is to provide a comprehensive overview of the Salinas Valley Groundwater Basin and to recommend various management strategies for the basin. The GWMP identifies a number of plan elements or implementing activities, such as monitoring of groundwater levels, quality, production, and subsidence; and development of basin yield and avoidance of overdraft (MCWRA 2006). The objectives and plan elements in the GWMP align closely with GSP requirements identified in SGMA.

Whereas SGMA identifies "undesirable results" as including significant and unreasonable reductions in groundwater levels, and significant and unreasonable seawater intrusion and/or degraded water quality, the GWMP seeks to determine sustainable yield and avoid overdraft and preserve groundwater quality for beneficial use.

Monterey County Ordinances

Chapter 16.08 – Grading

The purpose of Monterey County Code Chapter 16.08 is to safeguard health, safety, and the public welfare; to minimize erosion, protect fish and wildlife; and to protect the natural environment of Monterey County. This chapter sets forth rules and regulations to control all grading, including excavations, earthwork, road construction, and fills and embankments. It establishes the administrative procedure for issuance of permits, and it provides for approval of plans and inspections of grading construction.

Chapter 16.12 - Erosion Control

The purpose of Monterey County Code Chapter 16.12 is to eliminate and prevent conditions of accelerated erosion that have led to, or could lead to, degradation of water quality, damage to property, loss of topsoil or vegetation cover, disruption of water supply, and increased danger from flooding. This chapter requires control of all existing and potential conditions of accelerated (human-induced) erosion. It sets forth the required provisions for project planning, preparation of erosion control plans, runoff control, land clearing, and winter operations.

Chapter 16.14 - Urban Stormwater Quality Management and Discharge

The purpose of Monterey County Code Chapter 16.14 is to enhance watercourses within the unincorporated Urbanized Areas by, among other methods, controlling the entry of urban pollutants into stormwater runoff that may enter the county storm drain system. Other goals include protecting water quality in the waters within its jurisdiction, reducing the presence of pollutants in stormwater to the maximum extent practicable, and effectively prohibiting non-stormwater discharges into the county storm drain system.

Chapter 16.16 - Regulations for Floodplains in Monterey County

The purpose of Monterey County Code Chapter 16.16 is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions. The Chapter includes methods and regulations to reduce flood losses, requires that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction and control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters.

Monterey County Water Resources Agency Ordinance No. 3709

In 1995, MCWRA passed Ordinance No. 3709 prohibiting groundwater extractions and the drilling of new groundwater extraction facilities in certain portions of the 180-Foot Aquifer. The ordinance was intended to reduce the rate of seawater intrusion and allow recharge to raise groundwater levels. The proposed project would not be subject to this ordinance, but the ordinance is described here to demonstrate the types of efforts MCWRA is currently engaged in to address seawater intrusion.

San Luis Obispo County

San Luis Obispo County Stormwater Management Requirements

There are two Post-Construction Stormwater standards in effect in San Luis Obispo County. Within the Phase II Municipal Permit Area/MS4 coverage area (the county's stormwater management area) the County of San Luis Obispo applies the Central Coast Post-Construction Requirements. Projects located outside the Stormwater Management Area (in unincorporated areas of the county) that disturb more than 1.0 acre must meet the Post-Construction Standards in the California Construction General Permit. The County of San Luis Obispo has also prepared the Post-Construction Requirements Handbook, which provides strategies for post-construction stormwater management and LID design measures for compliance with stormwater requirements applicable in the county.

Permit applicants must submit either a Stormwater Requirements Waiver Request Form or a Stormwater Control Plan Application. Projects that do not receive a waiver must incorporate site design and runoff reduction measures during the projects planning stage. Public Works staff will review the stormwater control plan.

The County of San Luis Obispo LID Handbook and the LID Plant Guidance for Bioretention provides guidance on designing stormwater management controls and appropriate methods in LID areas. An Operations and Maintenance Plan is required for any structural control measures that are installed to mitigate post-construction stormwater runoff.

San Luis Obispo County General Plan

The San Luis Obispo County General Plan (2010) guides land use and development in San Luis Obispo County's unincorporated areas, and contains goals and policies directing growth, to guide development decisions, and protecting natural resources. The following goals and policies in the Conservation and Open Space Element and Safety Element related to hydrology, water quality, and flooding that may apply to the proposed project:

- **Biological Resources Goal 4**: The natural structure and function of streams and riparian habitat will be protected and restored.
  - **Policy BR 4.1:** Protect streams and riparian vegetation to preserve water quality and flood control functions and associated fish and wildlife habitat.
  - **Policy BR 4.3**: Alluvial Well Extractions. Require discretionary projects that depend on alluvial well extractions and stream diversion to monitor the long-term effects on surface streamflow and riparian vegetation. Identify and implement contingencies for maintaining streamflow (e.g., minimum bypass flows, alternate water sources, decreased pumping rates, groundwater discharge).
  - **Policy BR 4.4**: Vegetated Treatment Systems (Low Impact Development Techniques). Promote use and maintenance of engineered, vegetated treatment systems such as constructed wetlands, vegetated swales, or vegetated filter strips where they will reduce nonpoint source pollution from private and public development.
  - **Policy BR 4.7**: Contamination from Pesticides. Contamination from the use of commercial, residential, and public application of pesticides and herbicides into all inland and coastal waters, including but not limited to rivers, streams, wetlands, and intertidal areas shall be eliminated.

- **Policy BR 4.8**: Runoff from County Lands. Reduce and control fertilizer and pollutant runoff from County owned and managed lands.
- **Policy BR 4.9:** Pesticide Reduction. Encourage all landowners and pesticide applicators to consult with agencies such as the Natural Resource Conservation Service, U.C. Cooperative Extension, and Resource Conservation Districts to 1) reduce pesticide use, explore use of integrated pest management, 2) consider environmental impacts in choosing pesticides, and 3) otherwise reduce contamination of surface water and groundwater from pesticides.

- **Biological Resources Goal 7**: Significant marine resources will be protected.
  - **Policy BR 7.4:** Sedimentation. Support efforts on public and private lands to keep Chorro Creek, Los Osos Creek, and other watercourses free of excessive sediment and other pollutants to maintain freshwater flow into the Morro Bay National Estuary and the Monterey Bay National Marine Sanctuary, nurture steelhead trout, and support other plant and animal species. On County-owned lands, implement Best Management Practices in order to reduce sediment transport to coastal waters.
- **Soil Resources Goal 1**: Soils will be protected from wind and water erosion, particularly that caused by poor soil management practices.
  - **Policy SL 1.2**: Promote Soil Conservation Practices in All Land Uses. Require erosion and sediment control practices during development or other soil-disturbing activities on steep slopes and ridgelines. These practices should disperse stormwater so that it infiltrates the soil rather than running off, and protect downslope areas from erosion.
  - **Policy SL 1.3:** Minimize Erosion Associated with New Development. Avoid development, including roads and driveways, on the steeper portions of a site except when necessary to avoid flood hazards, protect prime soils, and protect sensitive biological and other resources. Avoid grading and site disturbance activities on slopes over 30 percent. Minimize site disturbance and protect existing vegetation as much as possible.
- **Soil Resources Goal 2**: Watershed and ecological function will be maintained through soil conservation.
  - **Policy SL 2.1:** Protect Watersheds and Aquifer Recharge Areas. Give high priority to protecting watersheds, aquifer-recharge areas, and natural drainage systems when reviewing applications for discretionary development.
- **Water Resources Goal 2**: The County will collaboratively manage groundwater resources to ensure sustainable supplies for all beneficial uses.
  - **Policy WR 2.1:** Groundwater Quality Assessments. Prepare groundwater quality assessments, including recommended monitoring, and management measures.
  - **Policy WR 2.2**: Groundwater Basin Reporting Programs. Support monitoring and reporting programs for groundwater basins in the region.
  - **Policy WR 2.4:** Groundwater Recharge. Where conditions are appropriate, promote groundwater recharge with high-quality water.
  - **Policy WR 2.5:** Groundwater Banking Programs. Encourage groundwater-banking programs.

- **Water** Resources **Goal 3**: Excellent water quality will be maintained for the health of people and natural communities.
  - **Policy WR 3.1**: Prevent Water Pollution. Take actions to prevent water pollution, consistent with federal and State water policies and standards, including but not limited to the federal Clean Water Act, Safe Drinking Water Act, and National Pollutant Discharge Elimination System (NPDES).
  - **Policy WR 3.2:** Protect Watersheds. Protect watersheds, groundwater and aquifer recharge areas, and natural drainage systems from potential adverse impacts of development projects.
  - **Policy WR 3.3:** Improve Groundwater Quality. Protect and improve groundwater quality from point and nonpoint-source pollution, including nitrate contamination; MTBE and other industrial, agricultural, and commercial sources of contamination; naturally occurring mineralization, boron, radionuclides, geothermal contamination; and seawater intrusion and salts.
  - **Policy WR 3.5:** Support Resource Conservation Districts. Continue support of and partnerships with Resource Conservation Districts to encourage education and technical assistance regarding erosion and sediment control in agricultural and other land use practices.
  - **Policy WR 3.6:** Prevent Pollution of Water Sources. The County will collaborate with private and nonprofit land managers, Resource Conservation Districts, recreation providers, Community Services Districts, and other stakeholders to prevent pollution or contamination of potable water sources, such as Nacimiento Reservoir and Lopez Lake. The County will also coordinate with the Nacitone Watershed Plan.
- **Water Resources Goal 4**: Per capita potable water use in the county will decline by 20 percent by 2020.
  - **Policy WR 4.7**: Low Impact Development. Require Low Impact Development (LID) practices in all discretionary and land division projects and public projects to reduce, treat, infiltrate, and manage urban runoff.
- **Water Resources Goal 6**: Damage to life, structures, and natural resources from floods will be avoided.
  - **Policy WR 6.1**: Integrated Management. Pursue an integrated management approach for waterway projects that includes flood management, sea level rise, water quality protection, groundwater recharge, and ecosystem enhancement objectives.
  - **Policy WR 6.2**: Region-wide Permitting. The County should coordinate with applicable State, regional, and local permitting agencies to develop and implement a region-wide permitting program that will provide consistent watershed or regional implementation measures.
  - **Policy WR 6.3:** Drainage Problems. Consider drainage problems in the context of an entire watershed. Drainage and flood management plans should address property owner and developer responsibilities. These plans should use an integrated watershed approach that incorporates flood management, water quality, water supply, groundwater, and ecosystem protection and enhancement objectives on a watershed/basin scale.

- **Policy WR 6.4:** Integrated Drainage Approach. Assure that proposed development integrates ecosystem enhancement, drainage control, and natural recharge as applicable.
- **Policy WR 6.5:** Stream Channelization. Prohibit channelization or major alteration of streams. Minor work in streambeds may be necessary to protect valuable farmland from erosion.
- **Policy WR 6.6**: Relocation of Stream Courses. Discourage the relocation of stream courses and encourage the use of levees and/or bypass/overpass channels along the borders of the floodway where flood protection is necessary. When an artificial channel is needed for flood protection, require landscaping and replanting of vegetation adjacent to the channel.
- **Policy WR 6.7:** Areas Prone to Flooding. Develop a public information and education program in areas of the county prone to flooding and drainage problems to discourage new development in those areas and to inform residents and property owners about how to deal with drainage and flood control problems, use best management practices, and get assistance.

- **Water Hazards Goal S-2**: Reduce damage to structures and the danger to life caused by flooding, dam inundation and tsunami.
  - **Policy S-8**: Flood Hazards. Strictly enforce flood hazard regulations both current and revised. FEMA regulations and other requirements for the placement of structures in flood plains shall be followed. Maintain standards for development in flood-prone and poorly drained areas.
  - **Policy S-9:** Reduce Flood Damage. Reduce flood damage in areas known to be prone to flooding, such as Los Osos, Avila Valley, Santa Margarita, Cambria, Oceano and others.
  - **Policy S-11:** Tsunami. Access information to increase the understanding and response to tsunamis.
  - **Policy S-12:** Dam Failure. Minimize the risk of dam failure.

San Luis Obispo County Ordinances

Chapter 12.08 – Urban Storm Water Quality Management and Discharge Control

The purpose of San Luis Obispo County Code Chapter 12.08 is to ensure the health, safety, and general welfare of citizens, and protect and enhance the quality of watercourses and water bodies in a manner pursuant to and consistent with the CWA by reducing pollutants in stormwater discharges to the maximum extent practicable, by prohibiting non-stormwater discharges to the storm drain system and improving stormwater management.

Chapter 19.02.050 - Drainage and grading regulations

This chapter establishes the administrative rules and procedures for regulating construction activities within the unincorporated areas of the county. All construction activities that may affect the velocity, direction or volume of natural drainage occurring on or in the vicinity of the construction site, or that involves site preparation, vegetation removal, earth moving, excavation, filling, or other grading activities would comply with all applicable provisions of the Land Use Ordinance (Title 22) or where applicable, the Coastal Zone Land Use Ordinance (Title 23).

San Luis Obispo County Code of Ordinances

Title 19, Chapter 19.11 – Stormwater Management

The requirements in this chapter are intended to reduce pollutant discharges to the maximum extent practicable and to prevent stormwater discharges from causing or contributing to a violation of receiving water quality standards. These requirements also incorporate the post-construction stormwater management requirements for development projects in the county.

Title 19, Chapter 19.12 – Grading and Excavation

The purpose of this chapter is to safeguard life, limb, property, and the public welfare by regulating grading on private property. It includes rules and regulations to control excavation, grading, and earthwork construction, including fills and embankments.

Title 22, Article 3, Chapter 22 Section 10.155 – Stormwater Management

The requirements in this section are intended to reduce pollutant discharges to the maximum extent practicable and to prevent stormwater discharges from causing or contributing to a violation of receiving water quality standards, also known as post-construction stormwater management. These requirements also emphasize protecting and, where degraded, restoring key watershed processes to create and sustain linkages between hydrology, channel geomorphology, and the biological health necessary for healthy watersheds.

Title 22, Article 3, Chapter 22, Article 14.060 – Flood Hazard Area

The Board of Supervisors of the County of San Luis Obispo adopted floodplain management regulations, as defined in this section. The flood hazard combining designation is applied to areas where terrain characteristics would present new developments and their users with potential hazards to life and property from potential inundation by a 100-year-frequency flood or within coastal high-hazard areas. These standards are intended to minimize the effects of development on drainage ways and watercourses.

Title 22, Article 5, Chapter 22.52 – Grading and Drainage

The purpose of this chapter is to establish standards to safeguard the public health, safety, and general welfare; minimize erosion and sedimentation; minimize fugitive dust emissions; prevent the loss of agricultural soils; reduce the harmful effects of stormwater runoff; encourage groundwater recharge; protect fish and wildlife; reduce hazards to life and property; reduce drainage problems from new development; enhance slope stability; protect natural, scenic, and cultural resources; prevent environmental damage to public and private property; and to otherwise protect the natural environment. This chapter addresses compliance with the NPDES Phase II stormwater regulations and sets forth local stormwater requirements to avoid pollution of watercourses with sediments or other pollutants generated on or caused by surface runoff on or across construction sites.

Impacts on Private Wells Resolution

MCWRA identified preliminary measures for possible impacts on private wells caused by the construction of the Interlake Tunnel and Spillway Modification Project (Resolution 16-R03). MCWRA is committed to mitigating the potential impacts to private wells as a result of construction and operation of the Interlake Tunnel. Measures include the implementation of construction techniques to avoid impacts to groundwater during construction and operation of the Interlake Tunnel to the extent feasible and provisions for measures to fully address impacts to wells that can be proven to result from construction or operation of the project. Special attention would be given to minimize the potential for short-term impacts on wells during tunnel excavation. MCWRA aims to proactively address any potential impacts to water supply from wells resulting from construction of the project including implementation of specific construction techniques as detailed in Resolution 16-R03. Incorporation of the identified construction techniques have been proven to minimize the impacts on groundwater and water wells in other similar tunnel projects.

4.1.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to surface water hydrology, water quality, and groundwater is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.1.3 Environmental Setting

This section provides a discussion of the existing conditions related to surface and groundwater hydrology in the study area.

4.1.3.1 Regional Climate and Topography

Mean annual precipitation in the mountain ranges surrounding the Salinas Valley ranges from approximately 15 to 60 inches, increasing with elevation and with more precipitation along the coastal Santa Lucia Range compared to the interior Gabilan Range. The mean annual precipitation in the valley ranges from 10 to 15 inches, with approximately 11 inches falling in Soledad, and approximately 14 inches falling at Nacimiento and San Antonio Reservoirs (MCWRA 2006). The Nacimiento and San Antonio Reservoirs are located within the Santa Lucia Range. Topography is generally undulating and steep in places, with numerous drainages cut into hillslopes feeding into the reservoirs.

4.1.3.2 Regional Watershed Setting

The study area is within the Nacimiento and San Antonio River sub-watersheds (hydrologic unit code [HUC] 1806000506 and 1806000507, respectively, described further below), both within the larger Salinas River watershed (HUC 18060005). The Salinas River originates in the La Panza Range in San Luis Obispo County and flows for 152 miles through San Luis Obispo and Monterey Counties and drains into Monterey Bay near Marina (RCDMC 2021). Tributaries to the Salinas River include the Nacimiento, San Antonio, and Arroyo Seco Rivers, as well as a number of smaller streams and creeks with seasonal flow. The Salinas River watershed covers 4,600 square miles. The Salinas River is a highly variable system, capable of conveying large winter floodflows, but also running very low or dry in drier years. The Salinas River is a primary conduit to groundwater recharge in the Salinas Valley and supplies irrigation water for many farms in the Salinas Valley, one of the most productive agricultural regions in the world. **Figure 4.1-1** shows the Salinas River watershed, **Figure 4.1-4** shows a portion of the Salinas River and other surface water features in the study area.

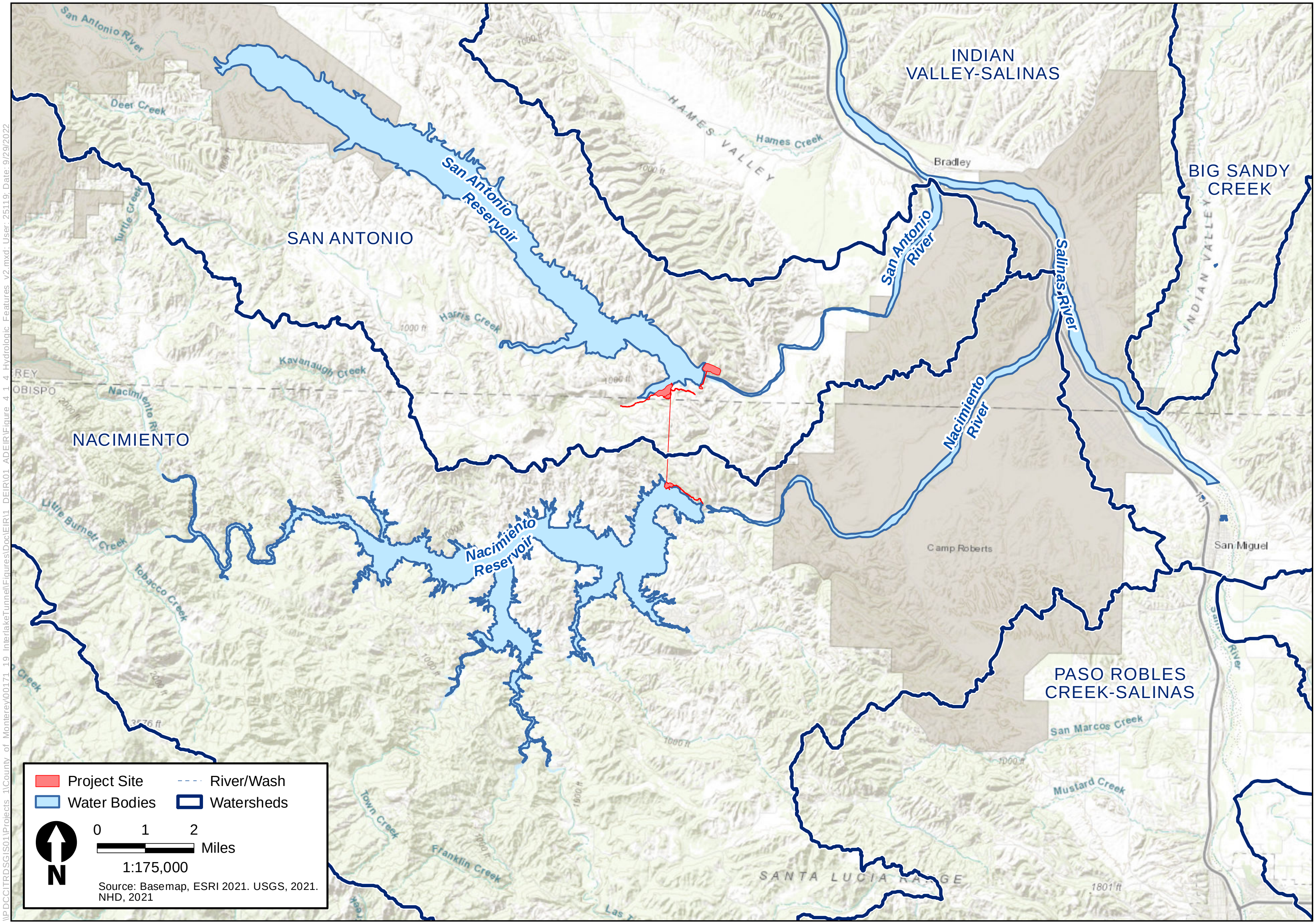


Figure 4.1-4
Hydrologic Features in the Study Area

Historically, the Salinas River was dry during the summer months and prone to flooding during extreme winter and spring storm events; however, modifications to the river system to promote flood protection, water supply, and conservation included constructing levees to prevent flooding and restrict channel migration, as well as building Nacimiento and San Antonio dams to store and manage watershed runoff. Storage of winter runoff in Nacimiento and San Antonio Reservoirs, and releases of flows during the summer months, have reduced peak floodflows during the winter and extended flows in the Salinas River beyond the natural runoff season (MCWRA 2014a). The existing (or baseline) Salinas River is a highly managed system with altered streamflows compared to the pre-settlement or pre-development period in the Salinas Valley.

4.1.3.3 Watershed Descriptions

Nacimiento River Watershed

The Nacimiento River originates in the Los Padres National Forest in San Luis Obispo County. From its highest point near Cone Peak, the river flows southeasterly through national forest lands, Fort Hunter Liggett and Camp Roberts, and several private parcels before reaching Nacimiento Reservoir and ultimately its confluence with the Salinas River. Covering an area of approximately 361.5 square miles, the watershed is generally characterized by a “v-shaped” valley. Average annual precipitation in the watershed ranges from 11 inches annually on the valley floor to 41 inches in the mountains.

Though only about 22 square miles larger than the San Antonio watershed, the Nacimiento River watershed generates roughly 3 times the amount of runoff/inflow to its reservoir compared to the San Antonio River Watershed (NWSC & CCSE 2008). The Nacimiento River watershed, with a more coastal orientation and proximity receives more precipitation than the San Antonio River watershed, which though adjacent, is generally an interior valley that experiences a rain shadow effect compared to the Nacimiento River watershed. **Figure 4.1-4** shows portions of the Nacimiento River watershed.

San Antonio River Watershed

The San Antonio River watershed originates in the Los Padres National Forest in Monterey County, covering 343.8 square miles. The San Antonio River flows in a southeasterly and easterly direction through national forest lands and Fort Hunter Liggett before reaching San Antonio Reservoir and its confluence with the Salinas River (NWSC & CCSE 2008). The physical landscape within the watershed is characterized by a series of northwest-southeast trending drainages with relatively steep sides. Precipitation is roughly 14 inches annually at the reservoir with increasing totals higher in the watershed. In general, the San Antonio River watershed receives less precipitation and generates less runoff than the neighboring Nacimiento River watershed. In addition to the reduced precipitation that the San Antonio River watershed experiences compared to the Nacimiento River watershed, another reason this watershed has less runoff is the presence of a larger alluvial basin upstream of San Antonio Reservoir. This alluvial basin stores more infiltrated precipitation and streamflow, thereby reducing runoff to the San Antonio Reservoir, compared to upstream of the Nacimiento Reservoir (NWSC & CCSE 2008). Both Nacimiento River and San Antonio River watersheds are within the larger Salinas River watershed. **Figure 4.1-4** shows portions of the San Antonio River watershed.

4.1.3.4 Reservoir Storage and Streamflow

Nacimiento and San Antonio Reservoirs were built by the Monterey County Flood Control and Water Conservation District (the name changed to MCWRA in 1991) to store and conserve watershed runoff for improved downstream uses of water supply, flood control, groundwater recharge, seawater intrusion management, supporting ecologic functions, and other beneficial uses. Since 1957 and 1967, respectively, the Nacimiento and San Antonio Reservoirs have been jointly operated to achieve these beneficial uses. The criteria and flow requirements summary of the SVWP Flow Prescription for steelhead trout in the Salinas River states that many regulatory flow requirements are based on combined storage between the two reservoirs; however, each reservoir also has its own operating criteria to assist in reservoir water management.

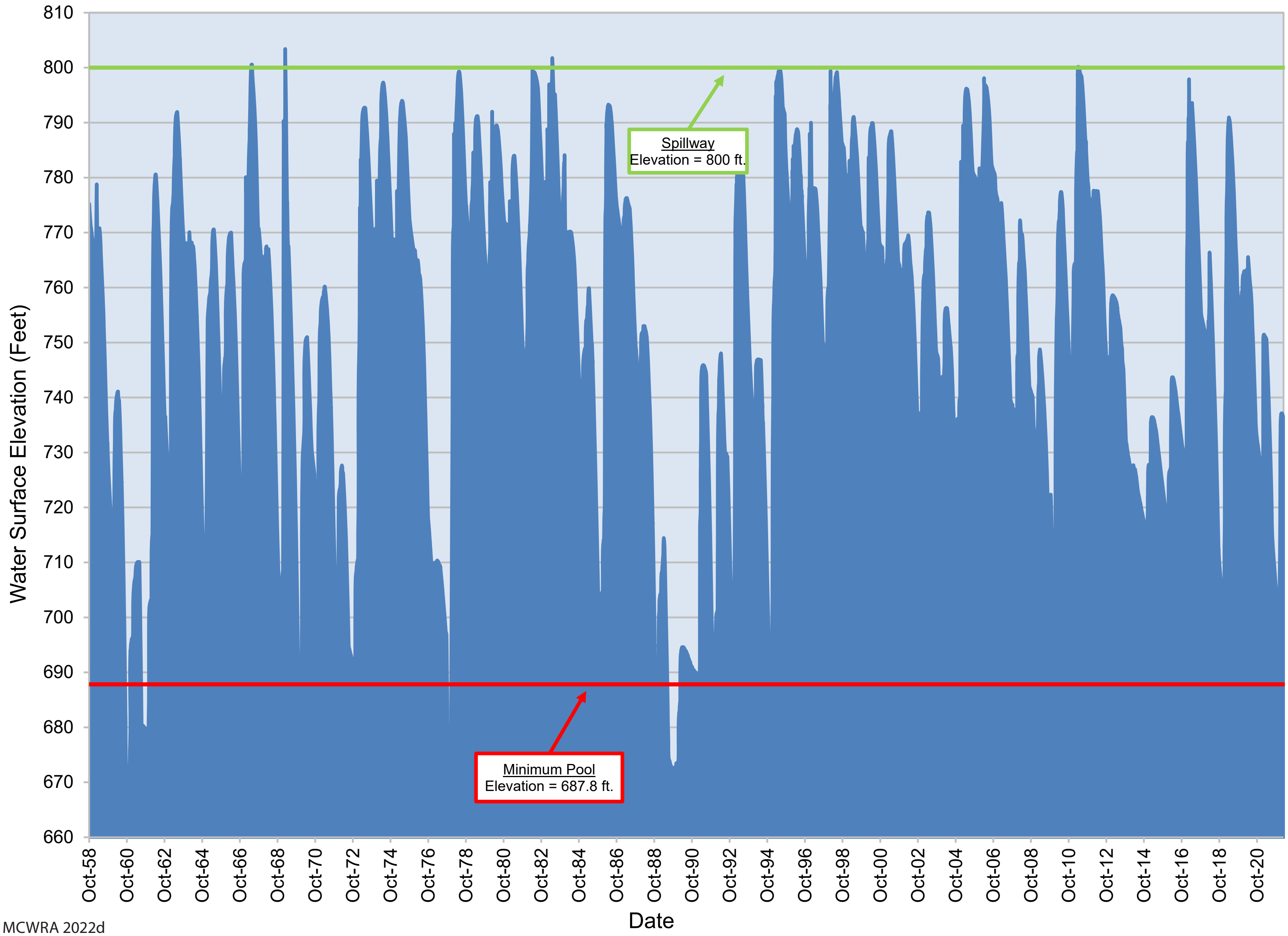
Nacimiento Reservoir

Nacimiento Reservoir is located in northern San Luis Obispo County, within the Nacimiento River watershed. The reservoir has a maximum storage capacity of 377,900 AF. When full, it is 18 miles long, with roughly 165 miles of shoreline. Nacimiento Dam, which creates Nacimiento Reservoir, is an earthfill dam with a height of 215 feet above the streambed and a crest length of 1,650 feet. The dam crest elevation is 825 feet, with a spillway crest elevation of 787.75 feet, which can be raised to an elevation of 800 feet with use of an inflatable Obermeyer spillway gate (MCWRA 2022c). **Figure 4.1-5** shows historical (water years 1959–2020) reservoir elevations for Nacimiento Reservoir, which reflect seasonal patterns of runoff, precipitation, water withdrawals for water-supply purposes, and other reservoir releases. Generally, reservoir levels increase from January through April and decrease from May through December. Inflows (or lack thereof) to the reservoir and reservoir operations combine to cause water levels in Nacimiento Reservoir to fluctuate (i.e., rise or fall). The greatest increases in historical water-level fluctuations occurred in winter when the reservoir fills in response to runoff from seasonal rains. By contrast, the greatest decreases have occurred from July through October.

The dam has two outlet works, as follows:

- **High-Level Outlet Works.** The High-Level Outlet Works (HLOW) is composed of twin 8-foot by 8-foot steel slide gates and cast concrete tunnels, which are located under the center of the spillway at an elevation of 755 feet. The HLOW has a maximum capacity of approximately 4,200 cfs when the reservoir elevation is 800 feet.
- **Low-Level Outlet Works.** The Low-Level Outlet Works (LLOW) is a 53-inch-diameter pipe near the south side of the dam. The inlet to the LLOW consists of three 42-inch butterfly valves set in a concrete structure at an elevation of 670 feet. Releases from the LLOW can be made from either a manifold of six 24-inch manually operated outlets or the hydroelectric power plant. The LLOW has a maximum capacity of 460 cfs when the reservoir elevation is 800 feet.

MCWRA currently has a waiver from DSOD because the outlet works do not satisfy DSOD’s emergency drawdown requirements (see Section 4.1.2.1 for further information). MCWRA has identified operational pools to aid in the management of water stored in the reservoir, as described in Section 2.2.4.1, *Nacimiento Dam and Reservoir*.



Source: MCWRA 2022d

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Figure 4.1-5
Nacimiento Reservoir Elevation

Operational pools for management of the water stored in the reservoir are described in Section 2.2.4.1, *Nacimiento Dam and Reservoir*. The dead pool indicates the physical minimum pool or the point at which water cannot be released by gravity from the reservoir outlet works. The top of the dead pool (670 feet) is at the invert of the intake structure of the LLOW; therefore, water cannot flow by gravity out of the reservoir below an elevation of 670 feet. The minimum pool (i.e., below 687.8 feet) is reserved for fish and wildlife habitat as well as a water entitlement belonging to the County of San Luis Obispo (MCWRA 2016b). The conservation pool extends from the top of the minimum pool (687.8 feet) to an elevation of 787.75 (elevation of the concrete spillway), equating to a storage capacity of 289,013 AF. This is the amount of water stored for later release to the Salinas River for groundwater recharge, fish passage, and the operation of the SVWP. The flood pool extends from the top of the conservation pool, or the concrete spillway elevation, to an elevation of 800 feet, or 1 foot above the elevation of the top of the inflated Obermeyer spillway gate. The flood pool of 66,587 AF is intended to provide winter flood protection by maintaining the ability of the spillway to pass the probable maximum flood without overtopping the dam (MCWRA 2022c).

The flood rule curve adopted by the MCWRA in 1985 was superseded by the December 29, 2009, DSOD Certificate of Approval, allowing the impoundment of water up to an elevation of 800 feet year-round. A self-imposed range of operating elevations within the flood pool provides adequate reservoir storage space during the winter to respond to forecast storm events. The elevations are developed with a goal of reducing the likelihood of flood control releases greater than 4,000 cfs while maintaining a reservoir elevation of no greater than 800 feet.

Estimates of unimpaired inflow to Nacimiento Reservoir were developed in 2014 to model reservoir processes, including evaporative losses, and releases from 1967 to 2013 (ECORP 2014a). The results of the 2014 study are summarized in **Table 4.1-4**. While more recent modeling efforts were conducted (which are used elsewhere in this EIR), the 2014 model results are included here because they include evaporative losses which are key to characterizing the nature of reservoir hydrology.

Table 4.1-4. Nacimiento Reservoir Estimated Unimpaired Inflow and Modeled Losses and Releases (1967–2013)

	Reservoir Inflows (AF)	Evaporation Losses (AF)	Conservation Releases[1] (AF)	Flood Spillway Releases[2] (AF)
Dry-Year Average	46,531	10,588	119,362	0
Normal-Year Average	159,885	15,594	158,624	16,989
Wet-Year Average	430,667	19,361	150,027	104,478
Average	214,952	15,498	145,021	40,212

Source: ECORP 2014a

[1] Conservation releases include water released for the purposes of groundwater recharge, operation of the SVWP, and fish passage, including block flow releases and other requirements of the SVWP Flow Prescription.

[2] Flood spillway releases refer to water released for the purpose of maintaining the reservoir elevation at or below the level of the flood pool.

Over the 46-year period modeled in the 2014 study, reservoir inflows averaged 214,952 AF across all year types. Of this amount, 145,021 AF was released for conservation purposes (e.g., groundwater recharge), while 40,212 AF was released for flood protection purposes and 15,498 AF was lost to evaporation. When broken down by year type (i.e., dry, normal, or wet), considerable variation was observed in the amount of water flowing into the reservoir and that released via the flood spillway. For example, on average, 104,478 AF was released from the flood spillway during wet years, whereas 0 AF was released during dry years. Conservation releases were more consistent across year types, with 150,027 AF released during wet years compared to 119,362 AF released during dry years.

Reservoir water levels depend on several factors, including reservoir inflow, regulatory requirements, and time of year. Reservoir water elevations correspond to different operational pools reserved for different uses (e.g., conservation, fish and wildlife, flood control). Likewise, the amount of water released for fish passage and related purposes may depend on combined storage at Nacimiento and San Antonio Reservoirs as well as Salinas River flows and other factors (see the subsection titled *Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River* in Section 4.1.2.1, *Federal Laws, Regulations, and Policies*). Conservation and flood control releases also depend on the time of year and may affect reservoir water levels. The 2014 modeled baseline end-of-month storage at Nacimiento Reservoir for 1967–2013 is shown on **Figure 4.1-6**.

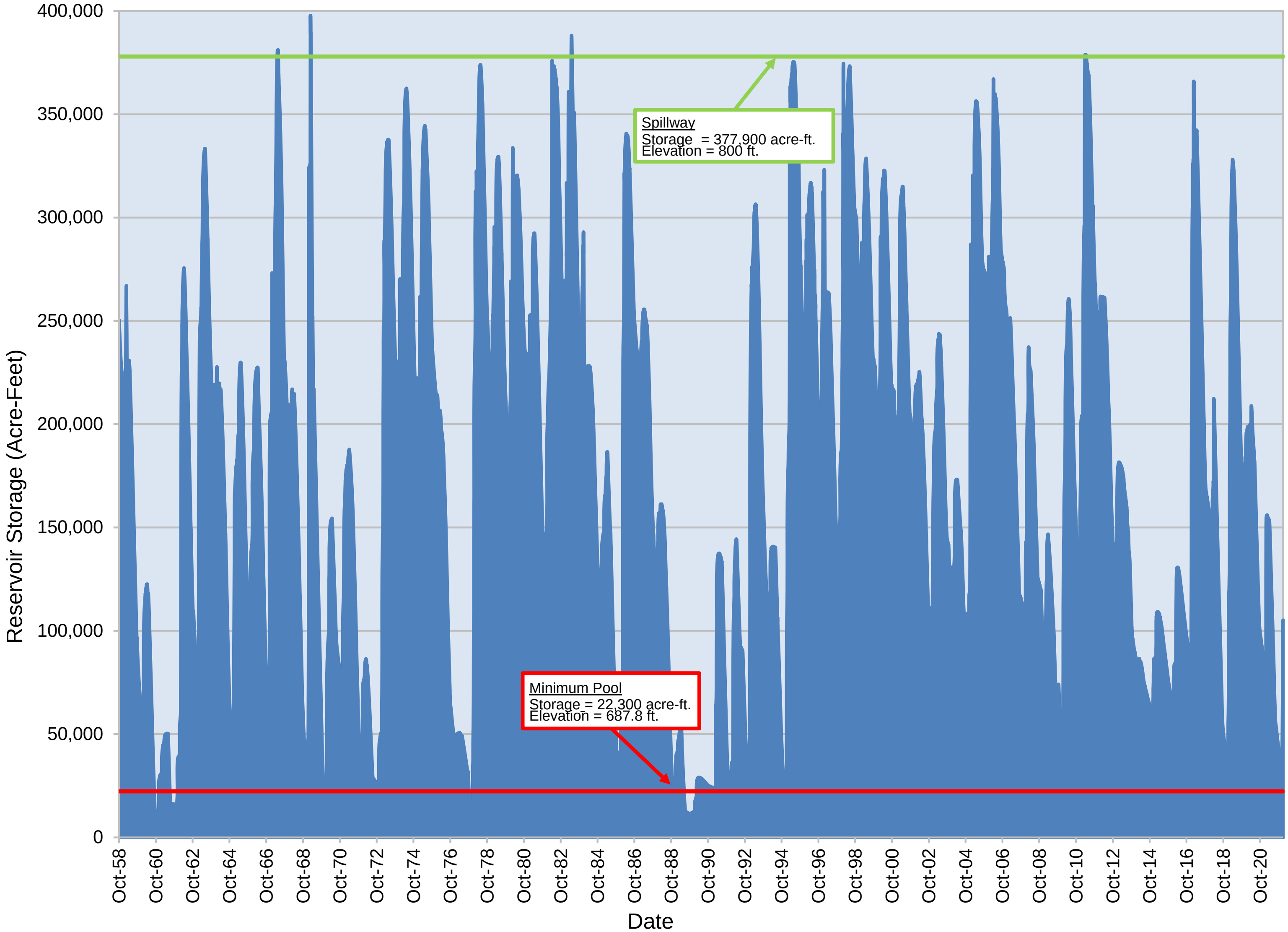
Nacimiento Water Project

The Nacimiento Water Project (NWP) consists of a 45-mile pipeline from Nacimiento Reservoir to San Luis Obispo County. The NWP began construction in 2007 and was completed in 2011. Owned and operated by the San Luis Obispo County Flood Control and Water Conservation District, the NWP is capable of delivering 15,750 AF of raw water annually to communities within San Luis Obispo County. Participants in the NWP include the City of Paso Robles, Templeton Community Services District, Atascadero Mutual Water Company, the City of San Luis Obispo, and Community Services Area 10, Benefit Zone A (County of San Luis Obispo 2022).

San Antonio Reservoir

San Antonio Reservoir is located approximately 2.25 miles north of Nacimiento Reservoir in southern Monterey County. The reservoir has a maximum storage capacity of 335,000 AF, and, when full, is 16 miles long with approximately 100 miles of shoreline. San Antonio Dam, which creates San Antonio Reservoir, is an earthfill dam, completed in 1967, with a height of 201 feet above the streambed and a crest length of 1,433 feet. The crest of the dam elevation is 802 feet with a spillway crest elevation of 780 feet. The dam's Outlet Works consists of an 84-inch diameter, 1,085-foot-long steel conduit located near the center of the dam. The Outlet Works has a maximum capacity of 2,200 cubic feet per second (cfs) when the reservoir elevation is 780 feet (MCWRA 2022c). **Figure 4.1-7** shows historical water elevations (water years 1967–2020) for San Antonio Reservoir, which reflect seasonal patterns of runoff, precipitation, and reservoir releases. Generally, reservoir levels increase from January through April and decrease from May through November; reservoir levels are relatively unchanged in December. Inflows (or lack thereof) to the reservoir and reservoir operations combine to cause water levels in San Antonio Reservoir to fluctuate (i.e., rise or fall). The greatest increases in historical water-level fluctuations have occurred in winter when the reservoir fills in response to runoff from seasonal rains. The greatest drawdowns have occurred from July through October.

Operational pools for management of the water stored in the reservoir are described in Section 2.2.4.2, *San Antonio Dam and Reservoir*. The dead pool indicates the physical minimum pool or the point at which water cannot be released by gravity from the reservoir outlet works. The minimum pool indicates the minimum amount of water reserved for fish and wildlife habitat and extends from the top of the dead pool elevation to an elevation of 666 feet. The conservation pool refers to the amount of water stored for later release to the Salinas River for groundwater recharge, fish passage, and the operation of the SVWP.



Source: MCWRA 2022e

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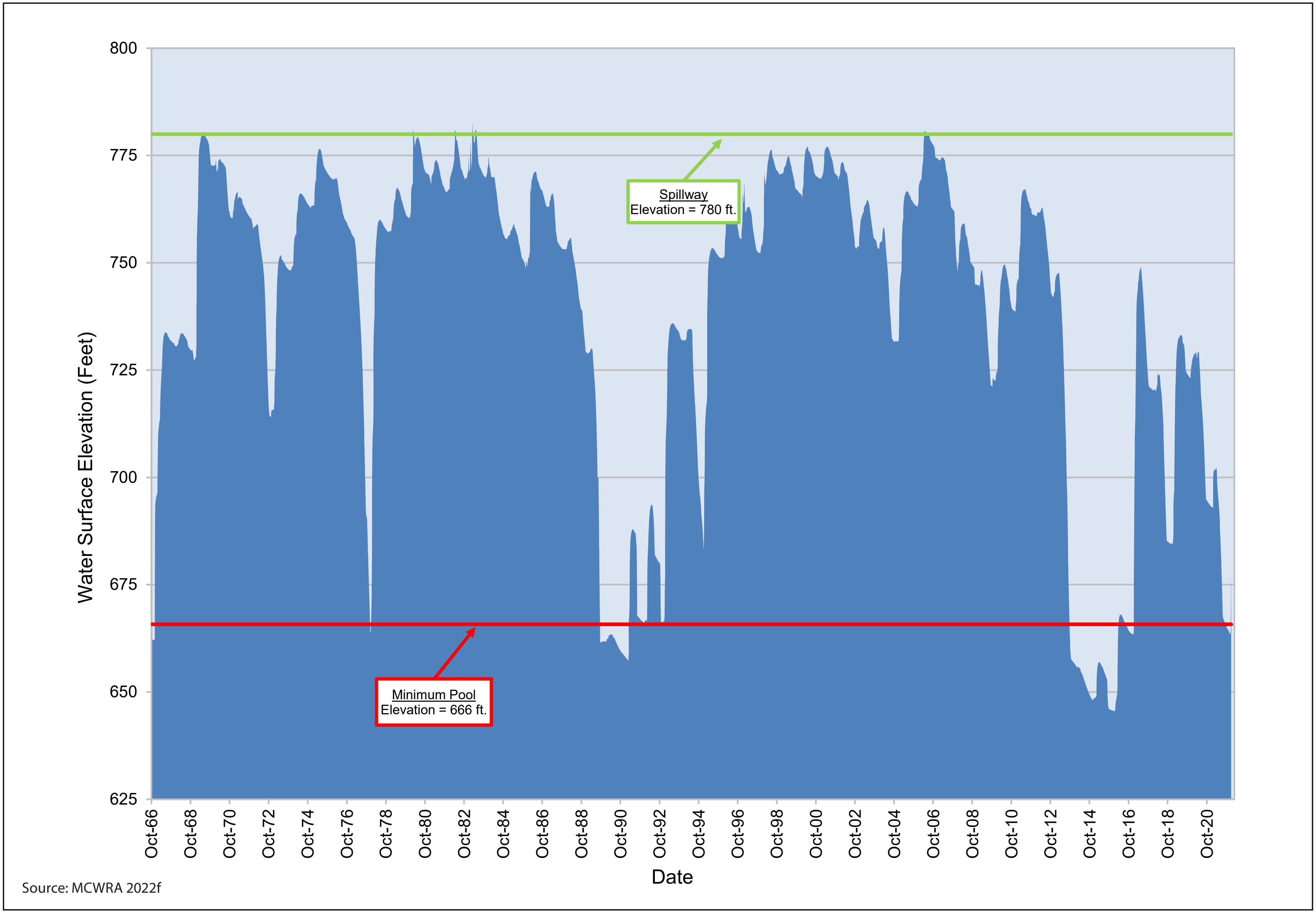
Figure 4.1-6
Nacimiento Reservoir Storage



Source: MCWRA 2022f

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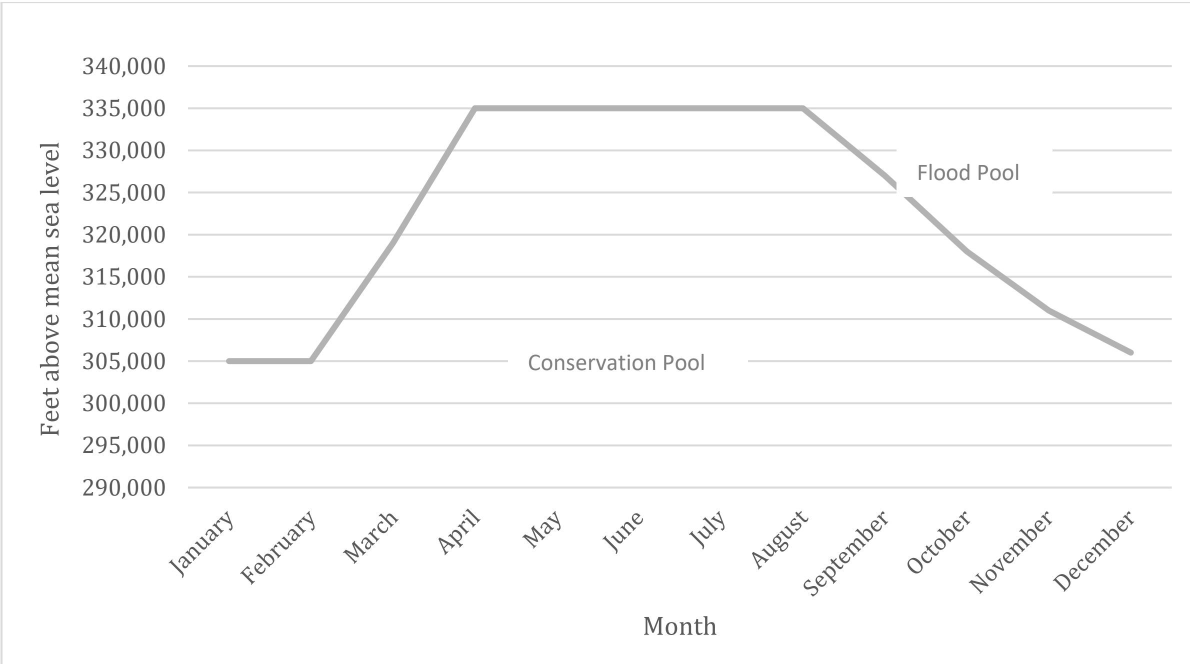
Figure 4.1-7
San Antonio Reservoir Elevation

The top of the conservation pool is typically set at 774.5 feet, equating to 282,000 AF of storage; however, as shown on **Figure 4.1-8**, the conservation pool varies depending on the time of year. Less water is typically stored for conservation during the winter months to provide additional capacity to accept floodflows. The flood pool typically extends from the top of the conservation pool (774.5 feet) to an elevation of 780 feet, but this also may change depending on time of year.

Figure 4.1-8. San Antonio Reservoir Storage Rule Curve



Source: MCWRA 2014b

Estimates of unimpaired inflow to San Antonio Reservoir were developed in 2014 to model reservoir processes, including evaporative losses, and releases from 1967 to 2013 (ECORP 2014a). The results of that 2014 study are shown in **Table 4.1-5.** While more recent modeling efforts were conducted (which are used elsewhere in this EIR), the 2014 model results are included here because they include evaporative losses which are key to characterizing the nature of reservoir hydrology.

Table 4.1-5. San Antonio Reservoir Estimated Unimpaired Inflow and Modeled Losses and Releases (1967–2013)

	Reservoir Inflows (AF)	Evaporation Losses (AF)	Conservation Releases (AF)	Flood Spillway Releases (AF)
Dry-Year Average	14,362	8,116	55,577	0
Normal-Year Average	52,864	11,919	71,280	431
Wet-Year Average	163,926	14,007	59,228	9,120
Average	77,660	11,533	63,090	3,085

Source: ECORP 2014a
AF = acre-feet

The 2014 study estimated that San Antonio Reservoir inflows averaged 77,660 AF across all year types. This amount varied substantially for different year types, from an average of 14,362 AF during dry years to 163,926 AF during wet years. Modeled flood control releases varied from a minimum of 0 AF during dry years to 9,120 AF during wet years. Conservation releases were more consistent across year types and were highest during normal years, presumably because during wet years more water was supplied to groundwater recharge and other beneficial uses via precipitation and downstream tributary accretion in the Salinas River. Therefore, more water could be retained in the reservoir during wet years when releases were not required to support downstream functions.

Water levels at San Antonio Reservoir depend on several factors and may change seasonally and/or annually due to varying precipitation and inflow rates as well as hydrologic conditions. Different reservoir volumes correspond to the different operational pools, which are reserved for different uses or purposes. Baseline end-of-month storage at San Antonio Reservoir, as reflected in the 2014 model, is shown on **Figure 4.1-9**.

Combined Reservoir Operations

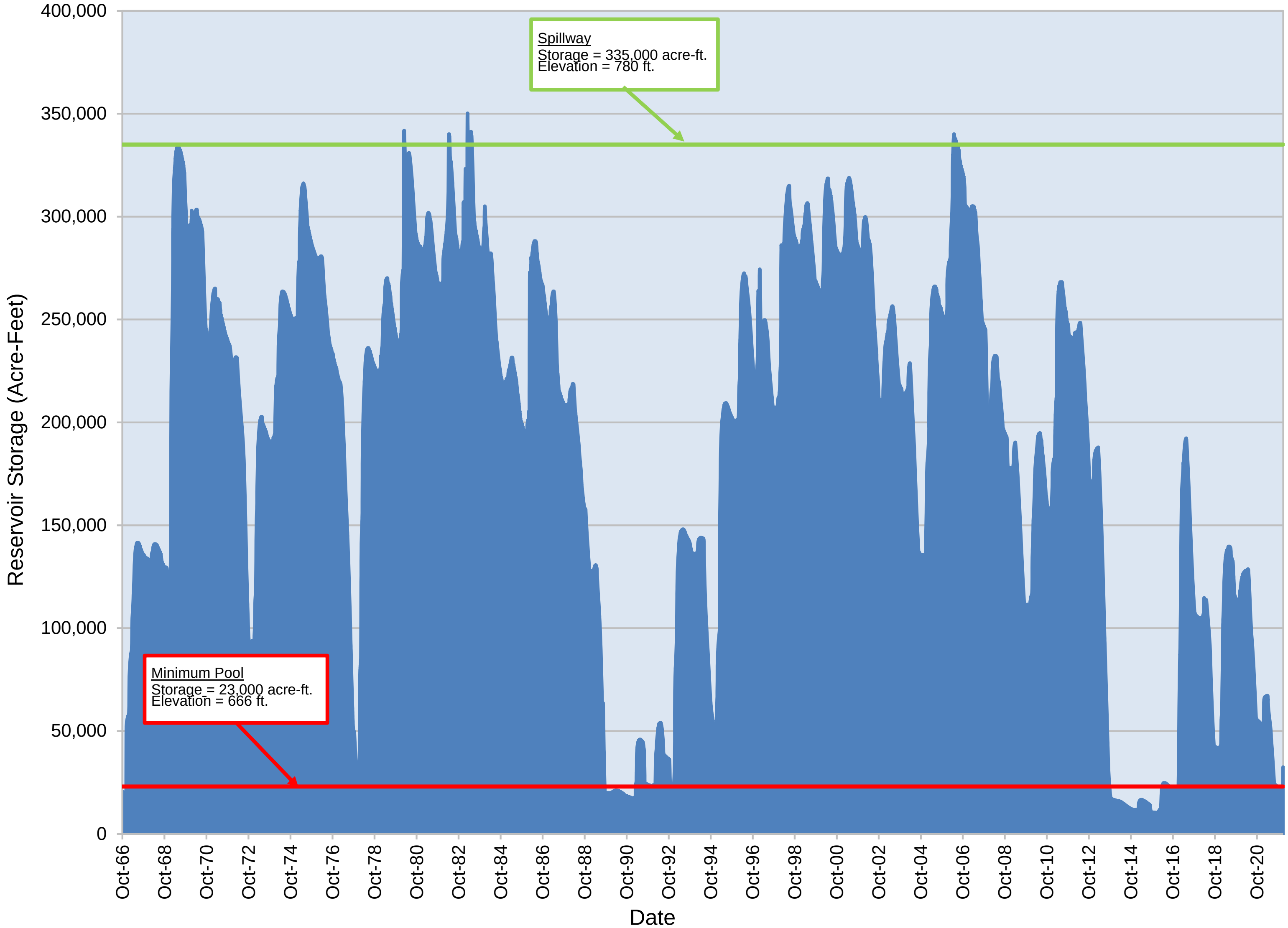
Nacimiento and San Antonio Reservoirs are operated jointly and many regulatory requirements apply to combined storage at the two reservoirs. For example, the adult steelhead upstream migration and juvenile outmigration flow criteria specified in the SVWP Flow Prescription (**Table 4.1-2**) apply to both reservoirs when combined storage at Nacimiento and San Antonio Reservoirs is greater than or equal to 220,000 AF. The combined reservoir inflow and outflow for Nacimiento and San Antonio Reservoirs from the 2014 study is shown in **Table 4.1-6** (ECORP 2014a).

Table 4.1-6. Estimated Combined Nacimiento and San Antonio Reservoir Unimpaired Inflow and Modeled Losses and Releases (1967–2013)

	Reservoir Inflows (AF)	Evaporation Losses (AF)	Conservation Releases (AF)	Flood Spillway Releases (AF)
Dry-Year Average	60,893	18,704	174,939	0
Normal-Year Average	212,750	27,513	229,904	17,420
Wet-Year Average	594,593	33,638	209,255	113,598
Average	292,612	27,031	208,111	43,297

Source: ECORP 2014a

Combined reservoir inflow to the Nacimiento and San Antonio Reservoirs averaged 292,612 AF across all year types over the 46 years modeled in the 2014 study. Approximately three-quarters of this total inflow can be attributed to runoff into Nacimiento Reservoir. During wet years, combined inflow to the reservoirs was 594,593 AF, with 113,598 AF of this total spilled for flood control purposes, 33,638 AF lost to evaporation, and 209,255 AF released for groundwater recharge or other conservation uses. By contrast, during dry years, combined inflow to the two reservoirs was only 60,893 AF on average, with no flood spillway releases, 18,704 AF lost to evaporation, and 174,939 AF released for conservation.



MCWRA 2022g

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Figure 4.1-9
San Antonio Reservoir Storage

The numbers shown In **Table 4.1-6** do not reflect the considerable inter-annual variation, as the values are averages by year type. For example, during the particularly wet water year of 1983, combined inflow to the two reservoirs was 1,035,932 AF whereas it was only 8,752 AF during the historic dry water year of 1977. Conservation and minimum (i.e., fish and wildlife habitat) releases also vary seasonally, with greater releases typically occurring in the summer months. Flood spillway releases typically only occur in the winter months. **Table 4.1-7** shows monthly average combined minimum and conservation releases from Nacimiento and San Antonio Reservoirs, meeting SRDF demands during dry, normal, and wet water years. The analysis uses water year 2013 to represent the normal volume of water required for successful SRDF operation. Model release schedules for wet and dry year types were adapted from the 2013 normal year type to resemble the start of operations under wet and dry conditions.

Conservation releases from both reservoirs have increased since the SVWP became operational in 2010. Under average conditions, the SVWP was designed to increase conservation releases by 30,000 acre-feet per year (AFY) above baseline conditions, 9,700 AFY of which would be diverted from behind the SRDF into the existing Castroville Seawater Intrusion Project distribution pipeline for delivery to agricultural users for irrigation (MCWRA and USACE 2001).

Table 4.1-7. Average Monthly Minimum and Conservation Releases Combined from Nacimiento and San Antonio Reservoirs

	Year Type		
Month	**Dry (cfs)**	**Normal (cfs)**	**Wet (cfs)**
January	70	70	70
February	70	70	70
March	371	279	70
April	472	463	135
May	529	529	272
June	598	598	598
July	627	627	627
August	668	668	668
September	608	608	608
October	344	344	344
November	70	70	70
December	70	70	70

Source: MCWRA 2014b

The 70 cfs combined daily release during the winter months represents the minimum 60 cfs “rearing flow” release from Nacimiento Reservoir, described in the SVWP Flow Prescription, and the 10 cfs minimum flow requirement below San Antonio Reservoir when storage is above the minimum pool.

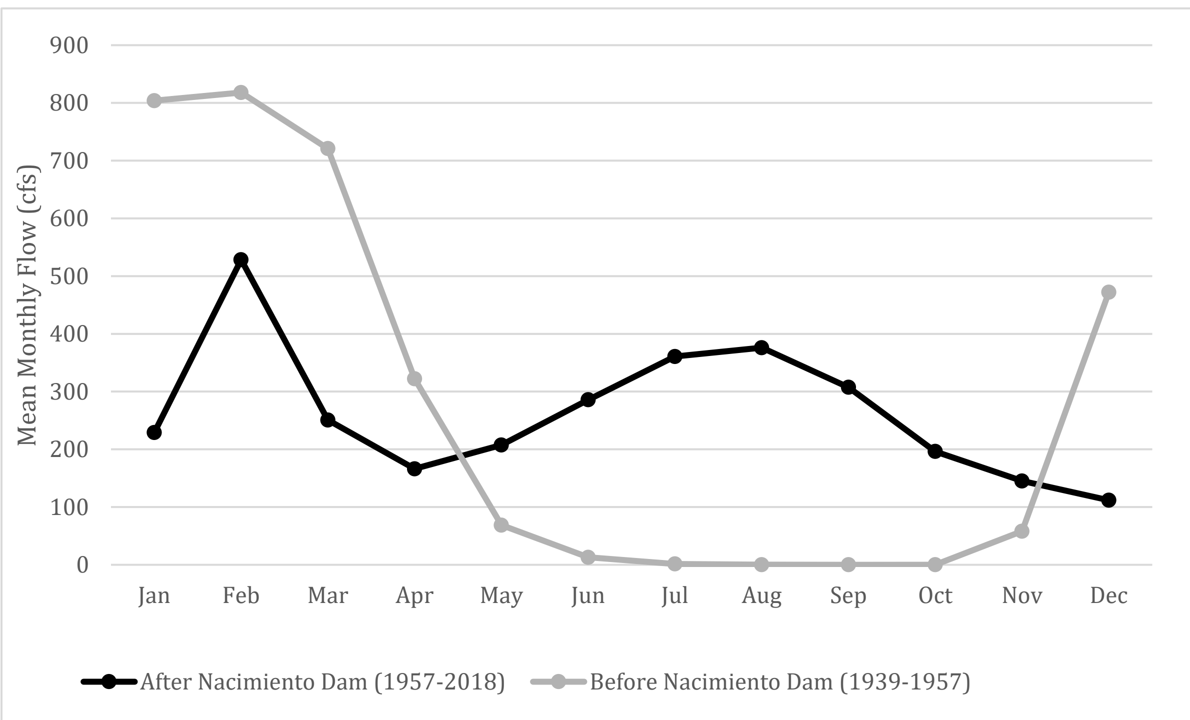
4.1.3.5 River and Downstream Creek Flows

Nacimiento River

Downstream of Nacimiento Dam, the Nacimiento River flows for approximately 11.5 miles, including through Camp Roberts, before joining with the Salinas River. As noted above in Section 4.1.3.3, *Watershed Descriptions*, Nacimiento Reservoir receives approximately three times the amount of inflow as the San Antonio Reservoir, and the Nacimiento River is the largest tributary of the Salinas River in terms of streamflow. Discharge from Nacimiento Reservoir is regulated by the SVWP Flow Prescription and is dependent on a number of factors (e.g., annual hydrologic conditions, water demand, etc.), but minimum year-round releases are generally 60 cfs. In addition to discharges from Nacimiento Reservoir, the Nacimiento River downstream of Nacimiento Dam may receive some inflow/runoff from adjacent lands. **Figure 4.1-10** shows average monthly flow rates in the Nacimiento River downstream of Nacimiento Reservoir, as measured by USGS Stream Gage 11149400.

The typical flow pattern in the Nacimiento River peaks in February, dips in April and then increases to over 300 cfs over the course of the summer before dropping again in late fall/winter. The peak in February may be attributed to flood control releases during the rainy season, whereas the elevated flow in the summertime is due to conservation releases in support of groundwater recharge and SRDF operation.

Figure 4.1-10. Mean Monthly Flow in Nacimiento River, Before and After Dam Construction (USGS 11149400 and 11149500)



Source: USGS 2022a

San Antonio River

Downstream of San Antonio Dam, the San Antonio River flows for approximately 8 miles before joining the Salinas River. Similar to Nacimiento River downstream of Nacimiento Dam, San Antonio River flows are governed by the SVWP Flow Prescription, which requires a minimum flow of 3 cfs in the river when storage in San Antonio Reservoir is at or below the elevation of the minimum pool. When storage in the reservoir is above the minimum pool, the flow requirement in the river downstream of the dam is 10 cfs. Daily releases from San Antonio Reservoir into the San Antonio River have been monitored since 1967. Releases are variable, depending on the water year; however, releases are generally greatest from June through August (MCWRA 2022h).

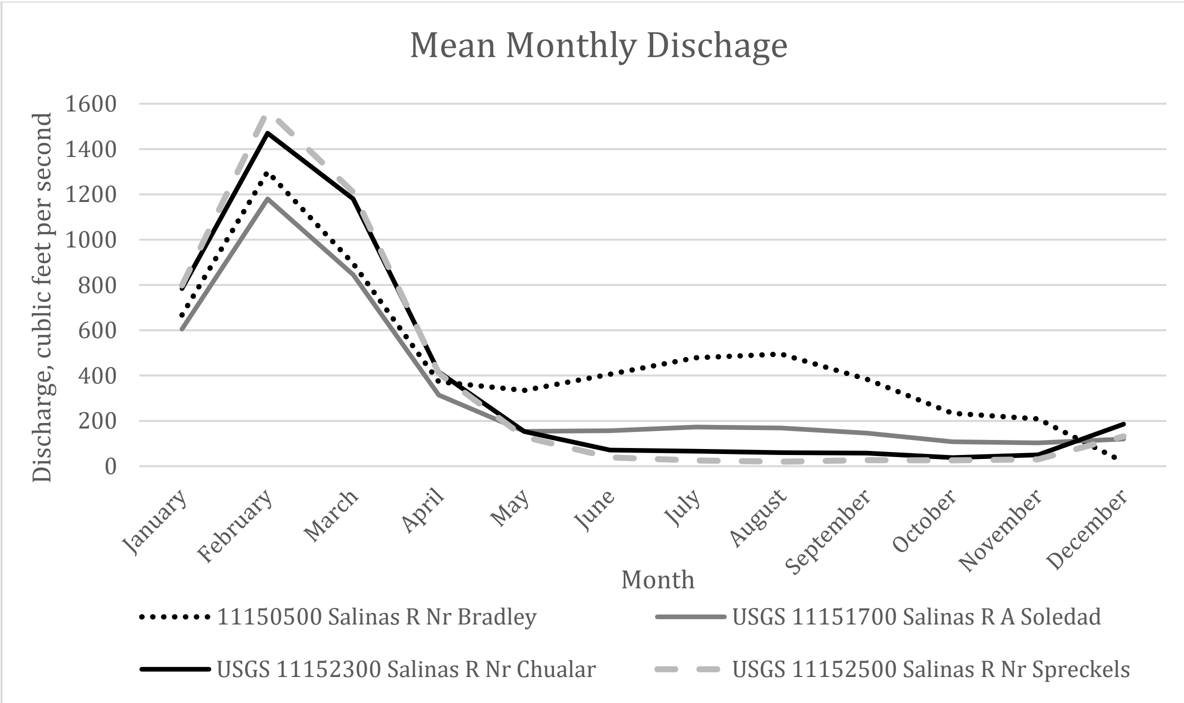
Salinas River

The Salinas River is the largest watercourse in the central coast region of California, draining a total area of approximately 4,600 square miles. Generally, the Salinas River flows in a northwest direction for approximately 150 miles through San Luis Obispo and Monterey Counties before discharging to Monterey Bay and the Pacific Ocean. The Salinas River system drains the Nacimiento and San Antonio Rivers, as well as a number of other tributaries including Arroyo Seco Creek, Pancho Rico Creek, San Lorenzo Creek, and El Toro Creek (MCWRA and USACE 2001). On an annual basis, Nacimiento and San Antonio Rivers contribute approximately 200,000 AFY and 70,000 AFY to the Salinas River, respectively, approximately 76 percent of the total average annual flow of the Salinas River at the Bradley Station, 6 mi downstream of the confluence of the San Antonio and Salinas rivers. Flow from the upper Salinas River, above the confluence with Nacimiento and San Antonio Rivers, is most prominent during the wet winter months.

The SVWP Flow Prescription governs flows in the Salinas River for the protection of steelhead trout and fish passage (See Section 4.3 *Biological Resources*). In general, flows are released from Nacimiento and San Antonio Reservoirs when flow triggers/criteria are met, in accordance with the SVWP Flow Prescription. During the spring and summer months, the river system is operated to maximize groundwater recharge, including to counteract the effects of ongoing seawater intrusion in the Salinas Valley Groundwater Basin – Pressure Subarea (see Section 4.1.3.6. *Groundwater,* for additional discussion), and to support operation of the SRDF. During the winter months, the Nacimiento and San Antonio Reservoirs are operated to maintain adequate capacity to accept floodflows and mitigate potential downstream flooding. As is described further in Section 4.1.3.10, *Flood Risk*, the Salinas River has a history of floods and can reach very high flow rates during winter storm events.

Flow data for several gaging stations along the Salinas River downstream of the confluence with the Nacimiento and San Antonio Rivers is provided on **Figure 4.1-11**. The locations of the referenced gaging stations can be seen on **Figure 4.1-3**. Salinas River flow generally peaks in late winter/early spring (February, March) and is typically lowest in the summer and fall months. In the winter wet season, the Salinas River is generally a “gaining stream” whereby river flows increase in the downstream direction with the addition of flows from joining tributaries. This is seen, on **Figure 4.1-11**, between January and April.

Figure 4.1-11. Salinas River Flow



Source: USGS 2022b, 2022c, 2022d, 2022e

The Bradley station (USGS 11150500) is the closest gaging station downstream of Nacimiento and San Antonio Reservoirs; therefore, the higher summertime flows observed at this location are reflective of the conservation releases made during the summer and fall. As the water released from the reservoirs moves downstream, it percolates down to the aquifers below the Salinas River and is lost from surface flow. The Salinas River bed is generally comprised of deep sand with high infiltration rates. In the summer dry season, the Salinas River can be described as a "losing stream" whereby surface flows generally decrease in the downstream direction along the stream or river due to losses to infiltration and percolation beneath the river bed, as well as diversions by other water users. Slightly higher wet season discharge rates at Chualar (USGS 11152300) may be due to the fact that Chualar is the nearest station downstream of the confluence with Arroyo Seco Creek, which can be a major source of inflow to the Salinas River during the winter.

Monterey Bay

Salinas River outflow to the ocean has been estimated to average 242,000 AFY, most of which occurs during the months of November through March (MCWRA and USACE 2001). On a seasonal and inter-annual basis, Salinas River outflow to Monterey Bay and the Pacific Ocean can vary substantially. As shown on **Figure 4.1-11**, mean monthly discharge at Spreckels (USGS 11152500), which is approximately 14 river miles upstream (southeast) of the mouth of the Salinas River at Monterey Bay, ranges from a high of 1,570 cfs during February to a low of 20 cfs during August, with flows consistently below 40 cfs from June through November. Discharge of the Salinas River at Monterey Bay/Salinas River lagoon is regulated by the SVWP Flow Prescription. During the juvenile passage season (April 1 through June 30), when combined storage at Nacimiento and San Antonio Reservoirs is greater than or equal to 220,000 AF, engineered "block flows" stipulating flows from

15 to 45 cfs may be required; or, when combined storage is less than 220,000 AF and SRDF diversions are occurring or conservation releases are being made, a minimum flow of 2 cfs to the lagoon may be required (MCWRA 2005).

The SVWP Flow Prescription also regulates the water surface elevation (WSE) of the Salinas River lagoon: if the lagoon is closed to the ocean, the lagoon WSE must be maintained at or below 3 feet,[3] whereas if the lagoon is open to the ocean, the lagoon WSE may fluctuate from 2 to 6 feet (MCWRA 2005). To prevent flooding of surrounding properties, and implement the requirements of the SVWP Flow Prescription, MCWRA periodically mechanically opens the Salinas River lagoon to the ocean (MCWRA 2014a). For more information regarding the SVWP Flow Prescription, see Section 4.3, *Biological Resources.*

4.1.3.6 Groundwater

The area generally surrounding San Antonio Reservoir is within the Lockwood Groundwater Basin. The basin covers approximately 94 square miles forming a northwesterly trending valley in the Coast Range Mountains of Monterey County west of the Salinas Valley. The basin extends from San Antonio Reservoir in the southeast to the Camp Hunter Liggett gate in the northwest and is bounded on all sides by Middle Miocene marine rocks. The elevation ranges from 800 to 1,200 feet. The San Antonio River and its tributaries drain the basin. The primary area of groundwater recharge is from the San Antonio River and the basin margins (DWR 2004a). Due to the terrain and geological features, the area surrounding the project, including the Nacimiento Reservoir, is not within a recognized groundwater basin.

San Antonio and Nacimiento River overlies the Upper Valley Aquifer and the Paso Robles Area sub-basins, respectively, within the larger Salinas Valley Groundwater Basin. The Salinas Valley Groundwater Basin is the largest coastal groundwater basin in Central California, draining approximately 4,600 square miles (RCDMC 2021). The Salinas Valley lies between the southern Coast Ranges between the San Joaquin Valley and the Pacific Ocean. The Salinas Valley Groundwater Basin is divided into eight subbasins: 180-/400-Foot, East Side, Forebay, Upper Valley, Paso Robles, Seaside, Langley, and Monterey. The Salinas Valley Groundwater Basin is bound by the Gabilan and Temblor Ranges on the east, the Sierra de Salinas and Santa Lucia Range on the west, La Panza Range to the south, and is drained by the Salinas River, which empties into Monterey Bay to the north (MCRMA 2015). In addition, two primary water-bearing formations comprise the Deep Aquifers in the coastal region: the Paso Robles formation (upper portion of the Deep Aquifers) and the Purisima Formation (lower portion of the Deep Aquifers). These two formations can be differentiated by the depositional environment, such as the change in texture, and materials between the two formations.

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[3] This may be superseded by Blanco Drain water rights. Water rights for the Blanco Drain (and Reclamation Ditch) were obtained from the California State Water Resources Control Board. Utilization of the Blanco Drain dry-weather flows as a New Source Water meets all treatment requirements for dry-weather flows. The Blanco Drain and Reclamation Ditch Water Rights Diversion Projects are a component of the Pure Water Monterey Project, a water recycling and groundwater replenishment project. That project proposes to reduce water use from the Carmel River, the Seaside Basin, and the Salinas Valley Basin. Uses of treated water from that project include potable water, irrigation supply, and groundwater recharge. Treated water from the Blanco Drain and Reclamation Ditch would be utilized as irrigation supply through the Castroville Seawater Intrusion Project (CSIP) and would result in reduced groundwater pumping.

Groundwater Levels

Groundwater elevations[4] in the Salinas Valley Groundwater Basin are generally related to topography, with groundwater elevations decreasing within the valley compared to elevations in the surrounding southern Coast Ranges. Five groundwater wells are within approximately 1,900 feet of the proposed Interlake Tunnel alignment. Groundwater levels in these wells vary from a depth of about 198 feet below ground surface (bgs) in the north to approximately 500 feet bgs in the south; corresponding to an elevation of approximately 1,170 feet and 870 feet in the north and the south, respectively. The two wells closest to the Interlake Tunnel alignment indicated water levels between approximately 1,005 feet and 1,010 feet. During boring drilling, groundwater was encountered at a depth of approximately 38 feet bgs (782 feet), which approximately corresponded with the surface water elevation in Nacimiento Reservoir at the time of drilling. It is expected that groundwater levels would fluctuate seasonally and vary depending on the drawdown of surrounding wells (McMillen Jacobs Associates 2018).

Groundwater recharge in the Salinas Valley occurs primarily through percolation of streamflow into underlying aquifers, particularly via the Salinas River and tributary drainages. Other sources of recharge include infiltration of precipitation and irrigation return flow. Groundwater may also flow from one subbasin adjacent to another. The principal outflow of groundwater from the basin is groundwater pumping. For additional information regarding the Salinas Valley Groundwater Basin water budget, see Appendix D*, Existing and Proposed Hydrology Conditions* (Page D-1).

Since construction of Nacimiento Dam and San Antonio Dam, MCWRA has managed surface waters for groundwater recharge and flood control purposes. The primary focus of the groundwater-related management of surface water in Nacimiento and San Antonio Reservoirs has been the regulated release of water from those reservoirs to maintain Salinas River streamflow to maximize groundwater recharge from the streambed (MCWRA 2006). Upper Valley Aquifer groundwater recharge also is uniquely linked to reservoir releases. The pattern of storage change is similar to that of the Forebay Subarea, with a similar reliance on reservoir releases. If reservoir releases are severely curtailed, groundwater storage losses on the order of 50,000 to 70,000 AFY, or about 30 to 50 percent of annual pumping, would occur (DWR 2021).

Managed reservoir releases also partially offset the effects of over-pumping of groundwater within the Salinas Valley Groundwater Basin. Although the release of stored water from Nacimiento and San Antonio Reservoirs allows for increased recharge, groundwater pumping continues to exceed inflows resulting in overdraft of the basin. Groundwater pumping was the largest source of outflow for all subareas. Over the course of the 1958 to 1994 period, total outflow exceeded total inflow in the basin as a whole. This indicates that overdraft conditions were present and long-term reduction in groundwater storage was occurring. Groundwater pumping quantities from 2015 were reduced compared to historical averages (MCRMA 2015). For additional information regarding groundwater storage in the basin, see Appendix D*, Existing and Proposed Hydrology Conditions* (Page D-2).

Project Groundwater Setting

The area surrounding the proposed project features is not within a recognized groundwater basin. Accordingly, the areas outside of recognized groundwater basins were not included in statistics on the Salinas Valley Groundwater Basin, and groundwater data are generally not available. This makes

[4] Groundwater elevation is distinct from depth-to-groundwater, which is the distance from the ground surface below ground to the water table. Groundwater elevation is measured as the elevation of the groundwater table in relation to sea level or an appropriate vertical datum.

it difficult to ascertain baseline groundwater information in the immediate vicinity of the proposed project features using conventional desktop survey methods. MCWRA has determined that a number of private landowners in the vicinity of the Interlake Tunnel own groundwater wells and use groundwater as a source of domestic, agricultural, or other water supply. As evidenced by comments received during the scoping period, there is a concern among these individuals that their existing wells may be affected by the proposed project and, specifically, construction of the Interlake Tunnel.

To better understand and document baseline groundwater conditions in the vicinity of the Interlake Tunnel, MCWRA conducted public meetings with residents and distributed a groundwater survey to landowners within a 3,000-foot radius of the conceptual tunnel alignment. The results of the survey are described further in Appendix D, *Existing and Proposed Hydrology Conditions,* under the section titled *Local Groundwater Use and Quality* (page D-3).

Groundwater in the study area is generally obtained from the fractured bedrock underlying the sedimentary deposits in the area. Subsurface rock structures in the proposed Interlake Tunnel alignment area exhibit low to moderate hydraulic conductivity; however, high conductivity zones do occur in places along the alignment (MCWRA 2018b). Detailed groundwater elevation contours are not available for the immediate area of the proposed project features. However, it is expected that groundwater flow generally follows the local topography, from higher elevation to lower elevation. Groundwater near the Interlake Tunnel alignment varies from a depth of approximately 98 feet below the ground surface (bgs) to the north to approximately 500 feet bgs to the south. This corresponds to an elevation of approximately 1,117 feet in the north and 870 feet in the south. Available data in the study area for known existing wells and associated groundwater depth levels, where available, are provided in Appendix D, *Existing and Proposed Hydrology Conditions*. Recharge of groundwater in the immediate area of the proposed Interlake Tunnel alignment is assumed to occur primarily through percolation of rainwater falling on the ground surface.

4.1.3.7 Surface Water Quality

Nacimiento River Watershed

The Basin Plan specifies beneficial uses that apply to water bodies with potential to be affected by the proposed project, as shown in **Table 4.1-8**. Beneficial uses for the Salinas River vary by reach. Generally, fewer beneficial uses are designated in downstream reaches. All reaches provide for municipal and agricultural water supply, non-contact recreation, wildlife habitat, cold and warm freshwater habitat, migration of aquatic organisms, and commercial and sport fishing. General water quality objectives apply to all inland surface waters, enclosed bays, and estuaries of the basin, as defined in the Basin Plan. Certain water quality objectives have also been established for selected surface waters. These objectives are intended to serve as a water quality baseline for evaluating water quality management in the basin. Water quality objectives specific to Nacimiento Reservoir are shown in **Table 4.1-9**. The 303(d)-listed impairments for water bodies within the Nacimiento River watershed portion of the study area are shown in **Table 4.1-10** and based on the 2020/2022 California Integrated Report (California State Water Resources Control Board 2018).

Table 4.1-8. Beneficial Uses for Surface Waters within the Nacimiento River Watershed with Potential to Be Affected by the Project

Water Body	Beneficial Uses
Nacimiento Reservoir	MUN, AGR, GWR, REC1, REC2, WILD, COLD, WARM, SPWN, RARE, FRESH, NAV, POW,[1] COMM
Nacimiento River, Downstream of Reservoir	MUN, AGR, IND, GWR, REC1, REC2, WILD, COLD, WARM, MIGR, SPWN, FRESH, COMM
Salinas River, Chualar-Nacimiento River	MUN, AGR, PROC, IND, GWR, REC1, REC2, WILD, COLD, WARM, MIGR, SPWN, RARE, COMM

Source: Central Coast RWQCB 2019

AGR = Agricultural Supply
COMM = Commercial and Sport Fishing
GWR = Ground Water Recharge
MIGR = Migration of Aquatic Organisms
NAV = Navigation
PRO = Industrial Process Supply
REC2 = Non-contact Water Recreation
WARM = Warm Freshwater Habitat
SPWN = Spawning, Reproduction, and/or Early Development
COLD = Cold Freshwater Habitat
FRSH = Freshwater Replenishment
IND = Industrial Service Supply
MUN = Municipal and Domestic Supply
POW = Hydropower Generation
REC1 = Contact Water Recreation
RARE = Rare, Threatened, or Endangered Species
WILD = Wildlife Habitat

[1] The Basin Plan does not list Hydropower Generation (POW) as a beneficial use at Nacimiento Reservoir, however hydropower facilities are present at the reservoir.

Table 4.1-9. Water Quality Objectives for Nacimiento River

Total Dissolved Solid, mg/L	Chloride, mg/L	Sulfate, mg/L	Boron, mg/L	Sodium, mg/L
200	20	50	0.2	20

Source: Central Coast RWQCB 2019
mg/L = milligrams per liter

Table 4.1-10. Water Quality Impairments within the Nacimiento River Watershed

Water Body	Listed Impairments per 2020/2022 303(d) List	Potential Sources	EPA TMDL Report Completion
Nacimiento Reservoir	Mercury	Source Unknown	Est. 2018
Nacimiento River	pH	Source Unknown	Est. 2035
Salinas River (middle, near Gonzales Rd crossing to confluence with Nacimiento River)	pH	Source Unknown	Est. 2035
	Water Temperature	Source Unknown	Est. 2035
	Toxicity	Source Unknown	Est. 2035
	Turbidity	Source Unknown	Est. 2035
	Benthic Community Effects	Source Unknown	Est. 2035

Source: SWRCB 2022
EPA = U.S. Environmental Protection Agency; Est. = estimated completion date; TMDL = total maximum daily load

Nacimiento Reservoir is designated as impaired for mercury. A fish consumption advisory is in place for Nacimiento Reservoir due to elevated levels of mercury found in fish (COEHHA 2020). Sources of mercury include runoff from historic mercury mines, atmospheric deposition, and resuspension of historic deposits of mercury-laden sediment already in the reservoir. The natural geology of the Central Coast Region also includes areas with high levels of naturally occurring mercury. Most of the historic mercury deposits date back to the Gold Rush of the 1800's, when mercury was mined throughout the Coastal Range and used in the Sierra Nevada to extract gold. Inactive mercury mines (Buena Vista Mine and Klau Mine) were identified as the primary point sources of mercury via the Las Tablas Creek system to Nacimiento Reservoir. Several inactive mercury mines, including Buena Vista Mine and Klau Mine, are designated as Superfund sites by the EPA. Mercury and other metals bind to sediment and are transported downstream via erosion and sediment transport processes. Mercury management practices are being implemented in the Central Coast Region, including Nacimiento Reservoir. The Central Coast RWQCB adopted four orders on May 14, 1993 requiring strict implementation of NPDES surface water discharge standards and California Code of Regulations Title 23 mine waste management and mine closure standards at the Buena Vista Mine and Klau Mine. Additional studies of inactive mines in northwest San Luis Obispo County are under way (Central Coast RWQCB 2019). The Las Tablas Creek and Nacimiento Reservoir TMDL for Mercury as a Basin Plan Amendment has not been adopted and is pending the results of the Record of Decision for the Klau Buena Vista Superfund Site.

Properties within the standard search radius with the potential for risks associated with the presence of hazardous materials or wastes (1 mile) were evaluated. Two leaking underground storage tank (LUST) cleanup sites were identified approximately 3,000 and 3,300 feet (0.57 and 0.63 mile) south and southwest, respectively, of the Tunnel Intake Structure site at Nacimiento Reservoir, on the opposite (south) reservoir shore. The Camp Roberts polyflouroalkyl substances site is currently being assessed for the potential for human exposure and effects on the environment associated with the historical use of perflouroalkyl and polyfluoroalkyl. Fort Hunter Liggett is currently overseeing remediation for a landfill and two underground storage tanks on-site. Additional results of the hazardous materials and waste evaluation are discussed in Section 4.7, *Hazards and Hazardous Materials.*

Other contaminants of concern in Nacimiento Reservoir, although not 303(d) impairments, include volatile organic chemicals, microorganisms such as *Giardia* and *Cryptosporidium*, and pesticides such as dichlorodiphenyltrichloroethane (DDT) and chlordane. Metals above the drinking water standard include aluminum, iron, and manganese. Aluminum, iron, and manganese have been detected at levels up to 1,800 µg/L, 2,800 µg/L, and 140 micrograms per liter (ug/L) respectively, above their maximum contaminant levels of 1,000 µg/L, 300 µg/L, and 50 ug/L, respectively (MCWRA and USACE 2001). In the summer months, Nacimiento Reservoir is thermally stratified. Thermal stratification results in two distinct water temperature zones within the reservoir that effects water quality and reservoir circulation. Fluctuations of seasonal water temperature in the upper layers of Nacimiento Reservoir in the late summer and early fall exceed the threshold of 20ºC considered the maximum fluctuation limit for salmon and trout habitat (NWSC & CCSE 2008).

Although total dissolved solids (TDS) are within established water quality objectives, there is a small increasing trend of TDS concentrations in Nacimiento Reservoir, especially in the upper layers of the reservoir. Sediment-rich waters from Las Tablas Creek deposit fine suspended sediment load into Nacimiento Reservoir. When the reservoir is at low levels but receiving high volumes of floodwater from Las Tablas Creek, reservoir sediments are transported farther downstream and ultimately into the Nacimiento River (NWSC & CCSE 2008). Turbidity during peak winter runoff is also a concern.

The Nacimiento River downstream of Nacimiento Reservoir and the Middle Salinas River, at the confluence with Nacimiento River, are listed as 303(d) impaired water bodies, as shown in **Table 4.1-10.** Other water quality parameters above their drinking water standard in the Salinas River (measured near Chualar) include turbidity and TDS (CCAMP 2022).[5]

San Antonio River Watershed

The Basin Plan specifies beneficial uses that apply to water bodies with the potential to be affected by the proposed project, as shown in **Table 4.1-11**. Waters objectives specific to San Antonio Reservoir are shown in **Table 4.1-12**. Downstream beneficial uses of the Salinas River and water quality impairments in the Middle Salinas River with the potential to be affected by the proposed project are shown in **Table 4.1-8** and **Table 4.1-10**, respectively (California State Water Resources Control Board 2018).

Table 4.1-11. Beneficial Uses for Surface Waters within the San Antonio River Watershed with Potential to Be Affected by the Project

Water Body	Beneficial Uses
San Antonio Reservoir	MUN, AGR, GWR, REC1, REC2, WILD, COLD, WARM, SPWN, RARE, FRESH, NAV, POW,[1] COMM
San Antonio, Downstream of Reservoir	MUN, AGR, IND, GWR, REC1, REC2, WILD, WARM, MIGR, SPWN, RARE, COMM

Source: Central Coast RWQCB 2019

AGR = Agricultural Supply
COLD = Cold Freshwater Habitat
COMM = Commercial and Sport Fishing
FRSH = Freshwater Replenishment
GWR = Ground Water Recharge
IND = Industrial Service Supply
MIGR = Migration of Aquatic Organisms
MUN = Municipal and Domestic Supply
NAV = Navigation
POW = Hydropower Generation
REC1 = Contact Water Recreation
REC2 = Non-contact Water Recreation
RARE = Rare, Threatened, or Endangered Species
SPWN = Spawning, Reproduction, and/or Early Development
WARM = Warm Freshwater Habitat
WILD = Wildlife Habitat

[1] The Basin Plan lists Hydropower Generation (POW) as a beneficial use at San Antonio Reservoir, however hydropower facilities are not present at the reservoir.

Table 4.1-12. Water Quality Objectives for San Antonio River

Total Dissolved Solid, mg/L	Chloride, mg/L	Sulfate, mg/L	Boron, mg/L	Sodium, mg/L
250	20	80	0.2	20

Source: Central Coast RWQCB 2019

[5] Water samples were collected from 2005 through 2012. The SWRCB established TDS and turbidity-related secondary maximum contaminant level (SMCL) drinking water standards (for taste and odor thresholds). The SMCL for TDS is 500 mg/L (recommended), and the upper SMCL is 1,000 mg/L; The SMCL for turbidity is 5 units.

The 303(d)-listed impairments for water bodies within the San Antonio River watershed portion of the study area are shown in **Table 4.1-13** and based on the 2020/2022 California Integrated Report. San Antonio Reservoir is designated as impaired for mercury. A fish consumption advisory is in place for San Antonio Reservoir due to elevated levels of mercury found in fish (COEHHA 2020). Similar to the Nacimiento River watershed, natural geology of the region are sources of mercury including a historic mercury mine on the Fort Hunter-Liggett Military Reservation.

Table 4.1-13. Water Quality Impairments within the San Antonio River Watershed

Water Body	Listed Impairments per 2020/2022 303(d) List	Potential Sources	EPA TMDL Report Completion
San Antonio Reservoir	Mercury	Source Unknown	Est. 2035
	DDT	Source Unknown	Est. 2035
San Antonio River	Escherichia coli	Domestic Animals/Livestock, Natural Sources	11/30/2011
	pH	Source Unknown	Est. 2035

Source: SWRCB 2022
DDT = dichlorodiphenyltrichloroethane
EPA = U.S. Environmental Protection Agency
Est. = estimated completion date
TMDL = total maximum daily load

Dischargers in the San Antonio River watershed include Monterey County Public Works, Facilities & Parks and the U.S. Army's Fort Hunter Liggett. Fort Hunter Liggett operates wastewater treatment facilities adjacent to the San Antonio River. Downstream of the reservoir, San Antonio River is impaired for fecal coliform and *E. coli* bacteria. Consequently, water contact recreation beneficial uses are not protected. The San Antonio River Fecal Indicator Bacteria TMDL was approved by U.S. EPA on November 30, 2011. The California Rangeland Water Quality Management Plan (Rangeland Plan) was proposed as the mechanism for implementing the TMDL. The Rangeland Plan was accepted by SWRCB in 1995 (SWRCB Resolution No. 95-43). It summarizes authorities and mandates for water quality and watershed protection on non-federal rangelands and specifies a framework for the cooperative development of ranch management strategies for water quality protection.

Thermal stratification may occur during spring, summer, and fall in San Antonio Reservoir. Surface water temperatures are between 68°F and 81°F; at depths greater than approximately 9 meters, the water temperature is typically between 55°F and 63°F. Below the thermocline[6] during summer months (approximately 13 to 30 feet below the reservoir surface), dissolved oxygen declines to very low levels. Levels of manganese were reported at 210 to 470 micrograms/liter, exceeding the Secondary Drinking Water Standard established by U.S. EPA, of 50 micrograms/liter (NWSC & CCSE 2008). Bacteriological contamination from grazing and human activities may include *Giardia* and *Cryptosporidium*. Generally, metals were below the drinking water standard with the exception of manganese. Electrical conductivity (EC) has also been monitored which can be used to approximate TDS) levels. TDS levels are well below the TDS secondary drinking water quality standard (NWSC & CCSE 2008). Nitrate-nitrogen levels in the reservoir have been monitored at least annually since 1983, with nitrate levels consistently monitored well below drinking water maximum contaminant levels (MCWRA and USACE 2001).

[6] A thermocline is a steep temperature gradient in a waterbody such as a lake, marked by a layer above and below which the water is at different temperatures.

Salinas River Watershed

The Salinas River extends for over 150 miles from its headwaters in the La Panza Range of San Luis Obispo County to its mouth at Monterey Bay. Adjacent land uses vary along its length, but generally the Salinas Valley is highly developed for agricultural use with pockets of urban and residential development. In addition to flows from the Nacimiento and San Antonio Rivers, the Salinas River receives flows from a number of smaller rivers and creeks (e.g., Arroyo Seco). The Salinas River also may receive treated wastewater from the City of Paso Robles and City of Salinas wastewater treatment systems. The City of Paso Robles discharges wastewater to evaporation-percolation ponds which have an overflow to the Salinas River. The City of Salinas has a permit to discharge at a 100:1 ratio from its industrial ponds, but only when the river is flowing at a minimum of 125 cfs at Spreckels (MCWRA and USACE 2001).

Beneficial uses for the Salinas River vary by reach. In general, fewer beneficial uses are designated the further one goes downstream. All reaches provide for municipal and agricultural water supply, non-contact recreation, wildlife habitat, cold and warm freshwater habitat, migration of aquatic organisms, and commercial and sport fishing. The Salinas River provides for substantial groundwater recharge and much of the water released from Nacimiento and San Antonio reservoirs during the summertime percolates to underlying aquifers as it moves through the Salinas River system.

The 303(d)-listed impairments for water bodies within the Salinas River watershed portion of the study area are shown in **Table 4.1-14** and based on the 2020/2022 California Integrated Report. The middle and (in particular) lower Salinas River are listed as impaired for a number of contaminants under CWA, Section 303(d). These include a number of pesticides (e.g., chlordane, dieldrin, chlorpyrifos, Fipronil), E. coli, TDS, and other contaminants. As a highly developed agricultural area, sources of these contaminants may include over- or mis-application of pesticides on adjacent agricultural lands, runoff of fertilizers or manure, livestock grazing, and other agricultural and urban runoff. However, some streams in the Salinas River watershed are naturally highly mineralized and contribute to the excessive salinity of local groundwaters, including Pancho Rico Creek, with TDS concentrations exceeding 1,000 mg/L (Central Coast Regional Water Quality Control Board 2019).

Table 4.1-14. Water Quality Impairments within the Salinas River Watershed

Water Body	Listed Impairments per 2020/2022 303(d) List	Potential Sources	EPA TMDL Report Completion
Salinas River (middle, near Gonzales Road crossing to confluence with Nacimiento River)	pH	Source Unknown	Est. 2035
	Water temperature	Source Unknown	Est. 2035
	Toxicity	Source Unknown	Est. 2035
	Turbidity	Source Unknown	Est. 2035
	Benthic Community Effects	Source Unknown	Est. 2035
Salinas River (lower, estuary to near Gonzales Road crossing)	Benthic Community Effects	Channelization, Flow Alteration/Regulation/Modification, Hydromodification, Source Unknown	Est. 2035
	Bifenthrin	Agriculture, Urban Runoff/Storm Sewers	08/09/2018
	Chlordane	Source Unknown	Est. 2035
	Chloride	Source Unknown	Est. 2035

Water Body	Listed Impairments per 2020/2022 303(d) List	Potential Sources	EPA TMDL Report Completion
	Chromium	Source Unknown	Est. 2035
	DDD	Source Unknown	Est. 2035
	DDE	Source Unknown	Est. 2035
	DDT	Source Unknown	Est. 2035
	Dieldrin	Source Unknown	Est. 2035
	Enterococcus	Source Unknown	Est. 2027
	Escherichia coli (E. coli)	Domestic Animals/Livestock, Illegal dumping, Urban Runoff/Storm Sewers	01/31/2013
	Fipronil	Source Unknown	Est. 2035
	Imidacloprid	Source Unknown	Est. 2027
	Manganese	Source Unknown	Est. 2035
	Nickel	Source Unknown	Est. 2035
	Nitrate	Agriculture, Domestic Animals/Livestock, Natural Sources, Urban Runoff/Storm Sewers	10/13/2015
	PCBs	Source Unknown	Est. 2035
	pH	Source Unknown	Est. 2035
	Selenium	Source Unknown	Est. 2035
	Sodium	Source Unknown	Est. 2035
	Total Dissolved Solids	Source Unknown	Est. 2035
	Toxaphene	Source Unknown	Est. 2027
	Toxicity	Agriculture, Urban Runoff/Storm Sewers	08/09/2018
	Turbidity	Source Unknown	Est. 2035
	Water Temperature	Source Unknown	Est. 2035
	Arsenic	Source Unknown	Est. 2035
Salinas River Lagoon (North)	Chlorpyrifos	Agriculture	10/07/2011
	DDE	Source Unknown	Est. 2018
	Nutrients	Agriculture	10/13/2015
	pH	Source Unknown	Est. 2035
	Toxicity	Agriculture	10/07/2011
Salinas River Refuge Lagoon (South)	pH	Source Unknown	Est. 2027
	Turbidity	Source Unknown	Est. 2023

Source: SWRCB 2018

DDD = dichlorodiphenyldichloroethane
DDE = dichlorodiphenyldichloroethylene
DDT = dichlorodiphenyltrichloroethane
EPA = U.S. Environmental Protection Agency
Est. = estimated completion date
PCBs = polychlorinated biphenyls
TMDL = total maximum daily load

The Salinas River Lagoon also often experiences undesirable water quality conditions. The 2014 Monitoring Report (MCWRA 2015) pursuant to the Salinas River Lagoon Management and Enhancement Plan noted extensive growths of aquatic vegetation and algae were present in the lagoon. At the same time, dissolved oxygen was at elevated levels, water clarity was high, and the lagoon water temperature was very warm (MCWRA 2015). Ultimately, the excessive algal growth, in concert with fish health concerns, prevented full sampling of fish populations in the lagoon for that year.

4.1.3.8 Groundwater Quality

Generally, groundwater quality in the Salinas Valley Groundwater Basin is acceptable for most uses. The Basin Plan specifies the following groundwater beneficial uses throughout the Central Coastal Basin[7]: agricultural water supply, municipal and domestic water supply, and industrial use (Central Coast RWQCB 2019). There are general groundwater quality objectives which apply to all groundwater in the region, as well as water quality objectives established for selected groundwater. Groundwater quality objectives specific to the Upper Valley Aquifer Groundwater Basin are shown in **Table 4.1-15**.

Table 4.1-15. Groundwater Quality Objectives for the Upper Valley Groundwater Basin

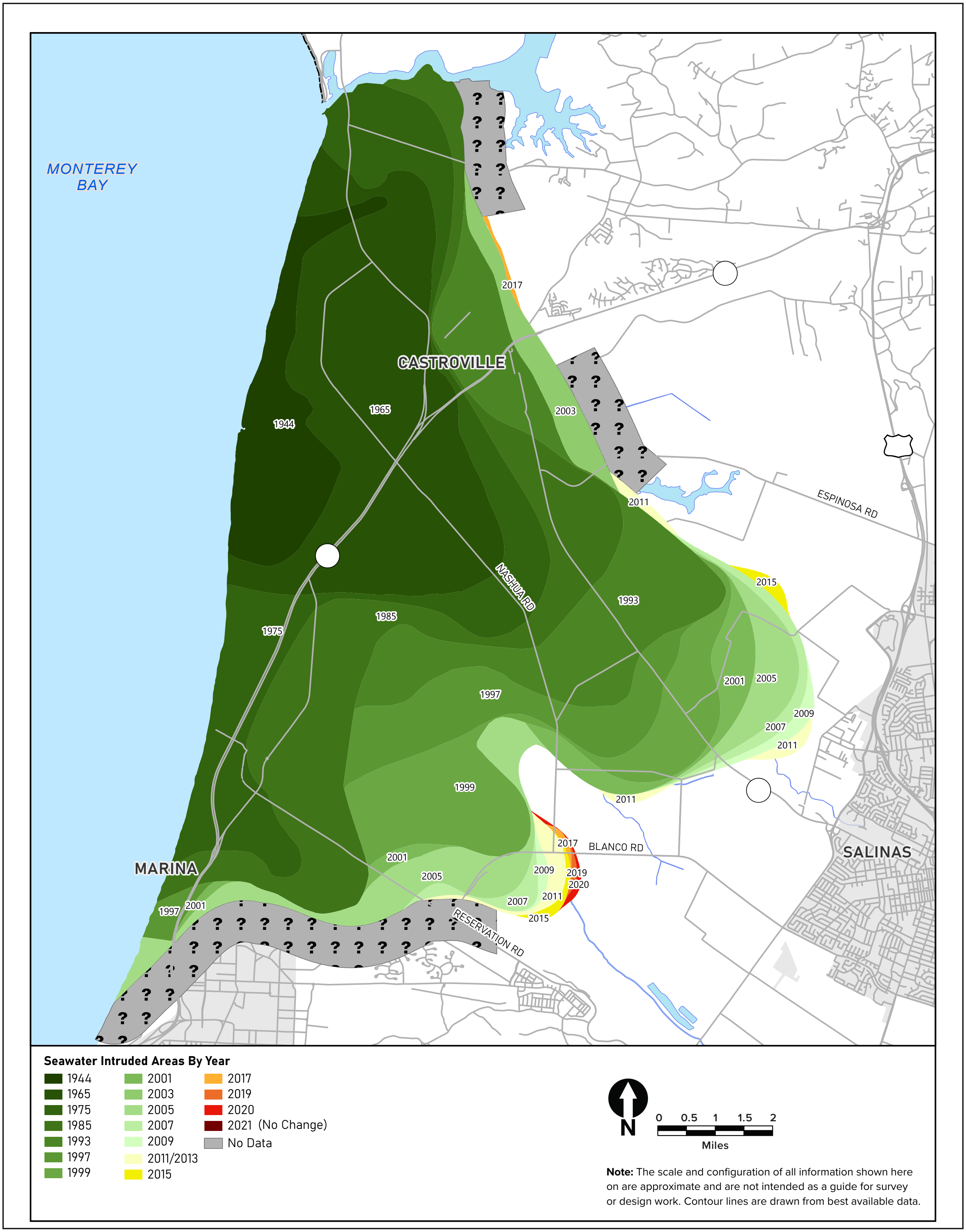
Total Dissolved Solid, mg/L	Chloride, mg/L	Sulfate, mg/L	Boron, mg/L	Sodium, mg/L	Nitrogen, mg/L
600	150	150	0.5	70	5

Source: Central Coast RWQCB 2019

One of the greatest threats to groundwater quality in the basin is seawater intrusion. Seawater intrusion has been noted as a problem in the coastal areas of the Basin since early in the 20th century. It is estimated that since 1949, an average of 10,000 AF of seawater per year has intruded into basin aquifers (MCRMA 2015). Primarily affecting the 180-/400-Foot Aquifer Subbasin, seawater intrusion can render groundwater unfit for irrigation or other beneficial uses. **Figure 4.1-12** shows the historical advancement of seawater intrusion for the 180-Foot Aquifer. **Figure 4.1-13** shows the same information for the 400-Foot Aquifer. Seawater intrusion has continued to advance over the last nine decades, but the rate of annual seawater intrusion has decreased since approximately 2000 due to operation of the Castroville Seawater Intrusion Program (CSIP). Other localized factors, such as aquifer materials and variations in groundwater head, also can affect seawater movement. Groundwater affected by seawater intrusion is identified by MCWRA Ordinance No. 3790 as containing chloride concentrations of 500 mg/L or greater. A chloride concentration of 500 mg/l is the maximum (upper) limit of the secondary drinking water standard and is used as a measure of impairment. Seawater intrusion results in degradation of groundwater supplies (NWSC & CCSE 2008).

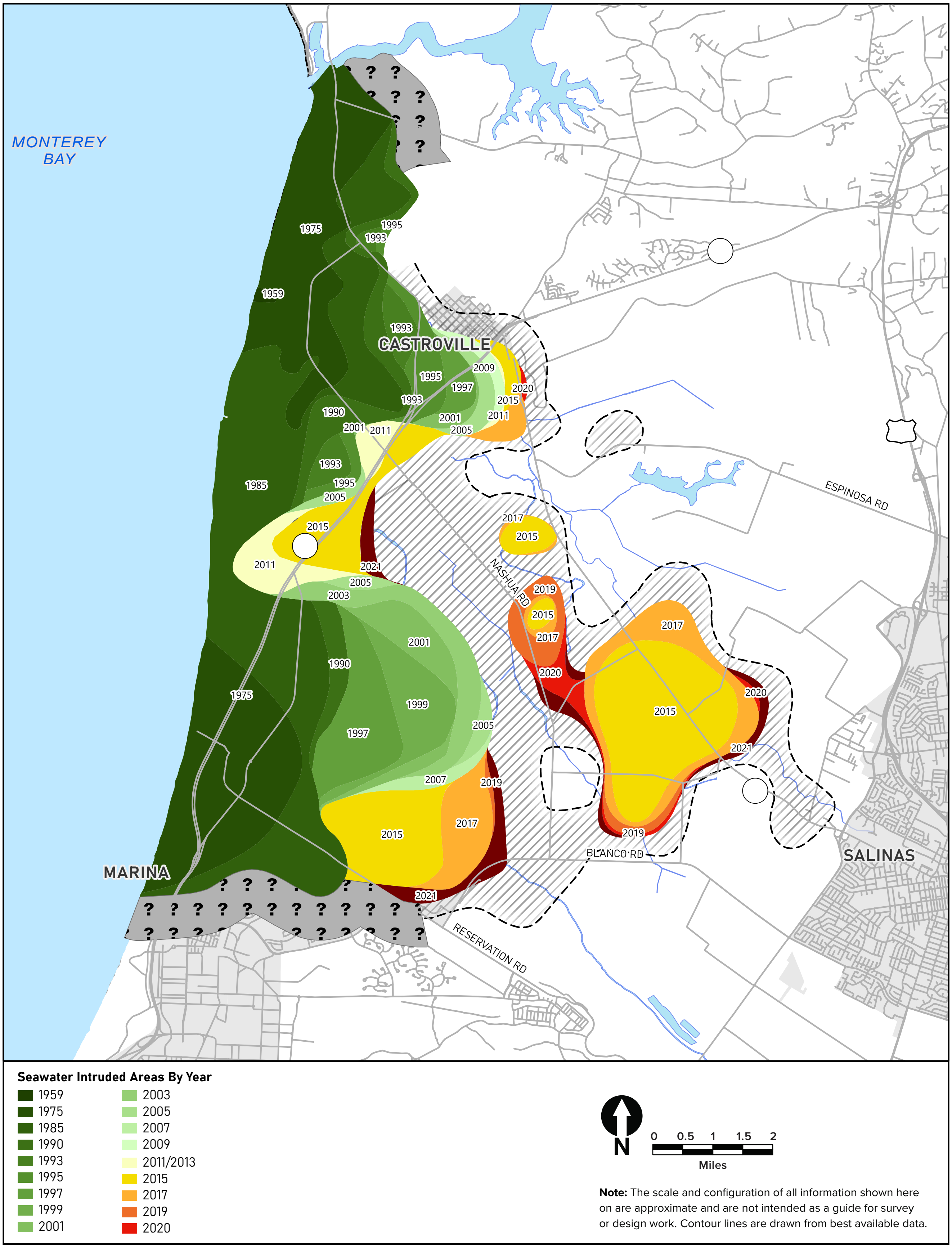
Recommendations to slow or halt seawater intrusion and associated effects in the Salinas Valley Groundwater Basin include the following: prohibition of groundwater extractions from new wells in the 400-Foot Aquifer within the area of impact (roughly equivalent to the seawater intruded area), with exceptions for certain well types; enhancement and expansion of the CSIP service area; following expansion of the CSIP service area, termination of all pumping from existing Pressure 180-Foot or Pressure 400-Foot Aquifer wells within the Area of Impact, with exceptions for certain well types; and an immediate prohibition of groundwater extractions from new wells within the entirety

[7] With the exception of the Carrizo Plain groundwater basin.



Source: MCWRA 2022i

Figure 4.1-12
Historic Seawater intrusion in the Pressure 180-Foot Aquifer



Note: The scale and configuration of all information shown here on are approximate and are not intended as a guide for survey or design work. Contour lines are drawn from best available data.

Graphics ... 104337 (10-18-2022) JC

Source: MCWRA 2022j

Figure 4.1-13

Historic Seawater intrusion in the Pressure 400-Foot Aquifer

of the deep aquifers of the 180-/400-Foot Aquifer and Monterey Subbasin until an investigation of the deep aquifers is completed and data pertaining to the hydraulic properties and long-term viability of the deep aquifers are available for knowledge-based water resource planning and decision making. The recommendations also include initiating and diligently proceeding with the installation of additional groundwater-level and water-quality monitoring locations in the coastal region and initiating and diligently proceeding with the destruction of inactive or abandoned wells in MCWRA Zone 2B (MCWRA 2020a; Salinas Valley Basin GSA 2022a).

The Lockwood Valley Groundwater Basin under lies San Antonio Reservoir. Groundwater in the basin is bicarbonate type with calcium and magnesium (DWR 2004a). There is no documented saline intrusion. Groundwater in the Salinas Valley Groundwater Basin – Upper Valley Aquifer is of sodium and calcium sulfate type, with calcium-magnesium bicarbonate. TDS values were reported between 140 to 990 mg/L, with an average value of 443 mg/L (DWR 2004b). High concentrations of nitrate are found in primary aquifers in the Salinas Valley Groundwater Basin. TDS concentrations were high (greater than the upper limit) in approximately 9 percent of the primary aquifers, and approximately 31 percent of the primary aquifers had moderate TDS concentrations (between the recommended and upper limit). Iron and manganese are naturally occurring elements, and one or both were present at high and medium concentrations in approximately 21 percent and 11 percent of the primary aquifers, respectively (Kulongoski and Belitz 2011). Recharge of poor-quality surface water from drainages along the western slope of the Gabilan Range have created poor quality groundwater along the eastern side of the subbasin. This results in sulfate, boron, TDS, and conductivity exceeding drinking water standards in many areas (DWR 2004b). Nitrate levels exceed drinking water standards, and iron and manganese exceed maximum contaminant levels. The following constituents have also been identified as above levels of concern: arsenic, asbestos, diesel, gasoline, and organochlorine pesticides. In the Salinas Valley Groundwater Basin, one or more inorganic constituents were present at high concentrations in about 15 percent of the primary aquifers and at moderate concentrations in about 36 percent of the primary aquifers. One or more trace elements were present at high concentrations in about 6 percent of the primary aquifers, and at moderate concentrations in about 25 percent of the primary aquifers. Arsenic, boron, and molybdenum were the trace elements that most frequently occurred at high concentrations (Kulongoski and Belitz 2011). Other reported water quality impacts include volatile organic compounds (VOCs), methyl tertiary butyl ether (MTBE), perchlorate (PERC), and trichloroethylene (TCE) (MCRMA 2015). As discussed in Section 4.7, *Hazards and Hazardous Materials,* two LUST sites are in the vicinity of the proposed project features; these involve releases of gasoline to groundwater. However, both cases have received closure by the Central Coast RWQCB.

4.1.3.9 Geomorphology

The numerous creeks and drainages within the watershed that feed into the Nacimiento and San Antonio rivers and reservoirs were cut out of the hillsides through processes of erosion and sediment transport, driven by water falling as precipitation. Erosion may be greatly accelerated during large storm events and sediment may be mobilized and transported many miles downstream before being deposited. Nacimiento and San Antonio Dams effectively block transport of sediment downstream beyond the dams. As a result, any sediment or eroded material that is mobilized in the upper watersheds would likely be deposited within the reservoir and would not be transported further downstream. In addition, any water released from the reservoirs (with the exception of high flow winter flood releases) would likely be deficient of sediment and therefore may be more erosive as it seeks to achieve a balance with its surrounding environment.

A study of the sediment budget for the Nacimiento and San Antonio River watersheds found that the San Antonio River watershed actually produces substantially more sediment (two times per unit area) than the Nacimiento River watershed. This can be attributed to the difference in landscape morphology, as well as human activities, which resulted in a greater supply of available sediment in the San Antonio watershed. The Nacimiento watershed has a denser vegetation canopy, and its lowland valleys are generally narrow and more confined. By contrast, the San Antonio watershed is dryer with less vegetation, and its lowland areas are dominated by a large alluvial plain, which provides a large source of highly erodible material and contains various higher intensity land uses (e.g., agriculture, grazing, and residential development) prone to creating conditions that increase sediment supply to channels (NWSC & CCSE 2008).

The morphology of the Salinas River has been shaped over time by similar processes of erosion and deposition. The river may receive some sediment from the Nacimiento and San Antonio watersheds (less now following construction of the Nacimiento and San Antonio Dams), but also receives sediment from the numerous other rivers and creeks (e.g., Arroyo Seco) that flow into it. During high flow events, sediment is transported downstream from its source higher in the watershed and is deposited in the lower reaches of the river or transported to the ocean.

The Salinas River terminates in a lagoon before discharging to Monterey Bay and the Pacific Ocean. Depending on river inflow and the time of the year, this lagoon may be closed or open to the ocean. Like the rest of the Salinas River, the Salinas River Lagoon is highly managed for the protection of steelhead trout as well as flood protection for adjacent parcels. Water levels in the Salinas River Lagoon are managed by MCWRA, which releases flows through an outlet gate to the Old Salinas River channel and manages the sandbar elevation to allow direct outflow to the ocean (MCWRA 2015).

When the Salinas River Lagoon is closed to the ocean, lagoon water surface elevations are maintained at a minimum of 3 feet relative to mean sea level, as measured at the Old Salinas River slide gate. In addition, the minimum bypass set point is 7 cfs when releases to the lagoon through the fish ladder occur (MCWRA 2017; MCWRA 2020b). MCWRA conducts sandbar management at the mouth of the Salinas River as part of its flood control activities. The lagoon sandbar is mechanically opened to the ocean using an excavator or bulldozer to prevent flooding on the properties located around the lagoon.

4.1.3.10 Flood Risk

The Salinas River has a history of floods and very high flows during the winter storm season. The largest flood of record occurred in March 1995, when the Salinas River reached 95,000 cfs at Spreckles (MCWRA 2014a). The flooding altered the course of the Salinas River in many areas, resulting in the permanent loss of over 1,100 acres of prime farmland due to erosion (MCWRA 2014a). Other damaging floods include the February 1998 flood, when 50 roads and highways were closed and March 2011 floods, resulting in at least 1,279 acres of cropland damage (MCWRA 2014a). Most recently, the lower Salinas River approached flood stage in February 2017, but did not reach a level to cause major effects (National Oceanic and Atmospheric Administration 2022).

As shown on **Figure 4.1-14**, a portion of the Interlake Tunnel and Spillway Modification Project, including Nacimiento and San Antonio Reservoirs, Nacimiento River downstream of the reservoir, and San Antonio River downstream, is within the 100-year floodplain, within FEMA

Zone A. However, the area between the reservoirs is outside of the 100-year floodplain, within FEMA Zone X. FEMA Zone X is an area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level (City of San Luis Obispo 2020; Monterey County 2018).

4.1.4 Impact Analysis

4.1.4.1 Methods for Evaluating Impacts

To determine whether the proposed project or the Tunnel-Only Alternative would result in any significant impacts associated with hydrology and water quality, the analysis in this section focuses on issues related to surface hydrology, groundwater supply, surface and groundwater quality, and flood hazards. The key construction and operations-related impacts are identified and evaluated, based on the physical characteristics of the project and the magnitude, intensity, location, and duration of activities.

As provided by CEQA Guidelines Section 15125(a), a lead agency should generally describe physical environmental conditions (existing conditions) as they existed at the time the NOP was published; where existing conditions change or fluctuate over time, a lead agency may define existing conditions by referencing historic conditions or conditions expected when the project becomes operational, or both. In the case of this EIR, existing conditions are generally defined as the way they were in 2016, the date the NOP was issued for the project, which is also the CEQA baseline for evaluating construction impacts. Construction impacts in this section were analyzed by comparing reasonably foreseeable construction-related effects of the proposed project and Tunnel-Only Alternative to existing conditions, as described in Section 4.1.3, *Environmental Setting*.

Impacts related to reservoir operations are analyzed using output from the SVOM, an operational baseline model that considers the geologic structure, land use, hydrologic processes and properties, reservoir operations, and climate.[8,9] The SVOM provides modeled baseline data as well as modeled proposed project and Tunnel-Only Alternative scenarios. For operational analyses that utilize output from the SVOM, the CEQA baseline is the modeled baseline from the SVOM. Precipitation records from October 1, 1967, through December 26, 2014, were used in the model, with time-step ranges of 5 to 6 days. The model is described further in the subsection titled *Hydrologic Modeling* in Section 2.5.1.1, *Operations*.

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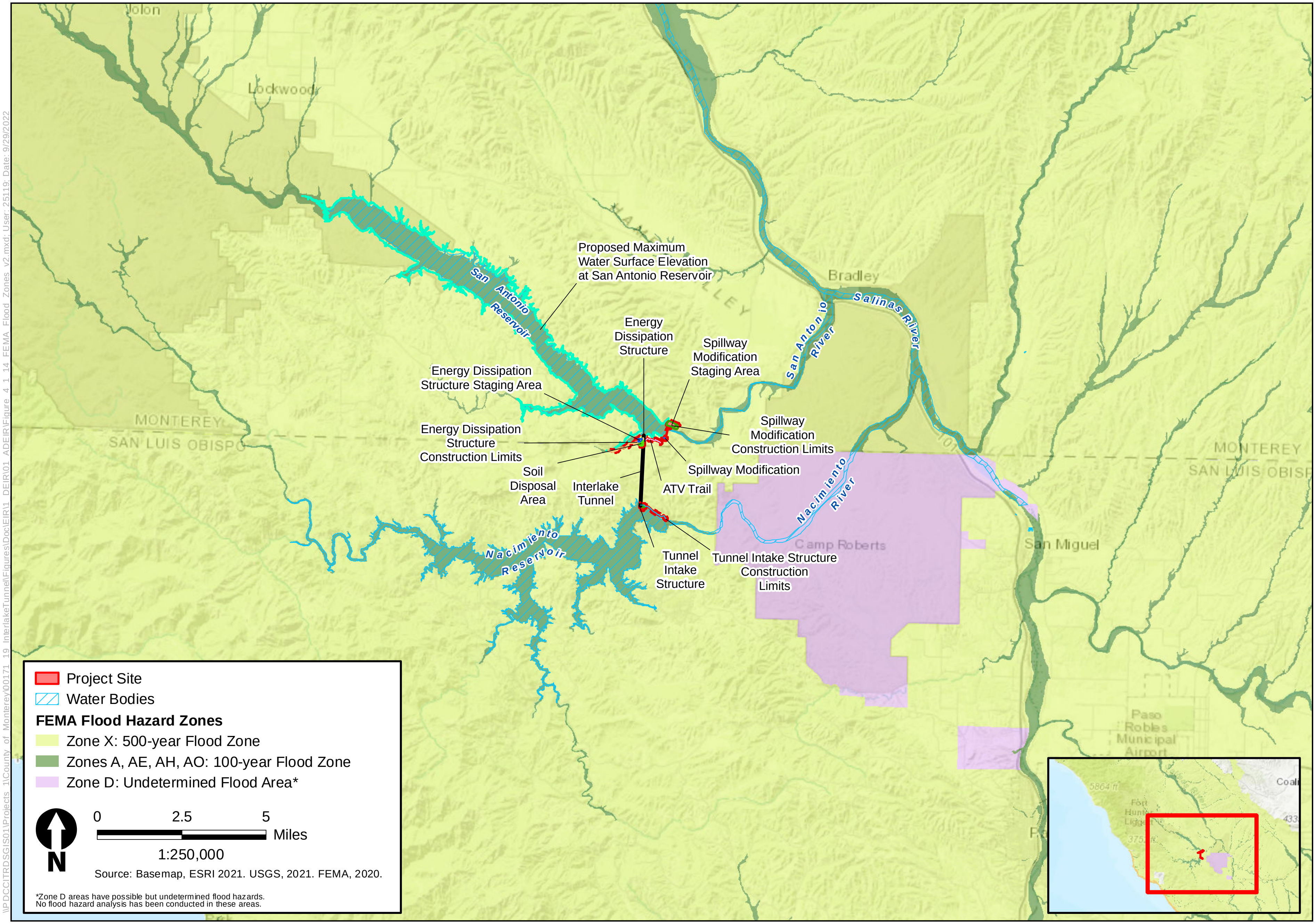
[8] Salinas Valley Integrated Hydrologic Model (SVIHM) is a historical integrated hydrologic model that uses estimated and measured data to simulate historical rainfall, runoff, recharge, storage, water levels, streamflow, water supply, and demand for native and cultivated lands to develop comprehensive water budgets. The SVIHM is calibrated from October 1, 1967, to December 31, 2014, and updated though water year 2018. The SVOM assumes that current reservoir operations and 2014 land uses were constant for the entire simulation from October 1, 1967, to December 31, 2014.

[9] The results presented herein are from an unofficial collaborator development version of a preliminary model. Access to the model and use of its data are limited to those who are collaborating on model development. Once the model is published and receives full USGS approval, it will be archived and released to the public. The data (model and/or model results) are preliminary or provisional and ae subject to revision. The model and model results are being provided to collaborate with agencies that are contributing to model development and meet the need for timely best science. The model has not received final approval from USGS. No warranty, expressed or implied, is made by USGS or the U.S. government as to the functionality of the model and related material, nor shall the fact of release constitute any such warranty. The model is provided on the condition that neither USGS nor the U.S. government shall be held liable for any damages resulting from authorized or unauthorized use of the model.



\\PDCCITRDSGIS01\Projects_1\County_of_Monterey\00171_19_InterlakeTunnel\Figures\Doc\EIR\1_DEIR\01_ADEIR\Figure_4_1_14_FEMA_Flood_Zones_v2.mxd; User: 25119; Date: 9/29/2022

Figure 4.1-14
FEMA Flood Zones

The modeled operations results provide a comparison of modeled with-project scenarios to modeled without-project scenarios (modeled baseline) using 47 years of historical data. This model method allows for comparison of alternatives under a variety of water-year types and scenarios to assess the full range of hydrological effects of the proposed project and Tunnel-Only Alternative on beneficial uses. The historic data on which the model results are based were also reviewed to understand trends, provide analysis context, and check modeled results. Modeling results presented on a 5- to 6-day time step are adequate for presenting the differences that could occur for each alternative. However, because the model results do not include daily (or instantaneous) hydrologic data, such as reservoir stage, reservoir release, or streamflow data, the modeled results should be used for alternative comparative purposes only. Because of model limitations, not every historical storm event is represented in modeled results. The model results approximate but may not capture the precise magnitude of events occurring on a daily or instantaneous time step.

Hydrological data, including reservoir stage, reservoir release, and river flow data, were modeled for baseline and project scenarios for all water-year types. Modeled baseline and modeled project hydrologic data were used to quantitatively evaluate operational impacts related to flood hazards and system capacity. Modeled baseline and modeled proposed project and Tunnel-Only Alternative scenario data also included seawater intrusion and groundwater/surface water exchange. Modeled groundwater data were used to quantitatively evaluate operational impacts related to groundwater quality and recharge. Water quality such as temperature, dissolved oxygen, nutrients, erosion, and debris are affected by reservoir levels, flow rates, and flood frequency. Modeled hydrological data was used to inform a qualitative evaluation of surface water quality, which in turn was compared to existing conditions as no water quality modeling was conducted for this EIR.

The SVOM includes output nodes that extend from Nacimiento and San Antonio Reservoirs in the upper Salinas River watershed all the way downstream to the Salinas River Lagoon. According to the SVWP Flow Prescription, the Salinas River Lagoon is generally open when the discharge in the Salinas River at Spreckels is between 80 and 150 cfs; however, MCWRA has observed the lagoon to be open at flows as low as 30 cfs at Spreckels. Operation scenarios resulting in streamflows of 30 cfs, 80 cfs, and 150 cfs at Spreckels were modeled for all water-year types (normal, wet, and dry conditions) to inform the analysis of the potential change in frequency at which the Salinas River Lagoon could be open.

To assess the potential change in flood impacts with implementation of the proposed project or Tunnel-Only Alternative, a flood frequency analysis was performed for modeled baseline, proposed project, and Tunnel-Only Alternative conditions at all the modeled locations. Flood frequency was determined by using the Weibull probability plotting position technique to rank the peak annual flow in descending order and calculate the recurrence interval (RI) in years (Flynn et al. 2006). Where modeling results are available, modeled baseline conditions through water year 2018, using SVOM, were analyzed by comparing them to modeled proposed project and Tunnel-Only Alternative conditions.

CEQA analyses typically consider potential impacts in terms of a 100-year flood event (1 in 100 or 1 percent probability of occurring in a given year). However, the modeling record covers only a 47-year period; no flood frequency extrapolation was performed to estimate a 100-year flood. Therefore, no 100-year flood events were represented in the 5- to 6-day time-step ranges evaluated in the model for the study area. The 47-year flood event was the largest event based on the modeling record evaluated in the analysis discussed.

The analysis uses project-specific significance criteria, based on the CEQA Guidelines Appendix G, with modifications where deemed appropriate, based on the nature of the project and environmental conditions. Where a potentially significant environmental effect has been identified, project-specific mitigation measures have been identified where feasible to avoid or reduce the significant effect.

4.1.4.2 Criteria for Determining Significance

Appendix G of the CEQA Guidelines provides guidance on assessing whether a project would have significant impacts on the environment. Consistent with Appendix G and consideration of project-specific environmental conditions, MCWRA has determined that the project would have surface water hydrology impacts if it would:

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

   i. Result in substantial erosion or siltation on- or off-site.

   ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

   iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

   iv. Impede or redirect floodflows.

d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

4.1.4.3 Avoidance and Minimization Measures

MCWRA has incorporated AMMs into the project design to prevent the occurrence of environmental impacts or reduce their severity. The AMMs applicable to the hydrology and water quality analysis include the following:.

- **AMM GEN-1**, *Spill Prevention and Control*
- **AMM GEN-2**, *Equipment Maintenance and Fueling*
- **AMM GEN-3**, *Hazardous Materials Containment*
- **AMM GEN-4**, *Waste Management*
- **AMM GEN-5**, *Maintenance and Parking of Construction Vehicles*
- **AMM GEN-6**, *Staging, Stockpiling of Soil, and Access*
- **AMM GEN-8**, *Dust Management Controls*
- **AMM GEN-14**, *Private Well Protection Measures*

A complete description of the measures is provided in Section 2.6, *Avoidance and Minimization Measures.*

4.1.4.4 Impacts and Mitigation Measures

Impact HWQ-1: Impacts on Surface or Groundwater Quality

Construction

Surface Water Quality

Construction activities under either alternative include grading, stockpiling of soil materials, and other construction-related earth-disturbing activities. These actions could result in short-term water quality impacts associated with soil erosion and subsequent sediment transport to adjacent properties, roadways, or watercourses. Construction would also involve use of motorized heavy equipment including trucks and dozers that require fuel, lubricating grease and other fluids as well as the delivery, handling, and storage of construction materials and wastes such as concrete debris. Accidental chemical release or spill from a vehicle or equipment could affect surface or groundwater quality. Construction activities could also generate dust, settlement, litter, oil and other pollutants that could temporarily contaminate water runoff from the project site. All construction equipment and materials would be staged on-site. Staging areas or building sites can be sources of pollution because of the use of paints, solvents, cleaning agents, and metals during construction.

Construction activities, such as grading, dewatering, and tunneling, would produce waste rock (spoils) that would require permanent disposal. Approximately 156,105 cubic yards of spoils would be generated. The construction contractor would reuse fill soils generated by site grading to the greatest extent possible and would also require imported materials. All spoils would be tested and treated accordingly prior to discharge to the soil disposal area. Contaminated spoils including on-site soils that become contaminated by products used by heavy construction equipment (e.g., from a hydraulic fluid leak) would be hauled to the appropriate off-site disposal area or approved reuse area. See Section 4.7, *Hazards and Hazardous Materials,* for more details regarding waste disposal and hazardous materials.

The project design includes the erosion control BMPs described in **AMM GEN-6**, *Staging, Stockpiling of Soil, and Access*, and **AMM GEN-8**, *Dust Management Controls*. Together, these design features would limit the potential for erosion. BMPs specified in **AMM GEN-6**, *Staging, Stockpiling of Soil, and Access,* include locating stockpiled soils away from waterways and surrounding stockpiles with an erosion control material. **AMM GEN-8**, *Dust Management Controls,* requires all active construction areas to be watered at least twice daily to minimize wind erosion and control dust. The project design also includes measures to manage chemical releases or spills, including the release of contaminants from vehicles, as described in **AMM GEN-1**, *Spill Prevention and Control*, **AMM GEN-2**, *Equipment Maintenance and Fueling*, **AMM GEN-3**, *Hazardous Materials Containment*, **AMM GEN-4**, *Waste Management*, and **AMM GEN-5**, *Maintenance and Parking of Construction Vehicles*. These design features would limit the potential for hazardous materials to be released into waterways. They require actions to be implemented to control and manage hazardous discharges during construction activities.

In addition to the above measures, the construction contractor and MCWRA must comply with the NPDES Construction General Permit and the Municipal Regional Permit, which contain standards to ensure that water quality is not degraded during construction. As part of the Construction General Permit, standard erosion and sediment control measures and BMPs would be identified in a SWPPP and would be implemented during construction to reduce sedimentation of waterways and loss of topsoil. The construction contractor would be required to install, monitor, and maintain erosion and sediment control measures. The construction contractor would also be required to prepare documents, including an erosion control plan and a stormwater control plan, and implement the measures contained within the documents. Erosion control measures would be maintained for the duration of the construction project. The construction contractor would be required to obtain a grading permit from the County of Monterey prior to any on-site grading. Compliance with the County of Monterey's grading permit and the Construction General Permit would require the use of BMPs to restrict non-stormwater discharges from the construction site as well as release of hazardous materials.

Other potential water quality impacts include chemical spills into storm drains or groundwater aquifers if proper minimization measures are not implemented. However, required BMPs would be implemented to reduce pollutants in stormwater and other nonpoint-source runoff. Measures range from source control to treatment of polluted runoff. BMPs can include watering active construction areas to control dust generation during earthmoving activities; using water sweepers to sweep streets and haul routes; and installing erosion and sediment control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, and sandbag dikes) to prevent silt runoff to public roadways, storm drains, or waterways. As appropriate, disturbed soil would be revegetated as soon as possible with the appropriate selection and schedule of plants. Specified permanent post-construction erosion and sediment control measures would be required to protect exposed slopes until the vegetation is fully established. As described in Chapter 2, *Project Description*, areas in which vegetation is removed during construction would be revegetated with native plants at the end of construction. The spoils stockpile created from excavation, ground clearing, and tunneling activities would also be revegetated after construction is completed (see the subsection titled *Spoils Management* in Section 2.4.2.6, *Materials Management and Disposal*).

No disturbed or graded surfaces would be left without erosion control measures in place during the rainy season, which generally occurs between October 15 and April 15. In addition to compliance with the Construction General Permit, the construction contractor would also be required to comply with local stormwater and construction site runoff ordinances. These requirements involve development and implementation of an erosion control plan (ECP) specific to the construction site to minimize water quality impacts. The ECP would include methods for controlling runoff, erosion, and sediment movement. The plan would be developed according to the guidance provided in documents such as the construction BMP handbook. Compliance with these requirements would ensure that construction activities do not result in a violation of water quality standards or waste discharges requirements, or otherwise result in water quality degradation.

Following the completion of construction, all temporarily disturbed areas used during construction would be cleaned and restored to approximate preconstruction conditions. All construction materials and debris would be removed from the project site and recycled or otherwise disposed of at an off-site disposal facility according to regulatory requirements.

Groundwater Quality

Groundwater dewatering would be required during some construction activities on a one-time or temporary basis. Typical pollutants that may be encountered include sediment (the most common pollutant associated with dewatering operations), high levels of pH, and contaminant pollutants associated with current or past use of the site or adjacent land. Discharging contaminated or sediment-laden water from a dewatering site into any water of the State without treatment is prohibited. The Construction General Permit covers dewatering activities, provided that dischargers prove the quality of water to be adequate and not likely to affect beneficial uses. Groundwater sampling and/or treatment may be required to ensure compliance with applicable construction dewatering discharge permitting.

Dewatering activities would also be in compliance with the discharge sampling, monitoring, and reporting requirements of the Central Coast RWQCB WDR for dewatering (Order NO. 2003-0003-DWQ). If it is found that the groundwater does not meet water quality standards, it must either be treated prior to discharge so that all applicable water quality objectives (as designated in the Basin Plan) are met or hauled off-site for treatment and disposal at an appropriate waste treatment facility that is permitted to receive such water.

Other construction activities could result in short-term groundwater quality impacts associated with the input of sediment loads or chemical spills into groundwater aquifers that exceed water quality objectives if proper minimization measures are not implemented. However, the construction contractor would be required to comply with the MS4 permit, including filing a Notice of Intent for permit coverage under the Construction General Permit as well as local stormwater and construction site runoff ordinances. These requirements involve development and implementation of a Construction General Permit SWPPP and ECP specific to the project site to minimize water quality impacts related to spills or other activities that could contaminate groundwater. BMPs would be required and incorporated into the SWPPP and other permits prior to approval of grading permits, providing an acceptable level of water quality protection. In addition, compliance with Waste Discharge Requirements and dewatering regulations would ensure that dewatering activities are monitored and treated as required and that no violations of any water quality standards or waste discharge requirements occur.

Operation

Surface Water Quality

Stormwater Runoff

Project implementation would create new impervious areas at the project site. The impervious area at the Tunnel Intake Structure and associated facilities (control building and access road) would be approximately 22,000 sf, and the impervious area at the Energy Dissipation Structure at San Antonio Reservoir would be approximately 880 sf. Stormwater runoff from impervious surfaces can generate nonpoint-source pollutants such as organic materials, solids, pathogens, sediment from erosion, chemical fertilizers, and other pollutants, which may be discharged to receiving waters, including Nacimiento Reservoir and San Antonio Reservoir. However, all project-related development would comply with applicable federal, State, and local requirements discussed in Section 4.1.2, *Regulatory Setting*. The project would be designed and maintained in accordance with County of Monterey and Central Coast RWQCB water quality requirements, such as the MS4 permit. The stormwater design would provide chemical and biological remediation of runoff, with a focus on infiltration management strategies (McMillen Jacobs Associates 2020). The project would incorporate stormwater treatment areas such as bioretention swales and other water quality management measures to ensure the project would not violate any water quality standards or otherwise result in water quality degradation during operation.

The project site drains to Nacimiento Reservoir and San Antonio Reservoir. Nacimiento River and San Antonio overlie the Paso Robles Area and Upper Valley Aquifer groundwater sub-basins, respectively. As a result, the project has a California Watershed Management Zone 4 (WMZ 4) classification and specific water quality management measures are required. The stormwater management design would provide chemical and biological remediation of runoff, with a focus on infiltration management strategies. Drainage from all new and resurfaced impervious areas would be collected and treated in a bioretention swale located to the south of the existing Nacimiento Reservoir boat ramp parking area. The bioretention swale would remove particulates prior to infiltrating or flowing back toward Nacimiento Reservoir. The bioretention swale would treat runoff from new impervious areas, including the control building, parking lot, and Tunnel Intake Structure, and allow stormwater to infiltrate into the ground (McMillen Jacobs Associates 2020).

Debris and Trash

To prevent large, woody debris from entering the Tunnel Intake Structure, a floating debris boom would be located at the entrance of the Tunnel Intake Structure. The debris boom would be a fixed structure with a floating boom section and an underslung debris curtain and would accommodate reservoir-level fluctuation. Debris from the boom would be diverted to the shore of Nacimiento Reservoir to be collected and processed by operations personnel as part of facility maintenance. A trash rack would be mounted behind the debris boom to remove vegetative matter and smaller woody debris from entering the structure.

The trash rack would contain a solid steel plate covering the upper reaches of the trash rack (from 760 feet to the top of the structure at 810 feet) to prevent surface debris from entering the Tunnel Intake Structure during flood events. The lower portion of the trash rack (729.5 feet to 760 feet) would consist of a standard metal bar trash rack with 1.5-inch clear space openings that would extend the entire width of the approach channel to screen all inflows to the intake structure and minimize debris from reaching the fish screens. The proposed trash rake is intended to operate in an automatic or a manual cleaning mode. The trash rake would lift debris from in front of the trash rack onto a conveyor belt where it would be transported to the side of the Tunnel Intake Structure and deposited into a debris bin. The debris bin is intended to periodically be removed with a loader and truck to allow for proper disposal of the accumulated debris.

Given that prior drought and recovery conditions have already exposed reservoir banks to water fluctuations and associated erosion under current conditions, it is presumed that no significant increase in erosion or geomorphic change would occur at Nacimiento Reservoir during non-flood events. However, during flood events, water quality impacts related to erosion are anticipated, as described in Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity*, as well as other erosion-related impacts.

Temperature

Reservoirs can cause considerable impacts on water quality, including temperature of downstream waters. Based on model results, both the proposed project and Tunnel-Only Alternative would generally result in lower reservoir water levels for Nacimiento Reservoir (a decrease up to -31 percent and -33 percent for the proposed project and Tunnel-Only Alternative, respectively) for all water-year types compared to modeled baseline conditions (see Appendix D*, Existing and Proposed Hydrology Conditions*, **Table D-5**, pages D-5 and D-6). Nacimiento Reservoir could experience adverse effects on water quality due to decreased water levels compared to modeled baseline conditions. Lower surface water levels in the reservoir could increase water temperature, decrease oxygen levels, and increase phosphorous levels, which in turn could increase intensity and duration of algae and cyanobacteria blooms in the reservoir during the summer and into early fall (Henderson et al. 2021; Tasnim et al. 2021). For reservoirs, pH and dissolved oxygen in the surface waters are driven largely by primary production[10] associated with phytoplankton. The water quality effects of oxygen and nutrients are discussed further in a subsequent subsection titled *Nutrients and Oxygen*. Effects on water quality would be temporary and intermittent, based on managed releases and seasonal variability, and would not affect existing beneficial uses.

Mercury

Reservoirs can convert and circulate the mercury that is already present in plants and soil in aquatic environments. Under the proposed project, model results indicate that tunnel transfers from Nacimiento Reservoir could contribute an annual average of 6,338 to 92,628 AF of water to San Antonio Reservoir in dry and wet years, respectively (Appendix D*, Existing and Proposed Hydrology Conditions,* **Table D-6**, page D-7). Under the Tunnel-Only Alternative, model results indicate that tunnel transfers from Nacimiento Reservoir could contribute an annual average of 6,338 to 92,296 AF of water in dry and wet years, respectively (2 to 28 percent of San Antonio Reservoir's maximum storage capacity for both alternatives). Although the transfer of water from Nacimiento Reservoir is likely to contain a small quantity of suspended sediment with trace amounts of mercury, it is expected that the overall existing mercury concentration in San Antonio Reservoir and the San Antonio River would not change because predominantly water (as opposed to sediment) would be transferred, and the dominant source of mercury contamination in water bodies is sediment-adsorbed mercury. The volume of tunnel transfers is greatest during the winter months (in wet and normal water years) when peak flows are expected to transport higher concentrations of mercury-laden suspended sediment. However, a disturbance of bottom sediments and associated release of mercury is not anticipated. The reduction in near-shore inundation in Nacimiento Reservoir would also reduce mercury methylation because a smaller area would be flooded by reservoir waters and prior deposits would be less likely to be mobilized. Methylation occurs in sediments in areas with shallow water, which undergo a microbiological process that transforms inorganic mercury into methylmercury, an organic form of mercury that is easily absorbed into living tissue and highly toxic (Tang et al. 2020). Therefore, mercury concentrations with implementation of either the proposed project or Tunnel-Only Alternative are expected to be similar to modeled baseline conditions.

Nutrients and Oxygen

Rapidly moving water generally contains elevated concentrations of dissolved oxygen. However, the concentrations of dissolved oxygen in surface water are affected by temperature. These concentrations have both a seasonal and a diurnal cycle. Because of the tunnel transfers, the model results indicate that San Antonio Reservoir could see an increase in reservoir water levels of up to 69 percent and 63 percent for the proposed project and Tunnel-Only Alternative, respectively, during all months and with all water-year types (Appendix D*, Existing and Proposed Hydrology Conditions,* **Table D-5**, pages D-5 and D-6). Therefore, San Antonio Reservoir and the associated San Antonio River are expected to generally avoid adverse water quality impacts related to low reservoir levels, as discussed for Nacimiento Reservoir. Higher water surface elevations can result in reduced mixing and nutrient transfers from the sediments to the water column (Seelos et al. 2021).

[10] Primary production is the production of chemical energy in organic compounds by living organisms.

However, if a reservoir thermally stratifies[11] in the summer, the bottom waters can become depleted of oxygen. Anoxic[12] conditions in bottom waters lead to biological processes that degrade water quality through the release of problem-causing compounds from anoxic sediments such as phosphates, ammonia, sulfides, or methyl-mercury (Beutel 2003). Furthermore, methyl mercury concentrations may increase in bottom waters during periods of thermal stratification and low oxygen levels (Beutel 2003; Seelos et al. 2021). However, deeper reservoir depths may also decrease water temperatures, which, in turn, create unfavorable conditions for mercury methylation (Wu et al. 2021).

Reservoir Releases and Water Quality

The model results indicate that average annual total reservoir releases from Nacimiento Reservoir could decrease by up to -27 percent across all water years for both the proposed project and Tunnel-Only Alternative (Appendix D*, Existing and Proposed Hydrology Conditions,* **Table D-7**, page D-7). Reduced water quality in Nacimiento Reservoir could also affect the Nacimiento River below the reservoir, including increased water temperature and increased levels of cyanobacteria. In rivers, a decrease in discharge during the warmer months (other factors remaining unchanged) often increases daytime peaks in pH and decreased dissolved oxygen because of the increase in water temperature and the likely increase in algae growth. In slow-moving rivers dissolved oxygen can be removed from the water column through respiration and decomposition causing dissolved oxygen to decrease. In addition, this reduction in peak flows and overall more stable river levels would be expected to reduce streambank erosion along the Nacimiento River and associated turbidity. Furthermore, operation of the proposed project and Tunnel-Only Alternative would allow reservoir operational flexibility that could change the way reservoir storage, water supplies, and reservoir releases are managed, with associated water quality effects managed on a real-time basis by reservoir operations managers. Therefore, overall effects on water quality in the Nacimiento River are not expected to be adverse.

Model results indicate that the average annual total reservoir releases from San Antonio Reservoir would range from an increase up to 164 percent during dry years to a decrease up to -13 percent during normal years under the proposed project and Tunnel-Only Alternative (Appendix D*, Existing and Proposed Hydrology Conditions,* **Table D-7**, page D-7). Water temperatures would be unaltered with the general increase in flows associated with reservoir releases; however, dissolved oxygen may increase. Other water quality impairments, such as nutrients and suspended sediment, would be flushed downstream. As a result, water quality in San Antonio Reservoir is not anticipated to affect the San Antonio River adversely.

Salinas River and Downstream Water Quality

In rivers, water temperatures fluctuate naturally or through anthropogenic actions, creating diverse thermal regimes (Steel et al. 2017; Caissie 2006). However, water temperature is influenced by river flow rates and seasonal thermal patterns (Sinokrot and Gulliver 2000; Caissie 2006). In warmer months, reduced flows can increase temperatures. Generally, Salinas River flows,[13] as estimated at various locations in the river (e.g., USGS gaging stations/model nodes), are similar under baseline conditions, the proposed project, and the Tunnel-Only Alternative. However, the proposed project

[11] Thermal stratification refers to a change in temperature at different depths in the lake related to the change in water density with temperature.

[12] Absent of oxygen.

[13] Under a 50 percent exceedance probability for all water-year types.

and Tunnel-Only Alternative would have greater flows compared to modeled baseline conditions in September and October at Bradley, Soledad, and the Salinas River Diversion Facility and lower estimated flows compared to modeled baseline conditions in May and June at Chualar, Spreckels, a model location upstream of the Salinas River Diversion Facility, and the Salinas River Lagoon. As a result, under the proposed project and Tunnel-Only Alternative, water temperatures may increase in some segments of the Salinas River and decrease in others compared to baseline conditions.

Low-lying agricultural fields on the north side of the Salinas River Lagoon are susceptible to inundation during concurrent high river flows and a closed river mouth. A breach typically occurs in conjunction with wet winter storms (November through January) but can also occur in fall and spring months (October and June) (MCWRA 2015). Subsequent water quality impacts may occur when the lagoon is breached, as the area opens to ocean waters and becomes more brackish. Alterations in water quality due to a lagoon breach would be reduced during dry summer months. According to the SVWP Flow Prescription, the lagoon is generally open when discharge in the Salinas River at Spreckels is between 80 and 150 cfs, although it has been observed that the lagoon is open at flows as low as 30 cfs at Spreckels.

Operational scenarios resulting in streamflows of 30 cfs, 80 cfs, and 150 cfs at Spreckels were modeled for all water-year types (normal, wet, and dry conditions) for both the proposed project and Tunnel-Only Alternative and compared to modeled baseline conditions. Modeled results indicated a variable change in the percentage of time steps with streamflows above the rates at which the Salinas River Lagoon has generally been known to open (Appendix D*, Existing and Proposed Hydrology Conditions,* **Table D-8**, page D-8). SVOM model results suggest that low flows (30 cfs at Spreckels) could occur more often for the proposed project and the Tunnel-Only Alternative compared to the modeled baseline. Conversely, moderate flows (80 cfs) could generally occur less often for the proposed project and the Tunnel-Only Alternative relative to baseline conditions, except for dry years, which could experience a substantial increase under both alternatives. The model output indicates large flows (150 cfs) could remain similar under both alternatives.

Effects to water quality would generally be variable with the proposed project and Tunnel-Only Alternative. Water quality may be affected by increased exposure to ocean water seepage and splash-over without drainage when low river flows occur during normal or wet water years in conjunction with a closed Salinas River Lagoon. These effects are likely to be reduced with an open river mouth. During dry years, the exposure to ocean water seepage could decrease due to an increase of positive pressures associated with increased river flows.

<u>Groundwater Quality</u>

The project is intended to improve the hydrologic balance of the Salinas Valley Groundwater Basin, reduce seawater intrusion, and enhance flood control. As discussed below, implementation of the project is generally expected to change the existing rates of seawater intrusion in certain of the underlying aquifers as a result of increased groundwater recharge and dry-season releases from Nacimiento and San Antonio Reservoirs during dry, average, and wet water-year types (Appendix D*, Existing and Proposed Hydrology Conditions,* **Table D-9**, page D-9). The geologic framework used in the model consists of nine layers (aquifers and aquitards). There are separate layers in the model for the two aquifer units that comprise the Deep Aquifers, known as the Upper Deep aquifer and Lower

Deep aquifer.[14] For the proposed project and Tunnel-Only Alternative, the seawater intrusion rate is generally expected to decrease or remain unchanged for all aquifers across all water year-types, except for the Lower Aquifer, which is expected to experience no change in the seawater intrusion rate. Groundwater recharge in aquifers underlying the downstream study area is generally expected to increase, as discussed under Impact HWQ-2, *Impacts on Groundwater Supplies and Recharge*. Compared to modeled baseline conditions, both the proposed project and Tunnel-Only Alternative would see no or negligible change in seawater intrusion in the Upper and Lower Deep Aquifer[15] and a minimal decrease (up to 1.9 percent) in seawater intrusion in the Shallow, 180-Foot, and 400-Foot Aquifer in all water-year types.

CEQA Conclusion

Construction impacts on water quality under the proposed project and the Tunnel-Only Alternative would be **less than significant**.

Operations-related water quality impacts under either the proposed project or the Tunnel-Only Alternative would be **less than significant**.

Impact HWQ-2: Impacts on Groundwater Supplies and Recharge

Construction

The proposed project and Tunnel-Only Alternative would involve temporary dewatering for construction of the Tunnel Intake Structure and the Energy Dissipation Structure. However, dewatering would be temporary and would be conducted during the construction phase only; it would not affect groundwater supplies. A small cofferdam would be required during construction of the Tunnel Intake Structure entrance channel when the reservoir levels are low. Because groundwater levels are anticipated to match the reservoir pool elevation, excavation groundwater controls would depend on the reservoir pool level. Excavations may occur during low reservoir pool levels, but it can be anticipated that full reservoir fluctuation from high pool to low pool may occur during construction. A groundwater control system would be required to manage potential fluctuations. However, the soils at the site are relatively impermeable, and it is anticipated that groundwater control may be achieved through sumps or short wells extending below the base of excavation. Dewatering pumps would be placed on the inside of the cofferdam to collect seepage and pumped to a disposal area in the boat ramp parking lot area. Pumped water would be conveyed through a straw or fiber wattle filter system prior to discharging back to Nacimiento Reservoir (McMillen Jacobs Associates 2020). In addition, groundwater supplies would not be used during construction activities such as dust control.

During construction of the Interlake Tunnel, excavation may encounter groundwater which would be addressed with grouting and a watertight tunnel lining to prevent inflows into the tunnel and limit any impacts on the groundwater levels. The project's Construction General Permit is expected

[14] The Upper Deep Aquifer and the Lower Deep Aquifer can be differentiated by the depositional environment, such as the change in texture and materials between the two formations. This is the basis of the definition for the layer boundary between the Upper Deep Aquifer and the Lower Deep Aquifer in the Salinas Valley Operational Model. As a result, the top of each formation (or depth to each from the surface) is not a constant value, and the depth to the boundary is variable.

[15] Note, in wet years, the Paso Robles Formation, making up the upper part of the Deep Aquifer, would see up to a 0.3 percent reduction in seawater intrusion under the proposed project and Tunnel-Only Alternative.

to cover grouting and lining activities. Construction of the Interlake Tunnel would not directly conflict with or damage private wells. However, groundwater levels in wells adjacent to the Interlake Tunnel alignment may be temporarily affected (low likelihood) by construction, with potential for temporary impacts on groundwater supply. If groundwater levels are affected by construction of the Interlake Tunnel, grouting and the watertight tunnel lining would limit the time when a decline in water levels would occur. The limited time would minimize the potential for groundwater levels to decline to the extent that they would affect the water supply at an individual well.

The project would include the boring and excavation procedures described in Resolution No. 16-R03 as well as Chapter 2, *Project Description*. These procedures would limit the intensity of groundwater seepage into the tunnel excavation and be used to manage potential impacts on private wells as a result of construction of the Interlake Tunnel. Preparation and implementation of a groundwater management plan would be required, as specified in **AMM GEN-14**, *Private Well Protection Measures*. The groundwater management plan would require a contingency plan, which would provide well owners with a temporary water supply if their wells are affected during construction. Once tunneling is complete, groundwater levels are expected to return, if affected, to their original levels. Therefore, groundwater would be managed during construction to ensure that the project would not affect groundwater supplies and recharge.

Operation

Implementation of the project would create new impervious areas at the project site. However, drainage from all new and resurfaced impervious areas would be collected and treated in a bioretention swale located south of the existing Nacimiento Reservoir boat ramp parking area. The bioretention swale would treat runoff from new impervious areas and would include drain rock and sands to allow stormwater to drain freely and infiltrate into the ground allowing for groundwater recharge (McMillen Jacobs Associates 2020). Landscaped areas around the project site would continue to allow surface water runoff to percolate into the ground, thereby providing for groundwater recharge consistent with existing conditions.

As discussed in Impact HWQ-1, *Impacts on Surface or Groundwater Quality*, changed operations at Nacimiento Reservoir would result in variations in reservoir water levels compared to baseline conditions. Seepage through porous geologic material could result in a loss of water on the bottom and the sides of the reservoir. Furthermore, this could increase with increased water levels. However, operations associated with the proposed project and Tunnel-Only Alternative would not change the susceptibility of soils in the study area with respect to expansion and contraction. Variations in reservoir water levels, with associated effects related to inundation within soils, would not change or exacerbate the tendency of soils to expand and contract with changes in wetness. For more information regarding soils and soil stability, see Section 4.2, *Geology, Soils, and Seismicity and Paleontological Resources.* Therefore, the decrease in seepage with lower water levels in Nacimiento Reservoir would not be expected to be substantial. In comparison, it is expected that the area surrounding San Antonio Reservoir could experience an increase in groundwater recharge due to higher reservoir water levels compared to baseline conditions.

Groundwater recharge changes along the Nacimiento River and San Antonio River would vary under the proposed project and Tunnel-Only Alternative. As discussed under Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity*, the proposed project and Tunnel-Only Alternative would increase the magnitude of the 47-year flood on the Salinas River downstream of the San Antonio River. The amount of land that would be flooded is larger under both the proposed project and Tunnel-Only Alternative compared to the modeled baseline condition. As a result of changes in flow in the Salinas River channel and increased flood inundation of adjacent floodplains, the volume of surface water infiltrating into the ground and contributing to groundwater levels would generally increase. Conversely, modeled storm peak flows would be similar or slightly less on the San Antonio River for 1.5-year and 4.8-year RI storm intervals. Moderate flows on the San Antonio River with a RI of 2 years would decrease, while flows with a RI of 9.6 years would increase. Moderate flows on the Nacimiento River with RIs of 2 years, 4.8 years, and 9.6 years would also decrease. As a result, water infiltration and associated groundwater recharge during moderate RI flow events would decline. However, there is likely to be an overall increase in groundwater recharge during other times of the year because of increased conservation releases from Nacimiento Reservoir.

Model results indicate variable groundwater recharge for the proposed project and Tunnel-Only Alternative compared to the modeled baseline when all water years are combined; however, total annual groundwater recharge is anticipated to increase under both the proposed project and the Tunnel-Only Alternative relative to the modeled baseline. Modeled results represent the net groundwater/surface water exchange between the stream system and the subsurface. However, not all of this water is expected to recharge the groundwater system because some of the water is utilized by riparian vegetation through evapotranspiration. In normal water years, the average annual net groundwater/surface water exchange would increase compared to modeled baseline conditions in groundwater aquifers underlying the Nacimiento River (Paso Robles Basin and Upper Valley Subbasin) for the proposed project and Tunnel-Only Alternative (Appendix D*, Existing and Proposed Hydrology Conditions,* **Table D-10**, page D-10). Conversely, the average annual net groundwater/surface water exchange underlying the San Antonio River in normal water years for the proposed project and Tunnel-Only Alternative would decline substantially (70 to 90 percent), particularly in the Upper Valley Subbasin, compared to modeled baseline conditions. In dry water years, under both the proposed project and the Tunnel-Only Alternative, a moderate decline (approximately 11 percent) in modeled groundwater/surface water exchange could occur in aquifers underlying the Nacimiento River. However, the model results indicate a substantial increase (67 to 70 percent) in groundwater/surface water exchange in the Upper Valley Subbasin. In addition, a small increase (2 AFY) in net groundwater/surface water exchange could occur in the non-basin areas underlying the San Antonio River. Furthermore, the model results indicate that in wet water years the net groundwater/surface water exchange in aquifers underlying the San Antonio River, particularly the Upper Valley Subbasin, could increase substantially under the proposed project and Tunnel-Only Alternative compared to the modeled baseline (57 to 115 percent). The model results also indicate that there could be a modest decline (7 to 8 percent) in groundwater/surface water exchange in aquifers underlying the Nacimiento River under the proposed project and the Tunnel-Only Alternative compared to the modeled baseline.

The model results indicate that both the proposed project and Tunnel-Only Alternative could increase groundwater recharge by up to 20 percent in each Salinas River subbasin (Upper Valley, Forebay, 180-/400-Foot, and Monterey) during dry years compared to modeled baseline conditions (Appendix D*, Existing and Proposed Hydrology Conditions,* **Table D-11**, page D-10). However, in dry years, the Paso Robles Subbasin would experience a small decrease (6.5 percent) in groundwater recharge. Furthermore, the recharge underlying the Salinas River would experience a modest decrease (1.5 to 3 percent) in wet and normal years under the proposed project and Tunnel-Only Alternative scenarios compared to the modeled baseline, with the Paso Robles subbasin experiencing the greatest decrease in groundwater recharge in normal years and no change in wet years. However, total groundwater recharge, when all water-year types are considered, would result in a 1 percent increase in total groundwater recharge under both the proposed project and the Tunnel-Only Alternative scenarios compared to the modeled baseline.

The proposed project is intended to support the goals in both the Monterey County GWMP and the applicable GSPs by increasing groundwater recharge in the Salinas Valley Groundwater Basin, which may further serve to protect groundwater quality and slow or possibly halt seawater intrusion. The proposed project is also intended to alleviate and improve the hydrologic balance of the Salinas Valley Groundwater Basin, thereby supporting the aims of the GSAs that manage the basin. As a result, the project would serve to alleviate some of the impacts on groundwater that are currently contributing to DWR priority rankings of high and medium for a number of the sub-basins within the Salinas Valley Groundwater Basin. The project would therefore benefit groundwater supplies and sustainable groundwater management of the Salinas Valley Groundwater Basin.

CEQA Conclusion

Construction impacts on groundwater under the proposed project and the Tunnel-Only Alternative would be **less than significant**.

Operations-related groundwater impacts under the proposed project and the Tunnel-Only Alternative would be **less than significant** due to the variable recharge between water years, however the proposed project and the Tunnel-Only Alternative would provide a long-term benefit to groundwater supplies and sustainable groundwater management of the Salinas Valley Groundwater Basin.

Impact HWQ-3: Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity

Construction

During construction, stormwater drainage patterns could be temporarily altered due to site grading, preparation, and excavation activity. However, the construction contractor would implement BMPs, as required in the project SWPPP, to minimize the potential for erosion or siltation in nearby storm drainage facilities and temporary changes in drainage patterns during construction. BMPs would also minimize excess stormwater flows into nearby storm drainage facilities. With implementation of BMPs during construction, small amounts of sheetflow[16] would be captured and allowed to infiltrate into the ground; therefore, off-site runoff from the project site would not increase, thereby ensuring that drainage patterns would not be altered substantially. Prior to issuance of a grading/land clearing permit, the County of Monterey would require preparation and approval of an ECP. The ECP would include methods for controlling runoff, erosion, and sediment movement.

It is anticipated that a cofferdam would be required during construction of the Tunnel Intake Structure when Nacimiento Reservoir water levels are greater than 724 feet. Similarly, construction of the Energy Dissipation Structure at San Antonio Reservoir would also require a cofferdam when the San Antonio Reservoir WSE exceeds 680 feet. The cofferdams at each construction site would be installed while reservoir levels are low (McMillen Jacobs Associates 2020). Dewatering pumps would be placed inside each cofferdam as well as the outlet construction area to collect seepage and

[16] Sheetflow is an overland flow or downslope movement of water, taking the form of a thin, continuous film over relatively smooth soil or rock surfaces; it is not concentrated in channels.

pump it to a disposal area where it can be run through a straw or fiber wattle filter system prior to discharge back to Nacimiento and San Antonio Reservoirs. The temporary cofferdams would be removed following the completion of construction. As appropriate, BMPs, such as silt booms or silt barriers, would be implemented to contain and control silt within the reservoir. As a result, construction of the project would not substantially alter the existing drainage pattern of the area in a manner that would result in substantial erosion or siltation.

Operation

Stormwater Runoff

Because the proposed project would create or replace 2,500 sf or more of impervious area, it would be required to meet the Central Coast RWQCB Post-Construction Requirements. The stormwater management design would provide physical and biological remediation for runoff, with a focus on infiltration management strategies. Stormwater facilities would be designed to retain 100 percent of the volume of water from storms that are less than or equal to the 95th-percentile 24-hour rainfall event over the footprint of the project site. Stormwater would not discharge to surface waters, including the Nacimiento Reservoir or San Antonio Reservoir. The design of the stormwater retention facility would be based on the runoff volume generated by a single 95th-percentile 24-hour rainfall event. In a 95th-percentile 24-hour rainfall event, the stormwater retention facility would contain 1.4 inches (in depth) of stormwater runoff (McMillen Jacobs Associates 2020).

In addition to Central Coast RWQCB Post-Construction Requirements, all runoff control would be sized using the 10-year storm, per Chapter 16.12.070 of the Monterey County Code of Ordinances. MCWRA or its construction contractor would be required to develop and implement a Stormwater Control Plan that meets the requirements of the Monterey Regional Stormwater Management Program and minimize water quality impacts.

Flooding, Erosion, and Drainage Capacity Effects

MCWRA's reservoir operations managers currently employ a decision-making process that allows for reservoir operational flexibility and changes the way reservoir storage, water supplies and reservoir releases are managed on a real-time basis. This operational flexibility could affect the rate, volume, and frequency of reservoir releases seasonally in some years, which could affect downstream peak flows, floodplain inundation, and erosion and siltation dynamics relative to the quantitative output of the SVOM model reported in this analysis.

To approximate the potential for effects from reservoir operations, the SVOM was used to estimate changes in river flows under a modeled scenario that prioritizes water supply storage using the Interlake Tunnel. Because this modeled scenario is only one of many potential modeled scenarios, the results should be interpreted as representations of potential changes; they would not represent actual changes that would occur under real-time reservoir operations. The SVOM model output for the proposed project and Tunnel-Only Alternative was analyzed at 10 different locations and compared to the modeled baseline, with nine of these locations having the potential for altered streamflows due to changes in reservoir operations (the Salinas River above the Nacimiento River output is unchanged between the different scenarios).

The largest RI possible is 48 years for the model output for the 1968–2014 water years. Model results suggest substantial increases in peak flows at RIs greater than approximately 20 years at many locations in the Salinas River and at RIs greater than approximately 7 years in the San Antonio River. The results are summarized in table format in Appendix D*, Existing and Proposed Hydrology*

Conditions (**Table D-12** and **Figures D-1 through D-11**, pages D-12 through D-24). Because the model time step is 5 to 6 days, the peak annual flows correspond to the average flow magnitude over 5 to 6 days; therefore, they are lower than instantaneous peak-flow measurements at a USGS gage. **Table D-12** on pages D-12 and D-13 in Appendix D*, Existing and Proposed Hydrology Conditions*, compares the proposed project and Tunnel-Only Alternative to the modeled baseline for the 1.5-, 2-, 4.8-, 9.6-, 24-, and 48-year RIs to capture potential changes in the range of flow-event magnitudes.

For the modeled 1.5-year RI, relative to the modeled baseline, the proposed project is generally expected to increase flows an average of 25 percent, ranging from an increase of 195 percent on the Nacimiento River to a decrease of 5 percent on the San Antonio River. The trend is the same for the Tunnel-Only Alternative. These results indicate that conservation releases on the Nacimiento River would increase.

For moderate flood events with RIs of 2 years, 4.8 years, or 9.6 years, the modeled results indicate that the proposed project is generally expected to decrease river flows 13 percent, 29 percent, and 23 percent, respectively, when averaged for all model node locations relative to the modeled baseline. The Tunnel-Only Alternative could decrease river flows -11 percent, -31 percent, and -21 percent, respectively, compared to the modeled baseline. The largest decrease, of 80 percent and 86 percent, could occur on the Nacimiento River with the 4.8-year RI with the proposed project and Tunnel-Only Alternative, respectively, compared to the modeled baseline. The exception to this overall trend of moderate flood reduction is on the San Antonio River where the proposed project could increase both the 4.8-year (5 percent) and 9.6-year (31 percent) peak flows compared to the modeled baseline. Similarly, the Tunnel-Only Alternative could increase the 9.6-year (49 percent) peak flow compared to the modeled baseline. This potential reduction in peak flow magnitudes on the Nacimiento River and increase in magnitudes on the San Antonio River during moderate storm events could reduce existing flood hazards and floodplain inundation and potentially modify erosion and siltation dynamics on the Nacimiento River. On the San Antonio River, the potential for flood hazards, floodplain inundation, and sediment transport is generally expected to increase. Downstream effects, as modeled under the proposed project and Tunnel-Only Alternative, in the Salinas River and its tributaries with 2- to 9.6-year flood events are generally expected to occur more frequently compared to the modeled baseline, potentially changing the effect moderate flows have on erosion rates and siltation conditions.

For the modeled 24-year RI, modeling results indicate that the proposed project is expected to increase peak flows an average of 2 percent, ranging from an increase of 48 percent on the San Antonio River to a decrease of 21 percent on the Salinas River upstream of the San Antonio River confluence. The trend is the same for the Tunnel-Only Alternative, except for the San Antonio River where the Tunnel-Only Alternative would increase the magnitude of the 24-year RI by 112 percent compared to the modeled baseline condition.

For the proposed project, the modeled 48-year RI (i.e., largest flow that occurred in the modeling record) would increase relative to the modeled baseline at all locations, except on the Nacimiento River; the increases could be substantial at many locations. On the San Antonio River, downstream of the San Antonio Reservoir, modeled results indicate that flows could increase by 135 percent under the proposed project relative to the modeled baseline. On average, the modeled results indicate that the proposed project could increase the 48-year RI flow by 23 percent relative to the modeled baseline. For the modeled Tunnel-Only Alternative scenario, the 48-year RI could increase at all locations, except on the Nacimiento River and the Salinas River above the San Antonio River, compared to the modeled baseline. On the San Antonio River, downstream of the San Antonio

Reservoir, modeled results indicate that flows could increase by 174 percent under the Tunnel-Only Alternative relative to the modeled baseline. On average, the modeled results indicate that the Tunnel-Only Alternative could increase the 48-year RI flow by 31 percent relative to the modeled baseline.

Increased peak modeled flows under the proposed project and Tunnel-Only Alternative compared to the modeled baseline suggest that there may be downstream erosion and sedimentation changes. As a result of the potential for increased flood events, primarily on agricultural land, operation of the proposed project and Tunnel-Only Alternative could result in substantial erosion or siltation along the Nacimiento River, San Antonio River, and Salinas River.

With respect to the proposed project, there are extensive alluvial deposits within the San Antonio River floodplain that could be reactivated during a high-flow event or as a result of bank erosion. As a result, there may be areas along the perimeter of San Antonio Reservoir that are susceptible to erosion caused by the increased normal maximum water level within the reservoir from the San Antonio Dam Spillway Modification. Potential nonpoint sources of pollution include sediment from erosion due to shoreline erosion. If shoreline areas are not adequately designed and maintained, an increase in erosion and siltation could result, especially in San Antonio Reservoir. This effect would not occur under the Tunnel-Only Alternative.

Overall, the modeling results indicate that operating the proposed project and the Tunnel-Only Alternative could reduce flood releases during moderate flood events because the increased reservoir storage, as allowed by the Interlake Tunnel, would reduce the need for flood control releases associated with moderate storm events (Baillie pers. comm.). This change is unlikely to result in adverse downstream flooding effects or streambed erosion and siltation because of the moderate flows that would occur and the infrequent nature of flood releases under this modeled scenario. However, for larger storm events, the modeled results for the proposed project and Tunnel-Only Alternative indicate that the potential exists for substantial changes in downstream peak flow magnitudes on the San Antonio River and moderate increases in downstream floodplain inundation (under the 48 year RI). These conditions could increase flood hazards and erosion and siltation, including at locations where floodwater could inundate portions of adjacent land that is used primarily for agriculture.

The modeled scenario aims to increase the overall storage capacity of the two-reservoir system by retaining relatively high amounts of water storage in Nacimiento and San Antonio Reservoirs, which, in effect, reduces the spare capacity that could otherwise be used to hold water from a storm event. Therefore, in wetter years, modeling results indicate that flood release magnitudes and frequencies would increase when higher reservoir storage levels occur. This kind of change, if it were to occur, could result in increased downstream peak flows, especially in the San Antonio River, and increased floodplain inundation, streambed erosion, and siltation effects. However, as presented in Section 2.5.1.1, *Operations*, the modeled results provide an approximation of potential effects from operating the proposed project and Tunnel-Only Alternative; they do not simulate historical conditions. The model is unable to capture the real-time operational decision making that occurs to reduce the downstream effects of reservoir releases. The considerations that would be employed in the real-time decision-making process for operation of the project include:

- Using precipitation and streamflow forecasts to estimate inflow volumes and the timing for reservoir storage management plans and decisions,
- Avoiding excess San Antonio Reservoir releases by temporarily allowing reservoir elevations to exceed the operation rule curve and attenuate and reduce anticipated peak flood control releases,

- Reducing or delaying Interlake Tunnel transfers to prevent elevations from exceeding the operation rule curve and uncontrolled spillway releases. This would result in the storage of water in Nacimiento Reservoir until a time later in the year when the delayed water transfer could be completed, and
- Decreasing or delaying planned reservoir flood control releases, based on Salinas River watershed conditions, to reduce impacts from releases coinciding with other peak flows in the watershed.

These measures reflect a continuation of MCWRA's ongoing operational decision-making process and the ability of the reservoir operations managers to maximize the water supply and minimize downstream effects, as reflected in MCWRA's historic reservoir operations record. Although the ability to mitigate downstream flooding, floodplain inundation, and erosion and siltation effects through a continuation of MCWRA's operational decision-making process is considerable under the proposed project and Tunnel-Only Alternative, the potential for these types of effects is, in an abundance of caution, considered to be substantial in light of the SVOM modeling results available for flood releases on the San Antonio River and the inherent uncertainty of hydrologic conditions in MCWRA's watersheds.

CEQA Conclusion

Construction impacts associated with stormwater under the proposed project and the Tunnel-Only Alternative would be **less than significant**. As required by the SWPPP, stormwater management and erosion control BMPs would be implemented to minimize the potential for erosion or siltation. An ECP would be implemented to control runoff, erosion, and sediment movement.

Operational impacts under the proposed project and Tunnel-Only Alternative have the potential to increase the magnitude of flood control releases on the San Antonio River and the Salinas River, which could change flood hazard conditions, increase floodplain inundation, alter erosion and siltation conditions, and exceed the conveyance capacity of river channels. This impact would be significant because modeling results indicate that the potential exists for sizable increases in the magnitude of flow releases below San Antonio Reservoir in the wettest years. There is some inherent uncertainty related to the ability of real-time operational decision-making to limit increased peak flow magnitudes in the San Antonio River compared to modeled baseline conditions. The conveyance capacity of the river channels could be exceeded, particularly on the San Antonio River and reaches of the Salinas River, without appropriate management strategies. MCWRA would implement **MM HYD-1**, which would require MCWRA to actively manage Interlake Tunnel and reservoir operations through development and implementation of a detailed operational plan for controlling the rate and timing of Interlake Tunnel transfers during projected storm events. The operational plan would reduce the potential for hazardous downstream flows on the San Antonio River or exceedances of system capacity. It would also reduce potential downstream floodplain inundation as well as erosion and siltation changes associated with higher river flows.

Operational impacts under the proposed project have the potential to increase erosion with increased water levels within San Antonio Reservoir. Implementation of **MM GSP-2** (see Section 4.2, *Geology, Soils, Seismicity, and Paleontological Resources*) would stabilize San Antonio Reservoir slopes and reduce the potential for impacts related to erosion. The impact would be **less than significant with mitigation**.

Mitigation Measure HYD-1. Develop and Implement the Interlake Tunnel Operational Plan

MCWRA will develop and implement an operational plan for the Interlake Tunnel that addresses procedures and decision-making processes for actively managing Interlake Tunnel and reservoir operations to minimize the potential for downstream flood impacts. Elements of the plan will include:

- Hydrologic and operational triggers to determine when Interlake Tunnel operations will be actively managed, including projected reservoir inflows, storm and precipitation forecasts, and current and forecast reservoir storage.
- Detailed operational plans for controlling the rate and timing of Interlake Tunnel transfers during projected storm events prior to San Antonio Reservoir storage reaching the tunnel operation rule curve. The goal of Interlake Tunnel operations will be to limit the magnitude of downstream San Antonio River peak flows from San Antonio Reservoir, based on specific operations limitations developed by a qualified reservoir operations engineer.
- Coordinated technical studies related to localized and baseline hydrology, hydraulics, and geomorphology prior to developing the Interlake Tunnel Operational Plan to inform the management of reservoir and tunnel operations. The plan will be presented to the Reservoir Operations Advisory Committee (an advisory committee to the MCWRA Board of Directors) prior to finalization.

Impact HWQ-4: In a Flood Hazard Area, Risk Release of Pollutants Due to Project Inundation

Construction

A portion of the proposed project including Nacimiento and San Antonio Reservoirs, is within the 100-year floodplain. Therefore, construction of the proposed project and Tunnel-Only Alternative could be subject to inundation by a flood. Prior to a flood event, construction equipment would be relocated as necessary such that floodflows are not impeded or redirected. Measures required by the Construction General Permit, including preparation of a SWPPP and associated stormwater BMPs, would limit site runoff during construction. BMPs would be implemented to control construction site runoff, ensure proper stormwater control and treatment, and reduce the discharge of pollution to the storm drain system.

Construction activities must comply with the NPDES Construction General Permit as well as county and local policies including implementing stormwater BMPs to minimize degradation of water quality associated with stormwater runoff or construction-related pollutants. In addition, measures such as sandbags and other temporary barriers would be implemented to reduce the release of pollutants and manage floodflows. In addition, construction and maintenance activities would comply with local stormwater and floodplain management ordinances, stormwater requirements of the MS4 permit, and regional waste discharge requirements. Other measures in the SWPPP would include a range of stormwater control BMPs (e.g., installing silt fences, staked straw wattles, or geofabric to prevent silt runoff to storm drains or waterways). Implementation of stormwater BMPs would minimize the potential for a release of pollutants as a result of inundation at the project site.

Operation

A portion of the project site, Nacimiento and San Antonio Reservoirs, Nacimiento River downstream of Nacimiento Reservoir, and the San Antonio River downstream of San Antonio Reservoir are within the 100-year floodplain. As described in HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity*, the SVOM model indicates that the proposed project and Tunnel-Only Alternative could result in substantial increases in peak flows at many locations, particularly for the largest flood over the modeling record (the 48-year RI) relative to the modeled baseline. On the San Antonio River downstream of San Antonio Reservoir, the modeled results indicate that flows could increase by 135 percent under the proposed project relative to the modeled baseline. For locations on the Salinas River downstream of the San Antonio River, the modeled increases under the proposed project with the 48-year RI range from 13 percent to 28 percent relative to the modeled baseline. On average, the modeled proposed project scenario is expected to increase the 48-year RI by 23 percent relative to the modeled baseline. The trend is the same for the Tunnel-Only Alternative. Flooding in these areas could result in impeded or redirected floodflows and the release of pollutants.

Operations would comply with County of Monterey stormwater management, discharge control, and floodplain ordinances; stormwater requirements established by the regional MS4 permit; and regional waste discharge requirements. Such requirements would entail the use of naturalized drainage channels to enhance stormwater runoff management and associated stormwater treatment. Existing vegetation adjacent to the improved channel would slow runoff and allow for infiltration, providing increased benefits from the reduced volume of pollutants released. Hardscape surfaces and landscape areas would slope toward suitable discharge facilities.

FEMA regulatory floods are typically based on a 100-year event, and likely determined from measured gage data of a much shorter duration than the MCWRA model data that has a 5- to 6-day time step and a 48-year period of record. Therefore, it is not possible to precisely state what effect the proposed project and Tunnel-Only Alternative would have on the regulatory flood. There is the potential for both the proposed project and the Tunnel-Only Alternative to increase the extent of flood inundation during the FEMA regulatory flood, particularly along the San Antonio River where the model data show substantial increases in peak flows relative to the modeled baseline. The increased flooding of adjacent agricultural land, as reflected under the modeled proposed project and Tunnel-Only Alternative, has the potential to mobilize and transport additional agricultural pollutants (e.g., herbicides) compared to the modeled baseline condition.

Although the ability to mitigate the release of pollutants due to inundation through a continuation of MCWRA's operational decision-making process is considerable under the proposed project and Tunnel-Only Alternative, the potential for water quality effects resulting from inundation is, in an abundance of caution, considered to be substantial in light of the SVOM modeling results available for flood releases on the San Antonio River and the inherent uncertainty of hydrologic conditions in MCWRA's watersheds.

CEQA Conclusion

Construction impacts related to flooding and a discharge of pollutants under the proposed project and the Tunnel-Only Alternative would be **less than significant**.

Increases in peak flows during operation of the proposed project and Tunnel-Only Alternative would have the potential to result in increased flooding and a release of pollutants compared to the baseline condition and could result in a significant impact. **MM HYD-1** would reduce the potential for hazardous downstream flows on the San Antonio River and reduce potential downstream floodplain inundation. Actively managing Interlake Tunnel and reservoir operations through a detailed operational plan would control the rate and timing of Interlake Tunnel transfers during projected storm events and associated peak flows as well as the potential for flood hazards. The operational plan would reduce the potential for hazardous downstream flows on the San Antonio River as well as risks associated with a release of pollutants from higher river flows. The impact of operations under the proposed project and the Tunnel-Only Alternative would be **less than significant with mitigation**.

Impact HWQ-5: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Groundwater Sustainability Plan

Construction

Commonly practiced BMPs would be implemented during construction of either the proposed project or the Tunnel-Only Alternative to control construction site runoff and reduce the discharge of pollutants to storm drain systems from stormwater and other nonpoint-source runoff. As part of compliance with permit requirements during ground disturbing or construction activities, implementation of water quality control measures and BMPs would ensure that water quality standards would be achieved, including the water quality objectives that protect designated beneficial uses of surface and groundwater, as defined in the Basin Plan. Construction runoff would also have to comply with the appropriate water quality objectives for the region. The NPDES Construction General Permit also requires stormwater discharges not to contain pollutants that cause or contribute to an exceedance of any applicable water quality objectives or water quality standards, including designated beneficial uses. Dewatering would be conducted temporarily during the construction phase and restricted to a small geographic area around the construction sites within the existing reservoirs. Water that is removed would be treated, if necessary, and discharged back to the reservoir from which it originated.

Operation

The stormwater design characteristics of the proposed project and Tunnel-Only Alternative would provide chemical and biological remediation for runoff, with a focus on infiltration management strategies. Incorporation of sustainable site design features such as a bioretention swale and vegetation within the borrow ditch would reduce stormwater runoff flows and associated pollutants. Furthermore, groundwater supplies would not be used during operation. Stormwater management strategies with a focus on infiltration would treat runoff and allow for groundwater infiltration and groundwater recharge. In addition, implementing the appropriate General Plan policies would require the protection of groundwater recharge areas and groundwater resources, as required by a sustainable groundwater management plan.

The proposed project would improve the hydrologic balance of the groundwater basin in the Salinas Valley, consistent with the SGMA, County of Monterey GWMP, and applicable GSPs shown in **Table 4.1-3**. The proposed project supports the goals in the GSPs by increasing groundwater recharge in the Salinas Valley, which may further serve to protect groundwater quality and halt or reverse seawater intrusion. As discussed under Impact HWQ-2, *Impacts on Groundwater Supplies and Recharge*, when all water years are combined, total annual groundwater recharge is anticipated to increase in aquifers underlying the Nacimiento River, San Antonio River, and the Salinas River under both the proposed project and the Tunnel-Only Alternative. Furthermore, the time when flows exceed 30 cfs at Spreckels under the proposed project and Tunnel-Only Alternative would be anticipated to increase during all water-year types. As a result, water quality and associated designated beneficial uses would improve. Therefore, the proposed project and Tunnel-Only Alternative would serve to alleviate some of the impacts on groundwater that are currently contributing to DWR priority rankings of High and Medium for a number of the subbasins within the Salinas Valley Groundwater Basin.

CEQA Conclusion

During construction and operation of either the proposed project or the Tunnel-Only Alternative, impacts with implementation of a water quality control plan would be **less than significant**.

During construction of either the proposed project or the Tunnel-Only Alternative, impacts with implementation of a groundwater sustainability plan would be **less than significant.**

During operation of either the proposed project or the Tunnel-Only Alternative, impacts with implementation of a groundwater sustainability plan would be **less than significant** due to the variable recharge between water years, however the proposed project and the Tunnel-Only Alternative would provide a long-term benefit to groundwater supplies and sustainable groundwater management of the Salinas Valley Groundwater Basin.

4.1.5 Impact Summary

Table 4.1-16 provides a summary of the significance of potential impacts on hydrology and water resources.

Table 4.1-16. Summary of Impacts on Hydrology and Water Resources

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact HWQ-1: Impacts on Surface or Groundwater Quality			
Proposed Project	<u>Construction</u>: Less than significant	N/A	N/A
	<u>Operation</u>: Less than significant	N/A	N/A
Tunnel-Only Alternative	<u>Construction</u>: Less than significant	N/A	N/A
	<u>Operation</u>: Less than significant	N/A	N/A
Impact HWQ-2: Impacts on Groundwater Supplies and Recharge			
Proposed Project	<u>Construction</u>: Less than significant	N/A	N/A
	<u>Operation:</u> Less than significant	N/A	N/A
Tunnel-Only Alternative	<u>Construction</u>: Less than significant	N/A	N/A
	<u>Operation:</u> Less than significant	N/A	N/A
Impact HWQ-3: Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity			
Proposed Project	<u>Construction:</u> Less than significant	N/A	N/A
	<u>Operation</u>: Significant	**MM HYD-1** **MM GSP-2**	Less than significant
Tunnel-Only Alternative	<u>Construction</u>: Less than significant	N/A	N/A
	<u>Operation</u>: Significant	**MM HYD-1**	Less than significant

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact HWQ-4: In a Flood Hazard Area, Risk Release of Pollutants Due to Project Inundation			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Significant	**MM HYD-1**	Less than significant
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Significant	**MM HYD-1**	Less than significant
Impact HWQ-5: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Groundwater Sustainability Plan			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A

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4.2 Geology, Soils, and Seismicity and Paleontological Resources

4.2.1 Overview

This section identifies geologic, soil, and seismic conditions that could be affected or, as appropriate under applicable law, exacerbated by the proposed project or the Tunnel-Only Alternative. It also describes the regulatory setting, affected environment, and the project's impacts on the environment.

The analyses regarding the project's setting and impacts are based on the following:

- *Interlake Tunnel and San Antonio Spillway Modification Project: Geotechnical Exploration Work Plan* (McMillen Jacobs Associates and GEI Consultants [MJA and GEI] 2017)
- *Interlake Tunnel Project: Geotechnical Data Report* (MJA and GEI 2018)
- *Interlake Tunnel Project: Geotechnical Baseline Report for Bidding (GBR-A), 60 Percent Design-Build Submission Revision No. 1* (MJA and GEI 2020)
- *Web Soil Survey* and *Gridded SSURGO Database* (Natural Resources Conservation Service [NRCS] 2016, 2021)

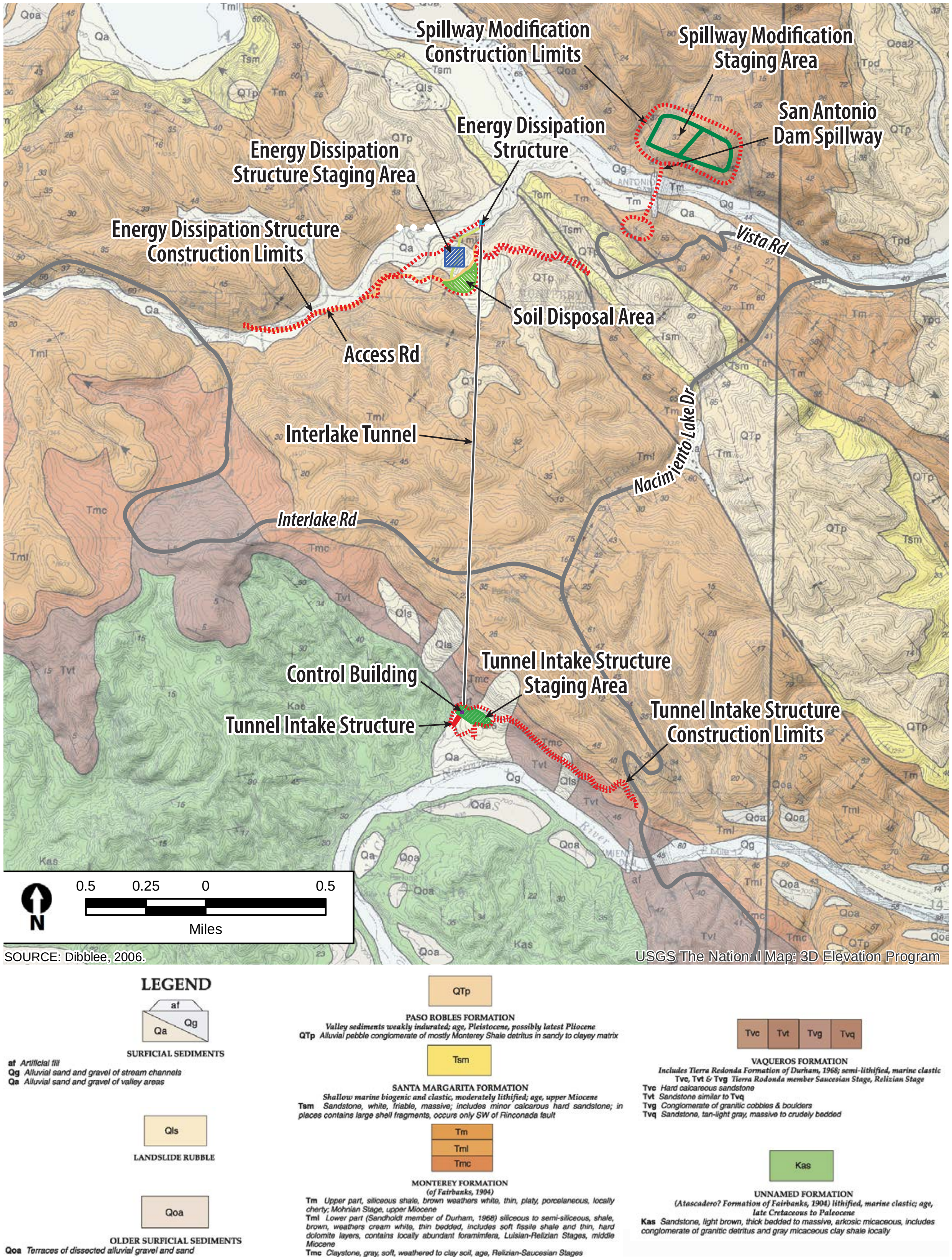
This section also describes the regulatory setting, affected environment, and the project's impacts on paleontological resources. Paleontological resources are the fossil remains of prehistoric flora and fauna or traces of evidence of the existence of prehistoric flora and fauna. This section addresses issues concerning the occurrence of paleontological resources within the study area and the potential impact that construction activities and operation of the proposed project could have on scientifically important fossil remains, as identified in the CEQA Guidelines. The analysis presented in this section conforms to the Society of Vertebrate Paleontology (SVP) criteria (SVP 2010).

The analyses regarding the project's paleontological setting and impacts are based on the following:

- SVP's Standard Procedures for the Assessment and Mitigation of Adverse Impacts on Paleontological Resources (2010)
- Geologic mapping in the study area (Dibblee and Minch 2006; Dibblee 2006)
- University of California Museum of Paleontology (UCMP) Advanced Specimen Search (UCMP 2021a, 2021b, 2021c, 2021d, and 2021e)
- Paleontological field survey conducted in October and November 2016 in concert with the archaeological survey by Dudek.

4.2.1.1 Study Area

The study areas for the various resources in this section are based on standard practice considering the type of project and the nature of geologic hazards present. **Figure 4.2-1** shows the project site and underlying geology.



Source: MCWRA 2018.

ICF Graphics ... 00171.19 (10-17-2022) JC

Figure 4.2-1
Regional Geology

Geology, Soils, and Seismicity

Landslide, Slope Stability, and Soil Failure Hazards

The study area for hazards related to landslides and slope stability is the 0.25-mile buffer around project features (Interlake Tunnel and associated subcomponents and the Spillway Modification) plus the area surrounding San Antonio Reservoir between the existing maximum WSE (780 feet) and the maximum WSE with project implementation (787 feet). This includes consideration of landslides, soil failure (e.g., adequacy of load-bearing soils), settlement, seismically induced liquefaction, and lateral spreading.

Seismicity Hazards

The study area for seismic ground shaking is the 50-mile buffer around project features (Interlake Tunnel and associated subcomponents and the Spillway Modification). This is because damage from regional seismic ground shaking has the potential to result in localized effects. The study area for surface fault rupture is the 0.25-mile buffer around project features. The boundary for the buffer is drawn to capture faults in the immediate area whose rupture could affect the features. The study area for dam failure is the 0.5-mile area on either side of the San Antonio and Salinas Rivers, which are immediately below San Antonio Reservoir (Division of Safety of Dams [DSOD] n.d.a, n.d.b).

Other Geology and Soils Hazards

The study area for other hazards related to geology and soils is the 150-foot buffer around project features (Interlake Tunnel and associated subcomponents and the Spillway Modification) plus the area surrounding San Antonio Reservoir between the existing maximum WSE (780 feet) and the maximum WSE with project implementation (787 feet). This includes consideration of settlement, corrosivity, and expansive soils.

Paleontological Resources

The study area for paleontological resources is the 150-foot buffer around project features (Interlake Tunnel and associated subcomponents and the Spillway Modification) and the belowground geologic units underlying this area to the maximum depth of excavation.

4.2.1.2 Scoping Comment

MCWRA received one scoping comment related to the issues covered in this section. The comment expressed concern regarding construction of new infrastructure in an area known to contain seismic faults and the corresponding potential for impacts on private property. Potential construction-related impacts are addressed in Impact GSP-1, *Impacts Associated with Surface Rupture of a Known Earthquake Fault*. Refer to Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* for a complete list of public comments received during the public scoping period.

4.2.1.3 Definitions

Expansive soils are subject to shrinking and swelling with seasonal changes in moisture content. Foundations and structures constructed on soils with high expansion potential can be damaged both during construction and operation. The expanding and contracting cycles as soils are wetted and dried exert variable pressures against structures, potentially weakening or fracturing them.

A *Holocene-active fault* or *active fault* is an earthquake fault that has had surface displacement within the last 11,700 years (Holocene time) (California Geological Survey [CGS] 2018). A *pre-Holocene fault* is one whose recency of past movement is older than 11,700 years.

A *well-defined fault* is an earthquake fault whose trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface (bgs) (CGS 2018).

Paleontological resources are fossils and fossiliferous deposits (SVP 2010). These are nonrenewable resources that are protected by federal, state, and local environmental laws and regulations. *Significant paleontological resources* are fossils and fossiliferous deposits that provide information important to the scientific record, including “taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information.”

4.2.2 Regulatory Setting

4.2.2.1 Geology, Soils, and Seismicity

Federal Laws, Regulations, and Policies

Federal Emergency Management Agency

FEMA is responsible for preparing for, protecting against, responding to, and mitigating all hazards. Under the FEMA National Dam Safety Program, FEMA partners with federal, state, territorial, and private-sector partners to establish and maintain effective federal and state dam-safety programs to reduce the risk to human life, property, and the environment from dam-related hazards. Their initiatives include participating in the Interagency Committee on Dam Safety, which prepared and approved the guidelines for federal agency dam owners and regulators—which non-federal entities can also use. Guidelines include increasing inspections, emergency action planning, and purchasing needed equipment and providing grants to states for dam improvement. The National Dam Safety Review board advises FEMA’s Administrator in setting national dam safety priorities and considers the effects of national policy issues affecting dam safety. In California, DSOD is responsible for regulating dams in accordance with the FEMA National Dam Safety Program.

Federal Energy Regulatory Commission, Dam Safety, and Inspections

FERC regulates both the construction and operational phases of dam projects with hydroelectric capacity. Their oversight addresses engineering requirements, emergency action plans, hazard potential, safety, and security. Federal guidelines include a description of risk analysis, risk assessment, and risk reduction for dam safety. FERC licenses and inspects private, municipal, and state hydroelectric projects and oversees environmental matters related to natural gas and hydroelectricity projects. FERC has regulatory jurisdiction over the Nacimiento Dam due to the hydropower plant at the dam.

Section 402 of the Clean Water Act/National Pollutant Discharge Elimination System

The Clean Water Act (CWA) is discussed in detail in Chapter 6, *Water Quality and Geomorphology*.

The 1987 amendments to CWA added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES program. As described in Chapter 11, the EPA has delegated the authority to oversee the NPDES program in California to the

SWRCB. The program is then implemented by the state's nine RWQCBs. Under the NPDES Phase II Rule, any construction activity disturbing 1 acre or more must obtain coverage under the state's General Permit for Stormwater Discharges Associated with Construction Activity (General Permit). General Permit applicants are required to prepare a Notice of Intent, stating that stormwater will be discharged from the construction site, and a Stormwater Pollution Prevention Plan that describes the BMPs that will be implemented to avoid adverse effects on the quality of receiving waters as a result of construction activities, including earthwork.

National Earthquake Hazards Reduction Act

The National Earthquake Hazards Reduction Act of 1977 (Public Law 95-124) and the Earthquake Hazards Reduction Program (EHRP) established a long-term earthquake risk reduction program to understand, predict, and mitigate risks associated with seismic events. The following federal agencies are responsible for coordinating activities under EHRP: USGS, National Science Foundation, FEMA, and National Institute of Standards and Technology. Since its inception, EHRP has shifted its focus from earthquake prediction to hazard reduction. The current program objectives (USGS 2015) are as follows:

1. Improve earthquake hazards identification and risk assessment methods and their use;
2. Maintain and improve comprehensive earthquake monitoring in the United States with focus on "real-time" systems in urban areas; and
3. Improve the understanding of earthquake occurrence and their effects and consequences.

Implementation of EHRP objectives is accomplished primarily through original research, publications, and recommendations and guidelines for state, regional, and local agencies regarding the development of plans and policies to promote safety and emergency planning.

State Laws, Regulations, and Policies

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (Public Resources Code [Pub. Res. Code] Section 2621 *et seq*.) was enacted in 1972 to reduce the risk to life and property from surface faulting in California. The Alquist-Priolo Act prohibits the construction of most types of structures intended for human occupancy on surface traces of active faults and strictly regulates construction in corridors along active faults (i.e., earthquake fault zones). It also defines criteria for identifying active faults and giving legal weight to terms such as *active*. Finally, the act establishes a process for reviewing building proposals in and adjacent to earthquake fault zones.

Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are "sufficiently active" and "well defined." A fault is considered sufficiently active if one or more of its segments or strands show evidence of surface displacement during the Holocene (defined for purposes of the act as approximately the last 11,000 years). A fault is considered well defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (CGS 2018). Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

Seismic Hazards Mapping Act

As with the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (Pub. Res. Code Sections 2690–2699.6) is intended to reduce damage resulting from earthquakes. Provisions of this Act are similar to those of the Alquist-Priolo Act in concept in that the state is charged with identifying and mapping areas that are at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards. Cities and counties are required to regulate development within seismic hazard zones.

California Building Code and International Building Code

Title 24 of the CCR, also known as the California Building Standards Code (CBSC), specifies standards for geologic and seismic hazards other than surface faulting. These codes are administered and updated by the California Building Standards Commission. CBSC specifies criteria for open excavation, seismic design, and load-bearing capacity directly related to construction in California.

Division of Safety of Dams

Nacimiento and San Antonio Dams are under the jurisdiction of the DSOD (DSOD 2019; MCWRA 2021). DSOD engineers and engineering geologists review and approve plans and specifications for the design of dams and oversee their construction to ensure compliance with the approved plans and specifications. Site geology, seismic setting, site investigations, construction material, dam stability, hydrology, hydraulics, and appurtenant structures are all reviewed. In addition, DSOD engineers inspect more than 1,200 dams annually to ensure that they are performing and being maintained in a safe manner. DSOD statutes and regulations include requirements regarding repairs, alterations, and dam or reservoir removal within the state of California, including a provision that calls for receiving written approval from DSOD before proceeding with work.

California Water Code Section 6160 and 6161

California Water Code sections 6160 and 6161 bring inundation maps, which were formerly under the jurisdiction of California Office of Emergency Services, under the jurisdiction of the Department of Water Resources. After the maps are approved, the dam owner must submit an emergency action plan to the California Office of Emergency Services and update the plan and map every 10 years, or more frequently in some cases. SB 92 requires that inundation maps be made publicly available, whereas emergency action plans are protected from public disclosure.

Cal/OSHA Title 8, Subchapter 20, Tunnel Safety Orders

The California Division of Occupational Safety and Health, known as Cal/OSHA, establishes minimum safety standards for places of employment at tunnel and other underground construction sites, such as shafts, during excavation, construction, alteration, repair, renovation, or demolition. The Tunnel Safety Orders regulate boring operations 30 inches in diameter or greater and establish requirements for safety precautions; emergency plans; ground control, including tunnel support; and mechanical tunneling methods, among other topics.

Local Laws, Regulations, and Policies

Monterey County

Monterey County General Plan

The Safety Element of the Monterey County General Plan (Monterey County 2010a) contains the following goal and policies pertaining to geology, soils, and seismicity:

- **Goal S-1**: Minimize the potential for loss of life and property resulting from geologic and seismic hazards.
  - **Policy S-1.1**: Land uses shall be sited and measures applied to reduce the potential for loss of life, injury, property damage, and economic and social dislocations resulting from ground shaking, liquefaction, landslides, and other geologic hazards in the high and moderate hazard susceptibility areas.
  - **Policy S-1.3**: Site-specific geologic studies may be used to verify the presence or absence and extent of the hazard on the property proposed for new development and to identify mitigation measures for any development proposed.
  - **Policy S-1.5**: Structures in areas that are at high risk from fault rupture, landslides, or coastal erosion shall not be permitted unless measures recommended by a registered engineering geologist are implemented to reduce the hazard to an acceptable level. Development shall be discouraged in the following areas:
    a. Areas within 50 feet of active faults. Within state or county earthquake fault zones, trenching or other suitable methodology shall be used to determine the location of the fault.
    b. Areas within or adjacent to large active landslides. Large active landslides are those that are economically or technically infeasible to mitigate because of their rate of movement or size and volume.
  - **Policy S-1.6**: New development shall not be permitted in areas of known geologic or seismic hazards unless measures recommended by a California certified engineering geologist or geotechnical engineer are implemented to reduce the hazard to an acceptable level. Areas of known geologic or seismic hazards include:
    a. Moderate or high relative landslide susceptibility.
    b. High relative erosion susceptibility.
    c. Moderate or high relative liquefaction susceptibility.
    d. Coastal erosion and seacliff retreat.
    e. Tsunami run-up hazards.
  - **Policy S-1.7**: Site-specific reports addressing geologic hazard and geotechnical conditions shall be required as part of the planning phase and review of discretionary development entitlements and as part of review of ministerial permits in accordance with the CBSC as follows:

a. Geotechnical reports prepared by state-licensed Registered Geotechnical Engineers are required during building plan review for all habitable structures and habitable additions over 500 square feet in footprint area. Additions less than 500 square feet and non-habitable buildings may require geotechnical reports as determined by the pre-site inspection.

b. A Registered Geotechnical Engineer shall be required to review and approve the foundation conditions prior to plan check approval, and if recommended by the report, shall perform a site inspection to verify the foundation prior to approval to pour the footings. Setbacks shall be identified and verified in the field prior to construction.

c. All new development and subdivision applications in state- or Monterey County-designated earthquake fault zones shall provide a geologic report addressing the potential for surface fault rupture and secondary fracturing adjacent to the fault zone before the application is considered complete. The report shall be prepared by a Registered Geologist or a Certified Engineering Geologist and conform to the state's most current guidelines for evaluating the hazard of surface fault rupture.

d. Geologic reports and supplemental geotechnical reports for foundation design shall be required in areas with moderate or high landslide or liquefaction susceptibility to evaluate the potential on- and off-site impacts on subdivision layouts, grading, or building structures.

e. Where geologic reports with supplemental geotechnical reports determine that potential hazards effecting new development do not lead to an unacceptable level of risk to life and property, development in all land use designations may be permissible, so long as all other applicable general plan policies are complied with.

f. Appropriate site-specific mitigation measures and mitigation monitoring to protect public health and safety, including deed restrictions, shall be required.

- **Policy S-1.8**: As part of the planning phase and review of discretionary development entitlements, and as part of review of ministerial permits in accordance with the California Building Standards Code, new development may be approved only if it can be demonstrated that the site is physically suitable and the development will neither create nor significantly contribute to geologic instability or geologic hazards.
- **Policy S-1.9**: A California-licensed civil engineer or a California-licensed landscape architect can recommend measures to reduce moderate and high erosion hazards in the form of an erosion control plan.

The Conservation and Open Space Element (Monterey County 2010b) includes the following goal and policy pertaining to soil conservation:

- **Goal OS-3**: Prevent soil erosion to conserve soils and enhance water quality.
  - **Policy OS-3.1**: Best management practices (BMPs) to prevent and repair erosion damage shall be established and enforced.
  - **Policy OS-3.5**: Monterey County shall regulate activity on slopes to reduce impacts to water quality and biological resources:

1) Non-Agricultural

a) Development on slopes in excess of 25 percent shall be prohibited except as stated below; however, such development may be allowed pursuant to a discretionary permit if one or both of the following findings are made, based upon substantial evidence:

   1. There is no feasible alternative which would allow development to occur on slopes of less than 25 percent;

   2. The proposed development better achieves the resource protection objectives and policies contained in the Monterey County General Plan, accompanying area plans, and all applicable master plans.

b) Development on slopes greater than 25 percent or containing geologic hazards and constraints shown on Monterey County's Geographic Information Systems (GIS) Geologic (Policy S-1.2) or Hydrologic (Policy PS-2.6) Hazard Databases shall require adequate special erosion control and construction techniques and the discretionary permit shall:

   1. Evaluate possible building site alternatives that better meet the goals and policies of the general plan;

   2. Identify development and design techniques for erosion control, slope stabilization, visual mitigation, drainage, and construction techniques; and

   3. Minimize development in areas where potentially unstable slopes, soil and geologic conditions, or sewage disposal pose substantial risk to public health or safety.

c) Where proposed development impacting slopes in excess of 25 percent does not exceed 10 percent, or 500 square feet of the total development footprint (whichever is less), a discretionary permit shall not be required.

d) It is the general policy of Monterey County to require dedication of a scenic easement on a slope exceeding 25 percent.

Monterey County Grading Permit

Monterey County Code Chapter 16.08 lays out requirements for grading. Section 16.08.110 describes the requirement for geotechnical and engineering geology reports to accompany applications for grading permits. The geotechnical report must provide data regarding the nature, distribution, and strength of on-site soils; conclusions and recommendations for grading procedures; and design criteria for corrective measures when necessary. The engineering geology report must describe the geology of the site and provide conclusions and recommendations regarding the geologic conditions in the study area. The building official processing the permit may require a geotechnical investigation regarding the likelihood of seismically induced liquefaction at the site if shallow groundwater and unconsolidated sandy alluvium are found and the soil is vulnerable to liquefaction.

San Luis Obispo County

San Luis Obispo County General Plan

The Safety Element of the San Luis Obispo County General Plan (San Luis Obispo County 1999) addresses geology, seismic, and soil hazards with one goal:

- **Goal S-5**: Minimize the potential for loss of life and property resulting from geologic and seismic hazards. This goal guides policies that focus on minimizing risks from surface fault rupture, seismic ground shaking, liquefaction and seismic settlement, and slope instability and landslide. The policies call for reviewing and disseminating geologic reports, technical documents, and plans to ensure conformance with applicable codes and regulations pertaining to potential geologic and seismic hazards; enforcing applicable building codes to reduce the potential for loss of life and property damage resulting from seismic ground shaking; evaluating, by professionals, the potential for liquefaction or seismic settlement to affect structures; and limiting development in areas of known slope instability or high landslide risk when possible.
    - **Policy S-18 Fault Rupture Hazards**: Locate new development away from active faults to reduce damage from fault rupture. Fault studies may need to include mapping and exploration beyond project limits to provide a relatively accurate assessment of a fault's activity. San Luis Obispo County will enforce applicable regulations of the Alquist-Priolo Earthquake Fault Zoning Act pertaining to fault zones to avoid development on active faults.
    - **Policy S-19 Reduce Seismic Hazards**: San Luis Obispo County will enforce applicable building codes relating to the seismic design of structures to reduce the potential for loss of life and reduce the amount of property damage.
    - **Policy S-20 Liquefaction and Seismic Settlement**: San Luis Obispo County will require design professionals to evaluate the potential for liquefaction or seismic settlement to affect structures in accordance with the currently adopted Uniform Building Code.
    - **Policy S-21 Slope Instability**: San Luis Obispo County acknowledges that areas of known landslide activity are generally not suitable for residential development. San Luis Obispo County will avoid development in areas of known slope instability or high landslide risk when possible, and continue to encourage that developments on sloping ground use design and construction techniques appropriate for those areas.

The Conservation and Open Space Element of the San Luis Obispo County General Plan (San Luis Obispo County 2010) addresses soil resources with the one goal and two policies:

- **Goal SL 1**: Soils will be protected from wind and water erosion, particularly that caused by poor soil management practices.
    - **Policy SL 1.1**: Prevent Loss of Topsoil in All Land Uses. Minimize the loss of topsoil by encouraging broad-based cooperation between property owners, agricultural operators, agencies, and organizations that will lead to effective soil conservation practices on all lands, including San Luis Obispo County–controlled properties.
    - **Policy SL 1.2**: Promote Soil Conservation Practices in All Land Uses. Require erosion and sediment control practices during development or other soil-disturbing activities on steep slopes and ridgelines. These practices should disperse stormwater so that it infiltrates the soil rather than running off and protect downslope areas from erosion.

- **Policy SL 1.3**: Minimize Erosion Associated with New Development. Avoid development, including roads and driveways, on the steeper portions of a site except when necessary to avoid flood hazards, protect prime soils, and protect sensitive biological and other resources. Avoid grading and site disturbance activities on slopes more than 30 percent. Minimize site disturbance and protect existing vegetation as much as possible.

San Luis Obispo County Grading Permit

San Luis Obispo County Code Chapter 19.12 lays out requirements for grading and excavation. Section 19.12.060 describes requirements for engineering grading, including requirements for soils engineering and engineering geology reports to accompany applications for grading permits. The soils engineering report must provide data regarding the nature, distribution, and strength of on-site soils, conclusions and recommendations for grading procedures, and design criteria for corrective measures when necessary. The engineering geology report must describe the geology of the site and provide conclusions and recommendations of geologic conditions in the study area. The building official processing the permit may require a geotechnical investigation regarding the likelihood of seismically induced liquefaction at the site if shallow groundwater and unconsolidated sandy alluvium are found and the soil is in a seismic design category that indicates expected ground shaking in the study area would be moderate to severe.

Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to geology, soils, seismicity, and paleontological resources is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.2.2.2 Paleontological Resources

Federal Laws, Regulations, and Policies

No federal laws governing paleontological resources apply to the study area.

State Laws, Regulations, and Policies

Pub. Res. Code Section 5097

The lead agency having jurisdiction over a project is responsible for ensuring that paleontological resources are protected in compliance with the CEQA Guidelines and other applicable statutes. Paleontological management is addressed in Pub. Res. Code Section 5097, Archaeological, Paleontological, and Historical Sites. This statute defines as a misdemeanor any unauthorized disturbance or removal of a vertebrate fossil site or remains on public land and specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. This statute would apply to any construction or related project impacts that would occur on state-owned or state-managed lands.

Local Laws, Regulations, and Policies

Monterey County

The Conservation and Open Space Element of the Monterey County General Plan (Monterey County 2010b) contains one goal and two related policies pertaining to paleontological resources.

- **Goal OS-7**: Encourage the conservation and identification of the county's paleontological resources.
  - **Policy OS-7.1:** Important representative and unique paleontological sites and features shall be identified and protected. Developers shall be required to complete Phase I (reconnaissance level) paleontological reviews in any formation known to yield important elements of the fossil record. If significant fossil deposits are found during grading activities, data recovery shall be required to obtain a sample of materials from such deposits prior to their systematic destruction.
  - **Policy OS-7.2**: Information on the location and significance of Monterey County's paleontological resources shall be compiled and used in the environmental and development review process. This compilation process shall involve consulting with knowledgeable academic professionals.
  - **Policy OS-7.3**: Development proposed within high and moderate sensitivity zones and known fossil bearing formations shall require a paleontological field inspection prior to approval. Routine and Ongoing Agricultural Activities are exempted from this policy in so far as allowed by state or federal law.
  - **Policy OS-7.4**: Development proposed in low sensitivity zones are not required to have a paleontological survey unless there is specific additional information that suggests paleontological resources are present.
  - **Policy OS-7.5**: Policies and procedures shall be established that encourage development to avoid impacts to sensitive paleontological sites including:

    a. Designing or clustering development to avoid paleontological deposits;

    b. Requiring dedication of permanent conservation easements where subdivisions and other developments can be planned to provide for such protective easements.

San Luis Obispo County

The Conservation and Open Space Element of the San Luis Obispo County General Plan (San Luis Obispo County 2010) addresses paleontological resources with one goal.

- **Goal CR 4**: San Luis Obispo County's known and potential Native American, archaeological, and paleontological resources will be preserved and protected.
  - **Policy CR 4.5, Paleontological Resources**: Protect paleontological resources from the effects of development by avoiding disturbance where feasible.

Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to geology, soils, seismicity, and paleontological resources is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.2.3 Environmental Setting

4.2.3.1 Geology, Soils, and Seismicity

Nacimiento and the San Antonio Reservoirs lie within the Coast Ranges geomorphic province. This geomorphic province is characterized by a series of northwest-trending mountain ranges. The mountain ranges are composed of thick Mesozoic and Cenozoic sedimentary strata as well as valleys that run parallel to the San Andreas fault (CGS 2002). The Coast Ranges are bounded by the Pacific Ocean to the west and the Great Valley alluvial plain to the east. The orientation of the ranges and valleys of the Coast Ranges is heavily influenced by the northwest-trending San Andreas fault system (MJA and GEI 2017). This area comprises a zone of major northwest-trending, active strike-slip, and oblique-slip faults of right-lateral motion between the Pacific and North American Plates. The proposed project is located on the east side of the Santa Lucia Range, directly south of Lockwood Valley and approximately 18 miles west of the Pacific Ocean.

Local Geology

Nacimiento and the San Antonio Reservoirs lie within the Salinian Block of the Pacific Plate. Situated between the San Andreas fault to the west and the Nacimiento fault, the Salinian Block consists of metamorphic granitic rocks that date to the Cretaceous. The granitic rocks are overlain by Upper Cretaceous and Tertiary sedimentary rocks (MJA and GEI 2017; Seiders and Cox 1992). The origin of granitic rock is similar to that of the Sierra Nevada and the Peninsular Ranges of Baja California.

The strata underlying San Antonio Reservoir and the study area consist mostly of Lower Miocene to Middle Miocene marine sedimentary rocks over a granitic basement (Dibblee 2006; Dibblee and Minch 2006). Younger Plio-Pleistocene non-marine sedimentary rocks underlie the hillslope areas north and east of San Antonio Reservoir. Quaternary-age alluvium is located along the San Antonio River and San Antonio Reservoir, Nacimiento River, and Salinas River floodplains. In addition, isolated Quaternary landslide deposits can be seen along the proposed Interlake Tunnel alignment. Near Nacimiento Reservoir and the southern extent of the study area, the Middle Miocene marine sedimentary units underlying the northern portion of the study area are separated from Upper Cretaceous arkosic sandstone by narrow bands of northwest-trending Lower Miocene marine sedimentary and volcanic units.

According to the Geotechnical Baseline Report (MJA and GEI 2020), the proposed Interlake Tunnel alignment would traverse a sequence of Tertiary marine sedimentary rocks that are locally overlain by surficial, non-marine Quaternary deposits, as described on **Figure 4.2-1**. The geologic units along this alignment include:

- Colluvium (Quaternary): medium-stiff clay, sandy clay, sandy elastic silt, medium-dense clayey sand, and gravel;
- Vaqueros Formation (Plio-Pleistocene): sandstone, thin interbeds of siltstone or claystone;
- Monterey Formation (Miocene): interbedded calcareous shale and mudstone, siliceous shale and mudstone, chert, clay shale, siltstone, dolomitic rock, sandstone, and brecciated siliceous and dolomitic rock;
- Paso Robles Formation (Oligocene – Miocene): sandy mudstone, sandstone, and conglomerate, with minor limestone; and
- Unnamed Formation (Cretaceous): sandstone derived from granitic detritus, with interbeds of conglomerate and siltstone.

Soils

Soils in the study area consist mainly of the Santa Lucia-Reliz association and the Linne-Calodo complex (**Figure 4.2-2**) (NRCS 2021). Other soils in the study area include the Balcom-Calleguas complex, Nacimiento-Los Osos complex, and Santa Lucia-Gazos complex.

The Santa Lucia-Reliz association is derived from clayey residuum associated with weathered shale (NRCS 1999, 2003a). This unit is generally found on hills with 30 to 75 percent slopes. Typical soil textures consist of channery clay loam up to 24 inches deep before transitioning to bedrock. Channery refers to soil material that is 15 to 35 percent by volume thin, flat sedimentary rock (or schist) rock fragments. The Santa Lucia-Reliz association is well drained, with high runoff and a relatively low susceptibility to erosion. This soil unit possesses a moderate risk of corrosion for concrete, a moderate risk of corrosion for steel, and moderate plasticity (i.e., susceptibility to expansion).

The Linne-Calodo complex consists of residuum from weathered calcareous shale and/or sandstone (NRCS 2001a, 2003b). This unit is found on hills with 9 to 75 percent slopes. Typical soil textures consist of channery clay loam up to 39 inches deep before reaching weathered bedrock. The Linne-Calodo complex is well drained, with a very high runoff class and high susceptibility to erosion. This soil unit possesses a low risk of corrosion for concrete, a moderate risk of corrosion for steel, and moderate plasticity.

The Balcom-Calleguas complex consists of residuum from weathered sandstone and shale (NRCS 2001b, 2001c). This unit is found on hills with 50 to 75 percent slopes. Typical soil textures consist of loam up to 28 inches deep before reaching weathered bedrock. The Balcom-Calleguas complex is well drained, with a high runoff class with moderate to high susceptibility to erosion (NRCS 2016). This soil unit possesses a low risk of corrosion for concrete, a moderate risk of corrosion for steel, and low plasticity.

The Nacimiento-Los Osos complex consists of residuum from weathered calcareous sandstone and shale (SCS 1983). This unit is found on hills with 30 to 50 percent slopes (NRCS 2021). Typical soil textures consist of loam with a minimum depth to bedrock of 61 inches. The Nacimiento-Los Osos complex is well drained, with high susceptibility to erosion. This soil unit possesses a low risk of corrosion for concrete, a moderate risk of corrosion for steel, and moderate plasticity.

The Santa Lucia-Gazos complex consists of clayey residuum from weathered shale (SCS 1983). This unit is found on hills with 50 to 75 percent slopes (NRCS 2021). Typical soil textures consist of clay with a minimum depth to bedrock of 53 inches. The Santa Lucia-Gazos complex is well drained, with high susceptibility to erosion. This soil unit possesses a moderate risk of corrosion for concrete, a high risk of corrosion for steel, and low plasticity.

Based on the Geotechnical Data Report, distribution tests were performed on selected grain-size soil and soil-like core samples from boring sites (MCRWA 2018). Sieve analyses were performed on samples or cores consisting of weak or clayey rock (e.g., mudstone, shale), as presented in Table 3-1 of the Geotechnical Data Report.

Reflecting the erodible quality of soils in the study area, sediment transport along the San Antonio River is greater than along the Nacimiento River, approximately twice the rate per unit area (MCWRA 2008). The quantity of sediment passing a particular point in the watershed depends on the supply of sediment from the adjacent landscape to the channel. Lockwood Valley along the San Antonio River provides a large source of highly erodible material from unconsolidated alluvial deposits in the surrounding mountains to the north and east. **Figure 4.2-3** shows areas with slight, moderate, severe, and very severe erosion hazards.

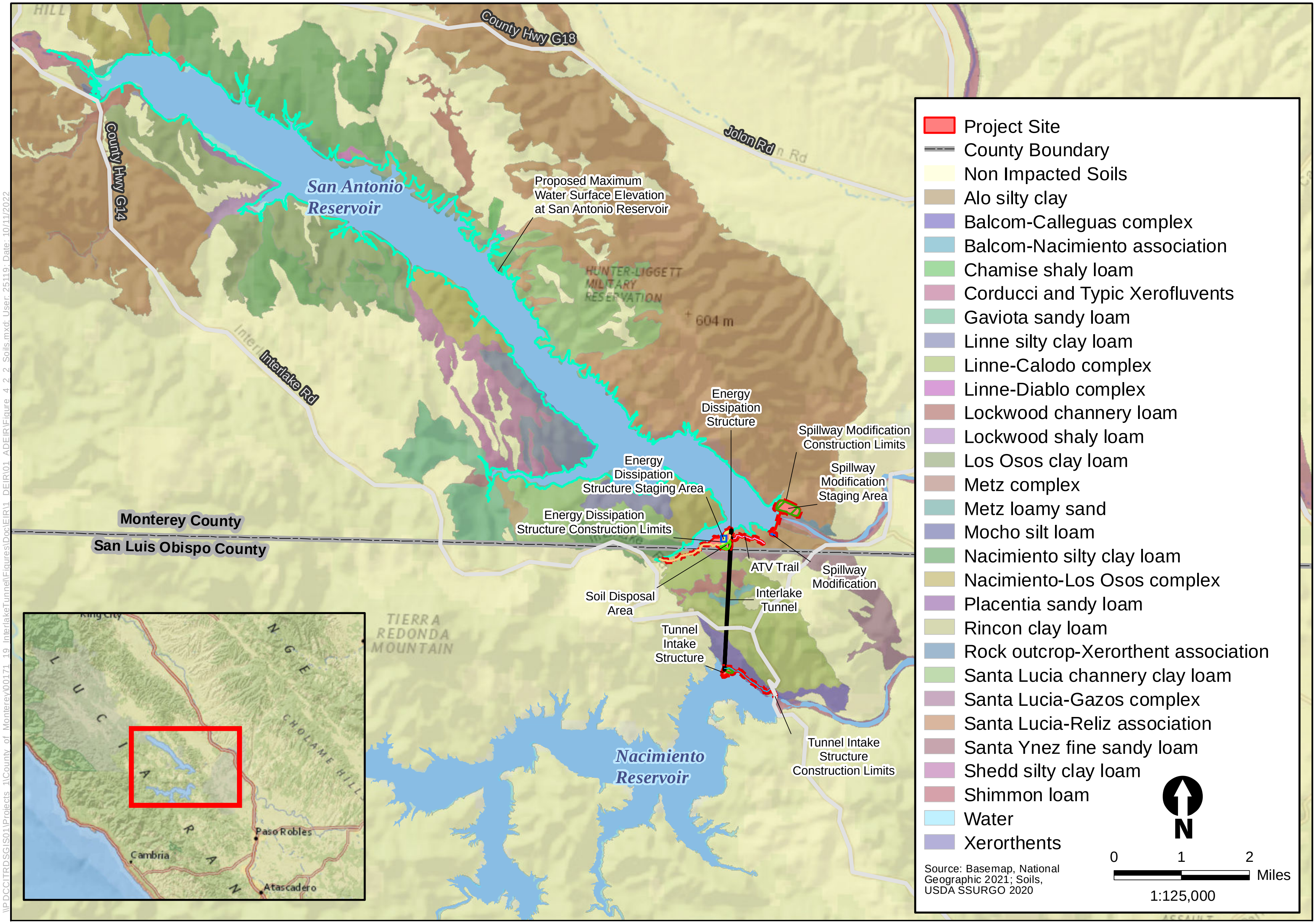


Figure 4.2-2
Soils in the Study Area

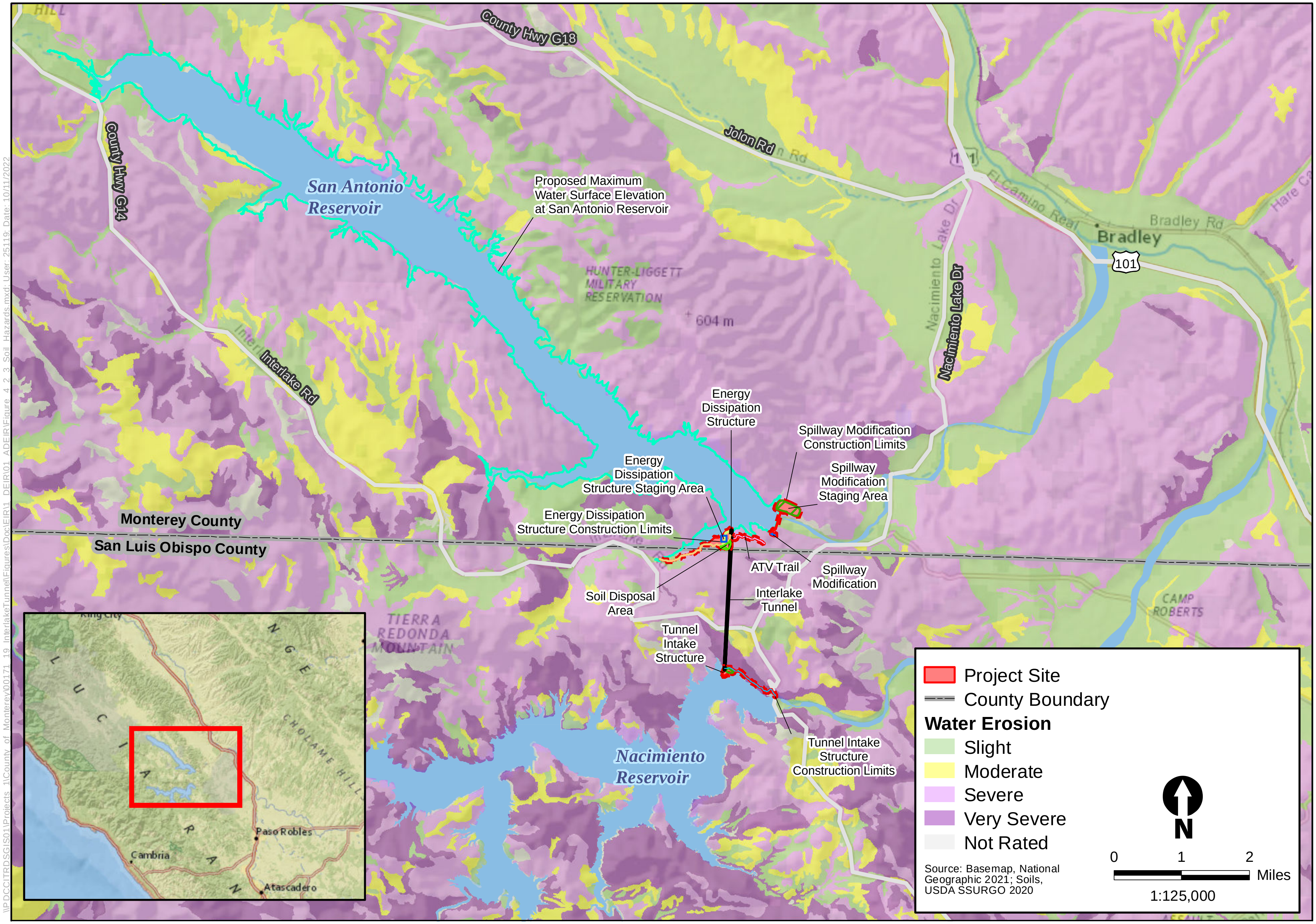


Figure 4.2-3
Soils Hazards at San Antonio Reservoir

Seismicity

Similar to much of California, the Coast Range in Monterey and San Luis Obispo Counties is prone to shaking from regional and local seismic events (Working Group on California Earthquake Probabilities 2015). Tectonic movement from the boundary of the Pacific and North American Plates helped shape regional topography and landforms, such as the Saint Lucia Range and Lockwood Valley. Much of this movement stems from shearing stresses associated with the right-lateral strike-slip motion, which occurs predominantly along the San Andreas Fault Zone. The San Andreas Fault Zone is approximately 23 miles east of the study area and considered one of the dominant seismic sources for a major earthquake in the state.

Seismic events also have the potential to occur along several other active and historic regional faults, including the San Simeon Fault Zone (approximately 18 miles west of the study area) and the Rinconada Fault Zone (traverses the study area and intersects with the San Antonio Dam Spillway). An active fault is one that has ruptured in the past 11,000 years. A fault that has been historically active has ruptured in the past 150 years. The following sections describe Alquist-Priolo Fault Zones in the study area; ground shaking effects in the study area; differential settling, subsidence, and liquefaction; and the potential for landslides and other slope failures in the study area.

Alquist-Priolo Fault Zones and Surface Fault Rupture

Horizontal and/or vertical surface or ground ruptures can occur during seismic events, typically along existing fault lines. Ground rupture that occurs along a fault trace (i.e., the mapped location of the intersection of a fault with the ground surface) is referred to as "surface fault rupture." Some seismogenic faults (e.g., "blind thrust" faults) do not extend to the ground surface and may not generate fault rupture, even during major earthquakes. Surface fault ruptures can result in damage to buildings, roads, and underground utilities. The potential for surface fault rupture depends on the proximity of faults, the severity of the shaking, and local geologic conditions. Fault areas considered to be of greatest risk are identified as Alquist-Priolo Fault Zones (CGS 2018).

Past evidence of Holocene-aged (i.e., last 11,700 years) fault displacement can be seen throughout the region. **Table 4.2-1** lists active and historic faults near the study area.

Table 4.2-1. Regional Faults in Proximity to the Study area

Fault	Approximate Distance from Proposed Project	Last Known Major Displacement
Rinconada Fault Zone – San Marcos Fault	On-site	11,700–700,000 years ago; without historic record
Rinconada Fault Zone – Espinosa Fault	1.5 miles northwest	11,700–700,000 years ago; without historic record
Nacimiento Fault Zone	2 miles west	Older than 1.6 million years
Jolon Fault	3 miles northwest	Within last 1.6 million years; age undifferentiated
Oceanic Fault	13 miles west	11,700–700,000 years ago; without historic record
San Simeon Fault Zone	18 miles west	2003, magnitude 6.5
San Andreas Fault Zone – Parkfield Section	23 miles east	2004, magnitude 6.0

Source: CGS 1958, 2010; USGS 2016.

No Alquist-Priolo designated fault zones exist within or near the study area. The Rinconada Fault Zone passes through the upper part of the spillway at San Antonio Dam and the general vicinity of the downstream area of the project (Rosenberg and Clark 2009). There is no documented evidence of Holocene (i.e., past 11,000 years) activity on the fault, and only sparse recorded seismicity evidence is spatially associated with the fault (MJA and GEI 2020). However, this fault zone is considered active by the CGS (CGS 2010). In addition, it is generally considered capable of a magnitude (M) 7.5 earthquake (MCRWA 2018). The Nacimiento Fault Zone and Jolon fault also pass within 5 miles of the study area. However, earthquakes have not occurred along these faults within the last 11,000 years; a large earthquake is not expected because of the nominal slip rate (CGS 2010).

Ground Shaking

Seismically induced ground shaking can cause substantial damage to structures. The severity of ground shaking experienced at a specific location depends on a variety of factors, such as the magnitude and duration of the seismic event, fault type associated with the event, distance from the epicenter, and physical properties of the underlying geology and soils (USGS n.d.a). The Modified Mercalli Intensity (MMI) scale of perceived intensity, shown in **Table 4.2-2,** is based on observed effects. The MMI scale is the current standard used throughout the United States. Less intense earthquakes are typically rated on the basis of subjective accounts, whereas higher intensity events are rated on the basis of observed structural damage.

Table 4.2-2. Modified Mercalli Intensity Scale

Richter Scale Magnitude (approximate)	Intensity	Shaking	Description/Damage
0.1–0.9	I	Not Felt	Not felt, except by a very few under especially favorable conditions.
1.0–2.9	II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
3.0–3.9	III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
4.0–4.5	IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
4.6–4.9	V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
5.0–5.5	VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
5.6–6.4	VII	Very Strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.

Richter Scale Magnitude (approximate)	Intensity	Shaking	Description/Damage
6.5–6.9	VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
7.0–7.4	IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
7.5–8.0	X	Extreme	Some well-built structures destroyed; most masonry and frame structures destroyed with foundations severely damaged. Railway lines bent.

Source: USGS n.d.b.

As previously stated, significant ground shaking events can periodically affect the area following earthquakes from regional faults. **Table 4.2-3** presents major historical seismic events in the region.

Table 4.2-3. Major Historical Seismic Events in the Region

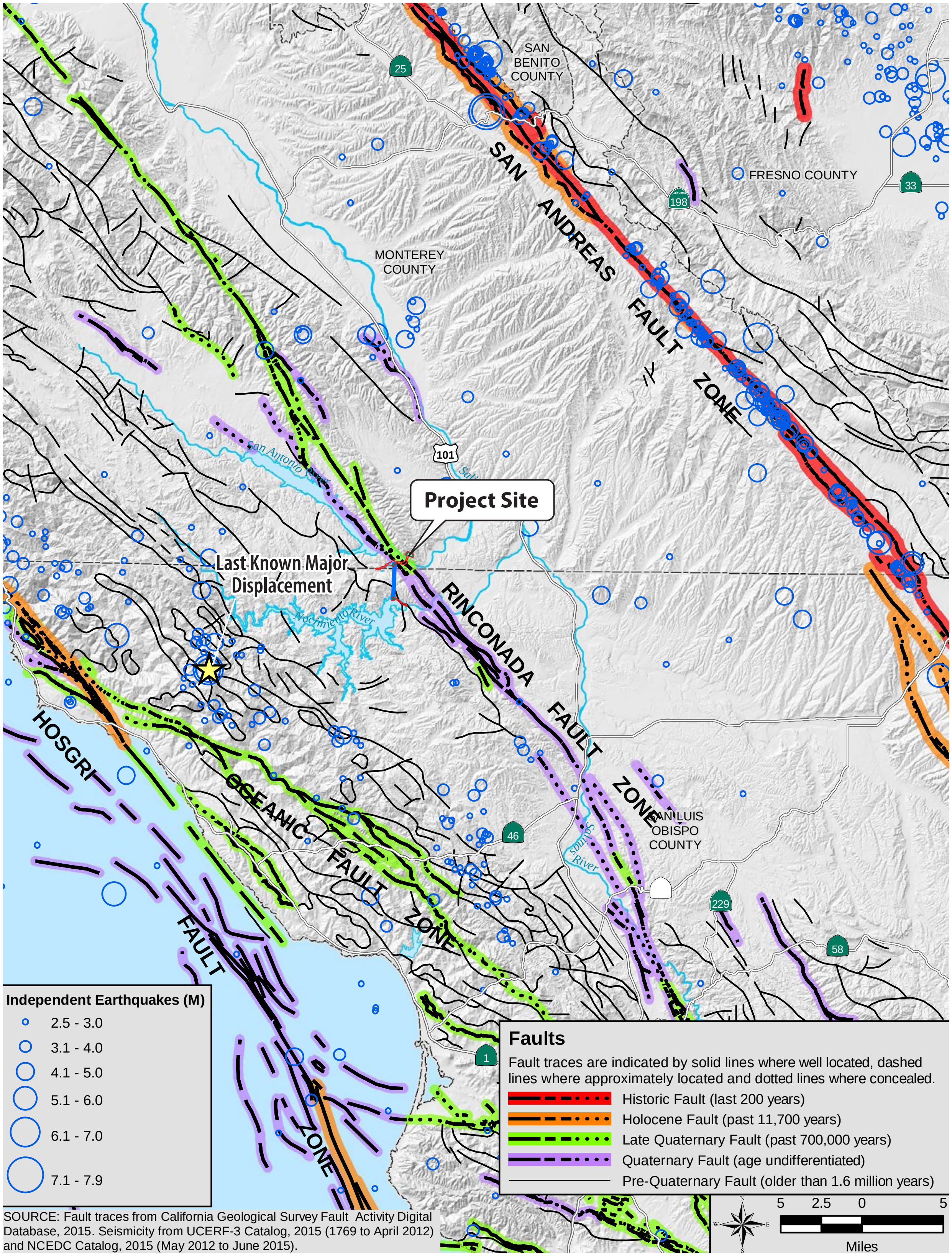
Year	Associated Fault	Magnitude
1901	San Andreas Fault Zone – Parkfield Section	6.4
1922	San Andreas Fault Zone – Parkfield Section	6.3
1934	San Andreas Fault Zone – Parkfield Section	6.0
1952	Unnamed Fault (near San Andreas Fault Zone and Wheeler Ridge Fault Zone)	7.5
1952	San Simeon Fault Zone	6.2
1966	San Andreas Fault Zone – Parkfield Section	6.6
1983	San Andreas Fault Zone – Parkfield Section	6.1
1989	San Andreas Fault Zone – Loma Prieta	7.2
2003	San Simeon Fault Zone	6.5
2004	San Andreas Fault Zone – Parkfield Section	6.0

Source: USGS 2016.

Figure 4.2-4 presents records from several large regional earthquakes, with perceived shaking intensities ranging from light (MMI IV) to very strong (MMI VII) along the Rinconada Fault Zone, San Marcos Section (USGS 2016). Lower levels of ground shaking have also been felt during very large historical events that were located farther away (e.g., MMI IV from the 7.2 M along the San Andreas fault [Loma Prieta earthquake] and MMI III from 6.6 M along Sierra Madre fault) (USGS 2016). Many of the significant earthquakes in the Salinas Valley are associated with the San Andreas Fault Zone – Parkfield Section. USGS modeling forecasts a high probability for a major earthquake from this section of the San Andreas fault within the next 20 years (USGS 2016). The expected (i.e., 10 percent chance of occurring in the next 50 years) peak ground shaking (acceleration)[1] at the study area for any event is high, at 0.590 g[2] (CGS 2021).

[1] Ground shaking is usually quantitatively expressed as the acceleration of movement relative to the acceleration of gravity (g).

[2] The value for g, which is the standard acceleration due to Earth's gravity, is 32.2 ft/s^2 (9.81 m/s^2).



Source: MCWRA 2018.

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Figure 4.2-
Regional Faults and Seismicity

Differential Settling, Subsidence, and Liquefaction

Settlement of the ground surface can be caused by a number of geologic processes (Geoengineer 2022). Settlement is the lowering of the land surface elevation as a result of the compression, compaction, or consolidation of underlying soils, sediment, or rock. These processes are exacerbated by increased loading (e.g., from additional sediment deposition or the construction of structures, including the use of fill) or the withdrawal of subsurface water. Compaction and compression generally occur over a relatively short timeframe in unconsolidated granular soils or sediments.

Consolidation usually occurs over a longer period, sometimes many years, in saturated, fine-grained material as the pore water (i.e., water within the spaces between grains of sediment) is forced out of the sediment structure under loading or during groundwater pumping. Surface settlement of a large magnitude or capable of affecting a large area can be referred to as "subsidence." Ground settlement can cause the development of cracks or fissures in the ground surface. When ground settlement is non-uniform or uneven, differential settlement results, potentially inducing stress within structures.

Liquefaction can occur when water-saturated, loose sandy soils suddenly lose strength during seismic shaking (USGS n.d.a). The primary factor that triggers liquefaction is moderate to strong ground shaking. The probability for liquefaction correlates directly with the intensity and duration of ground shaking (i.e., the stronger and/or longer the earthquake, the greater the chance of liquefaction). In addition, physical soil properties may increase the susceptibility of soil to liquefaction. Saturated, relatively clean/loose granular soils have relatively high susceptibility to liquefaction, whereas cohesive soils, even if saturated, have low susceptibility (Geoengineer 2022). During liquefaction, liquefied soils may behave like a liquid and flow, which can cause ground settlement and/or lateral spreading, described further below, and associated surface cracking. All of these processes can lead to severe damage in concrete foundations and infrastructure. Groundwater levels can directly contribute to how saturated the soils can become.

According to the groundwater data collected in the Geotechnical Data Report, water levels near the alignment vary from a depth of about 98 feet bgs in the north to about 500 feet bgs in the south (MJA and GEI 2018). During drilling adjacent to Nacimiento Reservoir, groundwater was encountered at a depth of about 38 feet bgs, or about elevation 782 feet; this elevation roughly corresponded to the WSE in Nacimiento Reservoir at the time of drilling. During field mapping, one spring was observed near the San Antonio River. This spring is on the river right, downstream of San Antonio Dam and the unlined spillway channel, and near the leading edge of a broad terrace. The spring is warm to the touch and, as reported by Bechtel (1964), has hydrogen sulfide gas bubbling at the surface. The spring was flowing at a rate several gallons per minute at the time of field mapping. No other springs were encountered during the field mapping, and none are shown on available USGS topographic maps of the study area (MCRWA 2018).

Landslide, Slope Failure, and Lateral Spreading

Landslides or slope failure may occur in steeply sloped areas (i.e., slope of 15 percent or more) following heavy rains, seismic events, or human activities (e.g., grading or excavation). Horizontal displacement of a few inches to several feet may occur along gently sloping ground (i.e., slope of 5 percent or less), such as riverbanks or exposed embankments, a phenomenon known as lateral spreading. Saturated, loosely consolidated soils and precipitation events increase the likelihood that an earthquake will trigger landslides, slope failure, or lateral spreading.

Based on landslide maps from Dibblee (2006), landslides were identified near the south and north ends of the tunnel alignment. The landslide area at the north end of the tunnel alignment is highly disturbed; Light Detection and Ranging (LiDAR) imagery identifies evidence of numerous benches, roads, and spoil piles. The landslide area at the south end of the tunnel alignment overlies Vaqueros Formation bedrock, near the proposed Tunnel Intake Structure (MCRWA 2018).

4.2.3.2 Paleontological Resources

Paleontological Sensitivity

The study area is underlain by the geological units shown in **Table 4.2-4**, below, listed in order from youngest to oldest (Dibblee and Minch 2006). A geologic unit's paleontological sensitivity is based on the potential for the geologic unit to yield significant paleontological resources, described as high, undetermined, low, and no potential. **Figure 4.2-5** depicts the paleontological sensitivities of the geological units and the formations mapped within the study area.

Table 4.2-4. Geological Units/Formations and Paleontological Sensitivities within the Study area

Geological Unit	Map Unit(s)	Geological Age	Approximate Numerical Age (years before present)	Fossils Recovered	Paleontological Sensitivity
Alluvial sand and gravel of stream channels and valley areas	Qg and Qa	Holocene	< 12,000	N/A	Low
Landslide rubble	Qls	Holocene to Late Pleistocene	12,000 to 126,000 years ago	N/A	Low
Older alluvial sediments	Qoa	Holocene to Late Pleistocene	12,000 to 126,000 years ago	Vertebrate fossils	High
Paso Robles Formation	QTp	Pleistocene to Late Pliocene	126,000 to 3.6 million years ago	Vertebrate fossils	High
Santa Margarita Formation	Tsm	Late Miocene	5.3 to 12 million years ago	Fossils of numerous types	High
Monterey Formation	Tm, Tml, Tmc	Late to Middle Miocene	5.3 to 16 million years ago	Fossils of numerous types	High
Vaqueros Formation	Tvc, Tvt, Tvg, Tvq	Early Miocene	16 to 23 million years ago	Fossils of numerous types	High
Unnamed Paleocene to Late Cretaceous rocks	Kas	Paleocene to Late Cretaceous	56 to 100 million years ago	No record of fossils, but depositional environment is favorable for fossils	Undetermined

Sources: Dibblee and Minch 2006; SVP 2010; Jefferson 1991; Addison and Galehouse 1973; J. Stewart, pers. comm., 2016; LSA 2013; Nomland 1917; Addicott 1973; Koch et al. 2004; Fierstine et al. 2012; Moore 1983; Reynolds 2009; UCMP 2021a, 2021b, 2021c, 2021d, 2021e, and 2021f.

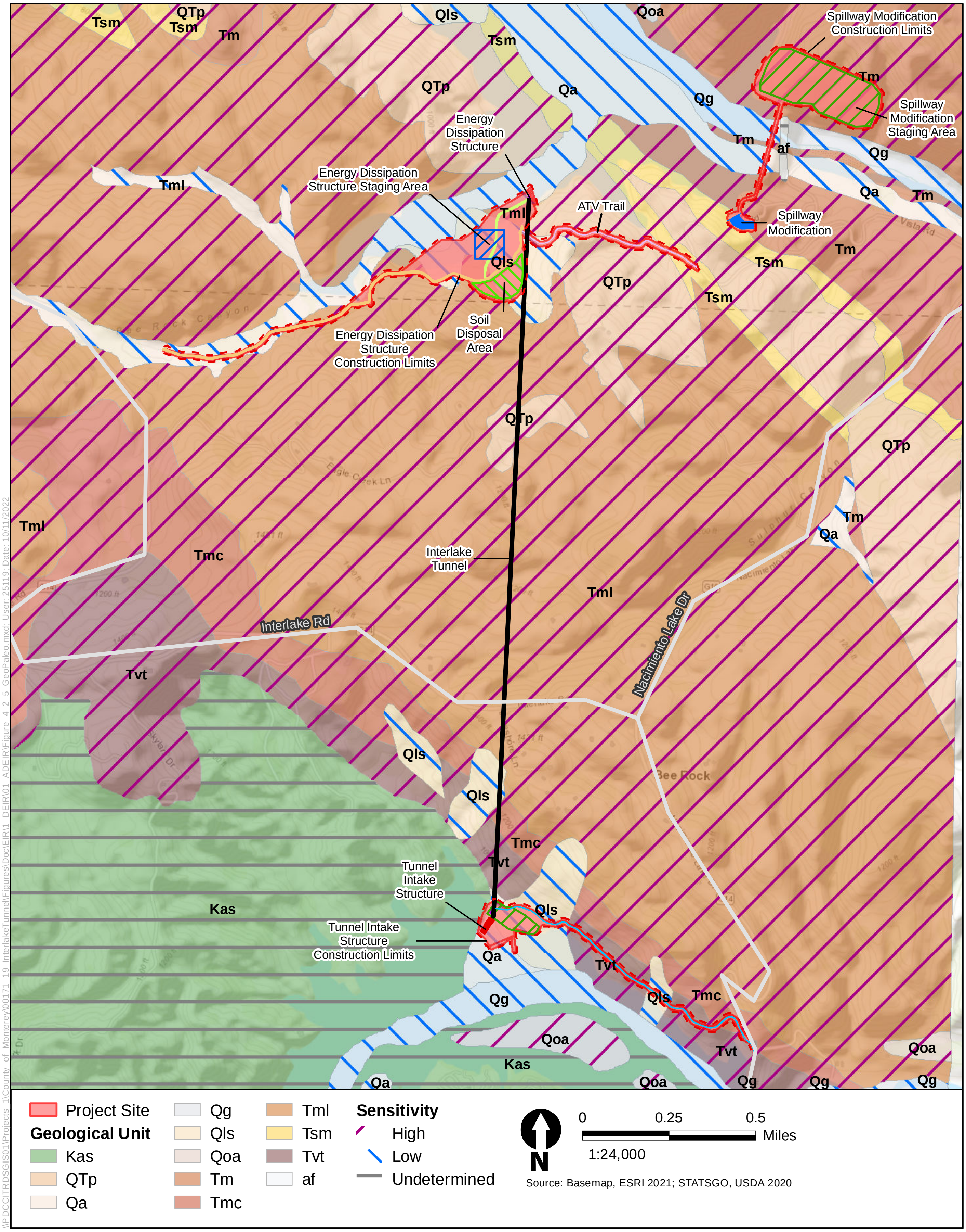

Figure 4.2-5
Paleontological Sensitivity of Geologic Units

It is probable that Holocene deposits with low paleontological sensitivity are underlain by older sediments with potential to contain paleontological resources. All of the older adjoining deposits in the study area have either high paleontological sensitivity, with a record of having yielded significant fossils, or undetermined paleontological sensitivity, with the potential to yield significant fossils, based on depositional environment, but no corresponding record of having yielded significant fossils.

Alluvial Sand and Gravel of Stream Channels and Valley Areas

The alluvial sand and gravel in stream channels and valley areas were generally deposited less than 10,000 years ago (Dibblee and Minch 2006). Because these surficial deposits are generally too young and coarse in the study area to contain significant preserved paleontological resources, they are considered as having low paleontological sensitivity (SVP 2010).

Landslide Rubble

Landslide rubble, which is mapped within the southwestern portion of the study area, is Holocene in age but could extend into the late Pleistocene (approximately 12,000 to 126,000 years ago) (Dibblee and Minch 2006). Although landslide rubble could be old enough to contain fossils, it is considered as having low paleontological sensitivity because fossils have been taken out of context through reworking of the original deposits.

Older Alluvial Sediments

Older alluvial sediments, which are mapped in the central study area, comprise terrestrially deposited alluvial gravel and sand deposited during the late Pleistocene (approximately 12,000 to 126,000 years ago). In the study area, the deposits are recognized as weakly indurated, dissected terraces (Dibblee and Minch 2006).

Older alluvial sediments have produced numerous Pleistocene fossil vertebrates throughout California (Jefferson 1991). Although not differentiated from the Paso Robles Formation, which is also Pleistocene in age, Jefferson (1991) reported the fossilized remains of mammoths (e.g., *Mammuthus columbi*), horses (e.g., *Equus*), bison (e.g., *Bison latifrons*), and camels (e.g., *Camelops* sp. and *Camelidae*) from Pleistocene sediments in Monterey County. Similarly, Jefferson (1991) reported mammoths (e.g., *Mammuthus* sp.), mastodons (e.g., *Mammut americanum*), horses (e.g., *Equus* cf. *E. occidentalis*), bison (e.g., *Bison latrifrons* and *Bison* sp. cf. *B. antiquus*) from Pleistocene sediments in San Luis Obispo County. Older alluvial sediments are considered to have high paleontological sensitivity.

Paso Robles Formation

The Paso Robles Formation is mapped in the northern and central portions of the study area. It is composed mainly of weakly indurated (or weakly hardened) conglomerate with alluvially derived pebble-sized clasts from the Monterey Formation set in a sand and clay-supported matrix (Dibblee and Minch 2006). The formation is late Pliocene to Pleistocene in age (approximately 126,000 to 3.6 million years ago) and, although known to consist of both terrestrial and marine sediments, predominately terrestrial sediment, with the lower portion of the formation being marine sediment (Addicott and Galehouse 1973; J. Stewart, pers. comm., 2016; LSA 2013).

The Paso Robles Formation is not differentiated from older alluvium, also Pleistocene in age, in Jefferson (1991); however, Addicott and Galehouse (1973) reported invertebrate fauna from the lower portion of the formation. UCMP (2021c) reported that horse (*Equus* sp.) remains have been recovered from this formation. In addition, Joe Stewart stated that marine mammals and three-spine stickleback (*Gasteroneus*) have been recovered from the Paso Robles Formation (J. Stewart, pers. comm., 2016). The formation is considered as having high paleontological sensitivity.

Santa Margarita Formation

The Santa Margarita Formation is mapped in the southeastern study area. Dibblee and Minch (2006) described the shallow marine formation as late Miocene (approximately 5.3 to 12 million years ago) and moderately indurated. The massive white sandstones are cemented and calcareous in places.

Dibblee and Minch (2006) reported that the Santa Margarita Formation contains large shell fragments in areas near or within the study area. The formation has yielded a variety of invertebrate and vertebrate fossils in other areas of California (UCMP 2021d). Nomland (1917) and Addicott (1973) identified echinoderms, bryozoans, pelecypods, gastropods, fish vertebrae, and shark teeth from the Santa Margarita Formation. The Santa Margarita Formation is considered as having high paleontological sensitivity.

Monterey Formation

Three members of the late to middle Miocene (approximately 5.3 to 16 million years ago) Monterey Formation were mapped throughout the study area by Dibblee and Minch (2006). The upper portion (unit Tm) is described as a brown silica-rich shale; the middle portion (unit Tml, the Sandholdt member) is also a brown siliceous shale but can be semi-siliceous; and the lower portion (unit Tmc) is a soft, gray sandstone (Dibblee and Minch 2006).

The Monterey Formation has yielded numerous invertebrate and vertebrate fossils throughout central and Southern California, including echinoids, bivalves, gastropods, sharks and bony fishes, whales, and terrestrial mammals (Koch et al. 2004; Fierstine et al. 2012). The Monterey Formation is considered as having high paleontological sensitivity.

Vaqueros Formation

Two units of the early Miocene (approximately 16 to 23 million years ago) marine deposits of the Vaqueros Formation were mapped by Dibblee and Minch (2006) in the southeastern portion of the study area. The upper middle unit (Tvt) is described as a tan to light gray sandstone that is roughly bedded, whereas the lower middle unit (Tvg) is defined as granitic cobble and boulder conglomerate within the study area (Dibblee and Minch 2006).

The Vaqueros Formation has yielded numerous fossil invertebrates and vertebrates in California, including mollusks and marine vertebrates (Addicott 1973; Koch et al. 2004; Moore 1983; Reynolds 2009). The Vaqueros Formation is considered as having high paleontological sensitivity.

Unnamed Paleocene and Late Cretaceous Sedimentary Rocks

An unnamed Paleocene to late Cretaceous (approximately 56 to 100 million years ago) clastic marine unit was identified in a small portion of the southeastern study area. Dibblee and Minch (2006) describe the unit as a light brown sandstone that can be massive and thickly bedded. Information is unavailable regarding the paleontological history of the unnamed Paleocene and late Cretaceous deposits; therefore, it is considered as having undetermined paleontological sensitivity.

Paleontological Localities

Records Search

A record search of UCMP records was conducted (UCMP 2021a, 2021b, 2021c, 2021d, 2021e, 2021f). The record search did not yield any reported fossil discoveries within a 1-mile radius of the study area. However, it was reported that an unidentifiable cetacean specimen was recovered from the Sandholdt member of the Monterey Formation (equivalent to member Tmc of Dibblee and Minch [2006]) approximately 2.4 miles southwest of the study area in San Luis Obispo County (K. Finger, pers. comm., 2016).

Field Inventory and Results

Paleontological resources were recorded in October and November 2016 in concert with the archaeological survey conducted by Dudek. Paleontological resources were identified and recorded by personnel who were qualified in both archaeology and paleontology. Approximately 800 acres were surveyed for paleontological resources, including the entire perimeter of San Antonio Reservoir, the north portal work area and access road, the south portal work area and access road, and the spillway construction area. The survey was conducted using pedestrian transects that were spaced 30 to 45 feet apart. It included examination of all bedrock outcroppings encountered. The locations of the identified fossils were recorded with a Global Positioning System (GPS) receiver with sub-meter accuracy.

During the survey for paleontological resources, paleontologists documented invertebrate pecten (clams and scallops) shells and impressions at three locations. Two of the sites were in or just northwest of the north portal work area; the third location was on the north bank of San Antonio Reservoir, adjacent to the parking lot and boat ramp at the end of New Pleyto Road.

4.2.4 Impact Analysis

4.2.4.1 Methods for Evaluating Impacts

Geology, Soils, and Seismicity

This impact analysis considers whether implementation of the proposed project or the Tunnel-Only Alternative would result in significant adverse impacts related to geology, soils, and seismicity. The analysis focuses on reasonably foreseeable direct and indirect effects from construction and operation of the proposed project and Tunnel-Only Alternative. The analysis uses significance criteria that are based on the CEQA Guidelines, Appendix G. Where a potentially significant environmental effect has been identified, project-specific mitigation measures have been identified, where feasible, to avoid or reduce the significant effect.

Paleontological Resources

The fossil-yielding potential of geologic units in a particular area depends on the geologic age and origin of the units as well as the geologic and anthropogenic processes they have undergone. The methods used to analyze reasonably foreseeable direct and indirect effects from construction and operation on paleontological resources and develop mitigation for the identified impacts conform to SVP guidelines (SVP 2010) and involve the following steps:

1. Assess the likelihood that the affected sediments contain scientifically important, nonrenewable paleontological resources that could be directly affected.
2. Identify the geologic units in the paleontological study area.
3. Evaluate the potential of the identified geologic units to contain significant fossils (i.e., their paleontological sensitivity)[3] (UCMP 2021a, 2021b, 2021c, 2021d, 2021e; Jefferson 1991; Addicott and Galehouse 1973; J. Stewart, pers. comm., 2016; Nomland 1917; Addicott 1973; Koch et al. 2004; Fierstine et al. 2012; Moore 1983; Reynolds 2009).
4. Identify the geologic units that would be affected, based on the depth of excavation—either at ground surface or below (at least 5 feet bgs).
5. Identify and evaluate impacts on paleontologically sensitive geologic units that may occur as a result of construction and operation that involves ground disturbance.
6. Evaluate impact significance.
7. According to the identified degree of sensitivity, formulate and implement measures to mitigate potential impacts.

The potential of the proposed project or the Tunnel-Only Alternative to affect paleontological resources is related to ground disturbance. Ground disturbance would take place during construction phases; therefore, this impact analysis focuses primarily on construction impacts but also considers impacts during the operations period.

To identify the geologic units in the paleontological study area, geologic maps were consulted—specifically, the geologic map of the Prunedale and San Juan Bautista quadrangles (Dibblee 2006) and the geologic map of the Tierra Redonda Mountain quadrangle (Dibblee and Minch 2006). To evaluate the paleontological sensitivity of the geologic units, the UCMP database was searched for records of fossils in these geologic units (K. Finger, pers. comm., 2016; J. Stewart, pers. comm., 2016; UCMP 2021a, 2021b, 2021c, 2021d, 2021e, 2021f). In addition, the scientific literature regarding the paleontological potential of geologic units in the area was reviewed (Jefferson 1991; Addicott and Galehouse 1973; J. Stewart, pers. comm., 2016; Nomland 1917; Addicott 1973; Koch et al. 2004; Fierstine et al. 2012; Moore 1983; Reynolds 2009). After the records search and literature review, the paleontological sensitivity of the units was assessed, according to the standard guidelines published by the SVP (2010).

Based on data from the UCMP database and scientific literature, each geologic unit in the study area was assigned a paleontological sensitivity rating according to SVP's standard guidelines. To identify and evaluate project-related impacts on paleontologically sensitive geologic units, GIS software was used to identify the location of ground-disturbing activities, including disturbance depth, with respect to the geologic units with high and undetermined potential (ArcGIS Desktop 10.8.2).

[3] The paleontological sensitivity of each geologic unit is provided in Section 4.2.3.2, *Paleontological Resources*.

4.2.4.2 Criteria for Determining Significance

Geology, Soils, and Seismicity

Appendix G of the CEQA Guidelines (14 CCR 15000 *et seq*.) provides guidance for assessing whether a project would have significant impacts on the environment. Consistent with Appendix G and consideration of project-specific environmental conditions,[4] MCWRA has determined that the project would have significant impacts related to geology, soils, and seismicity if it would result in any of the following:[5]

a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

   i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;

   ii. Strong seismic ground shaking;

   iii. Seismically related ground failure, including liquefaction; or

   iv. Landslides;

b. Result in substantial soil erosion or the loss of topsoil;

c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse; or

d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.

Paleontological Resources

Consistent with Appendix G of the CEQA Guidelines and consideration of project-specific environmental conditions, MCWRA has determined that the project would have significant impacts on paleontological resources if it would:

e. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

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[4] According to the California Supreme Court decision in *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, 377, "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents," although this standard does not apply to effects that a project could exacerbate. Specifically, "[W]hen a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment—and not the environment's impact on the project—that compels an evaluation of how future residents or users could be affected by exacerbated conditions." This impact analysis accordingly considers whether the proposed project would be likely to exacerbate risks related to the environment's impacts on the project or project users.

[5] Appendix G checklist item VII(e) has been omitted. It asks whether a project would have soils that would be incapable of supporting a septic system. The proposed project and Tunnel-Only Alternative would not involve construction or operation of a septic system, and would not require connection to a sewer. Accordingly, this checklist item is not applicable to the proposed project or Tunnel-Only Alternative.

A unique paleontological resource is understood in this analysis to be a significant paleontological resource, as defined by SVP (see the *Paleontological Sensitivity* subheading under Section 4.2.3.2, *Paleontological Resources*).

No unique geologic features, such as those designated by the National Natural Landmarks Program, are known in the study area (National Park Service 2021) and, therefore, are not discussed further.

4.2.4.3 Applicable Avoidance and Minimization Measures

Geology, Soils, and Seismicity

MCWRA has incorporated AMMs into the project design to prevent the occurrence of environmental impacts or reduce their severity. The AMMs applicable to geology, soils, and seismicity analysis include the following:

- **AMM GEN-6**, Staging, Stockpiling of Soil, and Access
- **AMM GEN-8**, Dust Management Controls

A complete description of the measures is provided in Section 2.6, *Avoidance and Minimization Measures.*

Paleontological Resources

No AMMs have been proposed that pertain to paleontological resources.

4.2.4.4 Impacts and Mitigation Measures

Impact GSP-1: Impacts Associated with Surface Rupture of a known Earthquake Fault, Seismic Ground Shaking, or Seismic Ground Failure (including seismically induced landslides)

The Rinconada fault traverses the study area and intersects with the San Antonio Dam Spillway. Other faults near the study area have the potential to generate an earthquake with a magnitude of up to 7.5.

Construction

The proposed project and Tunnel-Only Alternative would involve construction of the Interlake Tunnel, the Tunnel Intake Structure and Energy Dissipation Structure, and access roads. The proposed project would also include a San Antonio Dam spillway modification. This would involve removing and replacing San Antonio Dam Spillway’s crest control structure with a new labyrinth weir and raising the spillway walls. None of these activities would exacerbate the existing risk associated with surface fault rupture along the Rinconada fault or any other nearby known or unknown fault because none of the activities would increase stress on tectonic structures. Therefore, none would exacerbate the risk of surface fault rupture, seismic ground shaking, or seismically related ground failure, including seismically induced landslides.

Operation

Deep reservoirs (i.e., more than 460 feet deep) that are constructed on or very close to active faults can, in some circumstances, result in reservoir-induced seismicity (RIS; Srivastava and Dube 1997). RIS has been known to lead to surface fault rupture and worsen the effects of seismic ground shaking, one of which is seismically related ground failure, including seismically induced landslides. However, the San Antonio Reservoir has a depth of less than 460 feet, is not considered a deep reservoir and therefore would not be subject to RIS effects.

Proposed Project

Once in operation, the combination of the Interlake Tunnel and Spillway Modification would increase the depth of water in San Antonio Reservoir from approximately 210 feet to 217 feet. Although located on an active fault and near other faults, San Antonio Reservoir, even with the increased depth, would not approach the threshold at which RIS becomes likely (i.e., 460 feet). Therefore, the proposed project would not substantially exacerbate the risk of RIS, would not substantially increase the risk of surface-fault rupture and would not substantially worsen the effects of seismic ground shaking, including seismically related ground failure and seismically induced landslides, at San Antonio Reservoir. In addition, the proposed project would not increase the likelihood of dam failure at the San Antonio Dam and associated downstream inundation.

Tunnel-Only Alternative

The Tunnel-Only Alternative would not include the Spillway Modification. In addition, because the spillway would not be raised under the Tunnel-Only Alternative, it would not increase the maximum WSE or depth of San Antonio Reservoir or Nacimiento Reservoir. Therefore, this alternative would not change the risk of RIS and therefore would not exacerbate the risk of surface fault rupture associated with RIS or substantially worsen seismic ground shaking, including seismically related ground failure and seismically induced landslides, at either reservoir.

CEQA Conclusion

Construction

The proposed project and Tunnel-Only Alternative would have **no impact** related to exacerbating the risk of surface fault rupture, seismic ground shaking, or seismically related ground failure, including seismically induced landslides.

Operation

The proposed project would have a **less-than-significant** impact related to exacerbating the risk of surface fault rupture, seismic ground shaking, or seismically related ground failure, including seismically induced landslides. The Tunnel-Only Alternative would have **no impact**.

Impact GSP-2: Impacts of Soil Erosion or the Loss of Topsoil

The study area is characterized by moderate-to-steep slopes, which could be susceptible to wind and water erosion. Soils in the study area have low-to-high susceptibility to erosion, depending on the soil association (see the *Soils* subheading under Section 4.2.3.1, *Geology, Soils, and Seismicity*). Soils without ground cover are more susceptible to erosion than soils with vegetative or artificial ground cover. During erosion, topsoil (the surface layer of soils) would be eroded. *Topsoil* is the surface layer of most soils that contains greater organic matter than layers below the topsoil (Natural Resources Conservation Service 2016). Topsoil is important not only for cultivation, but also for maintaining surface vegetation to minimize erosional processes.

Construction

Construction activities for the proposed project and the Tunnel-Only Alternative involving vegetation removal and excavation would expose soils to the potential for wind and water erosion. Boring for the Interlake Tunnel, as well as other construction activities, would result in stockpiled soil (i.e., tunnel spoils). Use of heavy equipment would compress soils, decreasing their ability to absorb rains and increasing the risk of water runoff and associated erosion.

The project design includes the erosion control BMPs described in **AMM GEN-6**, *Staging, Stockpiling of Soil, and Access*, and **AMM GEN-8**, *Dust Management Controls*. Collectively, these design features would limit the potential for erosion. BMPs specified in **AMM GEN-6** include locating stockpiled soils away from waterways and surrounding stockpiles with an erosion control material until disposed of or used. **AMM GEN-8** requires all active construction areas to be watered at least twice daily to minimize wind erosion and control dust. In addition, as described in Chapter 2, *Project Description*, areas where vegetation would be removed would be revegetated with native plants at the end of construction. The spoils stockpile created from excavation, ground clearing, and tunneling would likewise be revegetated after construction comes to an end (see Section 2.4.2.6, *Spoils Management*).

Construction of the proposed project and the Tunnel-Only Alternative would require preparation of and adherence to a Stormwater Pollution Prevention Plan as part of requirements of the Construction General Permit (see Section 4.1, *Hydrology and Water Quality*). The Stormwater Pollution Prevention Plan would enumerate the BMPs that would be implemented to prevent soil erosion and require permittees under the General Permit to conduct annual monitoring and reporting to ensure that the BMPs are correctly implemented and effective.

Construction of the project components would result in temporary disturbances and a permanent loss of topsoil on land that is currently undisturbed. Table 2-4, *Summary of Land Disturbance for Interlake Tunnel*, provides the amount of acreage that each project component would temporarily or permanently disturb. Temporary disturbance would occur in work areas where vegetation would be stripped or compressed by heavy equipment; construction staging and stockpile areas would also be temporarily disturbed. This temporary disturbance could degrade the condition and productivity of the soil because of compaction. Although revegetation is incorporated into the project design, the re-establishment of native plants could be hindered where the soil has been degraded. Furthermore, a permanent loss of topsoil would occur where topsoil is removed to allow for the construction of new structures and features, including access roads, the ATV trail, and the Tunnel Intake Structure and Energy Dissipation Structure.

Operation

Proposed Project

The proposed maintenance activities for the proposed project would not result in erosion because they would not involve ground disturbance or removing ground cover. However, increased inundation and wave action in San Antonio Reservoir within the area of increased inundation could lead to erosion and loss of topsoil. Under the proposed project, San Antonio Reservoir would have a higher maximum WSE than under baseline conditions, resulting from the increased spillway height. Inundation has potential to harm existing grasses and other vegetative cover on the shoreline that protect against erosion above the current maximum WSE. Furthermore, in any areas where projected inundation would affect currently vegetated areas, if increased inundation causes the vegetation to diminish, then erosion could occur as a result of wave action.

Those areas most likely to experience erosion are those with less than 75 percent cover of live plants and/or other stability elements and that exhibit one or more instability elements. *Stability elements* include presence of live plants, rock, downed wood, or erosion-resistant soil. *Instability elements* include steep unvegetated slopes, fracturing, blocking, or slumping, mass movement, and undercutting. As shown on **Figure 4.2-3**, soils with moderate-to-high susceptibility to erosion are present in areas surrounding most of San Antonio Reservoir. In addition, parts of the San Antonio shoreline are steep and high, relative to surrounding shoreline. These steep areas of the San Antonio shoreline would be subject to erosion during the period of operation.

Tunnel-Only Alternative

As with the proposed project, the proposed maintenance activities for the Tunnel-Only Alternative would not result in erosion because they would not involve ground disturbance or removing ground cover. Unlike the proposed project, the maximum WSE would not change under the Tunnel-Only Alternative. Although the average WSE would change because of the increased water available through the tunnel, any erosion as a result of wave action would be in areas already affected.

CEQA Conclusion

Construction

The proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to erosion.

The proposed project and Tunnel-Only Alternative impacts related to loss of topsoil would be significant. Implementation of **MM GSP-1** would reduce the impact by requiring development of a soil storage and handling plan, which would specify the thickness of the topsoil that should be salvaged. The plan would also address issues regarding storage, handling of salvaged topsoil, and the application processes for savaged topsoil. With implementation of **MM GSP-1**, the impact with respect to loss of topsoil during construction would be **less than significant with mitigation**.

Operation

The proposed project would have a significant impact related to erosion and loss of topsoil. Implementation of **MM GSP-2** would reduce the impact by requiring planting of erosion-resistant plants along the slopes most susceptible to water erosion. With implementation of **MM GSP-2**, the impact with respect to loss of topsoil and erosion during operation would be **less than significant with mitigation**.

The Tunnel-Only Alternative would have a **less than significant impact** related to erosion and loss of topsoil.

Mitigation Measures

MM GSP-1: Salvage, Stockpile, and Replace Topsoil and Prepare a Topsoil Storage and Handling Plan

Prior to the initiation of construction, MCWRA’s contractor shall engage a qualified soil scientist to prepare a topsoil storage and handling plan that details how to manage topsoil that would be permanently removed from its current location as a result of construction. This plan will guide the approach to salvaging, stockpiling, and replacing topsoil during the construction phase. The plan, which will be based on a review of soil survey maps, supplemented by field investigations, and prepared by a qualified soil scientist, will specify the thickness of the topsoil that should be salvaged and identify areas where topsoil should not be salvaged. The plan will also include topsoil storage and handling plans for individual project components. Plan guidelines will establish the maximum allowable thickness of soil stockpiles, temporary stockpile stabilization/revegetation measures, and procedures for topsoil handling during salvaging and reapplication. The plan will specify that, where practicable, the topsoil will be salvaged, transported, and applied at its destination in one operation (i.e., without stockpiling) to minimize degradation of the soil structure and increases in bulk density as a result of excessive handling. For staging areas and similar areas where topsoil would not be covered over, the stockpiling and handling plan will describe how the soil will be decompacted or otherwise remediated after demobilization but before revegetation.

MM GSP-2: Plant Erosion-Resistant Vegetation along Unstable Vegetated Slopes at San Antonio Shoreline

Prior to initiation of operations, MCWRA will engage an engineering geologist or geomorphologist with expertise in slope stability to conduct a slope stability evaluation to determine the areas prone to erosion based on slope height and angle; fracturing, blocking, or slumping; mass movement; and undercutting as well as presence of rock or erosion-resistant soil. In those areas that are identified as prone to erosion, MCWRA or its contractor will plant vegetation such as willows that will withstand future inundation. Performance standards will be developed in conjunction with a qualified biologist. Monitoring would occur for up to 5 years to ensure that the planting survives and is successful at preventing erosion at these sites.

Impact GSP-3: Impacts as a Result of Soil Instability

Impacts as a result of soil instability could occur where the proposed project or Tunnel-Only Alternative would exacerbate conditions related to landslides, collapse, or subsidence. In addition, impacts as a result of soil instability could occur as a result of seismicity, including liquefaction and lateral spreading.

Construction

The proposed project and Tunnel-Only Alternative would be constructed in areas where landslides have occurred or areas that are susceptible to landslides. Specifically, the slopes range from moderate to steep, underlying geologic units are weathered, and some slopes have already failed. These areas include alluvial sand and gravel, landslide rubble, and older alluvial sediments. Construction of roads and other facilities associated with the Interlake Tunnel, including the Tunnel Intake Structure and Energy Dissipation Structure, would involve excavation and grading. Such activities could destabilize slopes, thereby increasing the risk of landslide. However, construction of the proposed project and Tunnel-Only Alternative would adhere to the requirements of the CBSC, as well as Monterey County and San Luis Obispo County grading permits that describe the nature, distribution, and strength of on-site soils; provide recommendations for grading procedures; and outline design criteria for corrective measures when necessary.

The proposed project and Tunnel-Only Alternative would require excavation to install utilities, lay foundations, and construct the Interlake Tunnel. However, through adherence to the CBSC, as well as Monterey County and San Luis Obispo County grading permits, risks associated with excavated walls collapsing into the excavated area would be minimized.

The proposed project and Tunnel-Only Alternative would involve temporary dewatering for construction of the Intake Structure and the Energy Dissipation Structure. Although dewatering can be associated with subsidence, dewatering, if required, would occur on the reservoirs with the water collected returned to the reservoirs themselves, and therefore that activity would not affect ground surface elevations.

Operation

Activities associated with operation of the proposed project or Tunnel-Only Alternative would not exacerbate risks associated with landslides, collapse, or subsidence because operation would not involve excavation, which could increase the risk of subsidence.

CEQA Conclusion

Construction

The proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Operation

The proposed project and Tunnel-Only Alternative would result in **no impact** related to being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Impact GSP-4: Impacts as a Result of Expansive Soil

Soils in the study area have low to moderate expansive qualities (see the *Soils* subheading in Section 4.2.3.1, *Geology, Soils, and Seismicity*).

Construction

Construction activities associated with the proposed project and the Tunnel-Only Alternative would not change the susceptibility of soils in the study area to expansion and contraction or exacerbate the tendency of the soils toward expansiveness. Any grading or excavation that moves soil will, in accordance with standard construction practices, compact the soil to engineering standards. There would be no other change to chemical or physical soil characteristics.

Operation

Proposed Project

Operation of the proposed project would not change soil chemical or physical characteristics with respect to expansion/contraction except in the new inundation area because only in this area would the proposed project have the potential to disturb soil. Although the new inundation area could increase the degree to which sediments are loosened along the reservoir boundary, the inundation itself would not change or exacerbate the tendency of soils to expand and contract with changes in wetness beyond the existing changes in the area already inundated.

Tunnel-Only Alternative

Operations and maintenance associated with the Tunnel-Only Alternative would not disturb any areas of soil not already disturbed. The Tunnel-Only Alternative does not include an expanded inundation area, and operations does not otherwise involve soil disturbance. Therefore, the Tunnel-Only Alternative would not change the susceptibility of soils in the study area with respect to expansion/contraction.

CEQA Conclusion

Construction

The proposed project and Tunnel-Only Alternative would result in **no impact** related to expansive soil.

Operation

The proposed project would have a **less than significant impact** related to expansive soil. The Tunnel-Only Alternative would result in **no impact** related to expansive soil.

Impact GSP-5: Impacts on Paleontological Resources

Construction

Activities that would involve ground disturbance could damage paleontological resources. **Table 4.2-5** lists the maximum depth of the ground-disturbing activities that would occur with each major project component, the geologic units that would be affected, and the paleontological sensitivity of the units. Ground-disturbing activities include grading, excavating, and tunnel boring. **Table 4.2-6** shows the acreage of each geologic unit that would be disturbed and indicates the paleontological sensitivity of each project component.

Construction of the Tunnel Intake Structure under both the proposed project and Tunnel-Only Alternative would involve excavation to a maximum depth of 60 feet bgs. As described in Chapter 2, *Project Description*, construction of the Tunnel Intake Structure would involve preparation of the work/staging area, installation of underground power lines, excavation at the work area, installation of a cast-in-place intake structure, and construction of the adjoining concrete approach channel and side walls. Ground-disturbing activities would include grubbing and excavation. The Tunnel Intake Structure would be constructed on geologic units with high paleontological sensitivity (Monterey Formation [Tmc] and Vaqueros Formation [Tvt]), geologic units with undetermined paleontological sensitivity (unnamed Paleo to Late Cretaceous rocks [Kas]), and geologic units with low paleontological sensitivity overlying units with high or undetermined paleontological sensitivity (alluvial sand and gravel [Qa] overlying unnamed Paleocene to Late Cretaceous rocks [Kas] and landslide rubble [Qls] overlying Vaqueros Formation [Tvt]).

Construction of the Energy Dissipation Structure under both the proposed project and the Tunnel-Only Alternative would involve excavation to a maximum depth of 25 feet bgs. This would involve installation of a control valve and drain, construction of an energy dissipater, installation of a pipe to connect the tunnel portal to the energy dissipater, and installation of ancillary structures. Ground-disturbing activities would include grubbing and excavation. The Energy Dissipation Structure would be constructed on geologic units with high paleontological sensitivity (Paso Robles Formation [Qtp], Monterey Formation [Tml], and Santa Margarita Formation [Tsm]) as well as geologic units with low paleontological sensitivity overlying units with high paleontological sensitivity (alluvial sand and gravel [Qa] and landslide rubble [Qls] overlying Monterey Formation [Tm] and landslide rubble [Qls] overlying Paso Robles Formation [Qtp]).

Table 4.2-5. Ground-Disturbing Construction Activities and the Geologic Units Affected by the Proposed Project and the Tunnel-Only Alternative

Component	Geologic Units in the Study Area	Paleontological Sensitivity	Depth of Excavation (vertical feet)
Tunnel Intake Structure	Alluvial sand and gravel of stream channels and valley areas (Qa)	Low	60
	Landslide rubble (Qls)	Low	
	Monterey Formation (Tmc)	High	
	Vaqueros Formation (Tvt)	High	
	Unnamed Paleocene to Late Cretaceous Rocks (Kas)	Undetermined	
Interlake Tunnel[a]	Alluvial sand and gravel of stream channels and valley areas (Qa)	Low	25 to 680
	Landslide rubble (Qls)	Low	
	Paso Robles Formation (QTp)	High	
	Monterey Formation (Tmc, Tml)	High	
	Vaqueros Formation (Tvt)	High	
Energy Dissipation Structure	Alluvial sand and gravel of stream channels and valley areas (Qa)	Low	25
	Landslide rubble (Qls)	Low	
	Paso Robles Formation (QTp)	High	
	Monterey Formation (Tml)	High	
	Santa Margarita Formation (Tsm)	High	
Spillway Modification (proposed project only)	Alluvial sand and gravel of stream channels and valley areas (Qa, Qg)	Low	20
	Monterey Formation (Tm)	High	
	Santa Margarita Formation (Tsm)	High	

Sources: Dibblee and Minch 2006; SVP 2010; Jefferson 1991; Addison and Galehouse 1973; J. Stewart, pers. comm., 2016; LSA 2013; Nomland 1917; Addicott 1973; Koch et al. 2004; Fierstine et al. 2012; Moore 1983; Reynolds 2009; UCMP 2021a, 2021b, 2021c, 2021d, 2021e.
Note:
[a] Horizontal structure in hilly terrain connecting Tunnel Intake Structure and Energy Dissipation Structure.

Table 4.2-6. Surficial Acres of Geologic Units Affected by Construction Area

	Low Paleontological Sensitivity			High Paleontological Sensitivity							Unknown Paleontological Sensitivity
	Alluvial Sand and Gravel of Stream Channels and Valley Areas		Landslide Rubble	Paso Robles Formation	Santa Margarita Formation	Monterey Formation			Vaqueros Formation	Total, High Paleontological Sensitivity	Unnamed Paleocene to Late Cretaceous Rocks
	Qa	Qg	Qls	QTp	Tsm	Tm	Tmc	Tml	Tvt	–	Kas
Tunnel Intake Structure	3	0	8	0	0	0	1	0	4	5	0
Energy Dissipation Structure	5	0	25	4	1	0	0	13	0	17	0
Interlake Tunnel	0	0	0	0	0	0	0	2	0	2	0
Spillway Modification	0	0	0	0	1	0	36	0	0	37	0

The Spillway Modification would involve excavation to a maximum depth of 20 feet bgs. This would involve excavation at the top of the spillway, as well as preparation of a staging area. Ground-disturbing activities would include grubbing and excavation. The Spillway Modification would be constructed on geologic units with high paleontological sensitivity (Monterey Formation [Tm] and Santa Margarita Formation [Tsm]), as well as geologic units with low paleontological sensitivity overlying units with high paleontological sensitivity (alluvial sand and gravel [Qa and Qg] overlying Monterey Formation [Tm]).

Under the proposed project, the restroom facility on the north shore of San Antonio Reservoir (serving the boat ramp at the end of New Pleyto Road) and the facility on the south shore (serving the boat ramp at the end of Harris Creek Road) that would be subject to partial inundation at the reservoir's new maximum WSE would either be removed, relocated, or protected by construction of a berm around the facilities. At this stage of project development, it is not known which of these approaches would be implemented to protect the facilities from partial inundation. If these facilities require relocation they would be subject to further environmental review to assess the potential for impacts.

Because excavation to the maximum depth for the Tunnel Intake Structure, the Energy Dissipation Structure, and the Spillway Modification would disturb a total of 60 surficial acres of geologic units with high paleontological sensitivity, as well as underlying units, construction could disturb or destroy unique paleontological resources.

Construction of the Interlake Tunnel under both the proposed project and the Tunnel-Only Alternative would involve excavation to a maximum depth of 680 feet bgs. As described in Chapter 2, *Project Description*, construction of the Interlake Tunnel would involve construction of two tunnel portals and boring for the tunnel. Ground-disturbing activities would comprise excavating the work areas for the Tunnel Intake Structure and Energy Dissipation Structure and boring for the tunnel. The Interlake Tunnel itself would traverse areas with high paleontological sensitivity (Vaqueros Formation [Tvt], Monterey Formation [Tmc, Tml], and Paso Robles Formation [QTp]); however, it is unknown which geologic units would occur at the depth of excavation. It is possible that construction of the Interlake Tunnel could encounter and destroy significant paleontological resources.

If the restroom facilities at New Pleyto Road and Harris Creek Road are removed, there would be some minor ground disturbance. However, this disturbance would not involve excavation to depth, and because the ground has already been disturbed at these locations, no new previously undisturbed paleontological resources are likely to be encountered. If the restroom facilities are protected by a berm, any ground disturbance would likewise be minor.

Operation

Proposed Project

Maintenance under the proposed project would not involve ground disturbance. Therefore, there is no risk of erosion from project activities. However, wave action in the operations period in areas subject to higher maximum WSEs could cause erosion.

Operation of the proposed project would increase the maximum WSE at San Antonio Reservoir through an influx from Nacimiento Reservoir through the Interlake Tunnel. The maximum WSE at San Antonio Reservoir would change from 780 feet under the baseline condition to 787 feet under the proposed project.

Where higher average water surface elevations would overlie geologic units (i.e., older alluvial sediments [Qoa], Paso Robles Formation [Qtp], Santa Margarita Formation [Tsm], and Monterey Formation [Tm, Tml, Tmc]) with high paleontological sensitivity that are not strongly lithified (i.e., hardened and converted to solid rock), especially in areas with relatively flat topography, wave action could expose paleontological resources through the erosion of soft materials. In particular, the older Monterey Formation is known to contain soft sandstone, which could be subject to erosion through wave action. Older geologic units (i.e., Vaqueros Formation [Tvc, Tvt, Tvg, and Tvq] and the unnamed Paleocene to Late Cretaceous rocks [Kas]) are more strongly lithified and therefore would not be as readily subject to erosion as a result of wave action. However, this erosion would occur in geologic units that are already disturbed through erosion from wave action.

Tunnel-Only Alternative

The maximum WSE at San Antonio Reservoir would not change under the Tunnel-Only Alternative. Although erosion might increase because of the increased average WSE, any additional erosion would be minor and within the existing area of periodic inundation. Furthermore, no new geologic units would be subject to any increased wave action.

CEQA Conclusion

Construction

Impacts on paleontological resources from construction of the proposed project and the Tunnel-Only Alternative would be significant. Mitigation measures would address impacts on paleontological resources that would occur as a result of excavation. Implementation of **MM GSP-3** and **MM GSP-4** would reduce impacts by requiring retention of a qualified paleontological resource specialist and paleontological resource monitor, consultation with the qualified paleontological resource specialist, preparation of a Paleontological Resources Monitoring and Mitigation Plan (PRMMP), monitoring of paleontological resources during construction, and implementation of the PRMMP. Construction of either the proposed project or Tunnel-Only Alternative has potential to encounter and destroy significant paleontological resources at depth during the tunneling activity. However, such resources would not be available for recovery and scientific analysis because they would be removed from their original context within the geologic unit. With implementation of mitigation measures **MM GSP-3** and **MM GSP-4**, the impact with be **less than significant with mitigation**.

Operation

The proposed project and Tunnel-Only Alternative impacts related to paleontological resources would be **less-than-significant**.

Mitigation Measures

MM GSP-3: Retain a Qualified Paleontological Resource Specialist and Paleontological Resource Monitor Prior to the Start of Construction and Consult with the Qualified Paleontological Resource Specialist Prior to and during Project Construction

MCWRA or its contractor, with approval of MCWRA, will retain a qualified paleontological resource specialist before the start of construction. The qualified paleontological resource specialist will meet the qualifications for a paleontological resources manager, as described in the SVP standard guidelines (2010). In addition, MCWRA or its contractor, with approval of MCWRA, will retain a qualified paleontological resource monitor to monitor construction activities, as described in the PRMMP.

Prior to the start of construction, MCWRA or its contractor will provide maps or drawings, or both, to the qualified paleontological resource specialist that depict the planned construction footprint, including all ground disturbance areas. The drawings and/or maps will show the location, depth, and extent of all ground disturbance that would occur on geologic units with high or undetermined paleontological sensitivity.

MM GSP-4: Prepare and Implement a Paleontological Resources Monitoring and Mitigation Plan, Including Conducting Monitoring during Project Construction and Preparing Monthly Reports

After the construction footprint maps and/or drawings are available and the engineering design is at a level with adequate detail, as determined by the qualified paleontological resource specialist, MCWRA will provide a PRMMP that describes the measures to minimize effects on potentially significant paleontological resources, as defined by SVP (2010), that could be encountered during construction of the project, other than tunnel boring. MCWRA will approve the PRMMP before any ground disturbance.

The PRMMP will guide all paleontological resource monitoring, collecting, and curating. It may be revised as needed to reflect changes to the project or new data. The PRMMP will be used by MCWRA's decision-makers when on-site decisions or project changes are considered. A copy of the PRMMP will be held by MCWRA, MCWRA's on-site manager, the qualified paleontological resource specialist, and each paleontological resource monitor. The PRMMP will be developed consistent with professional guidelines as well as guidelines issued by SVP (2010) The PRMMP will include procedures for the performance and sequencing of tasks related to paleontological resource identification, monitoring, identification, and curating, including:

- Literature searches
- Preconstruction surveys
- Worker environmental training for the identification of paleontological resources
- Construction monitoring
- Correct procedures in case of discovery by construction workers, paleontological resource monitors, or the qualified paleontological resource specialist
- Mapping and data recovery
- Fossil preparation and collection
- Fossil identification and inventory
- Preparation of reports
- Transmittal of materials for curation
- Final report approvals

The PRMMP will include the following information:

- A description of geologic units in the study area, the location and depth of the units with respect to the project footprint, and the assessed paleontological sensitivity of the geologic units.
- A description of the location where construction monitoring is needed and a plan for monitoring and sampling.
- A description of the different sampling procedures that may be used as well as an explanation that covers why sampling takes place, how sampling proceeds, and the amount of sampling anticipated and in which geologic units.
- A description of the procedures to be followed in the event of a significant fossil discovery, including stopping work, redirecting construction away from a fossil find, resuming construction, and determining how notifications regarding these activities will be executed.
- A description of the equipment and supplies needed for the collection of fossils and any specialized equipment needed for large-sized fossils or extensive fossil deposits, including preparation, removal, loading, transport, and analysis.
- Procedures for curation into a retrievable storage collection in a museum or other repository that meets SVP standards and requirements for curation of paleontological resources, including inventory, preparation, and delivery.
- Identification of institution(s) that will be contacted to receive data and fossil materials and their requirements and specifications for materials delivered for curation.
- Guidance for preparation of a paleontological resources report by the qualified paleontological resource specialist at the conclusion of ground-disturbing activities that could affect paleontological resources. The paleontological resources report will include an analysis of any collected paleontological resources, including:
    - A description and inventory of recovered paleontological resources;
    - A map showing the location of paleontological resources encountered during construction;
    - Determinations of geologic unit paleontological sensitivity and the significance of the retrieved materials; and
    - A statement by the qualified paleontological resource specialist that confirms that effects on paleontological resources for all project components, other than the boring portion of the tunnel work, have been mitigated to be not adverse.

During construction, MCWRA will ensure that the qualified paleontological resource specialist and paleontological resource monitor(s) will monitor construction excavations consistent with the PRMMP. MCWRA will also ensure that the qualified paleontological resource specialist and the paleontological resource monitor(s) will have the authority to halt or redirect construction if paleontological resources are encountered. MCWRA will ensure that there is no interference with monitoring activities directed by the qualified paleontological resource specialist.

MCWRA will ensure that the qualified paleontological resource specialist prepares and submits monthly summaries of monitoring and other paleontological resource management activities. The summaries will include:

- General information:
  - Name(s) of the qualified paleontological resource specialist and/or paleontological resource monitor(s) active during the month.
  - General locations of training and monitored construction activities.
  - General locations of excavations, grading, and other ground-disturbing activities.
- Paleontological resource information:
  - Geologic units or subunits encountered.
  - Descriptions of samples, if any.
  - A list of identified fossils.
- Issues or concerns about the project related to paleontological resource mitigation activities, including incidents of non-compliance and changes to the PRMMP by the qualified paleontological resource specialist.
- If no monitoring took place during the month, then the report will include an explanation regarding why no monitoring was conducted.

MCWRA will ensure, through the qualified paleontological resource specialist, that all components of the PRMMP are adequately performed during construction.

4.2.5 Impact Summary

4.2.5.1 Geology, Soils, and Seismicity

Table 4.2-7 provides a summary of the significance of potential impacts on geology, soils, and seismicity; identifies mitigation measures where applicable; and notes the significance of potential impacts after implementation of mitigation measures where required.

Table 4.2-7. Summary of Impacts on Geology, Soils, and Seismicity

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact GSP-1: Impacts Associated with Surface Rupture of a Known Earthquake Fault, Seismic Ground Shaking, or Seismic Ground Failure (including seismically induced landslides)			
Proposed Project	Construction: No impact	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: No impact	N/A	N/A
	Operation: No impact	N/A	N/A
Impact GSP-2: Impacts of Soil Erosion or the Loss of Topsoil			
Proposed Project	Construction: Significant	**MM GSP-1**	Less than significant
	Operation: Significant	**MM GSP-2**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM GSP-1**	Less than significant
	Operation: Less than Significant	N/A	N/A

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact GSP-3: Impacts as a Result of Soil Instability			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: No impact	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: No impact	N/A	N/A
Impact GSP-4: Impacts as a Result of Expansive Soil			
Proposed Project	Construction: No impact	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: No impact	N/A	N/A
	Operation: No impact	N/A	N/A

4.2.5.2 Paleontological Resources

Table 4.2-8 provides a summary of the significance of potential impacts on paleontological resources, identifies mitigation measures where applicable, and notes the significance of potential impacts after implementation of mitigation measures where required.

Table 4.2-8. Summary of Impacts on Paleontological Resources

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact GSP-5: Impacts on Paleontological Resources			
Proposed Project	Construction: Significant	**MM GSP-3** **MM GSP-4**	Less than significant
	Operation: Less than Significant	N/A	N/A
Tunnel-Only Alternative	Construction: Significant	**MM GSP-3** **MM GSP-4**	Less than significant
	Operation: Less than Significant	N/A	N/A

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4.3 Biological Resources

4.3.1 Overviews

This section describes the regulatory setting relevant to biological resources that might be affected by the proposed project. It also describes the existing environmental setting of the project area, including San Antonio Reservoir and Nacimiento Reservoir, and areas downstream, including the San Antonio River, Nacimiento River, Salinas River, Salinas River Lagoon, and the Old Salinas River Channel. It identifies plant, insect, fish and wildlife species that might be affected by the proposed project and proposes mitigation measures to avoid or reduce impacts on certain of these species.

4.3.1.1 Study Area

The biological resources study area (see **Figure 4.3-1**) consists of the following features: Nacimiento Reservoir; the Interlake Tunnel, associated subcomponents, and all associated construction work areas, including staging areas, access roads, and the soil disposal area; San Antonio Reservoir and the area that could be subject to inundation resulting from project operations; and the Spillway Modification, associated subcomponents, and all areas within the construction work limits, including the staging area. With the exception of Nacimiento Reservoir and the Interlake Tunnel, the study area also includes a 500-foot buffer around each of these features to identify and protect sensitive biological resources that could be inadvertently affected during project construction and/or operations.

To assess potential impacts on biological resources downstream of the reservoirs, the study area also includes the downstream portions of the San Antonio and Nacimiento Rivers east of the reservoir spillways, the Salinas River (starting from its confluence with the Nacimiento River and ending at the Salinas River Lagoon), the Salinas River Lagoon,[1] the Old Salinas River channel, Moss Landing Harbor, and any associated riparian/wetland corridor along these waterways. These downstream portions are included in the study area because the proposed project has a potential to affect the timing and quantity of water flowing through these river sections, which could result in impacts on existing plant and wildlife species.

4.3.1.2 Scoping Comments

Table 4.3-1 summarizes the scoping comments received regarding biological resources and identifies how and where these comments have been addressed. Refer to Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* for a complete list of public comments received during the public scoping period.

[1] Consistent with the Salinas River Lagoon Management and Enhancement Plan (1997), the lagoon is defined as the coastal breach outlet to approximately 1.31 miles upstream of Highway 1 (measured along the main channel of the Salinas River), including immediately adjacent vegetation and land cover types.

Biological Resources Study Area

Water Bodies

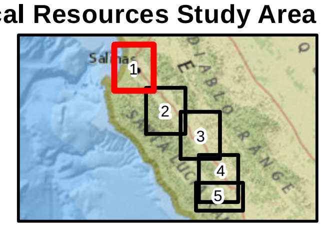
N

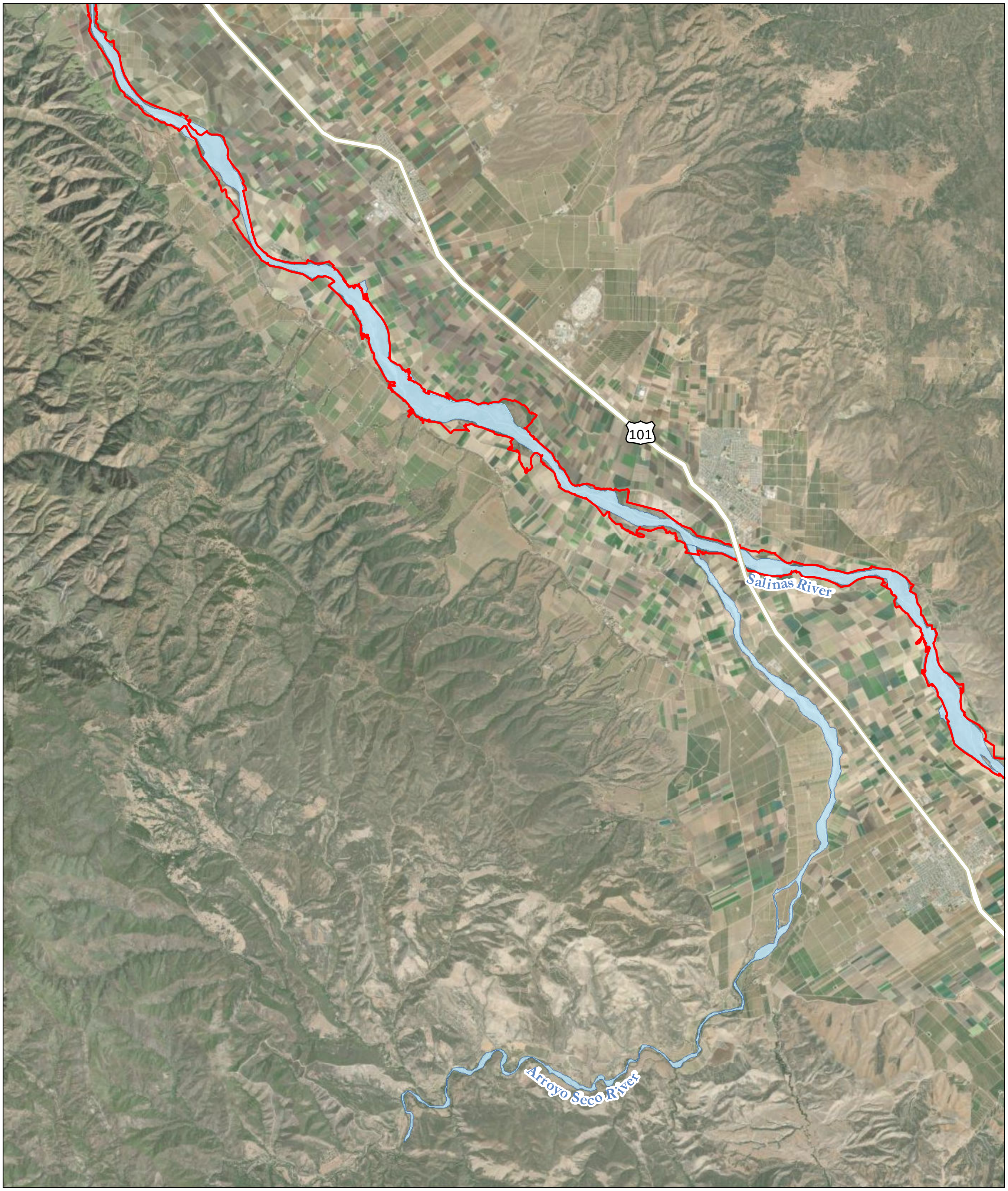
0 2 4 Miles

1:175,000

Source: Basemap, ESRI World Imagery; US Census 2021

Figure 4.3-1 - Sheet 1 Biological Resources Study Area





Biological Resources Study Area

Water Bodies

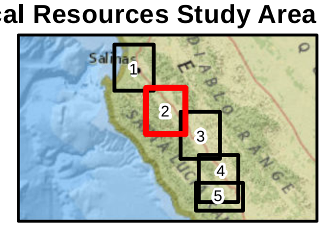
Figure 4.3-1 - Sheet 2 Biological Resources Study Area

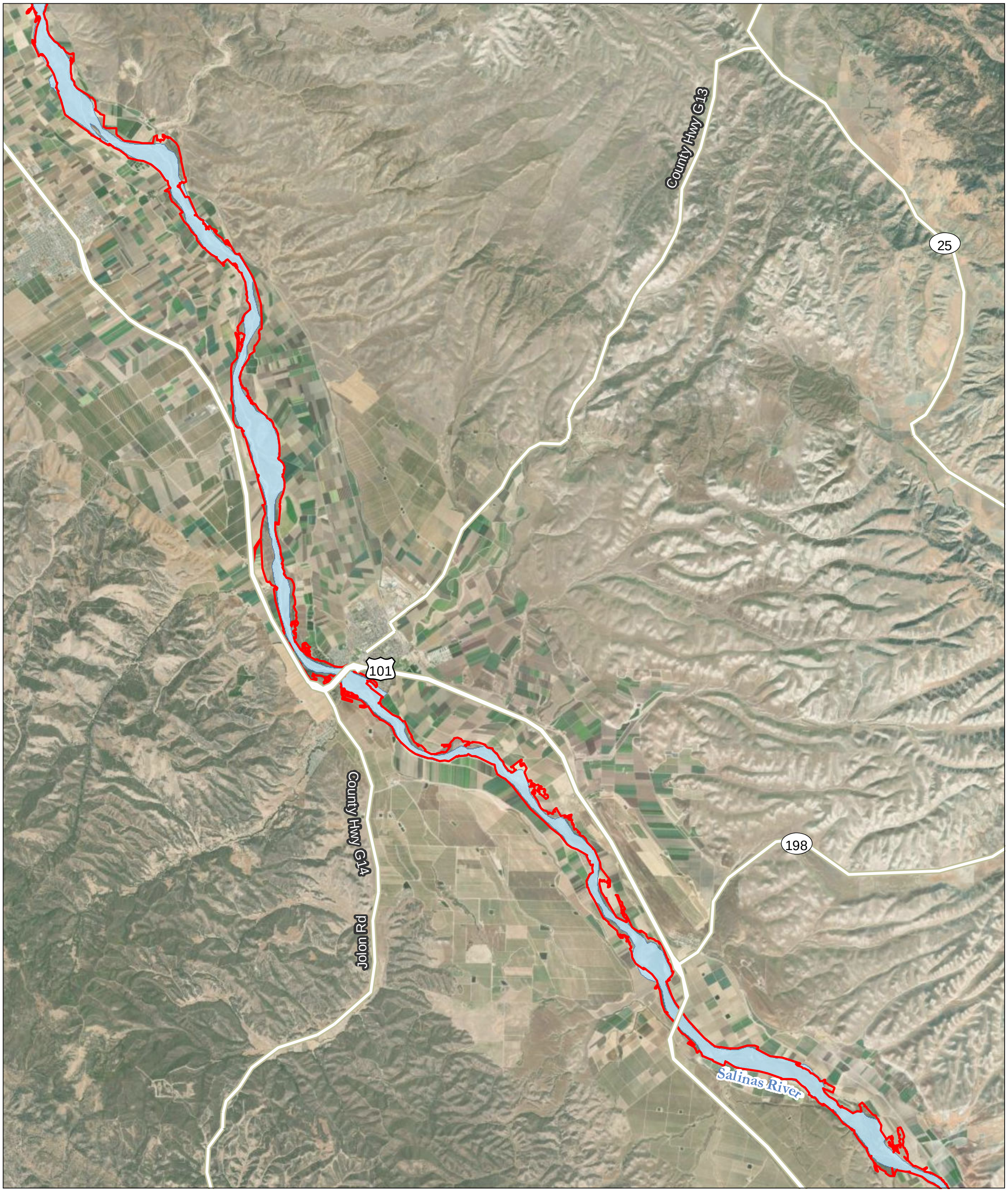
N

0 2 4 Miles

1:175,000

Source: Basemap, ESRI World Imagery; US Census 2021





Biological Resources Study Area
Water Bodies

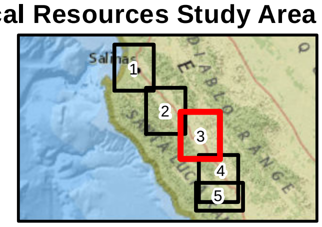
Figure 4.3-1 - Sheet 3 Biological Resources Study Area

N

0 2 4 Miles

1:175,000

Source: Basemap, ESRI World Imagery; US Census 2021



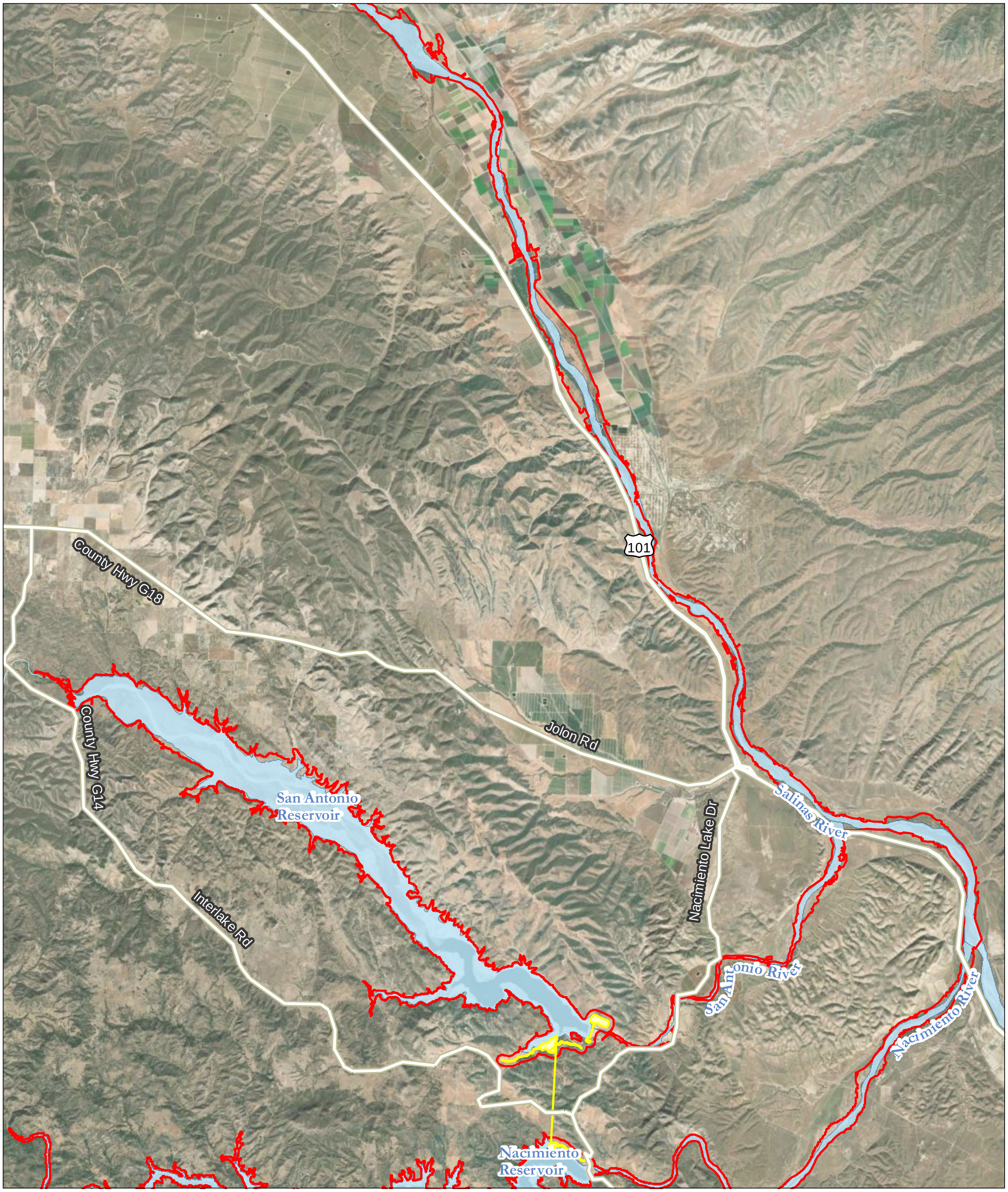


Figure 4.3-1 - Sheet 4 Biological Resources Study Area

Biological Resources Study Area

Project Site

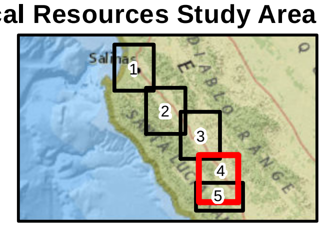
Water Bodies

N

0 2 4 Miles

1:175,000

Source: Basemap, ESRI World Imagery; US Census 2021



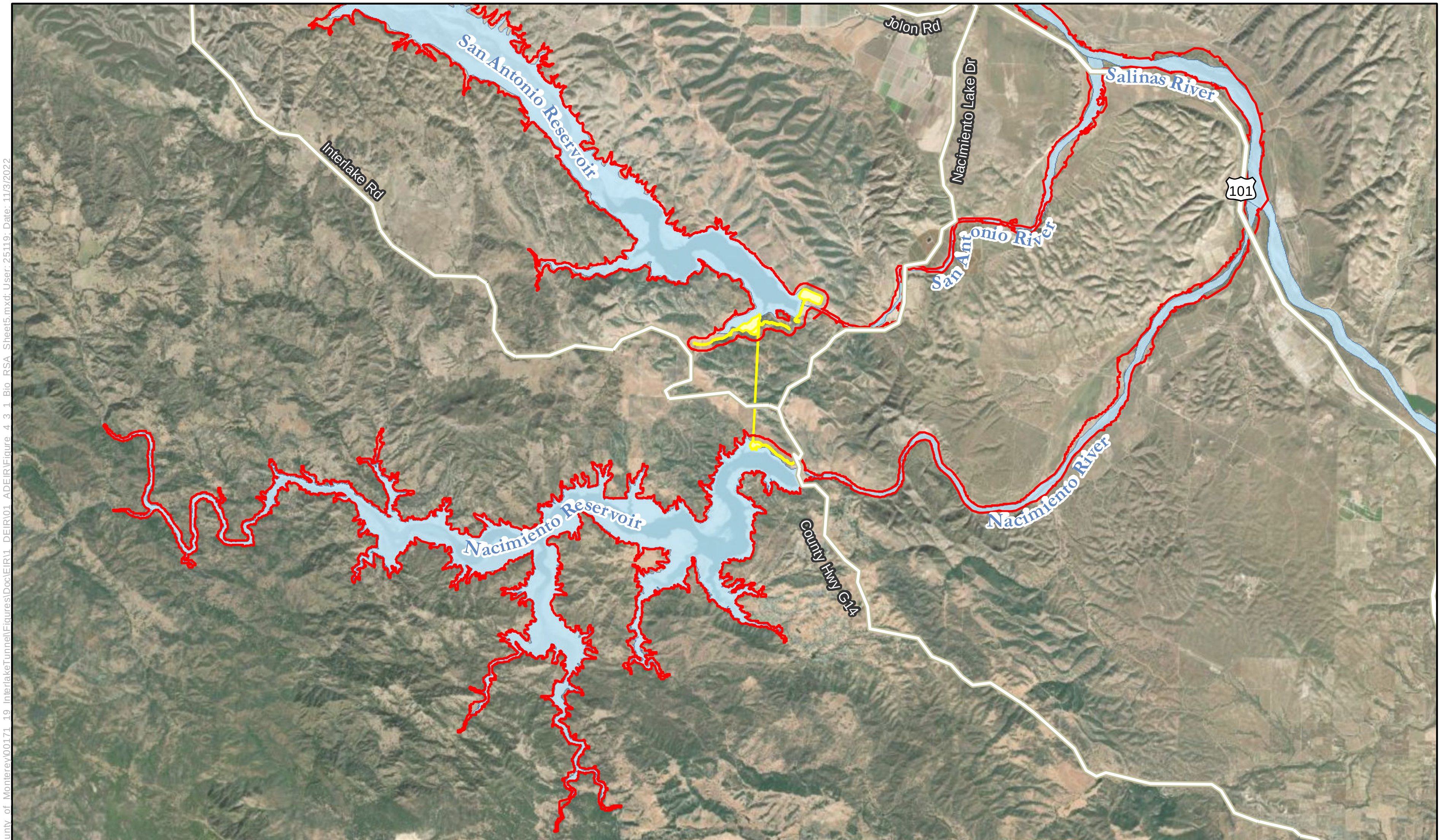


Figure 4.3-1 - Sheet 5 Biological Resources Study Area

Biological Resources Study Area
Project Site
Water Bodies

N

0 2 4 Miles

1:150,000

Source: Basemap, ESRI World Imagery, US Census, 2020

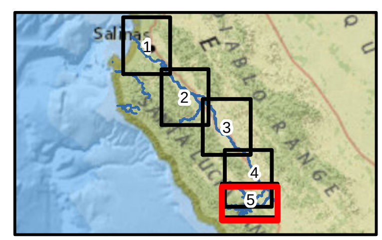


Table 4.3-1. Scoping Comments Related to Biological Resource Impacts

Summary of Comment	Location Comment is Addressed
Concerns of project impacts on special-status species and habitat, including wetlands and the Salinas River watershed (CDFW)	See impact discussions in Impact BIO-1, *Impacts on Riparian Habitat,* through Impact BIO-8p, *South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch*.
Concerns with effects on downstream habitat from project-related releases, including to river health and steelhead habitat and populations (Otter Project/Monterey Coastkeeper, CDFW)	See impact discussion in Impact BIO-8p, *South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch.*
Effects of project on fish populations, including from fluctuations in storage levels and increases in temperature; transfer of new fish species between reservoirs, including white bass; spread of populations contaminated with mercury; and changes in species composition in fisheries (CDFW, Norton, Capps, Lingor SLO County Public Works)	See impact discussion in Impact BIO-8p, *South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch.*
Project consistency with all Memorandums of Understanding, formal and informal state and local agreements, federal biological opinions, and water rights (CDFW)	See Section 4.3.3, *Environmental Setting,* and Impact BIO-8p, *South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch.*
Concern with spread of invasive species, including quagga and/or zebra mussels and establishment of (CDFW, Norton, Capps)	See Impact BIO-8p, *South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch,* and Section 4.3.4.4, *Applicable Avoidance and Minimization Measures.*
Analyze reoperation parameters and changes in spill occurrences, water transfer, and flow releases at the reservoirs throughout the year and during times of drought (Blois, CDFW, Monterey County Farm Bureau, SLO County Public Works, Otter Project, Potthoff, Salinas Valley Water Coalition, State Water Board)	The effects of changes in reservoir water levels and flow releases on biological resources is discussed in Impacts BIO-1, *Impacts on Riparian Habitat*, through BIO-8p, *South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch*. See also Section 4.1, *Hydrology and Water Quality*.

4.3.1.3 Definitions

Sensitive Vegetation Communities/Habitats

Sensitive vegetation communities/habitats are those identified in local or regional plans, policies, or regulations, or by California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS). CDFW's Rarity Ranking follows NatureServe's Heritage Methodology (Faber-Langendoen, et al. 2012) in which communities are given a G (global) and S (State) rank ranging from 1 (very rare and threatened) to 5 (demonstrably secure). Natural Communities with ranks of S1-S3 are considered Sensitive Natural Communities. Other sensitive habitats include riparian communities, and waters of the U.S. and state, including wetlands, as described in the following sections.

Wetlands and Other Waters

The term *waters of the United States* is an encompassing term used by U.S. Army Corps of Engineers (USACE) for areas that are subject to federal regulation under the Clean Water Act (CWA), Sections 404 and 10, which refer to wetlands and non-wetland (other waters) features. Wetlands that exhibit the prevalence of hydrophytic vegetation, hydric soils, and wetland hydrology were identified within the study area and include freshwater, brackish, and salt marshes.

Waters subject to CWA Section 404 also require a Water Quality Certification from the Regional Water Board under Section 401 of the CWA. The extent of Regional Water Board jurisdiction over wetlands and other waters of the United States is the same as that of USACE. In addition, the Regional Water Board regulates under California's Porter-Cologne Act. Waters regulated under the Porter-Cologne Act are called *waters of the state*. Waters of the state include any surface or groundwater, including saline waters, within state boundaries. Riparian plant communities associated with stream channels in the study area could also be considered jurisdictional by the Regional Water Board. If a project requires a Water Quality Certification, the Regional Water Board will incorporate requirements to also comply with the Porter-Cologne Act. Aquatic features that do not fall under USACE jurisdiction (e.g., isolated features, ditches, features excavated in uplands) would be considered *waters of the state*.

California Fish & Game Code Section 89.1, through referral to California Water Code Section 13050, defines *waters of the state* as "any surface water or groundwater, including saline waters, within the boundaries of the state." Activities that result in diversion or obstruction of the natural flow of any river, stream or lake; substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or deposit debris, waste, or other materials that could pass into any river, stream, or lake require that the project applicant enter into a Lake or Streambed Alteration Agreement (LSAA) with CDFW under Section 1602 of the California Fish and Game Code.

Critical Habitat

The USFWS and NMFS maintain areas of critical habitat for federally regulated species to safeguard the continued existence of such species by restricting the type and extent of activities proposed under Section 7 of Federal Endangered Species Act (FESA). Section 7 of FESA requires federal agencies to consult with USFWS and/or NMFS for actions that may take a listed species or their critical habitat.

Essential Fish Habitat

EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (67 *Federal Register* [FR] 2343). *Waters* include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; *substrate* includes sediment, hard bottom, structures underlying the waters, and associated biological communities; *necessary* means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and *spawning, breeding, feeding, or growth to maturity* covers a species' full life cycle (50 CFR Section 600.10).

Federal law provides that migratory routes to and from anadromous fish spawning grounds are considered EFH. The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) establishes a management system for national marine and estuarine fishery resources.

This legislation requires that all federal agencies consult with NMFS regarding all actions or proposed actions permitted, funded, or undertaken that may adversely affect EFH for species managed under the Magnuson-Stevens Act.

Wildlife Movement Corridors

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the migration of animals. Wildlife corridors contribute to population viability by assuring continual exchange of genes between populations, providing access to adjacent habitat areas for foraging and mating, and providing routes for recolonization of habitat after local extirpation or ecological catastrophes (e.g., fires). Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation. Habitat linkages provide a potential route for gene flow and long-term dispersal of plants and animals and may also serve as primary habitat for smaller animals, such as reptiles and amphibians. Habitat linkages may be continuous habitat or discrete habitat islands that function as stepping-stones for dispersal.

Special-Status Species

For the purposes of this EIR, special-status plant and wildlife species refers to those species that meet one or more of the following criteria:

- Species listed or proposed for listing as threatened or endangered under the FESA (50 CFR 17.11 [listed animals], 50 CFR 17.12 [listed plants], and various notices in the FR [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under FESA (81 FR 87246, December 2, 2016).
- Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (14 CCR 670.5).
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.).
- Plants with a California Rare Plant Rank (CRPR) of 1 or 2.
- Animal species of special concern to CDFW, Special Animals List.
- Animals fully protected in California (California Fish and Game Code Sections 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]).
- Taxa (i.e., taxonomic categories or groups) that meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the CEQA Guidelines (e.g., species that appear on the CDFW special animals list).

4.3.2 Regulatory Setting

This section summarizes federal, state, regional, and local regulations related to biological resources, including wetlands, and applicable to the proposed project. Much of the regulatory setting relevant to fish species and aquatic resources is further described in Section 4.1, *Hydrology and Water Quality*, of this EIR. Please refer to Section 4.1.2, *Regulatory Setting*, for descriptions of the following laws, regulations, and policies:

- Clean Water Act: Section 303(d), Section 401, Section 402 General Permit for Construction Activities, and Section 404
- Central Coast Basin Plan (Central Coast RWQCB 2019)
- Monterey County General Plan (Monterey County 2010)
- San Luis Obispo County General Plan (San Luis Obispo County 2010)

This section provides a brief description of other regulations that are applicable to biological resources.

4.3.2.1 Federal Laws, Regulations, and Policies

Federal Endangered Species Act

Pursuant to FESA, USFWS and NMFS have authority over projects that may result in take of a species listed as threatened or endangered under the act. Take is defined under the FESA, in part, as killing, harming, or harassing. Under federal regulations, take is further defined to include habitat modification or degradation that results, or is reasonably expected to result, in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. If a likelihood exists that a project would result in take of a federally listed species, either an incidental take permit, under Section 10(a) of FESA, or a federal interagency consultation, under Section 7 of FESA, is required to avoid take liability.

The USFWS and NMFS maintain areas of critical habitat for federally regulated species to safeguard the continued existence of such species by restricting the type and extent of activities proposed under Section 7 of FESA. Section 7 of FESA requires federal agencies to consult with USFWS and/or NMFS for actions that may take a listed species or their habitat. Federal agency actions include activities that are on federal land, conducted by a federal agency, funded by a federal agency, or authorized by a federal agency (including issuance of federal permits and licenses).

Under Section 7, the federal agency conducting, funding, or permitting an action—the federal lead agency—must consult with USFWS and/or NMFS, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed action "may affect" a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment (BA), evaluating the nature and severity of the expected effect. In response, USFWS and/or NMFS issues a biological opinion (BO), with a determination that the proposed action results in one of the following.

- Jeopardize the continued existence of one or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding)
- Not jeopardize the continued existence of any listed species (no jeopardy finding) or result in adverse modification of critical habitat (no adverse modification finding).

The BO issued by USFWS and/or NMFS may stipulate discretionary "reasonable and prudent" conservation measures. If the proposed action would not jeopardize a listed species, USFWS and/or NMFS will issue an incidental take statement to authorize the proposed activity.

For construction of the proposed project or Tunnel-Only Alternative, Section 7 consultation may be initiated by the USACE, who would be the lead federal agency, and would complete the consultation under Section 7 related to permits for project elements that affect wetland or waters within their jurisdiction.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA), as amended in 1964, was enacted to protect fish and wildlife when federal actions result in the control or modification of a natural stream or body of water. The statute requires federal agencies to take into consideration the effect that water-related projects would have on fish and wildlife resources. Consultation and coordination with USFWS and CDFW are required to address ways to prevent loss of and damage to fish and wildlife resources, and to further develop and improve these resources.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) domestically implements a series of international treaties that provide for migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds. The act further provides that it is unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird…" (16 USC 703). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA can be found in the March 1, 2020, *Federal Register* (75 FR 9281). This list comprises several hundred species, including essentially all native birds. Permits for take of nongame migratory birds can be issued only for specific activities, such as scientific collecting, rehabilitation, propagation, education, taxidermy, and protection of human health and safety and of personal property. USFWS publishes a list of birds of conservation concern (BCC) to identify migratory nongame birds that are likely to become candidates for listing under FESA without additional conservation actions. The BCC list is intended to stimulate coordinated and collaborative conservation efforts among federal, state, tribal, and private parties.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668) prohibits take and disturbance of individuals and nests. Take permits for birds or body parts are limited to religious, scientific, or falconry pursuits. However, the BGEPA was amended in 1978 to allow mining developers to apply to USFWS for permits to remove inactive golden eagle (*Aquila chrysaetos*) nests in the course of "resource development or recovery" operations. With the 2007 removal of bald eagle from the FESA list of threatened and endangered species, USFWS issued new regulations to authorize the limited take of bald eagles (*Haliaeetus leucocephalus*) and golden eagles under the BGEPA, where the take to be authorized is associated with otherwise lawful activities. A final Eagle Permit Rule was published on September 11, 2009 (74 FR 46836–46879; 50 CFR 22.26).

A permit authorizes limited, non-purposeful take of bald eagles and golden eagles, and can be applied for by individuals, companies, government agencies (including tribal governments), and other organizations to allow disturbance or otherwise take eagles in the course of conducting lawful activities, such as operating utilities and airports. Under BGEPA, take is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest or disturb." Disturb is defined in the regulations as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or

(3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." Most permits issued under the new regulations authorize disturbance. In limited cases, a permit may authorize the physical take of eagles, but only if every precaution is first taken to avoid physical take.

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act requires authorization from USACE for the construction of any structure, dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification in or over any defined navigable current or historical waters of the United States. Historical waters are defined by diked areas that used to be part of a tidal navigable system that are still at or below the mean high water elevation.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Act establishes a management system for national marine and estuarine fishery resources. This legislation requires that all federal agencies consult with NMFS regarding all actions or proposed actions permitted, funded, or undertaken that may adversely affect EFH for those species regulated under a federal fisheries management plan. The consultation process includes preparing an EFH assessment to determine whether the proposed action "may adversely affect" designated EFH for relevant commercial, federally managed fisheries species within the proposed action area. It also describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects on designated EFH resulting from the proposed action. The phrase *adversely affect* refers to the creation of any effect that reduces the quality or quantity of EFH. Federal activities that occur outside EFH but may nonetheless have an effect on EFH waters and substrate must also be considered in the consultation process.

The Magnuson-Stevens Act states that consultation regarding EFH should be consolidated, where appropriate, with the interagency consultation, coordination, and environmental review procedures required by other federal statutes, such as the NEPA, FWCA, the CWA, and FESA. EFH consultation requirements can be satisfied through concurrent environmental compliance if the lead agency provides NMFS with timely notification of actions that may adversely affect EFH, and the notification meets requirements for EFH assessments.

Executive Order 13112: Prevention and Control of Invasive Species

Federal Executive Order (EO) 13112, signed February 3, 1999, directs all federal agencies to prevent and control the introduction of invasive species in a cost-effective and environmentally sound manner. The EO established the National Invasive Species Council, which is composed of federal agencies and departments, and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. The council's invasive species management plan recommends objectives and measures to implement the EO and to prevent the introduction and spread of invasive species (National Invasive Species Council 2008). The EO requires consideration of invasive species in National Environmental Policy Act analyses, including their identification and distribution, their potential impacts, and measures to prevent or eradicate them.

Fort Hunter Liggett Integrated Natural Resources Management Plan/Environmental Assessment

The Fort Hunter Liggett Integrated Natural Resources Management Plan was developed in accordance with Department of Defense Instruction 4715.03, Natural Resources Conservation Program; and Army Regulation (AR) 200-1, Environmental Protection and Enhancement. Guidelines within this plan specific to biological resources include measures to enhance terrestrial and aquatic habitats, to ensure that there is no net loss of wetland habitat, and to adaptively manage activities that harm the environment (U.S. Army Garrison Fort Hunter Liggett 2012).

Camp Roberts Integrated Natural Resources Management Plan/Environmental Assessment

The Camp Roberts Integrated Natural Resources Management Plan was developed in accordance with Department of Defense Instruction 4715.03, Natural Resources Conservation Program; and Army Regulation (AR) 200-1, Environmental Protection and Enhancement. Guidelines within this plan detail standard operating procedures and best practices which will be used in an effort to provide protection of sensitive species, preserving grassland and oak woodland communities, controlling erosion, and preventing water pollution are among these guidelines. Additionally, oak tree replacement policies, special-species surveys, and coarse woody debris preservation policies are identified in this plan to protect biological resources.

4.3.2.2 State Laws, Regulations, and Policies

California Endangered Species Act

CESA (California Fish and Game Code Sections 2050–2116) states that all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants and their habitats that are threatened with extinction and those experiencing a significant decline that, if not halted, would lead to a threatened or endangered designation will be protected or preserved.

Under Section 2081 of the California Fish and Game Code, a permit from CDFW is required for projects that could result in the take of a species that is state listed as threatened or endangered. Under CESA, take is defined as an activity that would directly or indirectly kill an individual of a species. The definition does not include harm or harass, as does the definition of take under FESA. Consequently, the threshold for take under CESA is higher than that under FESA. For example, habitat modification is not necessarily considered take under CESA. CESA does, however, require that impacts be fully mitigated (California Fish and Game Code Section 2081[b]; California Code of Regulations, Title 14, Sections 783.2–783.8).

California Fish and Game Code

Sections 1600 through 1616

Sections 1600 through 1616 of the California Fish and Game Code require that a notification must be submitted to the CDFW for "any activity that may substantially divert or obstruct the natural flow of, or substantially change or use materials from the bed, channel, or bank of any river, stream, or lake." CDFW reviews the notification package and, if necessary, submits to the applicant a draft LSAA that includes measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the applicant is an LSAA.

Sections 3503, 3503.5, 3513, and 3800

Sections 3503, 3503.5, 3513, and 3800 of the California Fish and Game Code afford protection over the destruction of nests or eggs of native bird species, and it states that no birds in the orders of Falconiformes or Strigiformes (i.e., birds of prey) can be taken, possessed, or destroyed.

Sections 3511, 4700, 5050, and 5515

Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code designate certain species as "fully protected." Fully protected species may not be taken or possessed, and incidental take of these species cannot be authorized, except under a Natural Community Conservation Plan (NCCP). The State of California first began to designate species as fully protected prior to the creation of the CESA and the FESA. Lists of fully protected species were initially developed to provide protection to animals that were rare or faced possible extinction, including fish, amphibians, reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the CESA or the FESA. Fully protected species may not be taken or possessed at any time, except under certain circumstances, such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock (California Fish and Game Code Section 3511).

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Act, waters of the state fall under jurisdiction of the nine Regional Water Quality Control Boards (Regional Boards). Under this act, each Regional Board must prepare and periodically update water quality control basin plans. Each basin plan sets forth water quality standards for surface water and groundwater, as well as actions to control nonpoint and point sources of pollution. Projects that affect wetlands or waters must meet the waste discharge requirements of the Regional Board. Pursuant to CWA Sections 401, an applicant for a Section 404 permit to conduct any activity that may result in discharge into navigable waters must provide a certification from the Regional Board that such discharge would comply with state water quality standards. As part of the wetlands permitting process under Section 404, a project applicant would be required to obtain a water quality certification from the applicable Regional Board.

Section 13050 of the Porter-Cologne Act (California Water Code, Division 7) authorizes the State Water Resources Control Board and the relevant Regional Water Quality Control Board (in this case, the Central Coast Regional Board) to regulate biological pollutants. The California Water Code generally regulates more substances contained in discharges and defines discharges to receiving waters more broadly than the CWA does.

California Native Plant Protection Act

The CNPPA of 1977 gave the California Fish and Game Commission the authority to list plant species as rare or endangered and authorized them to adopt regulations prohibiting importation of rare and endangered plants into California, take of rare and endangered plants, and sale of rare and endangered plants. The CNPPA prohibits take, possession, transportation, exportation, importation, or sale of rare and threatened plants, except as a result of agricultural practices, fire control measures, timber operations, mining, or actions of public agencies or private utilities. Private landowners are also exempt from the prohibition against removing rare and endangered plants, although they must provide 10-day notice to CDFW before removing the plants. The CNPPA has mostly been superseded by CESA.

4.3.2.3 Local Laws, Regulations, and Policies

Monterey County General Plan

The Monterey County General Plan contains several open space conservation policies and objectives related to conservation and enhancement of biological resources that are relevant to the proposed project, including Goals OS-1 (Policy 1.2 and 1.3), Goal OS-4 (Policy 4.1 and 4.3), and Goal OS-5 (Policy 5.1, 5.2, 5.4, 5.9., 5.10, 5-12, 5-16, 5-18, 5-24, and 5-25). A description of these goals and policies follow.

- **Goal OS-1**: Retain the character and natural beauty of Monterey County by preserving, conserving, and maintaining unique physical features, natural resources and agricultural operations.
  - **Policy OS-1.2:** Development in designated visually sensitive areas shall be subordinate to the natural features of the area.
  - **Policy OS-1.3:** To preserve the County's scenic qualities, ridgeline development shall not be allowed.
- **Goal OS-4:** Protect and conserve the quality of coastal, marine, and river environments, as applied in areas not in the coastal zone.
  - **Policy OS-4.1:** Federal and State listed native marine and freshwater species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant shall be protected. Species designated in Area Plans shall also be protected.
  - **Policy OS-4.3:** Estuaries, salt and freshwater marshes, tide pools, wetlands, sloughs, river and stream mouth areas, plus all waterways that drain and have impact on State designated Areas of Special Biological Significance (ASBS) shall be protected, maintained, and preserved in accordance with state and federal water quality regulations
- **Goal OS-5**: Conserve listed species, critical habitat, habitat, and species protected in area plans: avoid, minimize, and mitigate significant impacts on biological resources.
  - **Policy OS-5.1:** The extent and acreages of critical habitat shall be inventoried to the extent feasible and mapped in GIS. Conservation of listed species shall be promoted.
  - **Policy OS-5.2** The extent and acreages of the potentially suitable habitat for listed species shall be inventoried to the extent feasible and mapped in GIS. Conservation of species shall be promoted as provided in the Area Plans.
  - **Policy OS-5.4** Development shall avoid, minimize, and mitigate impacts on listed species and critical habitat to the extent feasible.
  - **Policy OS-5.9** Tree removal that requires a permit shall be established by Area Plans.
  - **Policy OS-5.10** Regulations for tree removal, including Timberland Conversion, shall be established and maintained by ordinance, implementing Area Plan policies that address the following: a. Criteria when a permit is required including: 1. number of trees, 2. minimum size of tree, 3. Post Timberland conversion land-use b. How size is measured for each protected species of tree, and what constitutes a landmark tree depending on the rate of growth for that species. c. Hazardous trees d. Pest and disease abatement e. Replacement criteria f. Ensure minimal removal

- **Policy OS-5.12** The California Department of Fish and Game shall be consulted and appropriate measures shall be taken to protect Areas of Special Biological Significance (ASBS).
- **Policy OS-5.16** A biological study shall be required for any development project requiring a discretionary permit and having the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare, or threatened species. An ordinance establishing minimum standards for a biological study and biological surveys shall be enacted. A biological study shall include a field reconnaissance performed at the appropriate time of year. Based on the results of the biological study, biological surveys may be necessary to identify, describe, and delineate the habitats or species that are potentially affected. Feasible measures to reduce significant impacts to a less-than-significant level shall be adopted as conditions of approval.
- **Policy OS-5.18** Prior to disturbing any federal or state jurisdictional areas, all applicable federal and state permitting requirements shall be met, including all mitigation measures for development of jurisdictional areas and associated riparian habitats.
- **Policy OS-5.24** The County shall require discretionary projects to retain movement corridors of adequate size and habitat quality to allow for continued wildlife use based on the needs of the species occupying the habitat. The County shall require that expansion of its roadways and public infrastructure projects provide movement opportunities for terrestrial wildlife and ensure that existing stream channels and riparian corridors continue to provide for wildlife movement and access.
- **Policy OS-5.25** Occupied nests of statutorily protected migratory birds and raptors shall not be disturbed during the breeding season (generally February 1 to September 15).

The Monterey County Ordinance Section 16.60.060. Preservation of oak and other protected trees (County of Monterey 2020) are also relevant to the proposed project and are as follows:

1. No oak or madrone tree six inches or more in diameter two feet above ground level shall be removed in the North County Area Plan or Toro Area Plan areas without approval of the permit(s) required in Section 16.60.040.
2. No oak, madrone or redwood tree six inches or more in diameter two feet above ground level shall be removed in the Carmel Valley Master Plan area without approval of the permit(s) required in Section 16.60.040.
3. No native tree six inches or more in diameter two feet above ground level shall be removed in the Cachagua Area Plan area without approval of the permit(s) required in Section 16.60.040.
4. No oak tree may be removed in any other area of the County of Monterey designated in the applicable area plan as Resource Conservation, Residential, Commercial or Industrial (except Industrial, Mineral Extraction) without approval of the permit(s) required in Section 16.60.040.
5. No landmark oak tree shall be removed in any area except as may be approved by the Director of Planning. Landmark oak trees are those trees which are twenty-four (24) inches or more in diameter when measured two feet above the ground, or trees which are visually significant, historically significant, or exemplary of their species.

San Luis Obispo County General Plan

The Open Space Element of the County's General Plan (applicable to Nacimiento Reservoir) provides that protection and conservation of fish and wildlife should be one primary objective of reservoir operations as well as water quality (San Luis Obispo County 2010).

Salinas River Lagoon Management and Enhancement Plan

The Salinas River Lagoon Management and Enhancement Plan (MCWRA 1997) was prepared to address issues and concerns relating to the lagoon. The Salinas River Lagoon project area includes a 3.3-mile reach at the downstream end of the Salinas River. The plan was developed through consultation with the Salinas River Lagoon Task Force. The Task Force was composed of federal, state, and local agencies, along with a local agricultural representative. The management and enhancement plan includes the following recommendations that are relevant to biological resources:

- Reduce the dry-season salinity of lagoon water; and
- Encourage the concept of implementing a long-term program to voluntarily enhance riparian habitat within the study area.

North County General Plan Coastal Program

The Coastal Act provides that its goals and policies are to be carried out by local government through a process of comprehensive and coordinated planning known as the Local Coastal Program. Policies set forth in this plan are intended to protect the vast resources of this area through sensitive and responsive land use, development, and conservation. The North County General Plan Coastal Program includes the following policies that are applicable to protection of terrestrial biological resources in the project area (California Coastal Commission 2022):

- Where private or public development is proposed in documented or potential locations of environmentally sensitive habitats, field surveys by qualified biologists or agencies shall be required in order to determine precise locations and to recommend mitigation measures to ensure protection of any sensitive habitats present. The required surveys shall document that the proposed development complies with all applicable environmentally sensitive habitat policies.
- All wetlands areas of the North County Coastal Zone shall be protected and preserved for their plant and wildlife values, including but not limited to McClusky Slough, Pajaro River, Salinas River, Salinas River Lagoon, Elkhorn Slough, Bennett Slough, and Moro Cojo Slough.

Central Salinas Valley Area Plan

Objective 11.1.6 of the Central Salinas Valley Area Plan (Monterey County 1995) states that the County should identify environmentally sensitive habitat areas which are unique, limited, and fragile resources; and promote conservation of these habitat areas within the Central Salinas Valley.

4.3.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to biological resources is provided in Appendix C, *Consistency with Local Laws, Regulations, and Policies*.

4.3.3 Environmental Setting

This section describes the existing conditions of the study area including vegetation, sensitive natural communities, common wildlife, and special-status species that have the potential to occur. The study area is bisected by the county line separating southern Monterey and northern San Luis Obispo Counties and is located within the Central Coast watershed. **Figure 4.3-1** shows the reservoirs and major rivers included in the study area.

4.3.3.1 Methods for Assessing Existing Biological Resources

The following information sources and activities were used to identify biological resources occurring or potentially occurring on the project site and in the study area.

- USFWS Information for Planning and Consultation (IPaC) query of the project site (USFWS 2020a) (Appendix E, *Biological Resource Attachments*);
- California Native Plant Society (CNPS) species list query for the study area (CNPS 2021) (Appendix E, *Biological Resource Attachments*);
- California Natural Diversity Database (CNDDB) species list query for a 5-mile buffer around the study area (CDFW 2021a) (Appendix E, *Biological Resource Attachments*);
- CDFW Spotted Owl Database (CDFW 2021b)
- Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2021c)
- Special Animals List (CDFW 2021d)
- USFWS Critical Habitat Portal (USFWS 2021a);
- National Wetland Inventory (USFWS 2021b);
- NMFS essential fish habitat mapper (NMFS 2021a);
- NMFS California Species List (NMFS 2021b)
- Aquatic Resource Delineation Report Interlake Tunnel and Spillway Modification Project Monterey and San Luis Obispo Counties, CA (Horizon 2018);
- The soil map unit descriptions for the study area (Natural Resources Conservation Service 2021);
- Vegetation mapping for the project site (Dudek 2016);
- Supplemental vegetation and wetland mapping of additions to the study area (Horizon 2018 and MCWRA 2014a);
- Regional land cover datasets (California Invasive Plant Council 2014; The Nature Conservancy et al. 2008, 2014; U.S. Department of Agriculture, Forest Service 2017; CAL FIRE 2015); and
- eBird records (eBird 2021).

These information sources were used to develop lists of special-status species and other sensitive biological resources that could be present in the study area.

Literature Review

Information on the environmental setting was collected from the CNDDB, USFWS, and CNPS occurrences; general sources on special-status plants and wildlife (e.g., *California Bird Species of Special Concern* [Shuford and Gardali 2008], *California Amphibian and Reptile Species of Special Concern* [Thomson et al. 2016], and California Wildlife Habitat Relationships information); published sources on the regional occurrence of plants and wildlife, such as *Monterey Birds*, second edition (Roberson 2002); and existing reports and memorandums addressing biological resources in the project site, including, but not limited to, the following:

- Salinas Valley Water Project Environmental Impact Report (MCWRA 2001);
- Salinas Valley Water Project Biological Assessment (ENTRIX and EDAW 2002);
- Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River (MCWRA 2005a);
- Supplement to the Biological Assessment for the Salinas Valley Water Project (MCWRA 2005b);
- NMFS Biological Opinion for the Salinas Valley Water Project (NMFS 2007);
- USFWS Biological Opinion for the Salinas Valley Water Project (USFWS 2007a);
- Section 401 Water Quality Certification for the Salinas Valley Water Project (RWQCB 2007);
- Salinas River Stream Maintenance Program Revised Final Environmental Impact Report (MCWRA 2014a);
- Salinas River Stream Maintenance Program Biological Assessment (MCWRA 2016);
- USFWS Biological Opinion for the Salinas River Stream Maintenance Program (USFWS 2016a);
- Memorandum of Agreement between CDFW and MCWRA regarding the Nacimiento Reservoir Interlake Tunnel Project and San Antonio Reservoir Spillway Modification Project (CDFW and MCWRA 2018);
- Salinas River Long-Term Management Plan (MCWRA 2019);
- Salinas Valley Water Project Annual Flow Monitoring Report Operational Season 2019 (MCWRA 2019); and

Field Survey Methods

A delineation of aquatic resources was conducted in 2017 and 2018 by Horizon (**Figure 4.3-2**; Appendix E, *Biological Resource Attachments*, page E-145) (Horizon 2018). For the purposes of the aquatic resources delineation, the ”field delineation survey area” includes a range of water surface elevations surrounding San Antonio Reservoir, from 780 to 788 feet. This elevation band encompasses the potential maximum inundation area that would result from raising of the San Antonio spillway by approximately 7 feet plus an additional vertical one-foot buffer. The field delineation survey area also included the footprint of project components where the Interlake Tunnel would be constructed within and adjacent to San Antonio and Nacimiento Reservoirs, including access routes.

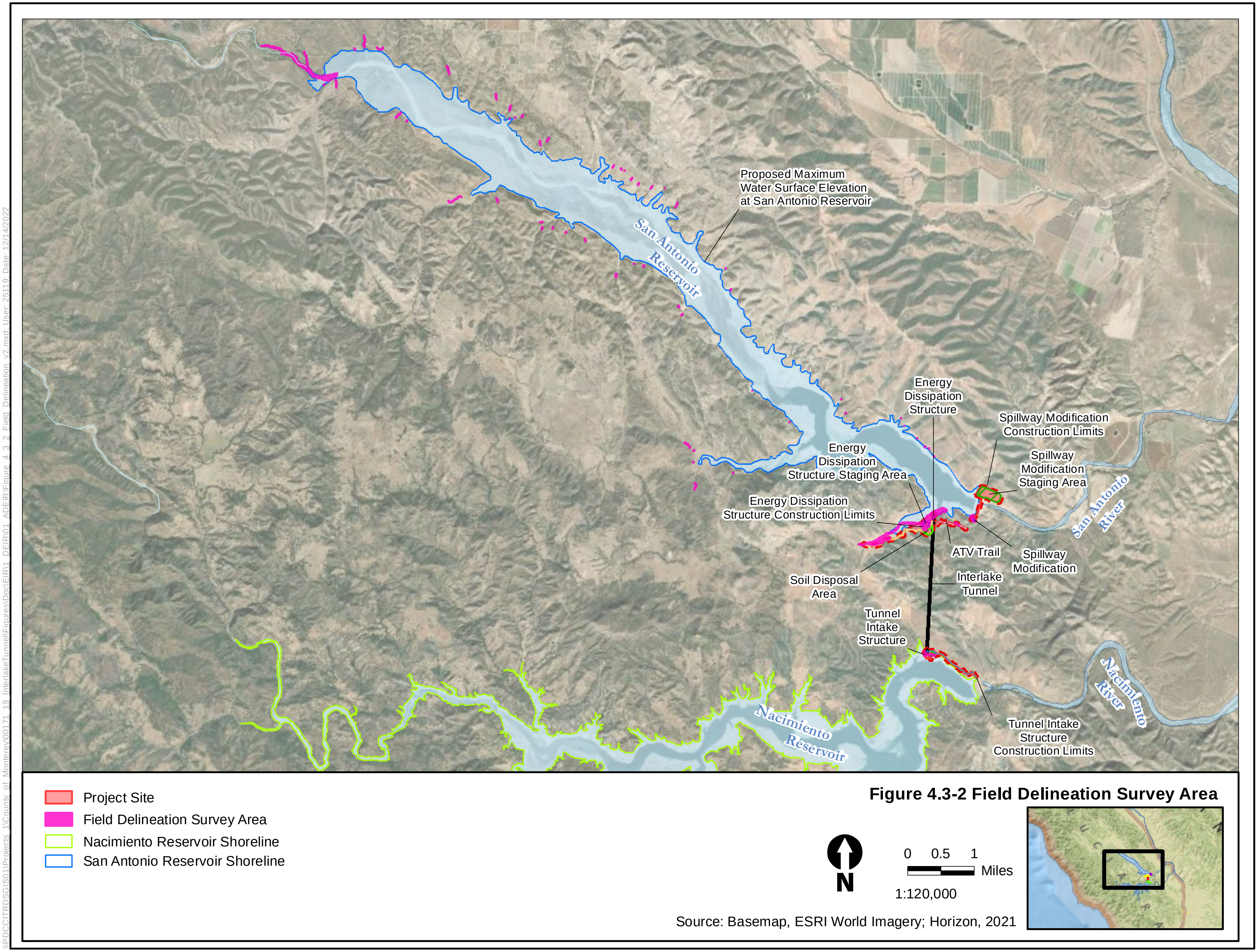


Figure 4.3-2 Field Delineation Survey Area

A biological reconnaissance survey was conducted in 2016 by Dudek to create a baseline biological resources map with vegetation communities, conspicuous special-status species, and special-status species habitat for the project. For the purposes of the biological reconnaissance survey, the “field survey area” is considered to include shoreline areas of San Antonio Reservoir that would be newly inundated as a result of the proposed project, the spillway modification area, the tunnel portals at San Antonio and Nacimiento Reservoirs, construction access roads at both portal locations, and an alternate spoils area near the north portal. The field mapping was prepared consistent with the *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (California Department of Fish and Wildlife 2018). Dudek conducted vegetation mapping in accordance with CDFW's List of Vegetation Alliances and Associations (or Natural Communities List) (CDFW 2021e). This list is based on A Manual of California Vegetation, Second Edition (Sawyer et al. 2009), which is the California expression of the National Vegetation Classification. Dudek mapped vegetation communities and land covers at the alliance level; however, where appropriate, vegetation communities not included in this list were mapped to accurately describe the vegetation present within the project site.

Dudek compiled a general inventory of plant and animal species detected by sight, calls, tracks, scat, or other signs as part of the field survey and assessed the potential for special-status species occurrence. Dudek also mapped observable sensitive resources including flowering annual plants, shrubs and trees, and conspicuous wildlife (i.e., birds and some reptiles) commonly accepted as regionally sensitive by CNPS, CDFW, or USFWS. No focused surveys for plant or wildlife species were performed. Field observations of vegetation communities and special-status species were digitized into a GIS and georeferenced to produce land cover maps as shown on **Figure 4.3-3**.

4.3.3.2 Vegetation and Land Cover

This section provides descriptions for all land cover types and aquatic environment found to occur throughout the project site and the study area, downstream of the project site. **Table 4.3-2** provides the acreage for each of land cover types and aquatic environments in the project site for the proposed project and Tunnel-Only Alternative as well as the study area downstream of the project site. **Figure 4.3-3** portrays the vegetation throughout the study area from the reservoirs to Moss Landing Harbor (see *Land Cover Mapbook* in Appendix E, *Biological Resource Attachments,* for a more detailed version of this figure). Land cover datasets used in this analysis included Dudek, Salinas River Arundo, Salinas Generalized Land Use/Land Cover Mapping, Salinas River Vegetation, CALVEG Mid-Region 5 Central Coast, and Fire Resource and Assessment Program Vegetation (Dudek 2016; California Invasive Plant Council 2014; The Nature Conservancy 2008; The Nature Conservancy et al. 2008; U.S. Department of Agriculture, Forest Service 2017, CAL FIRE 2015).

Aquatic

Lacustrine

Lacustrine (i.e., lake) habitat refers to inland depressions or dammed riverine channels containing standing water, and includes permanently flooded lakes and reservoirs, intermittent lakes, and ponds of less than one hectare in size. Lacustrine habitat may occur in association with terrestrial, riverine, and fresh emergent wetland habitat. Water depth accounts for the variation of plant and animal life found in these habitats, with a distinct zonation being present from shore to deep water. Lacustrine habitats are used by birds, wildlife, and fish for reproduction, food, water and cover. Lacustrine habitat in the study area includes Nacimiento and San Antonio Reservoirs, ponds, and ephemeral drainages (Horizon 2018).

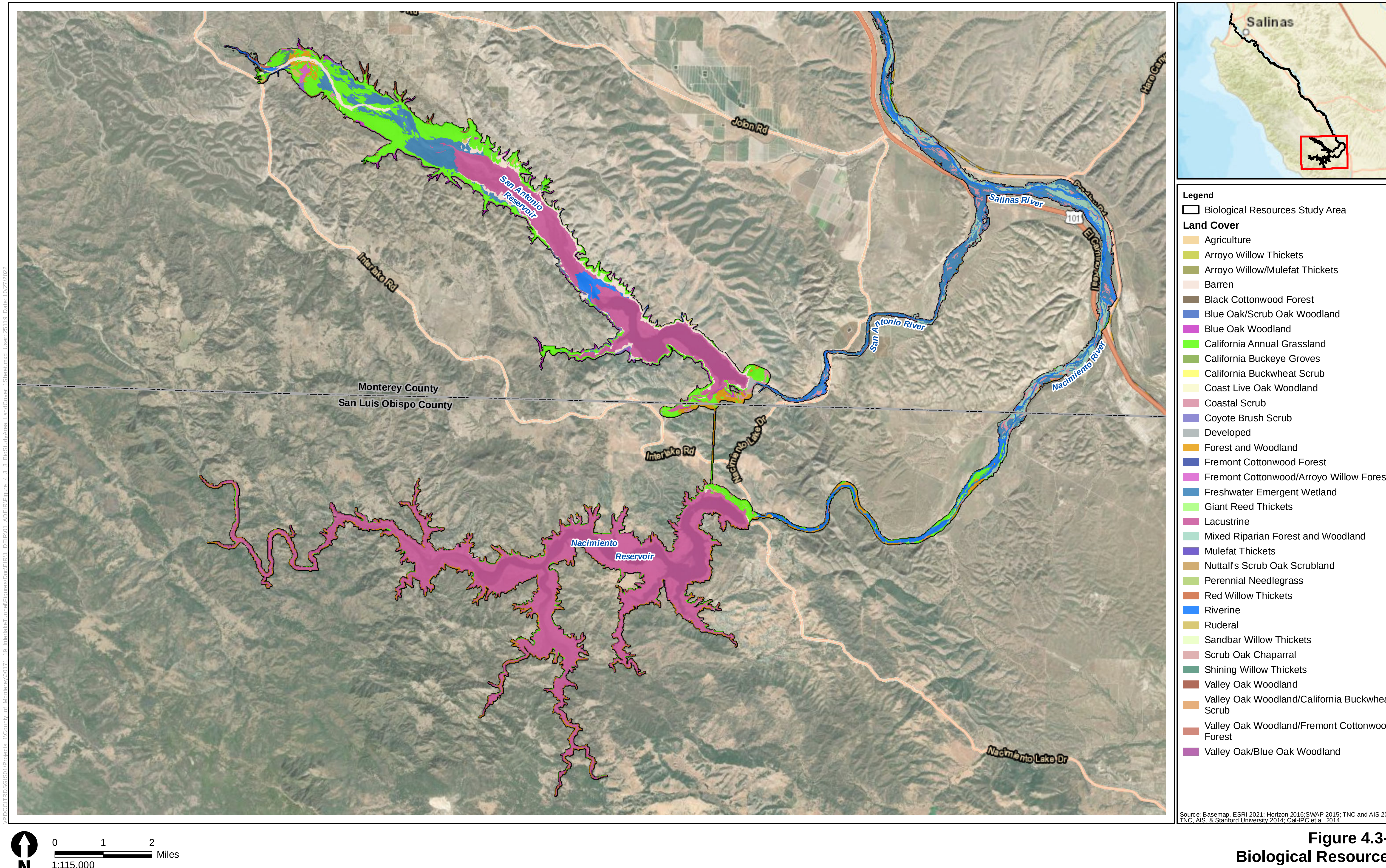


Figure 4.3-3
Biological Resources Study Area Land Cover

Table 4.3-2. Area of Vegetation and Land Cover within the Project Site and Study Area, Downstream of the Project Site

Land Cover Type	Approximate Area in the Proposed Project Site (Acres)	Approximate Area in the Tunnel-Only Alternative Project Site (Acres)	Approximate Area in Study Area, Downstream of Project Site (Acres)
Aquatic			
Lacustrine	7,997.32	7,996.21	269.90
Riverine	160.46	160.46	1,995.09
Estuarine	0.00	0.00	63.66
Coastal Strand and Dunes			
Central Strand and Dunes	0.00	0.00	10.99
Riparian			
Arroyo Willow Thickets	3.87	3.87	0.00
Arroyo Willow/Mulefat Thickets	1.76	1.76	0.00
Black Cottonwood Forest	5.38	5.38	0.00
Fremont Cottonwood Forest	17.85	17.85	0.00
Fremont Cottonwood/Arroyo Willow Forest	38.33	38.33	0.00
Giant Reed Thickets	0.44	0.44	1,362.70
Mixed Riparian Forest and Woodland	2.63	2.63	3,214.33
Mulefat Thickets	15.21	15.21	0.00
Red Willow Thickets	0.57	0.57	0.00
Sandbar Willow Thickets	4.27	4.27	0.00
Shining Willow Thickets	18.52	18.52	0.00
Valley Oak Woodland/Fremont Cottonwood Forest	12.67	12.67	0.00
Wetlands			
Coastal Brackish Marsh	0.00	0.00	54.08
Freshwater Emergent Wetland	735.79	735.79	8,309.31
Northern Coastal Salt Marsh	0.00	0.00	250.13
Grassland			
California Annual Grassland	2,201.22	2,171.27	1,741.54
Perennial Needlegrass Grassland	0.28	0.28	0.00
Scrubland			
California Buckeye Groves	0.18	0.18	0.00
California Buckwheat Scrub	11.18	11.18	0.00
Coastal Scrub	118.47	117.80	1,026.98
Coyote Brush Scrub	48.33	48.33	0.00
Nuttall's Scrub Oak Scrubland	0.87	0.87	0.00
Scrub Oak Chaparral	2.57	2.57	0.00

Land Cover Type	Approximate Area in the Proposed Project Site (Acres)	Approximate Area in the Tunnel-Only Alternative Project Site (Acres)	Approximate Area in Study Area, Downstream of Project Site (Acres)
Forest and Woodland			
Blue Oak Woodland	225.02	224.84	0.02
Blue Oak/Scrub Oak Woodland	6.22	6.22	0.00
Coast Live Oak Woodland	0.06	0.06	0.00
Valley Oak Woodland	65.25	65.25	0.00
Valley Oak/Blue Oak Woodland	1.18	1.18	0.00
Valley Oak/California Buckwheat Scrub	0.95	0.95	0.00
Forest and Woodland	694.19	692.13	158.05
Developed			
Agriculture	0.00	0.00	321.08
Ruderal	41.96	41.10	0.10
Developed	38.20	36.29	51.00
Non-Vegetated			
Barren	580.97	580.93	233.03
Total	**13,052.17**	**13,015.38**	**19,061.99**

Nacimiento Reservoir

Nacimiento Dam impounds water for storage in Nacimiento Reservoir. When the reservoir is full (elevation 800 feet when the inflatable spillway gate is raised), it has a maximum storage capacity of 377,900 acre-feet, is 18 miles long, and has about 165 miles of shoreline. The maximum water surface elevation during flood stage is 825 feet (25 feet above the inflatable spillway gate), with a maximum temporary capacity of 538,000 acre-feet and a surface area of 7,149 acres. Water below an elevation of 687.8 feet (22,300 acre-feet of storage) is reserved for fish and wildlife habitat as well as a water entitlement belonging to the County of San Luis Obispo (MCWRA 2021).

Reservoir Operations

The operation of Nacimiento Reservoir is seasonally driven. During winter, when precipitation and local watershed runoff occur, the reservoir is managed to store water and avoid uncontrolled spillway releases. Water is then released from the reservoir in spring, summer, and fall primarily for groundwater recharge and operation of the Salinas River Diversion Facility (SRDF). Releases from the reservoir are also made during this period or at other times for dam safety, flood protection, water supply, fish migration and fish habitat requirements. In addition to these releases, spillway releases can occur when excess inflows cause reservoir water levels to exceed the elevation of the spillway. In addition to the inflatable spillway gates, which can be used to regulate spillway releases above elevation 787.75 feet, the dam has two outlets: the High Level Outlet Works (HLOW) and the Low Level Outlet Works (LLOW). The maximum release capacity is approximately 5,500 cfs for the HLOW and 460 cfs for the LLOW when the reservoir is at elevation 800 feet. Variable hydrology combined with reservoir operations have caused the reservoir water surface to fluctuate annually within the water year (October 1 to September 30) by 15 to 125 feet, although fluctuations less than

60 feet are most common. See subsection titled *Nacimiento Reservoir* in Section 4.1.3.4, *Reservoir Storage and Streamflow*, for additional information on the reservoir and operations.

Figure 4.1-5 (see Section 4.1, *Hydrology and Water Quality*) shows historical (water years [WYs] 1959–2021) water levels for Nacimiento Reservoir, which reflect seasonal patterns of runoff, precipitation, water withdrawals for water-supply purposes, and other reservoir releases. Generally, reservoir levels increase January–April and decrease May–December. Inflows (or lack thereof) to the reservoir and reservoir operations combine to cause water levels at Nacimiento Reservoir to fluctuate (i.e., rise or fall). Falling reservoir levels, particularly during spring, summer, and fall, have the greatest effect on warm-water gamefish species in the reservoir.

Historical water-level fluctuations, based on monthly average water levels, are shown in **Table 4.3-3**. These month-to-month fluctuations have ranged from 0 to more than 64 feet, although water levels typically fluctuated several feet or less each month (median monthly fluctuations over the period of record were 7 feet or less); **Table 4.3-3**. The greatest increases occurred in winter when the reservoir fills in response to runoff from seasonal rains. By contrast, the greatest drawdowns have occurred July–October. Generally, stable or rising water levels during bass spawning periods and high surface elevations in April and May are associated with greater largemouth bass year classes in the reservoir (Von Geldern 1971).

Surface water temperatures vary from near 50°F in winter to slightly above 80°F in the summer (Von Geldern 1971). Nacimiento Reservoir thermally stratifies with oxygen depletion in the hypolimnion (the deep, cold, and undisturbed area of a reservoir) during spring, summer and fall. The thermocline (the depth layer where a steep temperature gradient is found that prevents mixing between the surface waters and those beneath the thermocline) occurs at depths ranging from about 25 to 30 feet (Von Geldern 1971). Below the thermocline, summer water temperature is approximately 52°F and dissolved oxygen becomes depleted because there is little or no circulation across the thermocline. Sampling for dissolved oxygen during 2022 indicated that levels fall from about 7–9 parts per million (ppm) above 20 feet depth to less than 2 ppm below 25 feet, approaching 0 ppm at the lake bed (MCWRA 2022). The depletion of dissolved oxygen during the summer months limits the use of the hypolimnion by fish.

Reservoir Wildlife Associations

Nacimiento Reservoir supports a mixture of native and non-native warmwater game and non-game fish species that were either intentionally stocked by the California Department of Fish and Game (CDFG—now CDFW) or were present in the Nacimiento River upstream of the dam when it was constructed (**Table 4.3-4**). Past electrofishing surveys have determined that the reservoir fish community is dominated by threadfin shad, largemouth bass, black crappie, and bluegill, though other species are present. (MCWRA 2001). Largemouth and smallmouth bass, white bass, catfish, crappie and bluegill are popular sport species sought by anglers at Nacimiento Reservoir. Occasionally, rainbow trout are also caught in the reservoir, but these fish are believed to originate from upstream populations in the Nacimiento River and that survive in the reservoir during the cooler months when water quality conditions are favorable (MCWRA 2001). One of the primary sport species sought by anglers at Nacimiento Reservoir is largemouth bass. Factors associated with good production of young largemouth bass include stable or rising water levels during the spawning period (i.e., mid-April to late May), high water surface elevations in April and May, and low abundance of adult threadfin shad (adult threadfin shad are believed to compete with young bass for food) (Von Geldern 1971). Decreasing reservoir water surface elevations during the spawning season can expose bass nests to the effects of wind and wave action, cause adults to abandon nests leaving eggs and fry exposed to predators (e.g., carp and sunfish), or lead to nest desiccation (Mitchell 1982; Stuber et al. 1982; Moyle 2002). Aquatic and inundated terrestrial vegetation, logs and brush, and rock outcrops and boulders provide shelter and are an important habitat component for largemouth bass and other reservoir fish species. At Nacimiento Reservoir, brush and other forms of shelter are found in greater abundance at high reservoir contour elevations (MCWRA 2001).

Table 4.3-3. Average Monthly Water Surface Elevation Fluctuations for Nacimiento Reservoir in Feet

Row Labels	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1959		-3.0	-2.3	-0.4	4.1	-0.8	-0.2	-4.2	-6.4	-8.2	-9.7	-9.2
1960	-7.2	-5.3	-4.2	-0.6	18.9	5.5	0.4	-3.7	-9.7	-12.5	-17.8	-21.4
1961	-4.4	1.6	21.5	3.2	8.4	2.5	1.8	0.2	-8.6	-18.8	-2.5	-0.3
1962	-0.2	0.3	21.3	5.7	39.7	30.1	3.4	-4.3	-6.4	-7.5	-9.3	-10.1
1963	-6.9	-5.0	-2.8	1.9	39.0	7.7	9.1	5.8	-0.8	-4.9	-6.8	-6.4
1964	-5.0	-1.1	0.8	-0.3	1.2	-0.3	-1.0	-4.4	-6.6	-8.3	-11.0	-12.4
1965	-11.0	-2.7	6.9	33.7	7.0	2.8	6.6	2.6	-4.1	-7.2	-9.4	-9.4
1966	-7.4	1.4	13.3	12.2	7.5	2.6	-0.2	-5.6	-5.6	-8.2	-10.3	-10.8
1967	-7.9	-5.5	40.3	12.7	3.6	4.6	15.5	8.0	-3.3	-4.7	-8.6	-10.1
1968	-4.0	-3.3	-1.4	0.4	1.3	0.5	-1.1	-5.5	-7.0	-9.2	-11.6	-12.5
1969	-10.8	-5.9	0.0	32.1	55.1	0.4	-19.5	-7.1	-8.8	-10.0	-11.6	-13.2
1970	-16.5	-21.9	-6.2	31.6	24.1	16.2	3.0	-3.2	-7.0	-7.6	-4.2	-3.0
1971	-7.0	-2.2	25.8	12.6	2.9	1.2	0.4	-3.0	-4.7	-7.9	-10.4	-12.3
1972	-12.0	-6.0	3.3	16.6	3.4	0.2	-4.2	-6.8	-10.1	-9.9	-2.2	-1.1
1973	-6.6	7.2	16.4	18.9	38.8	18.8	6.2	0.6	-1.8	-4.8	-5.9	-5.8
1974	-5.3	-2.3	2.0	2.5	-2.0	15.6	10.7	1.4	-2.3	-4.0	-6.1	-6.5
1975	-6.7	-4.7	0.5	0.4	4.5	10.6	9.9	1.3	-1.9	-3.4	-5.7	-6.4
1976	-4.9	-2.3	-1.9	-0.8	-2.0	-0.1	-2.2	-2.7	-5.8	-8.2	-11.4	-11.1
1977	-7.0	-4.0	-3.7	1.0	0.6	0.1	-0.1	-0.7	-2.3	-3.3	-3.6	-4.1
1978	-17.7	-4.0	9.3	64.3	32.2	7.7	7.5	3.8	-1.4	-4.6	-6.9	-7.3
1979	-4.9	-2.7	-1.1	2.8	7.9	1.8	7.9	0.4	-3.3	-5.5	-6.6	-6.1
1980	-4.7	-2.9	-0.8	9.7	6.3	9.3	2.3	0.8	-1.1	-3.1	-4.7	-4.9
1981	-3.3	-0.9	-0.3	-0.2	1.7	4.7	6.4	-1.5	-5.1	-6.2	-8.0	-8.3
1982	-6.9	-2.3	3.2	14.5	6.6	6.9	18.4	4.0	-0.5	-1.3	-4.0	-6.4
1983	-6.4	-5.7	-3.1	1.0	8.5	10.6	3.5	3.6	-3.7	-4.4	-7.5	-8.4
1984	-3.1	1.6	7.7	-9.6	-1.3	0.1	0.1	-0.7	-2.6	-4.2	-7.4	-7.0
1985	-6.7	-3.0	5.3	4.7	3.9	3.8	3.2	-5.2	-5.7	-9.1	-11.9	-12.2
1986	-13.1	-8.5	10.0	8.7	31.1	41.3	8.1	0.2	-1.6	-3.8	-5.1	-5.2
1987	-3.2	-2.0	-1.5	-1.5	1.5	4.4	1.1	-0.9	-1.5	-4.7	-7.5	-7.6
1988	-5.7	-3.9	-0.7	5.1	3.1	1.1	-0.8	-2.4	-6.1	-7.9	-11.1	-14.2
1989	-17.5	-4.0	2.8	11.5	3.5	4.0	1.8	-11.9	-14.7	-11.6	-1.2	-0.8
1990	-0.2	0.6	0.7	5.0	9.2	6.6	0.3	-0.4	-0.5	-0.7	-0.9	-0.8
1991	-0.6	-0.4	-0.3	-0.3	-0.4	32.8	23.1	0.5	-0.7	-4.1	-10.8	-12.4
1992	-15.5	-12.4	-0.1	9.5	20.9	23.2	4.0	-5.4	-7.8	-4.3	-1.4	-8.1
1993	-11.8	-13.3	0.3	50.8	31.7	3.6	4.3	-0.2	-4.2	-6.8	-9.4	-8.6

Row Labels	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1994	-7.0	-6.7	-4.3	-2.9	3.6	6.9	0.4	-0.1	-4.0	-8.8	-9.2	-11.2
1995	-12.3	-10.9	-1.0	37.8	32.2	25.5	13.1	1.3	-0.3	-3.6	-3.4	-4.6
1996	-7.3	-5.0	-2.2	1.3	7.1	2.9	3.8	0.1	-3.7	-5.4	-5.4	-6.4
1997	-4.9	-1.2	10.9	11.7	-5.4	-0.6	0.1	-2.1	-5.2	-6.3	-7.1	-6.8
1998	-1.6	-0.3	8.7	10.8	24.3	-5.8	7.3	3.8	0.8	-3.2	-4.6	-3.9
1999	-1.3	-3.5	-2.4	-1.5	3.3	1.9	6.1	0.7	-3.2	-4.3	-5.9	-5.0
2000	-1.3	-3.4	-5.2	-0.2	14.9	10.5	2.6	-0.4	-3.6	-5.3	-6.0	-5.4
2001	-1.3	-2.3	-4.8	0.8	7.3	16.4	3.1	-1.0	-4.6	-5.7	-6.1	-5.4
2002	-1.7	-1.8	0.4	5.2	0.8	0.8	-1.3	-3.9	-3.8	-5.6	-7.9	-8.2
2003	-5.5	2.8	7.9	16.5	3.9	5.8	3.4	-0.4	-3.8	-5.4	-7.1	-6.8
2004	-2.2	-4.7	-5.4	5.9	2.0	10.4	0.4	-2.4	-3.2	-4.1	-7.6	-3.5
2005	-0.3	1.2	3.9	37.8	5.9	5.4	6.7	0.2	-2.0	-4.6	-6.0	-2.7
2006	-0.6	-5.6	-4.3	10.0	-1.0	7.0	9.7	0.5	-1.5	-3.7	-5.8	-3.7
2007	-0.9	-2.6	-2.2	-2.6	0.0	0.7	-4.6	-5.1	-5.8	-6.8	-8.2	-4.6
2008	-0.9	-1.7	-0.7	12.2	17.3	5.7	-1.8	-3.8	-5.0	-6.9	-7.8	-4.1
2009	-0.9	-3.6	-4.0	0.1	4.5	10.0	-0.9	-3.8	-4.6	-5.8	-9.5	-11.6
2010	2.0	0.3	-2.6	14.5	28.9	15.7	4.9	1.8	-3.8	-6.6	-6.9	-6.7
2011	-6.4	-2.9	3.2	16.4	6.2	19.1	11.2	-0.9	-1.3	-3.9	-5.5	-4.8
2012	-4.9	-2.4	-0.6	0.1	1.8	-0.3	-0.1	-2.4	-4.6	-5.5	-7.0	-7.2
2013	-5.2	-2.6	6.7	8.8	0.4	-0.4	-0.8	-1.9	-1.8	-2.9	-4.0	-5.7
2014	-7.7	-2.9	-1.7	-1.8	-1.6	2.0	-0.7	-1.9	-2.2	-1.4	-1.5	-1.4
2015	-1.5	-1.2	7.0	5.3	5.9	2.7	-0.6	-1.4	-2.0	-2.5	-2.4	-2.5
2016	-2.5	-2.1	-2.2	2.6	6.0	11.9	5.0	-1.2	-2.0	-2.4	-2.4	-2.3
2017	-2.2	-1.8	-0.1	34.8	26.7	-0.2	2.4	-3.4	-5.8	-6.3	-7.2	-7.7
2018	-6.9	-1.9	-1.3	-0.7	-0.9	7.1	4.5	-7.8	-9.0	-9.2	-10.7	-12.2
2019	-5.3	-3.3	-0.4	20.4	41.0	20.9	3.4	-3.1	-4.7	-6.4	-8.1	-7.3
2020	-3.2	-1.6	3.1	3.5	0.2	-0.2	1.5	-2.8	-3.8	-7.1	-8.4	-7.7
Max Drawdown	-17.7	-21.9	-6.2	-9.6	-5.4	-5.8	-19.5	-11.9	-14.7	-18.8	-17.8	-21.4
Median	-5.2	-2.7	-0.2	5.2	5.2	4.6	2.8	-1.1	-3.8	-5.5	-7.0	-6.7
Max Filling	2.0	7.2	40.3	64.3	55.1	41.3	23.1	8.0	0.8	-0.7	-0.9	-0.3

-35.6	-24	-16	-12	-8	-4	-2	0	2	4	8	12	16	24	35.6

Negative change — Little to no change — Positive change

Source: https://www.co.monterey.ca.us/government/government-links/water-resources-agency/projects-facilities/dams-and-reservoirs/historical-data

Table 4.3-4. Fish Species Known or with Potential to Occur in the Project and Study Areas

Common Name	Native	Non-Native	Nacimiento River	Nacimiento Reservoir	San Antonio River	San Antonio Reservoir	Salinas River	Salinas Lagoon
Black bullhead [10,11] *Ameiurus melas*	–	X	X	X	X	X	–	–
Black crappie [3,10,11] *Pomoxis nigromaculatus*	–	X	X	X	X	X	X	–
Bluegill [3,6,10,11] *Lepomis macrochirus*	–	X	X	X	X	X	X	–
Brown bullhead [11] *Ameiurus nebulosus*	–	X	X	X	–	–	–	–
Channel catfish [3,10,11] *Ictalurus punctatus*	–	X	X	X	X	X		–
Common carp [1,4,6,10,11] *Cyprinus carpio*	–	X	X	X	X	X	X	X
Golden shiner [3] *Notemigonus chrysoleucas*	–	X	X	–	–	–	X	–
Goldfish [1,3,10] *Carassius auratus auratus*	–	X	X	–	X	X	X	–
Grass carp [2] *Ctenopharyngodon idella*	–	X	–	–	–	–	X	–
Green sunfish [3,11] *Lepomis cyanellus*	–	X	X	X	X	X	X	–
Inland silverside [3] *Menidia beryllina*	–	X	X	–	–	–	–	–
Largemouth bass [1,3,11] *Micropterus salmoides*	–	X	X	X	X	X	X	X
Monterey hitch [4,10] *Lavinia exilicauda*	X	–	X	X	X	X	X	X
Monterey roach *Lavinia symmetricus subditus*	X	–	X	–	X	–	–	–
Pacific herring [4] *Clupea pallasi*	X	–	–	–	–	–	–	X

Common Name	Native	Non-Native	Nacimiento River	Nacimiento Reservoir	San Antonio River	San Antonio Reservoir	Salinas River	Salinas Lagoon
Pacific lamprey [4,6] *Entosphenus tridentata*	X	–	X	–	X	–	X	X
Pacific staghorn sculpin[4] *Leptocottus armatus*	X	–	–	–		–		X
Prickly sculpin [4,6,7] *Cottus asper*	X	–	X	–	X	–	X	X
Redear sunfish [10,11] *Lepomis microlophus*	–	X	X	X	X	X	–	–
Riffle sculpin [6,7] *Cottus gulosus*	X	–	X	–	–	–	–	–
Sacramento blackfish [2,4] *Orthodon microlepidotus*	X	–	X	–	X	–	X	X
Sacramento pikeminnow [1,4,6,7,10] *Ptychocheilus grandis*	X	–	X	–	X	–	X	X
Sacramento sucker [1,4,6,7] *Catostomus occidentalis*	X	–	X	–	X	–	X	X
Shiner surfperch [4] *Cymatogaster aggregata*	X	–	–	–	–	–	–	X
Smallmouth bass [3] *Micropterus dolomieu*	–	X	X	X	X	X	–	–
Speckled dace [6,7] *Rhinichthys osculus*	X	–	X	–	–	–	–	–
Spotted bass [6] *Micropterus punctualtus*	–	X	X	X	–	–	–	–
Starry flounder [4] *Platichthys stellatus*	X	–	–	–	–	–	–	X
Steelhead [1,4,7,8,9,10] *Oncorhynchus mykis*	X	–	X	–	X	–	X	X
Striped bass [1,4,5] *Morone saxatilis*	–	X	X	–	X	X	X	X
Threadfin shad [3,4,5,10] *Dorosoma patenense*	–	X	X	X	X	X	X	X
Threespine stickleback [2,3,4,6] *Gasterosteus aculeatus*	X	–	X	–	X	–	X	X

Common Name	Native	Non-Native	Nacimiento River	Nacimiento Reservoir	San Antonio River	San Antonio Reservoir	Salinas River	Salinas Lagoon
Tidewater goby [4] *Eucyclogobius newberryi*	X	–	–	–	–	–	–	X
Western mosquitofish [3,5,6] *ambusia affinis*	–	X	X	X	X	X	X	X
White bass [3,10,11] *Morone chrysops*	–	X	X	X	–	–	X	X
White catfish [3,10,11] *Ameiurus catus*	–	X	X	X	X	X	–	–
White crappie [10,11] *Pomoxis annularis*	–	X	X	X	X	X	–	–
Yellowfin goby [4] *Acanthogobius flavimanus*	–	X	–	–	–	–	–	X

[1] Cuthbert et al. 2014.
[2] Personal observations from Salinas River Bridge widening project (Salinas River near Spreckels). Donna Maniscalco, ICF.
[3] FISHBIO 2018.
[4] Hagar Environmental Science and MCWRA 2015.
[5] Hagar Environmental Science 2014.
[6] MCWRA 2014b.
[7] MCWRA 2014c.
[8] Cuthbert et al. 2013.
[9] MCWRA 2019.
[10] CalFish 2022a.
[11] CalFish 2022b.

White bass are present at Nacimiento Reservoir but not at San Antonio Reservoir. White bass are native to the Mississippi River system, Great Lakes region, and some parts of the southern United States. White bass were intentionally introduced to Nacimiento Reservoir in 1965 by CDFG (now CDFW) as a sportfish and have since become well established at Nacimiento Reservoir (Moyle 2002). White bass are voracious piscivores (a carnivorous animal that eats primarily fish), and are considered a threat to native fish species, including young steelhead (Moyle 2002). Individual white bass are occasionally present in the Nacimiento and Salinas rivers and the Salinas Lagoon and are understood to be released from Nacimiento Reservoir during flood control releases (spillway and possibly HLOW releases) following storm events. However, despite leaving the reservoir, white bass do not appear to have developed a self-sustaining population outside of the reservoir (Hagar 2018). White bass eggs sink and adhere to benthic substrate following spawning, and the shifting sand substrate of the Salinas River may be a limiting factor preventing spawning (Hagar 2018). Movement of live white bass is prohibited without a permit from CDFW. MCWRA engaged with CDFW regarding methods to prevent transfer of white bass into San Antonio Reservoir, and fish screens were specifically designed for this prevention (CDFW and MCWRA 2018).

White bass prefer to spawn in running water but have been known to spawn on lake shoals and windswept lakeshores when tributaries are not present (Hamilton and Nelson 1984). At Nacimiento Reservoir, white bass spawn in the Nacimiento River and are assumed to also spawn in the reservoir; however, it is unknown whether or to what degree white bass spawn on shoals and lakeshores at Nacimiento Reservoir (Moyle 2002). According to Hamilton and Nelson, white bass spawn in the spring (approximately mid-March to mid-May) once water temperatures reach 54°F to 57°F (Hamilton and Nelson 1984). Optimal water temperatures for spawning are believed to be 54°F to 68°F. White bass are broadcast spawners. The eggs are fertilized in the water column and sink to the bottom, where they stick to the substrate. Spawning occurs during the day. Eggs hatch in 2 to 4 days depending on water temperature, with shorter hatching times occurring at warmer temperatures. Newly hatched larvae are 2 to 3 mm in length at hatching and initially remain in the vicinity of spawning areas. After a short while, larvae become planktonic and begin to drift downstream to the reservoir or river backwater where they feed on zooplankton and invertebrates. Young white bass have been known to begin consuming fish once they reach about 23 mm in length. Summer temperatures of white bass habitats typically are 66°F to 82°F. Dissolved oxygen concentrations of 2 parts per million (ppm) have been found to be extremely stressful to white bass (and possibly lethal within 72 hours); concentrations of 1 ppm at 70°F to 75°F have been found to be lethal (Hamilton and Nelson 1984).

At Nacimiento Reservoir, white bass are typically found in relatively shallow surface waters (i.e., less than 20 feet deep) (Moyle 2002). During the day, they are typically offshore but move inshore at dusk to feed. At night, they are less active and are typically found in deep water or near submerged objects (Moyle 2002). Although the specific details of the vertical distribution and lateral movements of white bass at Nacimiento Reservoir are not known, their distribution and movements may be inferred from studies conducted on lakes and reservoirs in their native range. During a fish distribution study of Keystone Reservoir in Oklahoma, Carter observed white bass (6 to 14 inches) to be concentrated near the surface in all seasons, while their vertical distribution in the reservoir varied by season (Carter 1967). In fall and winter, white bass were found in the reservoir from the surface to a maximum depth of approximately 56 feet. By contrast, white bass were found at shallower depths (maximum to 25 feet) during spring and summer. Low dissolved oxygen conditions (2 ppm or less) that occurred beginning at about 30 feet appeared to constrain the vertical distribution of fish in summer, while spawning behavior very likely explained their shallower distribution in spring. In another study, Taber observed that white bass larvae larger than 4 mm and juveniles occupied offshore and deep-water habitats during the day and at dusk moved to the surface and nearshore where they remained throughout the night (Taber 1969). During this study, which was conducted from late April to late June, larval and juvenile white bass (4 to 35 mm) were collected in bottom trawls as deep as approximately 48 feet, which was the deepest habitat sampled as part of that study.

San Antonio Reservoir

When San Antonio Reservoir is full (elevation 780 feet), it has a maximum storage of 335,000 acre-feet, is 16 miles long, and has 100 miles of shoreline. The maximum water surface elevation during flood stage is 802 feet (22 feet above the spillway), with a temporary capacity of 477,000 acre-feet and a temporary surface area of about 7,500 acres. Water below an elevation of 666 feet (23,000 acre-feet of storage) is reserved for fish and wildlife habitat. (MCWRA 2019).

Reservoir operations

Similar to Nacimiento Reservoir, the operation of San Antonio Reservoir is seasonally driven and the reservoir is managed to capture and store winter runoff for later release to the Salinas River primarily to maximize groundwater recharge in the Salinas Valley aquifer. Releases from the reservoir are made through a single outlet near the center of the dam. The maximum release capacity from this outlet is 2,200 cfs when the reservoir is at elevation 780 feet. Variable hydrology combined with reservoir operations have caused the reservoir water surface to fluctuate annually by 3 to 94 feet, although fluctuations of less than 35 feet are most common.

See *San Antonio Reservoir* in Section 4.1.3.4, *Reservoir Storage and Stream Flow*, for additional information on the reservoir and operations. **Figure 4.1-7** (see Section 4.1, *Hydrology and Water Quality*) shows historical (WYs 1967–2021) water levels for San Antonio Reservoir, which reflect seasonal patterns of runoff, precipitation, and reservoir releases. Generally, reservoir levels increase January–April and decrease May–November; reservoir levels are relatively unchanged in December. Inflows (or lack thereof) to the reservoir and reservoir operations combine to cause water levels at San Antonio Reservoir to fluctuate (i.e., rise or fall). Similar to Nacimiento Reservoir, falling reservoir levels during spring, summer, and fall have the greatest effect on warm-water gamefish species in the reservoir.

Historical water-level fluctuations, based on monthly average water levels, are shown in **Table 4.3-5**. These month-to-month fluctuations have ranged from 0 to more than 35 feet, although water levels typically fluctuated by a couple of feet or less each month (median monthly fluctuations over the period of record were 2.7 feet or less; **Table 4.3-5**). As with the Nacimiento Reservoir, the greatest increases occurred in winter when the reservoir fills in response to runoff from seasonal rains and the greatest drawdowns have occurred July–October. Generally, stable or rising water levels during bass spawning periods and high surface elevations in April and May are associated with greater largemouth bass year classes in the reservoir (Von Geldern 1971).

Similar to Nacimiento Reservoir, San Antonio Reservoir thermally stratifies with oxygen depletion in the hypolimnion during spring, summer, and fall. The thermocline occurs at depths ranging from about 13 to 30 feet (MCWRA 2001). During the stratification period, surface water temperatures range between approximately 68°F and 81°F, while temperatures below the thermocline range from approximately 53°F to 63°F (MCWRA 2001). Below the thermocline, dissolved oxygen becomes depleted because there is little or no circulation across the thermocline. Dissolved oxygen conditions at San Antonio Reservoir below the thermocline are likely similar to those described for Nacimiento Reservoir, with similar consequences for fish.

Table 4.3-5. Average Monthly Water Surface Elevation Fluctuations for San Antonio Reservoir in Feet

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1967		-0.2	25.9	10.0	13.1	5.9	9.1	6.3	1.3	-0.1	-0.8	-0.7
1968	-0.4	-0.3	-0.5	-0.2	0.8	1.4	0.8	-0.2	-0.5	-0.7	-1.4	-0.8
1969	-0.4	-0.7	-1.4	8.5	27.4	13.1	2.5	0.7	-0.1	-0.4	-0.7	-1.7
1970	-3.5	-0.6	0.0	0.3	-1.4	2.3	0.2	-0.6	-0.5	-0.8	-4.6	-4.7
1971	-1.9	-0.4	2.3	2.5	1.0	-1.1	0.0	-0.5	-1.3	-0.8	-0.8	-0.6
1972	-0.6	-0.7	-1.6	0.2	0.4	-0.4	-3.1	-2.9	-2.9	-5.0	-10.6	-12.0
1973	-7.1	0.0	0.9	3.8	13.9	13.7	3.8	0.7	-0.9	-0.6	-0.7	-0.6
1974	-0.3	-0.1	0.8	4.4	3.0	4.8	4.0	0.9	-0.1	-0.5	-0.7	-0.7
1975	-0.6	-0.5	0.2	0.2	4.3	4.7	3.5	0.6	-1.0	-2.1	-1.3	-0.8
1976	-0.7	-0.5	-0.4	-0.2	0.0	0.2	-1.3	-2.7	-1.8	-2.0	-1.4	-0.8
1977	-0.8	-0.9	-0.8	-0.9	-0.6	-2.5	-5.3	-6.4	-6.4	-8.7	-13.6	-16.7
1978	-7.8	-12.3	-10.3	25.7	35.6	22.1	7.7	2.7	0.4	-0.5	-0.7	-0.6
1979	-0.6	-0.3	0.1	1.0	2.7	3.5	2.5	0.2	-0.9	-1.4	-1.4	-1.3
1980	-1.1	-0.5	-0.1	4.4	8.0	5.7	-0.1	0.7	-0.8	-1.8	-2.4	-2.2
1981	-0.9	-0.4	-0.5	-1.3	1.6	1.4	1.8	-0.2	-1.2	-1.9	-1.7	-1.1
1982	-0.9	-0.2	0.4	2.6	1.6	1.7	6.1	-0.4	-2.0	-2.8	-2.1	-1.1
1983	-0.8	0.1	2.2	1.2	0.9	6.4	-1.9	1.8	-4.9	-2.8	-0.9	-0.9
1984	-0.6	0.0	2.2	0.7	-2.3	-0.7	-0.1	-2.2	-3.0	-3.3	-1.9	-1.7
1985	-1.3	-0.7	0.0	0.6	0.7	0.9	0.8	-1.0	-1.2	-1.6	-1.9	-1.8
1986	-0.9	-1.1	0.2	1.2	8.5	9.2	2.0	0.7	-0.6	-1.6	-1.2	-0.8
1987	-0.9	-1.5	-1.3	-0.2	0.7	1.7	0.4	-3.0	-5.4	-2.5	-0.8	-0.6
1988	-0.4	0.0	0.0	1.1	1.0	0.3	-2.7	-2.3	-2.2	-2.8	-3.4	-2.3
1989	-1.5	-4.2	-3.9	-1.2	0.0	0.5	0.4	-3.8	-5.9	-11.3	-13.2	-28.8
1990	-5.3	0.1	0.0	0.3	0.6	0.6	0.1	-0.4	-0.6	-0.9	-0.8	-0.7
1991	-0.6	-0.4	-0.5	-0.5	-0.5	12.8	16.1	1.4	-0.4	-1.6	-15.0	-3.6
1992	-0.5	-0.4	-0.3	0.5	7.6	14.1	4.5	0.4	-4.3	-7.3	-0.8	-0.6
1993	-5.7	-8.3	0.2	24.0	26.5	14.3	3.5	0.8	0.1	-0.5	-0.6	-0.5
1994	-1.0	-1.0	-0.1	0.0	0.8	1.6	0.2	-0.1	-6.0	-9.1	-7.0	-8.6
1995	-6.4	-4.5	-5.3	8.8	19.1	20.5	14.9	2.0	0.6	-0.3	-0.6	-0.6
1996	-0.5	-0.3	-0.1	0.3	5.6	8.5	2.2	0.2	-1.0	-1.7	-2.2	-3.1
1997	-2.7	-1.4	1.8	7.8	-1.5	-1.5	0.6	-0.4	-1.6	-3.2	-2.6	-2.1
1998	-0.6	-0.2	1.3	2.4	12.1	1.2	3.8	2.2	1.0	-1.6	-1.4	-1.3
1999	-0.6	-0.6	0.0	0.1	1.1	1.0	1.5	0.3	-1.5	-1.8	-1.8	-2.0
2000	-0.6	-0.5	-0.4	-0.2	4.3	5.4	1.3	-0.5	-0.8	-1.3	-1.9	-1.7
2001	-0.5	-0.3	-0.2	0.2	1.3	4.4	1.3	0.0	-0.9	-1.3	-1.5	-2.0
2002	-0.6	-0.6	0.4	2.6	0.4	-1.2	-1.1	-1.3	-3.3	-3.8	-3.1	-3.5
2003	-2.6	0.1	1.4	4.5	1.5	1.3	1.2	0.9	-0.5	-2.5	-2.9	-2.4
2004	-0.7	-1.2	-0.9	1.3	0.6	2.7	-2.0	-4.8	-5.1	-6.8	-5.5	-1.8

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2005	-0.2	0.1	0.1	11.1	7.0	10.4	5.0	1.1	0.0	-0.8	-0.9	-0.7
2006	-0.6	-0.3	0.1	4.8	1.2	3.2	6.4	1.5	-0.4	-0.5	-1.2	-0.7
2007	-0.7	-2.3	-0.5	-0.4	0.1	0.4	-0.2	-1.2	-2.2	-2.9	-3.3	-1.9
2008	-0.6	-5.1	-7.1	0.0	5.4	3.2	0.6	-0.7	-2.2	-2.0	-2.6	-1.7
2009	-0.6	-2.6	-1.8	-0.1	0.0	2.8	-0.7	-3.6	-4.9	-6.1	-5.7	-4.7
2010	0.3	0.5	0.7	4.2	10.5	7.0	3.0	1.4	-0.4	-2.0	-2.6	-3.2
2011	-1.9	-0.5	0.4	5.6	2.8	8.1	9.8	1.3	0.1	-1.2	-1.5	-1.2
2012	-1.2	-0.6	-0.2	0.1	0.6	0.1	0.7	-0.6	-2.5	-3.4	-3.8	-4.4
2013	-4.6	-1.0	1.4	3.2	0.7	-0.7	-5.0	-7.7	-11.2	-13.7	-17.9	-21.1
2014	-11.2	-1.6	-0.5	-0.5	-0.5	0.0	-0.7	-0.9	-1.1	-1.1	-1.1	-1.0
2015	-0.9	-0.7	0.0	0.3	3.9	4.0	0.1	-0.7	-0.8	-1.0	-1.1	-5.7
2016	-1.5	-0.2	-0.1	0.2	2.6	11.0	8.2	0.3	-0.7	-1.0	-0.8	-0.7
2017	-0.7	-0.4	-0.2	26.7	35.6	17.5	3.8	1.5	-3.3	-5.8	-6.9	-6.7
2018	-4.3	-0.8	-0.4	0.0	-0.2	1.6	2.0	-1.5	-4.1	-8.4	-13.5	-10.2
2019	-1.2	-0.3	0.0	5.3	22.8	15.1	4.1	0.9	0.2	-1.6	-2.6	-4.3
2020	-0.7	-0.5	2.2	2.4	0.9	-0.1	0.2	-1.9	-7.3	-5.9	-7.8	-9.8
Max Drawdown	-11.2	-12.3	-10.3	-1.3	-2.3	-2.5	-5.3	-7.7	-11.2	-13.7	-17.9	-28.8
Median	-0.8	-0.5	0.0	0.9	1.2	2.7	1.2	-0.1	-1.0	-1.8	-1.8	-1.7
Max Filling	0.3	0.5	25.9	26.7	35.6	22.1	16.1	6.3	1.3	-0.1	-0.6	-0.5

-35.6	-24	-16	-12	-8	-4	-2	0	2	4	8	12	16	24	35.6
	Negative change						Little to no change							Positive change

Reservoir Wildlife Associations

San Antonio Reservoir supports warmwater fish species similar to those presented above for Nacimiento Reservoir, but San Antonio Reservoir has been stocked successfully with striped bass instead of white bass (**Table 4.3-4**). Striped bass were introduced into San Antonio Reservoir in 1971 to feed on threadfin shad, as well as to provide a trophy fishery. Largemouth and smallmouth bass, striped bass, catfish, crappie and bluegill are popular sport species sought by anglers at San Antonio Reservoir with largemouth bass being one of the primary sport fish. Factors affecting largemouth bass recruitment at San Antonio Reservoir are similar to those described above for Nacimiento Reservoir.

Riverine

Riverine habitat refers to intermittent or ephemeral, non-tidal water, such as rivers, streams, and drainages. Riverine habitats often occur in association with other habitats, including riparian, lacustrine, and fresh emergent wetland habitats. These areas provide resting, escape cover, forage, and nest sites for many species of birds, wildlife, and fish (Sawyer et al. 2009). Depending on the characteristics of an individual riverine habitat—such as substrate, velocity, temperature, turbidity, and dissolved oxygen—riverine habitats can also support a variety of insects, mollusks, and crustaceans which are important prey items for birds, wildlife, and fish.

Riverine habitat in the study area includes the San Antonio River within the proposed inundation area at San Antonio Reservoir, Deer Creek, Copperhead Creek, Harris Creek, and other unnamed tributaries to San Antonio Reservoir; the Nacimiento and San Antonio Rivers downstream (east) of their respective reservoirs; the Salinas River from the confluence with the Nacimiento River to the upstream limits of the Salinas River lagoon; and other unnamed intermittent and ephemeral streams present throughout the study area.

Salinas River

The Salinas River watershed is the largest in the central coast of California, draining approximately 4,240 square miles of land in Monterey and San Luis Obispo Counties (Monterey County Water Resources Agency 2014a). Originating in the Los Padres National Forest, the headwaters of the Salinas River begin in the Santa Lucia and La Panza Mountain Ranges and flow approximately 184 river miles north-northwest through the Salinas Valley and into Monterey Bay near Castroville (Monterey County Water Resources Agency 2014a). The principal tributaries of the Salinas River within the study area are the Nacimiento River and the San Antonio River (**Figure 4.3-1**).

In the study area, the Salinas River is approximately 108 miles long and can be roughly divided into three major reaches based on the dominant channel morphology: upper watershed, Salinas River Valley, and the Salinas River Lagoon. A description of each of these three reaches, in order from upstream to downstream, follows.

- **Upper Watershed Reach**. The upper watershed reach extends from River Mile (RM) 108 (at the confluence with the Nacimiento River upstream of Bradley) to RM 53 (near Greenfield).The Salinas River channel is relatively narrow and confined in the upper portion of this reach as it passes through the narrow canyons of the coastal mountain ranges. The primary tributaries in this upper portion, the Nacimiento River and San Antonio River, originate in the Santa Lucia Range along the coast and enter the Salinas River from the southwest, upstream of Bradley. North of San Ardo (RM 90), the valley and river begin to widen, and the Salinas River channel becomes a more braided channel (i.e., a mainstem with side channels on either side that are separated by sandbars and riparian vegetation) downstream of King City (RM 68). The channel bed and banks are sand dominated, and the channel banks are well-vegetated, with widely varying amounts of vegetation growing on the bars and channel bottom (Monterey County Water Resources Agency 2014a). The major tributary in the lower portion of this reach is San Lorenzo Creek, which drains a 261-square-mile watershed that originates in the Diablo Mountain Range and joins the Salinas River from the east at King City.

- **Salinas Valley Reach**. The Salinas Valley River reach extends from RM 53 (near Greenfield) to RM 7 (Blanco Road). Generally, the Salinas River channel in this reach is wider, with channel widths (as measured from top-of-bank to top-of-bank) ranging between 500 and 2,000 feet, and is weakly braided. The major tributary in this reach is the Arroyo Seco, an important steelhead stream, which drains a 275-square-mile watershed that originates in the Santa Lucia Range and enters the Salinas River from the west near the city of Soledad (RM 46). Relative to historical conditions, the channel bed in this reach has narrowed significantly and become more highly vegetated, with varying amounts of vegetation growing on bars and the channel bottom. In the past, seasonal high flows regularly scoured the bars and channel bottom, transporting sediment and leaving the Salinas River channel bed largely bare. The combination of reduced peak flow and increased summer flows caused by the operation of Nacimiento Reservoir starting in 1957 and San Antonio Reservoir starting in 1967 has today allowed vegetation growth to expand onto the bars and channel bottom and largely persist there. This vegetation growth has increased since the revised operation of Nacimiento Dam in April 2010 to provide sufficient flows at the SRDF to meet agricultural demands and fish bypass flow requirements. Landowners along much of the Salinas River have historically constructed levees to protect agricultural lands from flooding and continue to do so today. Many of these informal levee sections are not engineered, and are often composed of sand, broken concrete, and other construction materials (Monterey County Water Resources Agency 2014a). The bank slopes below the levees are generally well-vegetated.
- **Salinas River Lagoon**. The Salinas River Lagoon reach extends from RM 7 (Blanco Road) to RM 0 (Monterey Bay). This reach includes the perennial portion of the river from Blanco Road to Highway 1 (RM 1.9) and downstream to the Salinas River Lagoon. The lagoon is formed by a sandbar that separates the river from Monterey Bay (see Salinas River Lagoon below for additional information). The SRDF is located in this reach at RM 4.8 and diverts surface waters in the Salinas River to the Castroville Seawater Intrusion Project's non-potable agricultural irrigation system. The SRDF operates April 1 to October 31, based on demand and available water in the reservoirs.

Historically, the Salinas River flows were extremely low in summer and were spread over a wide, sandy channel. The river was often dry. Winter rains would quickly change the Salinas River into a torrent, however, and these rapidly changing conditions created poor fishery conditions (Snyder 1913). Today, the Salinas River is a managed river system, influenced by flow regulation from upstream dams, levees, and land use on the adjacent floodplains. Construction of Nacimiento and San Antonio Dams altered the natural hydrology of the Salinas River to provide flood protection and aquifer recharge (and recreation, although this was not a primary purpose of the dams) (Monterey County Water Resources Agency 2001). In addition, the upper 110 square miles of the Salinas River are controlled by Salinas Dam (RM 154, constructed in 1941), which impounds 24,000 acre-feet and forms Santa Margarita Lake. Presently, flow in the Salinas River generally peaks in late winter or early spring (February–March) and is typically lowest in the summer and fall months. Releases from upstream reservoirs artificially sustain surface flows in the Salinas River during parts of the year when the river would normally be dry. Wet season discharge rates in the Salinas River are highly variable in response to runoff during storm events. The Arroyo Seco River, an unregulated (i.e., lacking a dam) tributary, can be a major source of inflow to the Salinas River during winter. causing discharge rates to be slightly higher in the Salinas River downstream of the confluence with the Arroyo Seco River. See Section 4.1.3.5, *Salinas River and Downstream Creek Flows*, for additional information on Salinas River hydrology.

As part of the adopted flow prescription for the Salinas Valley Water Project (SVWP), MCWRA adaptively manages flows in the Nacimiento, San Antonio, and Salinas Rivers to facilitate and enhance steelhead migration for adults, kelts (post-spawn adults), juveniles, and smolts (juveniles that have undergone physiological changes that prepare them for life in seawater) (MCWRA 2005a). In addition, MCWRA may release flows from Nacimiento and San Antonio Dams when passage conditions within the Arroyo Seco River are favorable, for lagoon maintenance in conjunction with lagoon opening and closure, and for downstream juvenile passage (MCWRA 2005a). The timing and magnitude of the flow prescriptions were developed based on the life cycle of steelhead within the Salinas River and are adaptively managed based on results of biological monitoring (i.e., steelhead escapement, smolt outmigration, steelhead population monitoring within indexed reaches, and surveys of the SRDF impoundment). In addition to biological monitoring, data are also collected on physical parameters, including flow and depth measurements for passage, water temperature, dissolved oxygen, and electrical conductivity (MCWRA 2014b). Flow prescriptions for the Salinas River are provided in **Table 4.1-2** in Section 4.1, *Hydrology and Water Quality*.

River Wildlife Associations

Historically, the Salinas River supported no fewer than 12 native species of fish (Snyder 1913), and likely as many as 15 native species (Moyle 2002), comprising freshwater (Sacramento pikeminnow [*Ptychocheilus grandis*], Sacramento sucker [*Catostomus occidentalis*], Sacramento blackfish [*Orthodon microlepidotus]*, Monterey roach [*Lavinia symmetricus subditus],* Monterey hitch [*Lavinia exilicauda*], speckled dace [*Rhinichthys osculus*], riffle sculpin [*Cottus gulosus*], thicktail chub [*Gila crassicauda*], Sacramento perch [*Archoplites interruptus*] and anadromous (Pacific lamprey [*Entosphenus tridentata*] and steelhead [*Oncorhynchus mykiss*]) forms as well as others (threespine stickleback [*Gasterosteus aculeatus*], prickly sculpin [*Cottus asper*], coastrange sculpin [*Cottus alueticus*], and tule perch *[Hysterocarpus traski]*) which move freely between freshwater and saltwater (Snyder 1913; Moyle 2002; Leidy 2007). Four species (coast range sculpin, Sacramento perch, tule perch, and thicktail chub) have been extirpated from the Salinas River system, while the distribution of Monterey roach in the Salinas River has been reduced and the species now occurs primarily in tributary streams (Moyle 2002; Moyle et al. 2015). Other native species, such as Sacramento sucker, speckled dace, threespine stickleback, Sacramento pikeminnow, prickly sculpin, roach, and hitch are still relatively common.

Fisheries monitoring conducted since 2010 has revealed that numerous native and nonnative fish species inhabit the Salinas River (**Table 4.3-4**). The vast majority of invasive fish species are known to either prey upon native species, including juvenile steelhead, or compete with native species for food resources. In general, the most impactful nonnative species, with respect to steelhead and tidewater goby (*Eucyclogobius newberryi*), are large-bodied piscivorous fish including striped bass, largemouth and smallmouth bass, and channel and white catfish. Of these species, striped bass are the most commonly observed and likely present the biggest threat to steelhead given their prevalence in the Salinas River watershed and their propensity to prey upon salmonids (NMFS 2013). Although predation and nonnative species were identified in the South-Central California

Coast Steelhead Recovery Plan as a high threat in the Salinas, Nacimiento, and San Antonio Rivers and Arroyo Seco, the impacts of nonnative species on steelhead are not well known, and the removal of nonnative fish species was not included as a critical recovery action for any of the rivers (NMFS 2013).

Steelhead historically used the Salinas River only as a migration corridor and entered all rivers in large numbers during high water (Snyder 1913). Carcasses of large adults were occasionally seen in the Arroyo Seco and Nacimiento Rivers. Today, the Salinas River continues to support migratory habitat for adult and juvenile steelhead. Water released from San Antonio and Nacimiento Reservoirs provides surface flows to the Salinas River and facilitates the movement of adult and juvenile steelhead between the ocean and the tributary rivers and creeks in the upper watershed. Annual monitoring of steelhead in the lower Salinas River has confirmed the continued presence of adult and juvenile steelhead in the river, although abundance is low compared to historical levels (FISHBIO 2014a). The decline in abundance across the species' range prompted NMFS to list south-central California coast (SCCC) steelhead as threatened under the federal ESA on August 18, 1997 (62 FR 43937). NMFS designated the Salinas River and numerous tributaries as critical habitat for the species on September 2, 2005 (70 FR 43937).

Today, agriculture occurs in what was once the riparian corridor (i.e., the bottomlands) of the Salinas River. As a result, significant narrowing of the riparian corridor has occurred throughout much of the river. Riparian vegetation in the study area is of variable quality because of past and ongoing impacts, including levee construction and bank protection activities, flow management, and clearing for agricultural use, and provides habitat for several native, regionally important fish and wildlife species. See *Riparian* in Section 4.3.3.2, *Vegetation and Land Cover*, for additional information on riparian habitats bordering the Salinas River.

Nacimiento River

The Nacimiento River originates in the Santa Lucia Mountains within the Los Padres National Forest along the coast and enters the Salinas River from the southwest upstream of Bradley (**Figure 4.3-1**). The Nacimiento River is 53 miles long and drains 362 square miles (MCWRA 2019). The river is regulated by Nacimiento Dam, which is located at approximately RM 10. Because the dam lacks fish passage facilities, it blocks passage of steelhead and other migratory fish species to an estimated 38 miles of historical habitat upstream of the reservoir (Becker and Reining 2008), much of which is likely suitable steelhead habitat.

In the study area, the Nacimiento River is approximately 10 miles long and is characterized by a low gradient channel with numerous deep pools, substrates consisting of gravel and lesser amounts of sand and cobble, and sparse riparian vegetation (NWSC & CCSE. 2008; FISHBIO 2014a,b). Water releases from Nacimiento Dam largely control habitat conditions in the river for steelhead and other fish and aquatic species in the study area. Because water is released from the bottom of Nacimiento Reservoir, water temperatures typically range between 52 and 54°F at the dam and generally remain cooler than 64°F within the first 5 miles below the dam and below 68°F within the lowermost 5 miles of the river. However, under low flow conditions during dry years, summer water temperatures can reach 73°F within the first 5 miles below the dam and 75°F within the lowermost 5 miles of the river (NMFS 2007).

Historically, the Nacimiento River's flow reflected the seasonal nature of the runoff that occurs in the watershed, with the majority of river's discharge occurring during the wet season from December to May (CALFED 1976). During the dry season, the lower Nacimiento River was often intermittent, resulting in long stretches of dry river bed between a few isolated pools. Dry water years were characterized by no surface flow for long periods of time (CALFED 1976). Today, dam operation and flow releases on the Nacimiento River are managed to meet the goals of the SVWP and to facilitate and enhance passage for upstream migrating adult steelhead on the Salinas River, to facilitate and enhance passage for downstream migrating steelhead smolts and juveniles on the Salinas River, to maintain the Salinas River Lagoon, to provide water for SRDF (RM 4.8), and to maintain steelhead rearing habitat below the dam (MCWRA 2005a). See *Nacimiento River* in Section 4.1.3.5, *Salinas River and Downstream Creek Flows*, for additional information on Nacimiento River hydrology. Flow prescriptions for the Nacimiento River are provided in **Table 4.2-1** in Section 4.1, *Hydrology and Water Quality*.

River Wildlife Associations

Historically, the Nacimiento River supported no fewer than nine native species of fish, including Sacramento sucker, Monterey roach, speckled dace, riffle and prickly sculpin, threespine stickleback, tule perch, Pacific lamprey, and steelhead (Snyder 1913). All but tule perch continue to be present in the river. Fisheries monitoring conducted since 2010 has revealed that numerous native and nonnative fish species inhabit the Nacimiento River (**Table 4.3-4**). The most impactful nonnative species with respect to steelhead include bass (smallmouth, largemouth, spotted, and white bass), green sunfish, and catfish (white and channel) as all of these species are piscivorous (fish eating). The impacts of nonnative fish species on steelhead in the Nacimiento River are not well known.

Steelhead spawning and rearing habitat in the Nacimiento River is located within the three miles closest to the dam. This reach has good cover, relatively cool water temperature and dense riparian vegetation, with less fine sediments. Habitat further downstream is degraded and does not support spawning. Fall snorkel surveys have detected juvenile steelhead in the river 7.7 miles downstream from the dam (Monterey County Water Resources Agency 2014c) and suggests that rearing habitat is supported in the river at least this far downstream from the dam. Per the flow prescription (see **Table 4.2-1** in Section 4.1, *Hydrology and Water Quality*), MCWRA releases a minimum of 60 cfs to the Nacimiento River from the dam year-round to support spawning and rearing habitat in the river (MCWRA 2005a).

San Antonio River

Like the Nacimiento River, the San Antonio River originates in the Santa Lucia Mountains within the Los Padres National Forest along the coast and enters the Salinas River just north of the Nacimiento River at RM 105 (**Figure 4.3-1**). The San Antonio River is 59 miles long and drains 350 square miles in the study area (USGS 2018). The river is regulated by San Antonio Dam, which is located at approximately RM 8. Because the dam lacks fish passage facilities, it blocks the passage of steelhead and other migratory fish species to an estimated 32 miles of historical habitat upstream of the reservoir (Becker and Reining 2008).

In the study area, the San Antonio River is approximately 8 miles long and aquatic habitat consists primarily of shallow-run habitat, with lesser amounts of pool and riffle habitat. The channel substrate is primarily composed of equal parts of sand and gravel with lesser amounts of cobble and silt (NWSC & CCSE 2008).

Prior to construction of San Antonio Dam, the San Antonio River normally did not reach the Salinas River in late summer (MCWRA 2001). Similar to Nacimiento Dam, San Antonio Dam operation and flow releases are managed as part of the SVWP to stop seawater intrusion, improve the long-term hydrologic balance between recharge and withdrawal, and provide water supply to meet existing needs and potential future needs (MCWRA 2005a). Flow prescriptions from San Antonio Reservoir are used to facilitate and enhance passage for upstream migrating adult steelhead on the Salinas River, to enhance or maintain passage for downstream migrating steelhead smolts and juveniles on the Salinas River, to maintain the Salinas River Lagoon, to provide water for Salinas River Diversion Facility (RM 4.8) and to maintain steelhead rearing habitat on the San Antonio River (below the dam). Flow prescriptions for the San Antonio River are provided in **Table 4.2-1** in Section 4.1, *Hydrology and Water Quality*.

River Wildlife Associations

Historically, the San Antonio River supported no fewer than five native species of fish, including Sacramento sucker, Monterey roach, speckled dace, stickleback, and steelhead (Snyder 1913). Page et al. 1995 (as cited in MCWRA 2001) sampled the San Antonio River and found native fish species such as hitch, Sacramento blackfish, Sacramento pikeminnow, speckled dace, Sacramento sucker, Monterey roach, and three-spined stickleback. In addition, the San Antonio River provides habitat for some of the same non-native warmwater fishes found in the Nacimiento River (**Table 4.3-4**). South-central California coast steelhead may occur in the San Antonio River if there is enough surface flow for migration. However, the San Antonio River is not expected to provide habitat suitable for steelhead rearing or spawning (MCWRA 2001). In some years, when flows and runoff are sufficiently high to facilitate migration, steelhead will enter the San Antonio River (NMFS 2007). In the lower part of the river, there is some riparian vegetation, gravel, and shading that could provide spawning and rearing habitat. However, without appropriate flows, habitat usage is limited.

Estuarine

The estuarine natural community consists of tidally influenced aquatic areas below the topographical contour that corresponds to the maximum possible extent of the tides. This natural community is subject to tidal fluctuations in water height that may be natural or muted by human-made structures such as tidal gates or culverts. An estuary is a semi-enclosed body of water where two other waterbodies, usually saltwater and freshwater, meet and mix. Examples of estuaries include bays, lagoons, sounds, and sloughs. Estuarine habitat provides valuable foraging habitat for numerous bird species, such as terns, pelicans, and seagulls, and shorebirds. Estuarine habitat in the study area includes the Salinas River Lagoon and the Old Salinas River Channel.

The Salinas River, like most central California coastal river systems, terminates in a seasonal lagoon. The lagoon forms when the estuary is separated from the ocean by the formation of a sandbar, which forms as a result of seasonal sand deposition onto the beach combined with reduced river outflows. For a typical or average water year, sandbars form across central California coast estuaries in late spring or summer and remain intact until high river flows due to winter rain and wave events breach it. In wet water years, the sandbar may form later in the summer or in the fall, while in dry years the bar may form in the late winter or early spring (Smith pers. comm. 2004). Modification of the river mouth, diking of adjacent wetlands, management of surface water elevation, and the diversion of river inflows also have potential to affect the timing of sandbar formation. The timing of sandbar formation and the quantity and quality of freshwater inflows determine the quality of water in the lagoon (Hagar Environmental Science 2015; Smith pers. comm. 2004).

Historically, the Salinas River Lagoon was a complex of natural dune, scrub, riparian, wetland, and riverine communities (San Francisco Estuary Institute 2009). The river mouth was likely “meandering,” with the river mouth moving north and south along the beach in response to oceanic and river processes. In the late nineteenth and early twentieth centuries the Salinas River flowed north, along the dune community, until it joined Elkhorn Slough and opened to the ocean near Moss Landing (San Francisco Estuary Institute 2009). With the construction of Moss Landing Harbor, in addition to agricultural and residential development beginning in the 1950s, the northward connection to the ocean was altered and the river mouth now opens to the ocean in its current position just southwest of the small, unincorporated town of Castroville.

The slide gate is closed when the river mouth is open and can be open or closed when the river mouth is closed (H. T. Harvey & Associates 2009). However, the volume of water that can flow through the slide gate is limited by the capacity of the outlet structure and the channel. Capacity in the channel is also limited by tidal influence (from Moss Landing) and flows from other sources, primarily Tembladero Slough (Hagar Environmental Science 2015). These limitations can cause localized flooding and root zone saturation. Management actions to reduce flooding include periodically lowering the sandbar elevation to allow direct outflow to the ocean at the mouth of the lagoon. Sandbar management involves grading or excavating a drainage channel across the sandbar to drain the lagoon at the critical elevation. At a WSE of about 6 feet, the lagoon begins to crest the south bank and floods an extensive area of low marsh vegetation in the Salinas National Wildlife Refuge to the south of the lagoon (Hagar Environmental Science 2015). There are low-lying agricultural fields on the north side of the lagoon that also begin to be inundated under these conditions. The initial breach usually occurs in conjunction with winter storms in November through January but can occur anytime between October and June (Hagar Environmental Science 2015). River flow may recede to low levels between storms and, depending on tide and wave conditions, the mouth may close again for periods of time with subsequent natural or artificial opening (Hagar Environmental Science 2015; MCWRA 2019).

In April 2010, MCWRA began operation of the Salinas River Diversion Facility (SRDF) located at about RM 4.8 near the upper part of the Salinas River Lagoon as part of the SVWP. Water released from Nacimiento and San Antonio Dams are impounded and diverted at the SRDF throughout the irrigation season (April 1 to October 31). When the SRDF is in operation, MCWRA is required to provide bypass flows to the lagoon based on water year type. Before implementation of the SVWP, there was no requirement for provision of flow to the lagoon, and there was generally no flow to the lagoon after storm flows ceased in the spring (a pattern more consistent with natural river flow patterns before development of the Salinas Valley for agriculture) (MCWRA 2019).

Lagoon Wildlife Associations

Fisheries monitoring has revealed that numerous native and nonnative fish species inhabit the Salinas River lagoon (**Table 4.3-4**). In addition to many of the same native, freshwater fish species found in the Salinas River, the Salinas Lagoon supports fish species that are able to tolerate a wide range of salinity, including the native starry flounder (*Platichthys stellatus*), Pacific herring (*Clupea pallasi*), Pacific staghorn sculpin (*Leptocottus armatus*), tidewater goby, top smelt (*Atherinops affinis*) and shiner surfperch (*Cymatogaster aggregata*), and the nonnative yellowfin goby (*Acanthogobius flavimanus*). Sacramento blackfish, Pacific lamprey and hitch are present and are California species of concern. South-central California coast steelhead and tidewater goby are also present and are federally listed. Steelhead use the lagoon to migrate to spawning locations upstream and for rearing, while tidewater goby use the lagoon for spawning and rearing.

Coastal Strand and Dunes

Coastal strand and dunes do not occur within the project site but they do occur within the study area near the mouth of the Salinas River Lagoon and northwest of the Old Salinas River (OSR). Vegetation is a low growing thicket of shrubs, subshrubs, and herbs with an average height of about 3 feet. Dominant species include lizard tail (*Eriophyllum staechadifolium*), yellow bush lupine (*Lupinus arboreus*), sea lettuce (*Dudleya farinosa*), coast buckwheat (*Eriogonum latifolium*), beach bur, mock heather (*Ericameria ericoides*), and dune buckwheat (*E. parvifolium*) (MCWRA 1997). Coastal strand and dunes occur in this area and are typified by sparse, low growing vegetation that partially anchors the sand substrate from aeolian (i.e., wind action) shifting. Dominant vegetation includes yellow sand verbena (*Abronia latifolia*), pink sand verbena (*A. umbellata*), beach morning glory (*Calystegia soldanella*), silky beach pea (*Lathyrus littoralis*), beach bur (*Ambrosia chamissonis*), and beach primrose (*Camissoniopsis cheiranthifolia* ssp. *suffruticosa*). European beach grass (*Ammophila arenaria*), a non-native species, also occurs in scattered locations of the southern dunes (MCWRA 1997). Coastal strand and dune communities are considered sensitive (CDFW 2021e).

Coastal Strand and Dunes Wildlife Associations

Common wading birds, such as sanderlings (*Calidris alba*), plovers (*Charadrius* ssp.), and godwits (*Limosa* ssp.), occur along the beaches; California ground squirrels (*Spermophilus beecheyi*), deer mice (*Peromyscus maniculatus*), gray fox (*Urocyon cinereoargenteus*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), American kestrel (*Falco sparverius*), loggerhead shrike (*Lanius ludovicianus*) and red foxes (*Vulpes vulpes*) occur in the disturbed dune habitats. Special-status species most strongly associated with coastal strand and dune scrub in the study area are Smith's blue butterfly (*Euphilotes enoptes smithi*), western snowy plover (*Charadrius nivosus* ssp. *nivosus*), black legless lizard (*Anniella pulchra nigra*), Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*), Monterey spineflower (*Chorizanthe pungens* var. *pungens*), seaside bird's beak (*Cordylanthus rigidus* var. *littoralis*), and coast wallflower (*Erysimum ammophilum*).

Riparian

Arroyo Willow Forest

Arroyo willow forest is dominated by mature Arroyo willow (*Salix lasiolepis*) tree canopy. Other co-dominants include other willow tree species such as red willow (*S. laevigata*) and Pacific willow (*S. lucida*) (Sawyer et al. 2009). Arroyo willow forest is not present within the project site, but it is present along the San Antonio and Nacimiento Rivers downstream of the dams, as well as along the Salinas River. This habitat was not mapped during reconnaissance biological surveys, because it is outside of the project site. The CDFW has designated the Arroyo willow forest with a rarity rank of G4S4. This community is considered sensitive (CDFW 2021e).

Arroyo Willow Thickets

Arroyo willow thickets communities include Arroyo willow as the dominant or co-dominant shrub in the canopy (Sawyer et al. 2009). Some species associated with Arroyo willow thickets include coyote brush (*Baccharis pilularis*), mule-fat (*B. salicifolia*), and cottonwoods (*Populus* spp.) (Sawyer et al. 2009). This community is mapped within a depressional area south of the San Antonio River. Arroyo willow association within this community is considered sensitive (G4S4) (CDFW 2021e). Outside of the project site but within the study area, this community is also found along portions of the Salinas River and associated lagoon, San Antonio River, and Nacimiento River where major flooding is absent.

Arroyo Willow/Mulefat Thickets

Arroyo willow/Mulefat thickets include Arroyo willow and mulefat (*Baccharis salicifolia*) as co-dominants. This community is mapped in the project site along San Antonio Reservoir. Arroyo willow association within this community is considered sensitive (G4S4) (CDFW 2021e).

Black Cottonwood Forest

Black cottonwood forest is dominated by mature black cottonwood (*Populus trichocarpa*) (Sawyer et al. 2009). Some associate species include Fremont cottonwood (*Populus fremontii*), coast live oak (*Quercus agrifolia*), California sycamore (*Platanus racemosa*), red willow, Arroyo willow, and Pacific willow (Sawyer et al. 2009). In the study area, this community is found in flat areas south of the San Antonio River. The CDFW has designated the black cottonwood forest with a rarity rank of G5S3. This community is considered sensitive (CDFW 2021e).

Fremont Cottonwood Forest

Fremont cottonwood forest communities include mature Fremont cottonwood as the dominant or co-dominant tree in the canopy (Sawyer et al. 2009). Some species associated with Fremont cottonwood forest include California sycamore, coast live oak, sandbar willow (*Salix exigua*), black willow (*S. gooddingii*), red willow, arroyo willow, and Pacific willow (Sawyer et al. 2009). In the study area, this community is associated with the San Antonio River floodplain. The CDFW has designated the Fremont cottonwood forest alliance with a rarity rank of G4S3. This community is considered sensitive (CDFW 2021e).

Fremont Cottonwood Forest/Arroyo Willow Forest

Fremont cottonwood forest/Arroyo willow forest includes mature Fremont cottonwood and Arroyo willow as co-dominant trees in the canopy. In the study area, this community is associated with the San Antonio River floodplain upstream of the reservoir. The CDFW has designated the Fremont cottonwood forest and Arroyo willow forest alliances with a rarity rank of G4S3 and G4S4, respectively. These two communities are considered sensitive (CDFW 2021e).

Giant Reed Thickets

Giant reed (*Arundo donax*) thickets are dominated by giant reed, which is known as one of the worst plant invaders of California's riparian and wetland communities. It is a fast-growing, tall grass species that spreads easily, consumes large amounts of water, forms dense monotypic stands, crowds out native vegetation, degrades wildlife habitat, increases fire frequencies, and causes flooding into adjacent upland areas during high flow events. As of 2011, approximately 8,907 acres of giant reed thickets were mapped in coastal California watersheds from Monterey to San Diego (California Invasive Plant Council 2011). Of this total, the Salinas River watershed supported 2,006 acres (23 percent of known giant reed stands mapped in all of coastal California) in 2011. After extensive and continuing eradication efforts by the Resource Conservation District of Monterey County and the implementation of MCWRA's Salinas River Stream Maintenance Program projects in the study area, approximately 1,363 acres of giant reed is currently present along the Salinas River riparian corridor.

Mixed Riparian Forest and Woodland

Mixed riparian forest and woodland occurs throughout the study area downstream of the project site along the Nacimiento, San Antonio, and Salinas Rivers. Generally, no single riparian species dominates the canopy in a mixed riparian forest and woodland community. Composition varies with elevation, aspect, hydrology, and channel type. Canopy species include Fremont cottonwood, arroyo willow, red willow, box elder (*Acer negundo*), and coast live oak (U.S. National Vegetation Classification 2018). Associated trees and shrubs include western sycamore, northern California black walnut (*Juglans hindsii*), California bay, bigleaf maple (*Acer macrophyllum*), and Goodding's black willow. California grape (*Vitis californica*) creates a dense network of vines in the canopy. In areas that are disturbed by frequent flooding, fire, or human activity, this natural community often consists of smaller trees, more shrubs, and more invasive nonnative species such as giant reed, salt cedar (*Tamarix ramosissima*), and Himalayan blackberry (*Rubus armeniacus*). The understory is disturbed by winter flows, and herbaceous vegetation is typically sparse or patchy. Typically, plants such as mulefat, California buckeye (*Aesculus californica*), poison oak, California mugwort (*Artemisia douglasiana*), California blackberry, common chickweed (*Stellaria media*), coyote brush, goose grass (*Galium aparine*), and Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*) populate the stream banks (Monterey County Water Resources Agency 2014a). This community is designated as sensitive (CDFW 2021e).

Mulefat Thickets

Mulefat thickets include mulefat as the dominant or co-dominant shrub in the canopy. Species associated with the mulefat thickets typically include willows, California sagebrush (*Artemisia californica*), and coyote brush (Sawyer et al. 2009). This community is associated with the San Antonio River, but is also located in a few areas around the rim of San Antonio Reservoir.

Red Willow Thickets

Red willow communities are groves dominated by red willow with sub-dominant species composition similar to Arroyo willow forest (Sawyer et al. 2009). In the study area, this community is found in the San Antonio River floodplain. The CDFW has designated the red willow thickets with a rarity rank of G4S3. This community is considered sensitive (CDFW 2021e).

Sandbar Willow Thickets

Sandbar willow communities include sandbar willow as the dominant or co-dominant shrub in the canopy (Sawyer et al. 2009). Species associated with the sandbar willow thickets alliance include *Baccharis* spp., California rose, Himalayan blackberry, California blackberry (*Rubus ursinus*), and arroyo willow. In the study area, this community is found in the San Antonio River floodplain and along the Salinas River.

Shining Willow Thickets

Shining willow groves are dominated by Pacific willow, with sub-dominant species composition similar to Fremont cottonwood forest. In the study area, this community is associated with the San Antonio River floodplain. The CDFW has designated the shining willow groves alliance with a rarity rank of G4S3. This community is considered sensitive (CDFW 2021e).

Valley Oak Woodland/Fremont Cottonwood Forest

Valley oak woodland/Fremont cottonwood forest includes mature Fremont cottonwood and valley oak (*Quercus lobata*) as co-dominant trees in the canopy. In the study area, this community is associated with the San Antonio River floodplain upstream of the reservoir. The CDFW has designated the Fremont cottonwood forest and valley oak woodland alliances with a rarity rank of G4S3 and G3S3, respectively. These two communities are considered sensitive (CDFW 2021e).

Riparian Wildlife Associations

Riparian habitat provides important forage, cover, and water to resident black-tailed deer, and serves as travel corridors for predators such as mountain lions (*Puma concolor*) and coyotes (*Canis latrans*). Other wildlife species associated with this community include Pacific tree frog (*Pseudacris regilla*), California slender salamander (*Batrachoseps attenuatus*), Wilson's warbler (*Wilsonia pusilla*), dark-eyed junco (*Junco hyemalis*), and striped skunk (*Mephitis mephitis*). Special-status species that utilize this community include the South-Central California Coast steelhead, arroyo toad (*Anaxyrus californicus*), California red-legged frog, least bell's vireo (*Vireo bellii pusilus*), bank swallow (*Riparia ripiaria*), Abbott's bush-mallow (*Malacothamnus abbottii*), and Davidson's bush-mallow (*Malacothamnus davidsonii*). Species known to occur in the riparian zone of the study area include gray fox, coyote, American badger (*Taxidea taxus*), coast horned lizard (*Phrynosoma coronatum*), western pond turtle (*Actinemys marmorata*), Monterey dusky-footed woodrat (*Neotoma fuscipes luciana*), bobcat, mountain lion, and numerous avian species, including some species of special concern.

Wetlands

Coastal Brackish Marsh

Coastal brackish marsh is dominated by obligate wetland species such as cattail (*Typha* spp.), common threesquare (*Schoenoplectus pungens*), sturdy bulrush (*Bulboschoenus robustus*), California bulrush (*Schoenoplectus californicus*), and rabbitsfoot grass (*Polypogon monspeliensis*). Taller species grow in water depths between one to three feet and shorter species grow from one foot deep to above the water line. Coastal brackish marsh does not occur within the project site, but it is present near the Salinas River banks and islands within the active flow channel. The CDFW has designated this community with a rarity rank of G4S3. This community is considered sensitive (CDFW 2021e).

Freshwater Emergent Wetland

Freshwater emergent wetland usually features shallow water that is often clogged with dense masses of vegetation, resulting in deep peaty soils. Common plant species predominantly consist of cattails (*Typha* spp.), bulrushes (*Schoenoplectus* and *Bolboschoenus* spp.), sedges (*Carex* spp.), and rushes (*Juncus* spp.). Dominant species in the study area include beard grass (*Polypogon* sp.), tall cyperus (*Cyperus eragrostis*), willow weed (*Persicaria lapathifolia*), yellow cress (*Rorippa* spp.), and false loosestrife (*Ludwigia* spp.). Freshwater emergent wetland is considered sensitive by CDFW (2021b).

Northern Coastal Salt Marsh

Northern coastal salt marsh vegetation is dominated by pickleweed (*Salicornia pacifica*), alkali heath (*Frankenia salina*), and fleshy jaumea (*Jaumea carnosa*), with coastal gumplant (*Grindelia stricta*) and salt grass (*Distichlis spicata*) as codominants. Northern coastal salt marsh does not occur within the project site, but it is present near the Salinas River mouth within the Salinas River Lagoon in the study area. The CDFW has designated this community with a rarity rank of G4S3. This community is considered sensitive (CDFW 2021e).

Wetland Wildlife Associations

Wetlands support a number of common wildlife species, including the great blue heron (*Ardea herodias*), American bittern (*Botaurus lentiginosus*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), black-crowned night heron (*Nycticorax nycticorax*), sora (*Porzana carolina*), American coot (*Fulica americana*), song sparrow (*Melospiza melodia*), mallard (*Anas platyrhynchos*), red-winged blackbird (*Agelaius phoeniceus*), marsh wren (*Cistothorus palustris*), and many species of wintering waterfowl in large numbers.

Grasslands

California Annual Grassland

California annual grassland is the most abundant natural community within the project site. Dominant species include slender oat (*Avena barbata*), wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), and soft brome (*Bromus hordeaceus*). This community is located on slopes and some flat areas throughout the project site. CDFW does not designate rarity ranks for semi-natural communities, which includes annual grasslands (CDFW 2021e).

Perennial Needlegrass Grassland

This community is dominated by native perennial bunchgrass known as purple needlegrass (*Nessella pulchra*). A small patch of perennial needlegrass grassland is present in the northwestern portion of the study area, south of San Antonio Reservoir. The CDFW has designated purple needlegrass grassland with wild oat and brome associates with a rarity rank of G3S3. This community is considered sensitive (CDFW 2021e).

Grassland Wildlife Associations

Grasslands provide nesting and foraging habitat and movement areas for a variety of wildlife species including reptiles, amphibians, small and large mammals, and raptors. Common wildlife species include California ground squirrel, Heerman's kangaroo rat (*Dipodomys heermanni*), narrow-faced kangaroo rat (*Dipodomys venustus*), western meadowlark (*Sturnella neglecta*), and American kestrel. In addition, grasslands provide one of the primary upland habitats for special-status species like the California tiger salamander (*Ambystoma californiense*) and the California red-legged frog (*Rana draytonii*). Grasslands also protect the soil from erosion and provide the primary source of forage for grazing domestic livestock.

Scrubland

California Buckeye Groves

California buckeye groves are monotypic stands of vegetation dominated by California buckeye (*Aesculus californica*) (Sawyer et al. 2009). This community is located above the shoreline of Nacimiento Reservoir in the western portion of the project site. The CDFW has designated this community with a rarity rank of G3S3. This community is considered sensitive (CDFW 2021e).

California Buckwheat Scrub

California buckwheat scrub is dominated by California buckwheat (*Eriogonum fasciculatum*) with California sagebrush (*Artemisia californica*), coyote brush, deer weed (*Acmispon glaber*), black sage (*Salvia mellifera*), and white sage (*Salvia apiana*) as codominants (Sawyer et al. 2009). This community is located throughout the study area, typically in relatively dry areas. The CDFW has designated this community with a rarity rank of G5S5. This community is considered sensitive (CDFW 2021e).

Coastal Scrub

Coastal scrublands are typically dominated by California sagebrush and black sage with associated species including coyote brush, California buckwheat, poison oak, and sticky monkeyflower (*Mimulus aurantiacus*) (Sawyer et al. 2009). The dominant woody plants in this land cover type are nearly the same among different soil types. This community is located throughout the study area, typically between the Salinas River floodplains and relatively drier areas.

Coyote Brush Scrub

Coyote brush scrub communities include coyote brush (*Baccharis pilularis*) as the dominant or co-dominant shrub in the canopy (Sawyer et al. 2009). This community is generally found on slopes above the southern shore of San Antonio Reservoir. The CDFW has designated this community with a rarity rank of G5S5. This community is considered sensitive (CDFW 2021e).

Nuttall's Scrub Oak Scrubland

Nuttall’s scrub oak scrubland is a monotypic stand of vegetation dominated by Nuttall’s scrub oak (*Quercus dumosa*) (Sawyer et al. 2009), a sensitive species ranked by CNPS as a 1B. 1 species. This community is located above the shoreline of San Antonio Reservoir in the northern portion of the project site. The CDFW has designated this community with a rarity rank of G2S2. This community is considered sensitive (CDFW 2021e).

Scrub Oak Chaparral

Scrub oak chaparral is dominated by inland scrub oak (*Quercus berbedifolia*) with codominant species such as buck brush (*Ceanothus cuneatus*) and greenbark ceanothus (*Ceanothus spinosus*) (Sawyer et al. 2009). Scrub oak chaparral is located above the shoreline at Nacimiento Reservoir in the eastern portion of the project site. The CDFW has designated this community with a rarity rank of G3S3. This community is considered sensitive (CDFW 2021e).

Scrublands Wildlife Associations

Scrublands support a variety of wildlife species. Common wildlife species California mouse, raccoon (*Procyon lotor*), California quail, scrub jay (*Aphelocoma californica*), and Nuttall's woodpecker (*Picoides nuttallii*). Cooper's hawk and northern harriers forage in this community as well.

Forests and Woodlands

Blue Oak Woodland

Blue oak woodland communities include blue oak (*Quercus douglasii*) as the dominant or co-dominant tree in the canopy (Sawyer et al. 2009). Some species associated with blue oak woodland include California buckeye, ghost pine (*Pinus sabiniana*), coast live oak (*Quercus agrifolia*), valley oak, and interior live oak (*Quercus wislizeni*) (Sawyer et al. 2009). This community is located on slopes throughout the study area. The CDFW has designated the blue oak woodland community with a rarity rank of G4S4. Blue oak woodland is considered sensitive (CDFW 2021e).

Blue Oak/Scrub Oak Woodland

Blue oak/scrub oak woodland include blue oak and scrub oak as the co-dominant trees in the canopy. This community is located on slopes throughout the project site near the outlet structure proposed at San Antonio Reservoir. The CDFW has designated the blue oak woodland and scrub oak scrubland communities with a rarity rank of G4S4 and G3S3, respectively. Blue oak woodland and scrub oak scrubland are considered sensitive (CDFW 2021e).

Coast Live Oak Woodland

Coast live oak woodland communities include coast live oak (*Quercus douglasii*) as the dominant or co-dominant tree in the canopy (Sawyer et al. 2009). Some species associated with coast live oak woodland include California buckeye, valley oak, blue oak, and interior live oak (Sawyer et al. 2009). This community is located above the shoreline at Nacimiento Reservoir in the eastern portion of the project site. The CDFW has designated the coast live oak woodland community with a rarity rank of G5S4. Coast live oak woodland is considered sensitive (CDFW 2021e).

Valley Oak Woodland

Valley oak woodland is dominated by valley oak in the tree canopy. This oak canopy intergrades with blue oak woodland in the ecotone between the two woodland types. Valley oak woodland in the study area is typically associated with low-lying areas above the bank of the reservoir that appear to be historic floodplain, and along stream channels. Where located on the floodplain, the understory of this habitat type is open, with few shrubs and a high concentration of annual grasses and forbs. Where this habitat is found along streams, it generally contains a dense shrub and vine layer under the tree canopy that includes such species as snowberry (*Symphoricarpos mollis*), Himalayan blackberry (*Rubus armeniacus*), wild rose (*Rosa californica*), and elderberry (*Sambucus nigra*). The herb layer can be dense to sparse and includes annual grasses and forbs, as well as California mugwort and Santa Barbara sedge (*Carex barbarae*). The CDFW has designated the valley oak woodland with a rarity rank of G3S3. This community is considered sensitive (CDFW 2021e).

Valley Oak/Blue Oak Woodland

Valley oak/blue oak woodland include valley oak and blue oak as the co-dominant trees in the canopy. This community is located on slopes in the study area around San Antonio Reservoir. The CDFW has designated the valley oak and blue oak woodland communities with a rarity rank of G3S3 and G4S4, respectively. Valley oak and blue oak woodlands are considered sensitive (CDFW 2021e).

Valley Oak Woodland/California Buckwheat Scrub

Valley oak /California buckwheat scrub include valley oak and California buckwheat as the co-dominant species in the landscape. This community is located on slopes in the study area near San Antonio Reservoir. The CDFW has designated the valley oak woodland and California buckwheat scrub communities with a rarity rank of G3S3 and G5S5, respectively. Valley oak woodland and California buckwheat scrub are considered sensitive (CDFW 2021e).

Forest and Woodland

The forest and woodland natural community is an upland vegetation community dominated by hardwood tree species. This broad community consists of savannas, woodlands, and forests dominated by warm-temperate and Mediterranean climate–endemic oak and conifer species within California below approximately 8,200 feet in elevation. In the region, this community includes characteristic taxa such as various oak species (*Quercus* spp.), various pines (*Pinus* spp.), California bay (*Umbellularia californica)*, and tanoak (*Lithocarpus densiflorus)* (U.S. National Vegetation Classification 2018)*.* Understory species found in this community include sticky monkeyflower, California coffeeberry (*Frangula californica*), California sagebrush, and spiny redberry (*Rhamnus crocea*) (Allen-Diaz et al. 1999). In addition, bugle hedge nettle (*Stachys ajugoides*), California blackberry (*Rubus ursinus*)*,* California wood fern (*Dryopteris arguta*)*,* and poison oak are often present. Across the Central Coast Ranges, stands of this community occur at lower elevations (200 to 3,250 feet) on north and northeast aspects. Slopes are generally steep, and parent material is primarily sedimentary sandstone and shale, with loam soils. Forest and woodland communities occur in the study area surrounding the two reservoirs.

Forests and Woodlands Wildlife Associations

Forests and woodlands support a variety of wildlife species, including multiple special-status species. They provide nesting sites, cover, forage, habitat connectivity, and other ecological values important to regional wildlife. Common wildlife species in coast live oak woodlands include black-tailed deer (*Odocoileus hemionus columbianus*), Stellar's jay, and acorn woodpecker. Red-tailed hawks and great-horned owls (*Bubo virginianus*) nest and roost in this community as well. Some special-status species associated with forests and woodlands in the study area include California tiger salamander, California red-legged frog, and arroyo toad.

Developed

Agriculture

Agriculture was introduced to the study area in the 1770s by the Spanish settlers. Over the next century, agriculture developed with greater intensity, first during the Mexican period (1822–1848) and even more so after the state of California was established (1850) (MCWRA 2019). Cattle ranching and small-scale croplands were historically common in the Monterey County region. Over the last 150 years, the agricultural community of the region diversified into an array of cultivated row crops, horticultural crops, vineyards, orchards, dairies, and pastures that require either soil tillage or other land maintenance activities. In the study area, agriculture is located throughout the valley floor surrounding the Salinas River corridor from San Miguel to Moss Landing.

Ruderal

Ruderal vegetation is characterized by non-native forbs and grasses in a disturbed habitat typically along the edges of development or areas with frequent anthropogenic impacts. In the study area it is found in the vicinity of recreational facilities along the north shore of San Antonio Reservoir and in the vicinity of San Antonio Dam and spillway. Species that dominate ruderal lands in the study area include poison hemlock (*Conium maculatum*), yellow star-thistle (*Centaurea solstitialis*) and Maltese star-thistle (*C. melitensis*) with other non-native grasses or forbs in the herbaceous layer. In the study area, this community is found in upland areas south of the San Antonio River and just north of Interlake Road.

Developed

Areas mapped as developed include roads and anthropogenic features such as buildings. Vegetation in these areas, if present at all, is usually sparse, dominated by weedy herbaceous species, or part of the landscaping associated with development. This landcover is mapped within recreational facilities along the north and south shores of San Antonio Reservoir and along San Antonio Dam as well as within the study area downstream of the project site

Developed Wildlife Associations

Depending on their specific conditions, developed areas can support a number of common wildlife species, including the acorn woodpecker (*Melanerpes formicivorus*), barn swallow (*Hirundo rustica*), western scrub-jay (*Aphelocoma californica*), ruby-crowned kinglet (*Regulus calendula*), northern mockingbird (*Mimus polyglottos*), American robin (*Turdus migratorius*), cedar waxwing (*Bombycilla cedrorum*), yellow-rumped warbler (*Dendroica coronata*), white-crowned sparrow (*Zonotrichia leucophrys*), dark-eyed junco, house finch, raccoon (*Procyon lotor*), and numerous nonnative species, including the European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), North American opossum (*Didelphis virginiana*), eastern fox squirrel (*Sciurus niger*), house mouse, and black rat.

Non-Vegetated

Barren

Bare ground is composed of areas lacking vegetation due to frequent disturbance that has discouraged the growth and development of vegetation. In the study area, bare ground is generally located along the north rim of San Antonio Reservoir and in a few areas along the San Antonio River channel.

Barren Wildlife Associations

Like developed lands, special-status species, such as the western burrowing owl, and American badger, may move through these areas.

4.3.3.3 Wetlands and Other Waters

The jurisdictional determination of waters of the United States was completed for the proposed project and was verified by USACE (see **Figure 4.3-2**). The information presented for the proposed project reflects preliminary research and field delineation efforts conducted for the jurisdictional determination to date (See *Wetland* in Section 4.4.3.1, *Vegetation and Land Cover*).

Inland *non-wetland waters of the United States* are seasonal or perennial waterbodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an OHWM but lack positive indicators for one or two of the three wetland parameters (33 CFR 328.4). Non-wetland waters of the United States that occur in the study area include Salinas River, Nacimiento River and Reservoir, San Antonio River and Reservoir, agricultural canals, and other minor drainages in the study area.

4.3.3.4 Sensitive Natural Communities

Sensitive natural communities within the study area include coastal strand, riparian, wetland, scrubland, and woodland plant communities (**Figure 4.3-3**). At the state level, riparian plant communities are considered sensitive because of habitat loss and their value to a diverse community of plant and wildlife species (CDFW 2021e). In general, wetlands represent a sensitive biotic community due to their limited distribution and importance to special-status plant and wildlife species. The following 22 sensitive natural communities occur within the study area: coastal strand, Arroyo willow thickets; Arroyo willow forest, black cottonwood forest, Fremont cottonwood forest; mixed riparian forest and woodland; mulefat thickets; red willow thickets; sandbar willow thickets, shining willow thickets; coastal brackish marsh; fresh emergent wetland; northern coastal salt marsh; perennial needlegrass grassland; California buckeye groves; California buckwheat scrub; coyote brush scrub; Nuttall's scrub oak scrubland; scrub oak chaparral; Blue oak woodland; coast live oak woodland; and Valley oak woodland.

4.3.3.5 Special-Status Species

Special-status species were identified through a search of CNDDB database, USFWS Critical Habitat Portal, the CNPS database, and other sources as being historically reported to occur within the general project vicinity and the study area, downstream of the project site (CDFW 2021a; USFWS 2020a; CNPS 2021; Thomson et al. 2016). A list of species with potential to occur, within a 5-mile radius of the project site and study area is provided in **Tables E-1 and E-2** in Appendix E, *Biological Resource Attachments*. The potential for special-status species to occur in the project site and the study area was evaluated according to the following criteria:

- **None**: Project site and/or study area contains a complete lack of suitable habitat, the local range for the species is restricted, and/or the species is extirpated in this region.
- **Not Expected:** suitable habitat or key habitat elements might be present in the project site and/or study area but might be of poor quality or isolated from the nearest extant occurrences. Habitat suitability refers to factors such as elevation, soil chemistry and type, vegetation communities, microhabitats, and degraded/substantially altered habitats.
- **Possible:** the presence of suitable habitat or key habitat elements in the project site and/or study area that potentially support the species.

- **Present:** either the target species was observed directly or its presence was confirmed by diagnostic signs during field investigations or in previous studies in the project site and/or study area.

Special-Status Plants

Approximately 83 special-status plant species occur in or within the vicinity (5 miles) of the study area (CDFW 2021a; CNPS 2021) (Appendix E, *Biological Resource Attachments,* **Table E-1**). One reconnaissance-level survey was conducted by Dudek in 2016; only one special-status plant species was observed (Nuttall's scrub oak). No blooming period surveys for special-status plant species have been conducted for this project; therefore, all species present in the study area vicinity identified through a search of CNDDB database, USFWS Critical Habitat Portal, the CNPS database, and other sources were evaluated for their potential to occur based on the known range of each species and their habitat associations (See section titled *Species Accounts* in Appendix E*, Biological Resource Attachments*). Approximately 29 plant species do not occur or are not expected to occur within the study area due to the lack of key habitat features. **Table E-1** in Appendix E, *Biological Resource Attachments,* provides an explanation for the absence of each of these species from the study area. These species are therefore not addressed further in this EIR. Approximately 54 species have the potential to occur in the study area, where 30 special-status plant species have the potential to occur in the project site. All 54 species are listed in **Table 4.3-6** and discussed in the following section. Please see land cover mapping on **Figure 4.3-3** in reference to suitable habitats for special-status plant species.

Table 4.3-6. Special-Status Plant Species Potentially Occurring in the Project Site or Study Area

Plants	
Abbott's bush-mallow	Ojai fritillary
Bristlecone fir	Oregon meconella
Carmel Valley bush-mallow	Pajaro manzanita
Carmel Valley malacothrix	Pale-yellow layia
Chaparral ragwort	Pinnacles buckwheat
Choris' popcorn-flower	Point Reyes horkelia
Congdon's tarplant	Prostrate vernal pool navarretia
Davidson's bush-mallow	Robbins' nemacladus
Dwarf calycadenia	Saline clover
Eastwood's goldenbush	San Antonio collinsia
Fort Ord spineflower	San Francisco collinsia
Hardham's evening-primrose	San Luis Obispo owl's-clover
Hooked popcornflower	San Simeon baccharis
Hutchinson's larkspur	Sand-loving wallflower
Indian Valley bush-mallow	Sandmat manzanita
Indian Valley spineflower	Santa Cruz clover
Jolon clarkia	Santa Cruz microseris
Koch's cord moss	Santa Lucia bush-mallow
La Panza mariposa lily	Santa Lucia dwarf rush
Lemmon's jewelflower	Santa Lucia monkeyflower

Plants	
Marsh microseris	Santa Lucia purple amole
Mason’s neststraw	Seaside bird’s-beak
Menzies’ wallflower	Shining navarretia
Monterey gilia	Straight-awned spineflower
Monterey spineflower	Toro manzanita
Northern curly-leaved monardella	Yadon’s rein orchid
Nuttall’s scrub oak	Yellow-flowered eriastrum
Total Number of Special-Status Plant Species	**54**

Bristlecone Fir

Bristlecone fir (*Abies alaries*) is a CNPS CRPR 1B.3 perennial evergreen tree. The general habitats are broadleafed upland forest, chaparral, and lower montane coniferous forest on rocky substrates at elevations of 600-5,100 feet. One extant location is known from near the project site (CDFW 2021a). No occurrences have been reported east of the Santa Lucia Range (CDFW 2021a; CNPS 2021). This species has potential to occur in the forest and woodland habitats in the study area.

Toro Manzanita

Toro manzanita (*Arctostaphylos montereyensis*) is a CNPS CRPR 1B.2 perennial evergreen shrub that blooms in February to March. The general habitats are maritime chaparral, cismontane woodland, and coastal scrub in sandy soils at elevations of 100-2,395 feet. One occurrence has been reported within the study area along the Salinas River just north of the Toro Regional Park. Multiple other occurrences have been reported within 5 miles of the study area along the Salinas River corridor (CDFW 2021a; CNPS 2021). This species has potential to occur in cismontane woodlands and coastal scrub in the study area.

Pajaro Manzanita

Pajaro manzanita (*Arctostaphylos pajaroensis) is* a CNPS CRPR 1B.1 perennial evergreen shrub that blooms in December to March. The general habitat is chaparral on sandy soils at elevations of 100-2,495 feet. One extant location is known from less than a mile from the study area within Fort Ord. Seven other occurrences have been reported within 5 miles of the study area (CDFW 2021a; CNPS 2021). This species has potential to occur in scrub oak chaparral and potentially within other shrubland communities in the study area.

Sandmat Manzanita

Sandmat manzanita (*Arctostaphylos pumila)* is a CNPS CRPR 1B.2 perennial evergreen shrub that blooms in February to May. The general habitats are maritime chaparral, closed-cone coniferous forest, cismontane woodland, coastal dunes, and coastal scrub on openings in sandy soils at elevations of 10-675 feet. Five occurrences have been reported within 2 miles of the study area, between Monterey to Marina, at the end of the Salinas River (CDFW 2021a; CNPS 2021). This species has potential to occur in forest/woodlands, coastal dune and coastal scrub habitats in the study area.

Indian Valley Spineflower

Indian Valley spineflower (*Aristocapsa insignis)* is a CNPS CRPR 1B.2 annual herb that blooms May to September. The general habitat is cismontane woodlands on sandy substrates at elevations of 985–1,970 feet. The Indian Valley spineflower is known from one occurrence recorded in the northwest portion of the Nacimiento Reservoir, within the project site. An additional occurrence was recorded 1.7 miles from the study area, near the eastern edge of Camp Roberts (CDFW 2021a; CNPS 2021). This species has potential to occur in woodlands on the project site and in the adjacent study area.

San Simeon Baccharis

San Simeon baccharis *(Baccharis plummerae ssp. Glabrata)* is a CNPS CRPR 1B.2 perennial deciduous shrub that blooms in June. The general habitat is coastal scrub at elevations of 165-1,575 feet. One extant location is known to occur within 5 miles of the project site southwest of Nacimiento Reservoir (CDFW 2021a; CNPS 2021). This species has potential to occur in coastal scrub in the study area.

La Panza Mariposa-Lily

La Panza mariposa-lily (*Calochortus simulans*) is a CNPS CRPR 1B.3 perennial bulbiferous herb that blooms April to June. The general habitats are valley and foothill grassland, cismontane woodland, chaparral, lower montane coniferous forest most commonly on decomposed granite but also sandy or sometimes on serpentine substrates in elevations of 1,065–3,775 feet. One occurrence was recorded in the northwest portion of the Nacimiento Reservoir (CDFW 2021a; CNPS 2021). This species has potential to occur in woodlands and grasslands in the study area.

Dwarf Calycadenia

Dwarf calycadenia (*Calycadenia villosa*) is a CNPS CRPR 1B.1 annual herb that blooms May to October. The general habitats are chaparral, cismontane woodland, meadows and seeps, and valley and foothill grasslands in rocky or fine soils in elevations of 787–4,429 feet. Four extant locations are known within the project site northwest and southeast of Nacimiento Reservoir in the foothills, Santa Lucia Mountains, and at the confluence with Dip Creek (CDFW 2021a). Multiple records within 5 miles of both the project site and study area have been documented and suitable habitat is present (CDFW 2021a; CNPS 2021). This species has potential to occur in chaparral, cismontane woodland, and grasslands in the project site and study area.

Hardham's Evening-Primrose

Hardham's evening-primrose (*Camissoniopsis hardhamiae*) is a CNPS CRPR 1B.2 annual herb that blooms March to May. The general habitats are chaparral and cismontane woodland often in sandy, decomposed carbonate, disturbed or burned areas in elevations of 459–3,100 feet. One extant location is known from the study area along the Salinas River near Bradley on Camp Roberts (CDFW 2021a). Multiple records within 2.5 miles of the project site have been documented and suitable habitat is present (CDFW 2021a; CNPS 2021). This species has potential to occur in chaparral and cismontane woodland in the project site and study area.

San Luis Obispo Owl's-clover

San Luis Obispo owl's-clover (*Castilleja densiflora* var*. obispoensis*) is a CNPS CRPR 1B.2 annual hemiparasitic herb that blooms in March to May. The general habitats are meadows, seeps, and valley or foothill grasslands occasionally on serpentinite soils at elevations of 35-1,410 feet. Recorded 2.8 miles southeast of the project site in Camp Roberts Training Area O in 2002 (CDFW 2021a; CNPS 2021). This species has potential to occur in wetland or grassland habitat in the project site.

Lemmon's Jewelflower

Lemmon's jewelflower (*Caulanthus lemmonii*) is a CNPS CRPR 1B.2 annual herb that blooms March to May. The general habitat is pinyon and juniper woodland and valley and foothill grassland in elevations of 262–5,184 feet. Three extant locations are known to occur within the project site, north and south of the San Antonio Reservoir, and one record occurs within the study area northwest of Camp Roberts. Multiple additional occurrences are within 5 miles of the study area and project site (CDFW 2021a; CNPS 2021). This species has potential to occur in grasslands in the project site.

Congdon's Tarplant

Congdon's tarplan*t (Centromadia parryi* ssp. *Congdonii)* is a CNPS CRPR 1B.1 annual herb that blooms in May to October (occasionally November). The general habitat is valley or foothill grasslands on alkaline soils at elevations of 0–755 feet. One occurrence is found within the study area and 25 records within 5 miles of the north portion of the study area, (CDFW 2021a; CNPS 2021). This species has potential to occur in grassland habitat in the study area.

Santa Lucia Purple Amole

Santa Lucia purple amole (*Chlorogalum purpureum var. purpureum*) is a federally threatened and CNPS CRPR 1B.1 perennial bulbiferous herb that blooms in April to June. The general habitats are chaparral, cismontane woodland, and valley or foothill grasslands on clay or gravelly soils at elevations of 675–1,265 feet. One occurrence has been reported within the study area in the western portion of Camp Roberts and one other occurrence has been reported within 0.4 mile of the study area. Multiple occurrences are within 3 miles of the project site (CDFW 2021a; CNPS 2021). This species has potential to occur in grassland, cismontane woodlands, and coastal scrub in the project site and study area.

Fort Ord Spineflower

Fort Ord spineflower (*Chorizanthe minutiflora*) is a CNPS CRPR 1B.2 annual herb that blooms in April to July. The general habitats are sandy openings in maritime chaparral and coastal scrub at elevations of 180–490 feet. There are four extant locations reported within 3 miles of the study area in the Fort Ord National Monument (CDFW 2021a). This species has potential to occur in coastal scrublands within the study area.

Monterey Spineflower

Monterey spineflower (*Chorizanthe pungens* var. *pungens*) is a federally threatened and CNPS CRPR 1B.2 annual herb that blooms in April to June. The general habitats are maritime chaparral, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland in sandy soils at elevations of 10-1,475 feet. There are seven extant locations reported within the study area in Soledad, Marina, and Salinas River State Beach (CDFW 2021a). Multiple records within 5 miles of the study area have been documented and suitable habitat is present (CDFW 2021a; CNPS 2021). This species has potential to occur in coastal dunes and coastal scrub within the study area.

Straight-Awned Spineflower

Straight-awned spineflower (*Chorizanthe rectispina*) is a CNPS CRPR 1B.3 annual herb that blooms April to July. It occurs in chaparral, cismontane woodland, and coastal scrub habitats in elevations of 279–3,395 feet. Two extant locations are known from the study area in Camp Roberts (CDFW 2021a). Multiple records within 5 miles of the project site and the study area have been documented and suitable habitat is present (CDFW 2021a; CNPS 2021). This species has potential to occur in chaparral and cismontane woodland in the project site and study area.

Jolon Clarkia

Jolon clarkia (*Clarkia jolonensis*) is a CNPS CRPR 1B.2 annual herb that blooms April to June. The general habitats are chaparral, cismontane woodland, coastal scrub, and riparian woodland areas in elevations of 66–2,165 feet. One possibly extirpated location is known from the study area northeast of San Antonio Reservoir approximately 3 miles from the project site (CDFW 2021a). Multiple records within 5 miles of the project site and study area have been documented and suitable habitat is present (CDFW 2021a; CNPS 2021). This species has potential to occur in chaparral, cismontane woodland, and riparian woodland areas in the project site and study area.

San Antonio Collinsia

San Antonio collinsia (*Collinsia antonina*) is a CNPS CRPR 1B.2 annual herb that blooms in March to May. The general habitats are chaparral and cismontane woodlands at elevations of 920–1,200 feet. Multiple extant locations within 5 miles of the project site and the study area near the north end of San Antonio Reservoir (CDFW 2021a; CNPS 2021). This species has potential to occur in chaparral, shrubland, and cismontane woodlands in the study area.

San Francisco Collinsia

San Francisco collinsia *(Collinsia multicolor)* is a CNPS CRPR 1B.2 annual herb that blooms in March to May, and occasionally in February. The general habitats are closed-cone coniferous forest and coastal scrub at elevations of 100–900 feet. One extant location within 5 miles of the project site and the study area north of the San Antonio Reservoir (CDFW 2021a; CNPS 2021). This species has potential to occur in coastal scrub in the study area.

Seaside Bird's-Beak

Seaside bird's-beak (*Cordylanthus rigidus ssp. Littoralis)* is state endangered and a CNPS CRPR 1B.2 annual hemiparasitic herb that blooms in April to October. The general habitats are closed-cone coniferous forest, cismontane woodland, maritime chaparral, coastal dunes and coastal scrub at elevations below 1,690 feet. Ten occurrences have been reported within 4 miles of the study area, between Monterey to Marina, at the end of the Salinas River. The closest occurrence is 0.4 miles from the study area. (CDFW 2021a; CNPS 2021). This species has potential to occur in forest/woodlands, scrubland, coastal scrub and dune habitat in the study area.

Hutchinson's Larkspur

Hutchinson's larkspur (*Delphinium hutchinsoniae*) is a CNPS CRPR 1B.2 perennial herb that blooms March to June. The general habitats are chaparral, coastal prairie, coastal scrub, and broadleaf upland forest areas in elevations of 0–1,400 feet. One extant location is known from the study area near Spreckels along the Salinas River (CDFW 2021a; CNPS 2021). This species has potential to occur in chaparral, coastal scrub, and broadleaf upland forest areas in the study area.

Koch's Cord Moss

Koch's cord moss (*Entosthodon kochii*) is a CNPS CRPR 1B.3 moss species. It occurs in cismontane woodland at elevation of 591–3,281 feet. There is one extant location within the study area and approximately 2.7 miles from the project site in Camp Roberts along the Nacimiento River near Twin Bridges (CDFW 2021a). This species has potential to occur in suitable cismontane woodland habitat in the project site and study area.

Eastwood's Goldenbush

Eastwood's goldenbush (*Ericameria fasciculata*) is a CNPS CRPR 1B.1 perennial evergreen shrub that blooms July to October. The general habitats are sandy areas or openings in closed-cone coniferous forests, maritime chaparral, coastal dunes, and coastal scrub in elevations of 100–900 feet. One extant location is known from the study area and six other occurrences have been reported within 5 miles of the study area on the Fort Ord National Monument (CDFW 2021a; CNPS 2021). This species has potential to occur in scrubland, coastal dunes, coastal scrub, and woodlands in the study area.

Yellow-Flowered Eriastrum

Yellow-flowered eriastrum (*Eriastrum luteum*) is a CNPS CRPR 1B.2 annual herb that blooms May to June. The general habitats are Broadleaf upland forest, chaparral, and cismontane woodland on sandy or gravelly substrates at elevations of 950–3,280 feet. One occurrence has been reported within the project site on the northern end of the San Antonio Reservoir. Four other occurrences have been reported less than a mile of the project site (CDFW 2021a; CNPS 2021). This species has potential to occur in scrubland and forest/woodlands in the study area.

Pinnacles Buckwheat

Pinnacles buckwheat (*Eriogonum nortonii*) is a CNPS CRPR 1B.3 annual herb that blooms May to June but occasionally as early as April and as late as September. The general habitats are disturbed or sandy areas or openings in chaparral and valley and foothill grasslands at elevations of 985–3,200 feet. The study area is outside the species elevation range. One extant occurrence is approximately 0.1 mile west of the study area at the base of Pine Canyon. Four other occurrences have been reported within 5 miles of the study area (CDFW 2021a; CNPS 2021). This species has potential to occur in scrubland and grassland habitats in the study area.

Sand-Loving Wallflower

Sand-loving wallflower (*Erysimum ammophilum*) is a CNPS CRPR 1B.2 perennial herb that blooms February to June. It occurs in maritime chaparral, coastal dunes, and coastal scrub habitats in sandy soils at elevations of 0–195 feet. One occurrence has been reported within the study area, between Monterey to Castroville, at the end of the Salinas River. Fourteen other occurrences have been reported within 5 miles of the study area, downstream of the project site. Suitable habitat occurs in the study area along the Salinas River Lagoon and OSR (CDFW 2021a; CNPS 2021). This species has potential to occur in coastal dunes and coastal scrub within the study area, specifically in the coastal breach outlet zone of the Salinas River as well as along the Salinas River Lagoon and OSR.

Menzies' Wallflower

Menzies' wallflower (*Erysimum menziesii*) is a federally and state endangered species as well as a CNPS CRPR 1B.1 perennial herb that blooms March to September. It occurs in coastal dunes at elevations of 0–115 feet. One occurrence has been reported within the study area near Marina at the end of the Salinas River. Three other occurrences have been reported within 2.5 miles of the study area, downstream of the project site. There is suitable habitat in the study area along the Salinas River Lagoon and OSR, specifically within the coastal breach outlet zone of the Salinas River Lagoon (CDFW 2021a; CNPS 2021). This species has potential to occur in coastal dunes within the study area, specifically in the coastal breach outlet zone of the Salinas River as well as along the Salinas River Lagoon and OSR.

Santa Lucia Monkeyflower

Santa Lucia monkeyflower (*Erythranthe hardhamiae*) is a CNPS CRPR 1B.1 annual herb that blooms March to May. It occurs in openings of chaparral habitat on sandstone outcrops, sandy soils, and sometimes serpentinite substrates, at elevations of 985–2,395 feet. One extant occurrence was recorded 0.3 miles from the project site and 3.5 miles from the study area at the south end of the San Antonio Reservoir (CDFW 2021a; CNPS 2021). This species has potential to occur in scrubland within the project site.

Ojai Fritillary

Ojai fritillary (*Fritillaria ojaiensis*) is a CNPS CRPR 1B.2 perennial bulbiferous herb that blooms in February to May. The general habitats are mesic broadleafed upland forest, chaparral, cismontane woodland, and lower montane coniferous forest on rocky substrates at elevations of 740-3,275 feet. Two extant locations occur within 5 miles of the project site northwest of the Nacimiento Reservoir (CDFW 2021a; CNPS 2021). This species has potential to occur in forest/woodland and scrublands in the study area.

Monterey Gilia

Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*) is a federally endangered and state threatened species as well as a CNPS CRPR 1B.2 annual herb that blooms April to June. It occurs in maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub at elevations of 0–150 feet. Three occurrences have been reported within the study area near Moss Landing at the end of the Salinas River. Sixteen other occurrences have been reported within 4 miles of the study area (CDFW 2021a; CNPS 2021). This species has potential to occur in forest/woodlands, coastal dunes, and coastal scrublands within the study area, specifically in the coastal breach outlet zone of the Salinas River as well as along the Salinas River Lagoon and OSR.

Santa Lucia Dwarf Rush

Santa Lucia dwarf rush (*Juncus luciensis*) is a CNPS CRPR 1B.2 annual herb that blooms April to July. It occurs in meadows and seeps, Great Basin scrub, chaparral, lower montane coniferous forest, and vernal pools at elevations of 985–6,695 feet. One occurrence has been reported within the project site on the northern end of the Nacimiento Reservoir. One additional record has been reported in Camp Roberts 3.2 miles from the study area (CDFW 2021a; CNPS 2021). This species has potential to occur in wetlands, scrublands, and forest/woodlands within the study area.

Point Reyes Horkelia

Point Reyes horkelia (*Horkelia marinensis*) is a CNPS CRPR 1B.2 perennial herb that blooms May to September. It occurs in coastal dunes, coastal prairie, and coastal scrub on sandy substrates at elevations of 15–2,475 feet. One occurrence has been reported 2.5 miles west of the study area near Marina. There is suitable habitat in the study area along the Salinas River Lagoon and OSR, specifically within the coastal breach outlet zone of the Salinas River Lagoon (CDFW 2021a; CNPS 2021). This species has potential to occur in coastal dunes and coastal scrub within the study area, specifically in the coastal breach outlet zone of the Salinas River as well as along the Salinas River Lagoon and OSR.

Contra Costa Goldfields

Contra Costa goldfields (*Lasthenia conjugens*) is a federally endangered species as well as a CNPS CRPR 1B.1 annual herb that blooms March to June. It occurs in cismontane woodland, on alkaline playas, vernal pools, and valley and foothill grasslands at elevations of 0–1,540 feet. There are three extant locations near the study area at the Fort Ord National Monument (CDFW 2021a; CNPS 2021). This species has potential to occur in the wetlands and grasslands within the study area.

Pale-Yellow Layia

Pale-yellow layia (*Layia heterotricha*) is a CNPS CRPR 1B.1 annual herb that blooms March to June. It occurs on alkaline or clay soils in cismontane woodland, pinyon and juniper woodlands, valley and foothill grasslands, or coastal scrub at elevations of 985–5,595 feet. Two occurrences have been reported within the project site near the southern portion of San Antonio Reservoir and one occurrence has been reported within the study area along the Salinas River near Greenfield. Multiple other occurrences have been reported within 3.5 miles of both the project site and the study area (CDFW 2021a; CNPS 2021). This species has potential to occur in the forest/woodlands, grasslands, and coastal scrub within the project site and the study area.

Abbott's Bush-Mallow

Abbott's bush-mallow (*Malacothamnus abbottii*) is a CNPS CRPR 1B.1 perennial deciduous shrub that blooms May to October. The general habitat is riparian scrub at elevations of 443–1,608 feet. There is one extant location near the project site on the east edge of the Nacimiento reservoir along a hillside adjacent to the entrance road into Lake Nacimiento Resort and Marina. Nine other occurrences are within 3.5 miles of the project site. Two occurrences within the study area, along the Salinas River, nearest to Sargent Canyon, and 3 occurrences reported within 2 miles of the study area (CDFW 2021a; CNPS 2021). This species has potential to occur in riparian scrub (thickets) in the project site and the study area.

Indian Valley Bush-Mallow

Indian Valley bush-mallow (*Malacothamnus aboriginum)* is a CNPS CRPR 1B.2 perennial deciduous shrub that blooms April to October. The general habitat is disturbed or burned areas of chaparral and cismontane woodlands on rocky or granitic substrates at elevations of 490–5,580 feet. The Indian Valley bush-mallow is known from one occurrence recorded 0.5 miles east of the study area, downstream of the project site on Shirttail Gulch. Eight other occurrences have been reported east of the study area on the Gabilan and Diablo Ranges. (CDFW 2021a; CNPS 2021). This species has potential to occur in scrubland and forest/woodlands in the study area.

Davidson's Bush-Mallow

Davidson's bush-mallow (*Malacothamnus davidsonii*) is a CNPS CRPR 1B.2 perennial deciduous shrub that blooms June to January. It occurs in chaparral, cismontane woodland, coastal scrub, and riparian woodland at elevations of 607–2,805 feet. Approximately 16 extant records are reported from within 4 miles of the project site. One additional occurrence is found within the study area in the downstream portion of the San Antonio Reservoir and 6 records within 5 miles of the study area (CDFW 2021a; CNPS 2021). This species has potential to occur in cismontane woodland, riparian woodland, and scrublands in the project site and study area.

Carmel Valley Bush-Mallow

Carmel Valley bush-mallow (*Malacothamnus palmeri var. involucratus*) is a CNPS CRPR 1B.2 perennial deciduous shrub that blooms in April to October. The general habitat is chaparral, cismontane woodlands, and coastal scrub at elevations of 100-3,610 feet. One extant location is known from near the study area within Fort Ord (CDFW 2021a). Three records are within 5 miles of the study area and project site at the northern end of the San Antonio Reservoir on the hillsides of the Santa Lucia Range (CDFW 2021a; CNPS 2021). This species has potential to occur in shrublands and on woodland hilltops or slopes in the study area.

Santa Lucia Bush-Mallow

Santa Lucia bush-mallow (*Malacothamnus palmeri var. palmeri*) is a CNPS CRPR 1B.2 perennial deciduous shrub that blooms in May to July. The general habitat is chaparral on rocky substrates at elevations of 95-1,180 feet. One extant location is located within 5 miles south of the project site on the Santa Lucia Range (CDFW 2021a; CNPS 2021). This species has potential to occur in scrublands in the project site.

Carmel Valley Malacothrix

Carmel Valley malacothrix (*Malacothrix saxatilis var. arachnoidea*) is a CNPS CRPR 1B.2 perennial rhizomatous herb that blooms June to December. The general habitats are chaparral and coastal scrub in rocky soils at elevations of 80–3,400 feet. One occurrence was reported within the study area and within 2 miles of the project site. This occurrence is north of Nacimiento River and River Road on Camp Roberts (CDFW 2021a; CNPS 2021). This species has potential to occur in chaparral in the project site and the study area.

Oregon Meconella

Oregon meconella (*Meconella oregana*) is a CNPS CRPR 1B.1 annual herb that blooms in March to April. The general habitats are coastal prairie and coastal scrub at elevations of 820-2,035 feet. Two extant occurrences have been reported near the study area within the Fort Ord National Monument (CDFW 2021a; CNPS 2021). This species has potential to occur in coastal scrublands in the study area.

Marsh Microseris

Marsh microseris (*Microseris paludosa*) is a CNPS CRPR 1B.2 perennial herb that blooms in April to June and occasionally until July. The general habitats are cismontane woodland, valley or foothill grasslands, coastal scrub, and closed-cone coniferous forests at elevations of 5-355 feet. Three extant occurrences have been reported near the study area within the Fort Ord National Monument

(CDFW 2021a; CNPS 2021). This species has potential to occur in forest/woodlands, grasslands, and coastal scrublands in the study area.

Northern Curly-Leaved Monardella

Northern curly-leaved monardella (*Monardella sinuata ssp. Nigrescens*) is a CNPS CRPR 1B.2 annual herb that blooms in May to July, and occasionally as early as April or as late as September. The general habitats are coastal dunes, coastal scrub, and lower montane coniferous forests on sandy soils at elevations below 985 feet. One extant location is known from near the study area adjacent to the Marina Municipal Airport (CDFW 2021a). Two additional records within 3.5 miles of the study area in the Fort Ord National Monument and the Fort Ord Dunes State Park (CDFW 2021a; CNPS 2021). This species has potential to occur in forest/woodlands and coastal dune and scrub habitat in the study area.

Woodland Woollythreads

Woodland woollythreads (*Monolopia gracilens*) is a CNPS CRPR 1B.2 annual herb that blooms in March to July, and occasionally in February. The general habitats are cismontane woodland, valley or foothill grasslands, openings of broadleafed upland forest, chaparral, and North Coast coniferous forest on serpentine substrates at elevations of 330–3,935 feet. One extant location is known to occur in the Pajaro Valley approximately 3.1 miles north of the study area (CDFW 2021a; CNPS 2021). This species has potential to occur in forest/woodlands, grasslands, and shrublands in the study area.

Prostrate Vernal Pool Navarretia

Prostrate vernal pool navarretia (*Navarretia prostrata)* is a CNPS CRPR 1B.2 annual herb that blooms in April to July. The general habitats are coastal scrub, meadows and seeps, vernal pools, or alkaline soils in valley and foothill grasslands at elevations of 10–3,970 feet. One extant location is within both the project site at the northern end of San Antonio Reservoir and the northwestern potion of Camp Roberts in the study area. Multiple records within 3 miles of the project site and the southern end of the study area (CDFW 2021a; CNPS 2021). This species has potential to occur in grasslands and coastal scrub in the project site and the study area.

Robbins' Nemacladus

Robbins' nemacladus *(Nemacladus secundiflorus* var*. robbinsii)* is a CNPS CRPR 1B.2 annual herb that blooms in April to June. The general habitats are openings in chaparral, and valley or foothill grasslands at elevations of 1,150–5,580 feet. One extant location has been reported within 0.7 mile of the project site between San Antonio Reservoir and the Nacimiento Reservoir (CDFW 2021a; CNPS 2021). This species has potential to occur in grasslands and shrublands in the project site.

Choris' Popcorn-Flower

Choris' popcorn-flower *(Plagiobothrys chorisianus* var. *chorisianus)* is a CNPS CRPR 1B.2 annual herb that blooms in March to June. The general habitats are mesic areas of chaparral, coastal prairie, and coastal scrub at elevations of 10–525 feet. Two occurrences have been recorded within 1 mile of the study area near the Fort Ord National Monument and suitable habitat is present in coastal scrub along the Salinas River corridor (CDFW 2021a; CNPS 2021). This species has potential to occur in shrublands and coastal scrub in the study area.

Yadon's Rein Orchid

Yadon's rein orchid (*Piperia yadonii*) is federally endangered and a CNPS CRPR 1B.1 perennial herb that blooms in May to August and occasionally as early as February. The general habitats are sandy soils in maritime chaparral, closed-cone coniferous forest, and coastal bluff scrub at elevations of 35–1,675 feet. One occurrence has been reported 2.6 miles north of the study area near Marina. (CDFW 2021a; CNPS 2021). This species has potential to occur in forest/woodlands, coastal shrublands in the study area.

Hooked Popcorn-Flower

Hooked popcornflower (*Plagiobothrys uncinatus)* is a CNPS CRPR 1B.2 annual herb that blooms in April to May. The general habitats are sandy soils in chaparral, cismontane woodland, and valley or foothill grasslands at elevations of 985–2,495 feet. One extant location is known from the study area north of the Nacimiento River and another occurrence is within 1.5 miles of the study area on Camp Roberts. An additional occurrence is approximately 0.7 miles south of the project site on the Santa Lucia Range (CDFW 2021a; CNPS 2021). This species has potential to occur in cismontane woodlands, grasslands, and shrublands in the project site and the study area.

Chaparral Ragwort

Chaparral ragwort (*Senecio aphanactis)* is a CNPS CRPR 2B.2 annual herb that blooms in January to April, and occasionally in May. The general habitats are coastal scrub, chaparral, cismontane woodland sometimes on alkaline soils at elevations of 50–2,625 feet. Two extant locations occur within 5 miles of both the project site and the study area. One occurrence is found on the Santa Lucia Range and the other is in the Pinnacles National Park (CDFW 2021a; CNPS 2021). This species has potential to occur in cismontane woodlands, scrubland, and coastal scrub in the study area.

Santa Cruz Microseris

Santa Cruz microseris (*Stebbinsoseris decipiens)* is a CNPS CRPR 1B.2 annual herb that blooms in April to May. The general habitats are openings in broadleaf upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, and valley and foothill grasslands, sometimes on serpentinite soils, at elevations of 35–1,640 feet. One extant location is known from Camp Roberts, approximately 0.3 mile from the study area (CDFW 2021a; CNPS 2021). This species has potential to occur in woodlands, shrubland, and grasslands in the study area.

Mason's Neststraw

Mason's neststraw (*Stylocline masonii)* is a CNPS CRPR 1B.1 annual herb that blooms in March to May. The general habitats are chenopod scrub and pinyon or juniper woodlands on sandy soils at elevations of 330–3,935 feet. One extant location is known from the project site in the northern portion of San Antonio Reservoir (CDFW 2021a; CNPS 2021). This species has potential to occur in cismontane woodlands, shrubland, and coastal scrub in the study area.

Santa Cruz Clover

Santa Cruz clover (*Trifolium buckwestiorum*) is a CNPS CRPR 1B.1 annual herb that blooms in April to October. The general habitats are margins of broadleaf upland forests, cismontane woodlands, and coastal prairies on gravel substrates at elevations of 345–2,000 feet. One occurrence has been reported within the study area, in the southeast portion of the Fort Ord National Monument.

Multiple records within 3 miles of the study area (CDFW 2021a; CNPS 2021). This species has potential to occur in woodlands and grassland habitat in the study area.

Saline Clover

Saline clover *(Trifolium hydrophilum)* is a CNPS CRPR 1B.2 annual herb that blooms in April to June. The general habitats are marshes, swamps, vernal pools, and mesic, alkaline, valley or foothill grasslands at elevations of 0–985 feet. One extant record is approximately within 0.1 miles north of the study area near Moss Landing and the northern portion of the study area. Two additional occurrences are within 0.5 mile of the study area. Suitable habitat is present downstream of the project site along the Salinas River Lagoon and OSR (CDFW 2021a; CNPS 2021). This species has potential to occur in wetlands and grassland habitat in the study area.

Special-Status Wildlife

Approximately 70 special-status wildlife species occur in or within the vicinity (5 miles) of the study area (Appendix E, *Biological Resource Attachments*, **Table E-2**) (CDFW 2021a; USFWS 2020a). Reconnaissance-level surveys were conducted by Dudek in 2016; several special-status wildlife species, or their sign (i.e., woodrat middens, burrows) were observed near the project site. All species present in the study area vicinity identified through a search of CNDDB database, USFWS Critical Habitat Portal, the CNPS database, and other sources were evaluated for their potential to occur based on the known range of each species and their habitat associations (see section titled *Species Accounts* in Appendix E*, Biological Resource Attachments*). Approximately 9 wildlife species do not occur or are not expected to occur within the study area due to the lack of key habitat features. **Table E-2** in Appendix E, *Biological Resource Attachments,* provides an explanation for the absence of each of these species. These species are therefore not addressed further in this EIR. Approximately 61 special-status wildlife species have the potential to occur in the study area. Of these, 54 special-status wildlife species have the potential to occur in the project site (**Table 4.3-7**) and are discussed in detail in the following section.

Table 4.3-7. Special-Status Wildlife Species Potentially Occurring in the Study Area

Species	
Invertebrates	
Crotch bumble bee	Smith's blue butterfly
Mimic tryonia	Vernal pool fairy shrimp
Monarch butterfly	Western bumble bee
Obscure bumble bee	
Fish	
Monterey hitch	Tidewater goby
Monterey roach	South-Central California Coast steelhead
Pacific lamprey	
Amphibians	
Arroyo toad	Coast Range newt
California red-legged frog	Foothill yellow-legged frog
California tiger salamander	Western spadefoot toad

Species	
Reptiles	
Coast horned lizard	Two-striped gartersnake
Northern California legless lizard	Western pond turtle
San Joaquin coachwhip	
Birds	
American peregrine falcon	Long-eared owl
Bald eagle	Northern harrier
Bank swallow	Prairie falcon
Burrowing owl	Sharp-shinned hawk
California condor	Short-eared owl
California horned lark	Tricolored blackbird
Cooper's hawk	Western snowy plover
Ferruginous hawk	White-tailed kite
Golden eagle	Yellow-billed cuckoo
Great blue heron	Yellow-breasted chat
Least Bell's vireo	Yellow warbler
Loggerhead shrike	
Mammals	
American badger	Salinas pocket mouse
Hoary bat	Townsend's big-eared bat
Long-eared myotis	Western mastiff bat
Monterey dusky-footed woodrat	Western red bat
Monterey shrew	Western small-footed myotis
Mountain Lion, Central Coast Central ESU	Yuma myotis
Pallid bat	
Salinas harvest mouse	
Total Number of Special-Status Wildlife Species	**61**

Invertebrates

Crotch Bumble Bee

Crotch bumble bee (*Bombus crotchii)* is a candidate to be listed as endangered under the California Endangered Species Act (CDFW 2021a). Endemic to California, Crotch bumble bee historically ranged across southern California, from the coast and coastal ranges, through the Central Valley, and to the adjacent foothills (CDFW 2019a). Declines have been found primarily in the Central Valley.

General habitat includes open grasslands, meadows, or foothill woodlands and scrub (Hatfield et al. 2015a). They feed on species such as Asclepias, Chaenactis, Lupinus, Medicago, Phacelia, and Salvia (Hatfield et al. 2015a). Colonies are annual and only the new, mated queens overwinters. Nesting occurs underground in abandoned rodent nests or aboveground in tufts of grass, old bird nests, rock piles, or cavities in dead trees (Hatfield et al. 2015a). Crotch bumble bee is known from one extant record known from the study area in Soledad (CDFW 2021a). Suitable habitat occurs in the project site and study area. Therefore, the species is considered present in the project site and is expected to occur within similar habitat in the study area.

Monarch Butterfly (California overwintering population)

Monarch butterfly (*Danaus plexippus)* is a candidate to be listed as threatened under the federal Endangered Species Act (CDFW 2021a). The monarch butterfly's migratory range in North America is both east and west of the Rocky Mountains. The western population migrates from Nevada, New Mexico, and Arizona to overwinter in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby along the California coast to Baja California (USFWS 2020b). The butterflies begin migration to overwinter sites in Mexico and California during the fall but the population abundance fluctuates based on environmental conditions (USFWS 2020b).

The monarch butterfly is dependent on milkweed host plants for both oviposition and larval feeding (USFWS 2020b). The habitat described for the monarch butterflies is typically associated with riparian habitats near water sources such as rivers, creeks, roadside ditches, and irrigated gardens (USFWS 2020b). Monarch butterflies are not known to occur within the project site. However, suitable habitat is present and roosting butterflies have been reported approximately 5 miles south of the study area along Pebble Beach in Carmel (CDFW 2021a).

Smith's Blue Butterfly

Smith's blue butterfly (*Euphilotes enoptes smithi*) is listed as federally threatened (CDFW 2021a). The Smith's blue butterflies range is currently believed to consist of two metapopulations (north and south) separated by development around the city of Monterey. The butterflies occur in scattered colonies with one metapopulation inhabiting the dunes along Monterey Bay and the second in the Carmel Valley stretching south, along the coast, into Big Sur (USFWS 2020c).

The Smiths blue butterfly is an annual species that is dependent on the hostplants: *Eriogonum latifolium and Eriogonum parvifolium* during both the larval and adult stages. These plants are even utilized for their structure for egg laying and pupae protection (USFWS 2020c). These host plants are known to grow in coastal dunes and coastal scrub habitats. The habitat described for the Smith's blue butterfly expands the habitat and includes inland and coastal sand dunes, serpentine grasslands, and cliffside chaparral. Ground disturbance is proposed outside of the species range (USFWS 2020c). There are no records from the project site vicinity, but the species is known from the north and south of the Salinas River Lagoon on state and federal lands (CDFW 2021a). There is suitable habitat in the study area along the Salinas River Lagoon and OSR and the species is considered present.

Vernal Pool Fairy Shrimp

Vernal pool fairy shrimp (*Branchinecta lynchi*) is listed as federally threatened (CDFW 2021a). Vernal pool fairy shrimp is endemic to California and the Agate Desert of southern Oregon, occurring in a wide range of vernal pool habitats in the southern and Central Valley regions of California and in Jackson County, Oregon (USFWS 2005a). Vernal pool fairy shrimp is currently found in 28 counties across the Central Valley and in the central and southern Coast Ranges (USFWS 2007b).

Vernal pool habitats form in depressions above an impervious soil layer such as hardpan or bedrock and primarily are located in annual grassland communities in alluvial fans and terraces. Occupied habitats generally include a complex of vernal pools with upland mounds interspersed with basins, swales, and drainages connecting the vernal pool features, and populations are defined by the entire complex rather than individual pools (USFWS 2007b). Vernal pool fairy shrimp are typically associated with smaller, shallower vernal pools that have relatively short periods of inundation.

Long distance dispersal of cysts is thought to be enabled by waterfowl and other migratory birds that ingest cysts, and by animals that move inoculated mud in their fur, feathers, and hooves. Vernal pool fairy shrimp cysts remain dormant in the soil when their vernal pool habitat is dry. Pools fill during winter rain events, and cysts require water temperatures of 50°F or lower to hatch; water temperatures of 75°F can lead to die off of immature and adult shrimp (USFWS 2007b). Multiple hatches have been observed in larger pools that hold water for longer periods, and shrimp have been observed in vernal pools from early December to early May (USFWS 2005a). Suitable habitat in the form of vernal pools or swales are not known to occur in the project site or downstream of the project site within the study area (Dudek 2016). The closest record is approximately 0.25 mile east of the project site on Camp Roberts (CDFW 2021a) within an area designated as critical habitat. Critical habitat and other occurrences are located adjacent to the study area in Bradley near the confluence of the Nacimiento and Salinas Rivers.

Western Bumble Bee

Western bumble bee (*Bombus occidentalis*) is a candidate to be listed as endangered under the California Endangered Species Act (CDFW 2021a). Western bumble bee historically ranged in California from the Channel Islands to the northern extent of the state, primarily in the coastal and Sierra Nevada ranges (CDFW 2019a). Western bumble bee populations are now largely restricted to high elevation sites in the Sierra Nevada and scattered observations along the California coast (CDFW 2019a).

General habitat includes open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows (Hatfield et al. 2015b). They feed on a wide variety of plants, foraging open flowers or “nectar robbing” flowers with longer corollas, but most are associated with feeding on plants in the Fabaceae, Asteraceae, Rhamnaceae, and Rosaceae families (Hatfield et al. 2015b). Colonies are annual and only the new, mated queens overwinters. Nesting occurs underground and are most commonly found in abandoned rodent nests on open west-southwest slopes bordered by trees but there have also been a few aboveground nests reported in logs and railroad ties (Hatfield et al. 2015b). There are three extant records known from the study area in San Lucas, Spreckels, and in coastal habitat near the Salinas River Lagoon (CDFW 2021a). Suitable habitat occurs throughout the study area. Therefore, the species is considered present in the project site and is expected to occur within similar habitat in the study area.

Fish

South-Central California Coast Steelhead DPS

Steelhead (*Oncorhynchus mykiss*) belonging to the SCCC distinct population segment (DPS) occur in coastal basins originating below natural and manmade impassable barriers from the Pajaro River to (but not including) the Santa Maria River (71 FR 833, January 5, 2006). The species is federally threatened throughout its range and is a California species of special concern (High Concern) (Moyle et al. 2015). SCCC steelhead are winter-run steelhead and therefore are at or near sexual maturity when they enter fresh water during late fall and winter. In the study area, SCCC steelhead use the Salinas River as a migration corridor to spawning and rearing habitat in tributary streams, including the Nacimiento, San Antonio, and Arroyo Seco Rivers, as well as other smaller tributary streams in the upper Salinas River basin. They spawn from December through April. Adult female steelhead construct redds (nests) in gravels that are relatively free of fine sediment at the head of riffles and the tail of pools. After emerging from the gravel, young steelhead rear in shallow water habitats along the stream margin and gradually move to deeper water as they mature. Juvenile steelhead typically rear in fresh water for 1 to 3 years before emigrating to the ocean as smolts (i.e., juveniles that have undergone physiological changes that prepare them for life in saltwater). They remain at sea for one to four growing seasons before returning to fresh water as adults to spawn. In general, steelhead require cool, clear freshwater streams year-round with suitable gravel substrate for spawning, adequate cover, and available food resources that connect to the Pacific Ocean in winter and spring to allow adult and juvenile (smolt) migration.

Tidewater Goby

Tidewater goby (*Eucyclogobius newberryi*) is a federally endangered species and California species of special concern (High Concern) (Moyle et al. 2015) that occurs from the mouth of the Smith River in Del Norte County south to Agua Hedionda Lagoon in San Diego County. The species occurs within coastal lagoons, estuaries, and marshes—dynamic environments that are subject to considerable fluctuation in salinity and water quality conditions both seasonally and annually (78 FR 8749, February 6, 2013). The tidewater goby typically lives 1 year, although some individuals may live longer (Moyle 2002). Tidewater goby typically select habitats in the upper estuary where freshwater and saltwater mix and salinity is less than 12 parts per thousand (ppt), although they may range upstream a short distance into fresh water and downstream into more saline water of about 28 ppt. Reproduction can occur at any time of the year, but it tends to peak in spring, with a second, smaller peak in late summer (Swenson 1999). Male tidewater gobies initiate spawning by digging one or more vertical burrows 4 to 8 inches deep in unconsolidated, clean, coarse sand or mud substrates with minimal vegetative cover. Coarse sand appears to be the preferred substrate over substrates that are too fine or too coarse (such as silt and gravel) (Swenson 1999). Males continuously guard the burrow for approximately 9 to 11 days until the eggs hatch (USFWS 2005b). Following hatching, the larvae swim up and join the plankton until they reach 15 to 18 mm (0.5 to 0.7 inch) standard length (Moyle 2002), at which time they have matured sufficiently to become free-swimming and benthic. This species is known to occur in the study area within the Salinas River Lagoon (Hagar Environmental Science 2015).

Monterey Roach

Monterey Roach (*Lavinia symmetricus subditus*) is a California species of special concern (Moderate Concern) (Moyle et al. 2015) that occurs within a variety of stream habitats in the Salinas, Pajaro, and San Lorenzo tributaries. This species was formerly widespread throughout the Pajaro and San Benito drainages, but they have disappeared from previously occupied stream segments of their range due to habitat alteration and possibly hybridization with or competition from hitch where hitch are abundant (Smith 1982). Reduced streamflows from dam construction and operation have contributed to the species' upstream range expansion (Moyle 2002). Monterey roach are considered extirpated from the main stem of the Salinas River (Moyle et al. 2015). Monterey roach spawn from March through early July at temperatures exceeding 61°F (Moyle et al. 2015). Roach spawn in large groups in riffles containing coarse gravel. This species is known to occur in the study area within the Nacimiento and San Antonio Rivers downstream of their respective dams (Page et al. 1995; FISHBIO 2014a,b).

Pacific Lamprey

Pacific lamprey (*Entosphenus tridentata*) is a federal species of concern and a California species of special concern (Moderate Concern) (Moyle et al. 2015). In California, the species is found in coastal streams and rivers from Del Norte to Los Angeles counties and in rivers in the Central Valley. Like steelhead, Pacific lamprey are anadromous and share similar requirements with steelhead as both species need cold, clear water and gravel areas for spawning and egg incubation (Moyle et al. 2015). Ammocoetes (juveniles) burrow in soft sediments during rearing and need habitats with slow to moderately slow water velocities (0–4 inch per second) and detritus that produces algae for food (Moyle et al. 2015). The ammocoete life stage lasts approximately 5 to 7 years, after which ammocoetes undergo physiological and internal anatomical changes, including changes that allow them to tolerate salt water. Downstream migration to the ocean occurs in winter and spring after metamorphosis is completed. Adults live in the ocean for up to 3 to 4 years where they consume the body fluids of a variety of fishes and marine mammals before returning to fresh water to spawn (Moyle et al. 2015). Generally, adult spawning migrations occur from early March and late June, but may occur as early as January or February after the sand bar blocking the lagoon at the mouth is breached. Adults construct nests in low-gradient riffles, runs, and pool-tail outs containing gravel and cover. Ammocoetes remain in freshwater for 5 to 7 years before they metamorphose into macropthalmia (juveniles) and migrate to the ocean. This species is known to occur in the study area in the Nacimiento River and the Salinas River Lagoon (FISHBIO 2014a; Hagar Environmental Science 2015).

Monterey Hitch

Monterey Hitch (*Lavinia exilicauda harengus*) is a California species of special concern (Moderate Concern) (Moyle et al. 2015) that is found throughout the Pajaro and Salinas Rivers. This species is found in warm lakes, sloughs, slow river segments, and clear, low gradient streams at low elevations (Moyle 2002). Hitch spawning requires additional study, but they have been observed spawning in the Pajaro River in May and June, and as late as early August on one occasion, during low summer flows at water temperatures between 18°C and 26°C (Smith 1982). This species requires clean, fine to medium-sized gravel for egg deposition (Murphy 1948; Kimsey 1960). Monterey hitch are known to be present in both San Antonio and Nacimiento Reservoirs and corresponding rivers downstream, the Salinas River, and the Salinas River lagoon (Moyle et al. 2015; FISHBIO 2014a; CDFW 2018b).

Amphibians

Arroyo Toad

Arroyo toad (*Anaxyrus californicus*) is federally endangered and is a California species of special concern. It is known from the San Antonio River in Monterey County south through the Transverse and Peninsular Ranges to the Arroyo San Simón area in Baja California Norte (Thomson et al. 2016). Arroyo toads occur in low-gradient streams in coastal and desert drainages as well as high-elevation valleys (USFWS 1999). They use aquatic, riparian, and upland habitats to different degrees, depending on an individual's stage of development, the time of year, and the weather (USFWS 2014). Arroyo toad is known from the San Antonio River on Fort Hunter-Liggett, with the nearest occurrence within the anticipated inundation area at the northwest end of San Antonio River (CDFW 2021a, Thomson et al. 2016). Perennial streams with sand bars or sandy banks within the species' range also include Nacimiento, San Antonio, and Salinas Rivers, all which occur downstream of the project site in the study area.

California Red-Legged Frog

The California red-legged frog is federally listed as threatened and a California species of special concern (CDFW 2021a). The historical range of California red-legged frog generally extends south along the coast from the vicinity of Point Reyes National Seashore, Marin County and inland from the vicinity of Redding, Shasta County, southward along the interior Coast Ranges and Sierra Nevada foothills to northwestern Baja California, Mexico (Storer 1925; Jennings and Hayes 1985). The current range is generally characterized based on the current known distribution. Although California red-legged frog is still locally abundant in portions of the San Francisco Bay area and the central coast, only isolated populations have been documented elsewhere within the species' historical range, including the Sierra Nevada, northern Coast Ranges, and northern Transverse Ranges (86 FR 47138). California red-legged frog is believed to be extirpated from the floor of the Central Valley (USFWS 2002).

California red-legged frog inhabit marshes, streams, lakes, ponds, and other, usually permanent, sources of water that have dense riparian vegetation (Stebbins, 2003). California red-legged frog primarily breeds in ponds and less frequently in pools within streams (Thomson et al., 2016). Breeding occurs from November through April, and red-legged frogs typically lay their eggs in clusters around aquatic vegetation (USFWS, 2002). Larvae undergo metamorphosis from July to September, 3.5 to 7 months after hatching (66 FR 14626). California red-legged frogs often disperse from breeding sites to various aquatic, riparian, and upland estivation habitats during the summer (66 FR 14628); however, it is common for individuals to remain in the breeding area year-round (66 FR 14628; Bulger et al. 2003; Fellers and Kleeman 2007). Adults may take refuge during dry periods in rodent holes or leaf litter in riparian habitats (USFWS, 2002). Within riparian areas, microhabitats utilized by California red-legged frogs include blackberry thickets, logjams, and root tangles (Fellers and Kleeman 2007). Known from approximately 4.5 miles north of the project site on Fort Hunter Liggett (CDFW 2021a; USFWS 2020a) and from the study area along the Salians River downstream of the project site near Chualar, Spreckels, and Moss Landing (CDFW 2021a; USFWS 2020a).

California Tiger Salamander

California tiger salamander *(Ambystoma californiense*) is listed as federally and state threatened (CDFW 2021a). The Central California tiger salamander is found, below 1,000 feet, in disjunct populations along the foothills of the Central Valley and Inner Coast Range from San Luis Obispo, Kern, and Tulare Counties in the south, to Sacramento and Yolo Counties in the north (USFWS 2017).

The California tiger salamander inhabits upland habitats most of the year such as annual grasslands and open woodlands that contain small mammal burrows. California tiger salamander breed in vernal pools, as well as in stock ponds and other permanent ponds that usually lack predatory fish or breeding bullfrogs (USFWS 2017). Adults typically migrate to ponds to breed following rainy periods from November to April, and the peak period for metamorphs to leave the natal pond in search of upland habitat occurs from May to July (USFWS 2017). California tiger salamanders are known from the uplands adjacent to the study area near Gonzales, Chualar, Spreckels, Moss Landing, Prundale, Marina, and Fort Ord.

Coast Range Newt (Southern Populations)

The Coast Range newt (*Taricha torosa*) is a California species of special concern (CDFW 2021a). This species occurs in a variety of coastal drainages from central Mendocino County south to San Diego County. It inhabits valley-foothill hardwood, valley-foothill hardwood-conifer, coastal scrub, mixed chaparral, annual grassland, and mixed conifer habitats from near sea level to 1,830 m (6000 feet) elevation (Zeiner et al. 1988). The species breeds in intermittent streams, rivers, permanent and semi-permanent ponds, lakes, and large reservoirs, starting with the fall or winter rains. Although CNDDB includes no occurrences of this species within 5 miles of the project site and anticipated inundation areas (CDFW 2021a), it is known from downstream of the project site in the study area along the Salians River 1.5 miles northwest of Spreckels. The Coast Range newt may occur in or near permanent and semi-permanent water sources and occupy underground refuges in a variety of habitats that occur in the project site and study area.

Foothill Yellow-Legged Frog

The foothill yellow-legged frog is a state endangered species as well as a California species of special concern. Historically the species occurred from the Willamette River drainage in Oregon west of the Sierra-Cascade crest to at least the San Gabriel River drainage in Los Angeles County, as well as in a disjunct population at 6,700 feet in Baja California. In California the species has been reported from foothill and mountain streams in the Klamath, Cascade, Sutter Buttes, Coast, Sierra Nevada, and Transverse ranges from sea level to around 6,000 feet (Thomson et al. 2016). Foothill yellow-legged frog inhabits rivers and streams in hardwood, conifer, and valley-foothill riparian forests, mixed chaparral, and wet meadows. Habitat is generally characterized as partly-shaded, shallow perennial rivers and streams with a low gradient and rocky substrate that is at least cobble-sized; however, they have also been known to occupy intermittent and ephemeral streams by post-metamorphic frogs and small impoundments, isolated pools in intermittent streams, and meadows along the edge of streams (Thomson et al. 2016). Breeding sites in rivers and streams are often located near the confluence of tributary streams in sunny, wide shallow reaches. Tadpoles require slow, stable flows during development. Post-metamorphic frogs remain close to the water's edge (average < 10 feet), select sunny areas with limited canopy cover, and are often associated with riffles and pools. Adequate water, food resources, cover from predators, ability to regulate their body temperature (e.g., presence of basking sites and cool refugia), and absence of non-native predators are important components of non-breeding habitat (Thomson et al. 2016). During the winter months they typically move away from larger streams and rivers to avoid high flows, usually inhabiting smaller tributaries or taking cover in adjacent vegetation on the stream or river. They have also been observed using upland habitats at an average distance from the stream of about 234 feet though have been reported moving as far as 2,723 feet from a river (Thomson et al. 2016). The species can be active both day and night (Thomson et al. 2016). Project site occurs within the species known range. Two populations are reported within 5 miles of the project site located near the border of Monterey and San Luis Obispo counties (CDFW 2021a). Nacimiento and San Antonio Rivers serve as suitable habitat, whereas Salinas River does not due its low gradient, sandy substrate environment (Thomson et al. 2016).

Western Spadefoot Toad

Western spadefoot toad (*Spea hammondii*) is a California species of special concern. It occurs in the Sierra Nevada foothills, Central Valley, Coast Ranges, and coastal counties in Southern California, from sea level to 4,460 feet (Zeiner et al. 1990). Breeding occurs in temporary rain pools or seasonal pools in streams with water temperatures between 48°F–86°F (Zeiner et al. 1990). It spends the majority of its life underground in self-constructed burrows, primarily in grasslands and occasionally in valley-foothill hardwood woodlands (Zeiner et al. 1990). This species has been documented southeast and northwest of San Antonio Reservoir (CDFW 2021a; Thomson et al. 2016). The closest CNDDB occurrence is approximately 2.7 miles northwest of the anticipated inundation areas of San Antonio Reservoir in a perennial pool (CDFW 2021a). The species also potentially occurs in the San Antonio River itself, in the anticipated inundation areas at the northwest end of the reservoir and has some potential to breed in pools elsewhere in project vicinity and aestivate in a variety of upland habitats in the study area.

Reptiles

Coast Horned Lizard

The Coast horned lizard (*Phrynosoma blainvillii;* formerly known as Blainville's horned lizard) is a California species of special concern (CDFW 2021a). It occurs in the Sierra Nevada foothills from Butte County to Kern County, and the central and southern California coasts, usually below 2,000 feet in the north and 3,000 feet in the south (Zeiner et al. 1990). It inhabits open areas of sandy soils and low vegetation in a variety of habitats, often by ant nests. Coast horned lizards burrow into loose soil to escape predators and extreme heat, and use rocks, mammal burrows, or crevices for periods of inactivity (Zeiner et al. 1990). Eggs are laid in nests in loose soil and hatching occurs after two months (Zeiner et al. 1990). Most activity occurs during the middle of the day in spring and fall, and in the morning and late afternoon in mid-summer, with nocturnal activity sometimes occurring during warm periods (Zeiner et al. 1990). The closest species occurrence is along San Antonio River, approximately 4 miles east northeast of the San Antonio Reservoir dam (CDFW 2021a; Thomson et al. 2016). It is also known from the Salinas River floodplain near Soledad. The coast horned lizard potentially occurs in a variety of vegetation communities present in the project site and riparian areas of the study area where suitable soils also occur.

Northern California Legless Lizard

The Northern California legless lizard (*Anniella pulchra*) is a California species of special concern (CDFW 2021a). It occurs in the Coast Ranges from Contra Costa County to the Mexican border, with spotty occurrences in the San Joaquin Valley, the Tehachapi Mountains, and the mountains of Southern California (Zeiner et al. 1990). The species inhabits a variety of habitats with loose soils, sandy washes, or thick duff or leaf litter, and often where substrates are slightly moist (Zeiner et al. 1990). This species is known from occurrences south and southeast of San Antonio Reservoir (CDFW 2021a; Thomson et al. 2016). The closest CNDDB occurrence is near the Nacimiento River, approximately 3 miles east of the Nacimiento Reservoir inlet work area (CDFW 2021a). Its highest potential to occur in the project site is along the San Antonio River, in the anticipated inundation areas, and in oak woodland in the project site where suitable soils or leaf little occur. This species is considered present in the dunes near the Salinas River Lagoon adjacent to the study area.

San Joaquin Coachwhip

San Joaquin coachwhip (*Masticophis flagellum ruddocki*) is a California species of special concern (CDFW 2021a). The San Joaquin coachwhip is endemic to California with a small range extending from the Arbuckle and Contra Costa Counties in the north, through the Sacramento Valley, south to the Kern County portion of the San Joaquin Valley and west into the inner South Coast Ranges. One disjunct population is known to occur in the Sutter Buttes (Thomson et al. 2016).

Habitat for the San Joaquin coachwhip occurs in chenopod scrub, valley and foothill grassland, open, dry habitats with little or no tree cover. In the San Joaquin Valley this species is found in valley grassland and saltbush scrub. Mammal burrows are used for overwintering, refuge, and oviposition sites (Thomson et al. 2016). This species can be found outside of the burrows during the warmest times of the day. Known from the Nacimiento River floodplain on Camp Roberts approximately 5 miles east and downstream of the project site (CDFW 2021a). Suitable habitat occurs in the project site.

Two-Striped Gartersnake

The two-striped garter snake (*Thamnophis hammondii*) is a California species of special concern (CDFW 2021a). This species is found in coastal California in the vicinity of the southeast slope of the Diablo Range and the Salinas Valley south along the Coast and Transverse ranges to Rio Rosario in Baja California, Mexico. It is found in a variety of perennial and intermittent freshwater streams within oak woodlands, shrublands, and sparse coniferous forests from sea level to 2,400 meters (7,874 feet) (Stebbins 2003; Zeiner et al. 1988). Two-striped gartersnakes are restricted to streams, vernal pools, lakes, and stock and artificial ponds with good adjoining riparian vegetation (Jennings and Hayes 1994) and are commonly found within wetlands and streams having rocky or sandy beds with willows (Salix sp.) or dense vegetation (Zeiner et al. 1988). This species has not been recorded within 5 miles of the project site, but its range is considered to include the project vicinity (CDFW 2021a; Thomson et al. 2016). The highest likelihood of occurrence is within the anticipated inundation areas and termini of the proposed tunnel in the project site. This species is expected to occur within the San Antonio River up- or down-stream of the reservoir and, to a lesser extent, elsewhere in the study area including Nacimiento and Salinas Rivers. It has been recorded near Salinas in Pine Canyon (CDFW 2021a).

Western Pond Turtle

The western pond turtle (*Emys marmorata*) is a California species of special concern (CDFW 2021a). It occurs throughout California west of the Sierra-Cascade crest and below 4,690 feet (Zeiner et al. 1990). It inhabits permanent or semi-permanent water, including ponds, marshes, rivers, streams, and irrigation canals. Suitable aquatic habitat contains basking sites such as logs, rocks, floating vegetation, or mud banks (Zeiner et al. 1990). Eggs are laid from March to August, and nesting sites occur up to 325 feet from aquatic habitat in a variety of soil types (Zeiner et al. 1990). This species is known from several occurrences in the project vicinity, with the closest approximately 2.8 miles east of the Nacimiento Reservoir on Camp Roberts (CDFW 2021a; Thomson et al. 2016). It has the potential to occur in pools within or near the project site and may nest or aestivate in uplands near aquatic habitat, sometimes several hundred meters away. It is known to occur at Nacimiento Reservoir and along the Nacimiento and Salinas Rivers. It also has potential to occur along San Antonio River, in the anticipated inundation areas, or along other semi-permanent streams entering San Antonio or Nacimiento Reservoirs.

Birds

American Peregrine Falcon

The American peregrine falcon (*Falco peregrinus anatum*) is a California fully protected species under the California Fish and Game Code (CDFW 2021a). It was delisted from ESA in 1999 (60 FR 34406–34409; 64 FR 46542–46558) and from CESA in 2008 (Comrack and Logsdon 2008). The species' California breeding range has expanded to include the Central and southern coasts, Inner North Coast Ranges, Klamath Mountains, Cascade Range, and Sierra Nevada (USFWS 1982). They nest on protected ledges on high cliffs primarily in woodland, forest, and coastal habitats, but also in some desert areas (USFWS 1982; White et al. 2002). Peregrines most often nest near marshes, lakes, and rivers that support an abundance of avian prey (Johnsgard 1990). Suitable areas for nesting are absent in the project site and the anticipated inundation areas, and CNDDB includes no nesting occurrences within 5 miles (CDFW 2021a). However, this species has a high potential to forage around both San Antonio and Nacimiento Reservoirs when suitable prey, such as waterfowl, are present. Similarly, this species is expected to forage over portions of the study area, but nesting is not expected due to the lack of suitable nesting substrate.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is listed as endangered under CESA and is a Fully Protected species under the California Fish and Game Code (CDFW 2021a). USFWS delisted the bald eagle from ESA in 2007 (72 FR 37346–37372). It is also protected under the Bald and Golden Eagle Protection Act. In California, most nesting bald eagles are found in the northern part of the state, but pairs nest locally south through the Sierra Nevada, coastal counties in Central and Southern California, and on the Channel Islands. Bald eagles typically nest in large conifers or on rock outcrops near aquatic features, but also occasionally in large hardwoods, such as sycamores and oaks (Anthony et al. 1982; USFWS 1986). They usually nest in one of the largest trees available within about 1.2 miles of water, but often much closer and generally situated with a prominent overview of the surrounding area (Buehler 2000). Bald eagles preferentially forage on fish and waterfowl, but their diet varies regionally and seasonally in response to locally available resources, and often includes a variety of mammals as well as carrion, especially in winter (Ewins and Andress 1995; Buehler 2000). The San Antonio and Nacimiento Reservoirs support a wintering population of bald eagles, and two nesting sites have been reported along the northern shoreline of Nacimiento (CDFW 2021a; Roberson 2002). Foraging and nesting is possible within the project site and other unpopulated portions of the study area. A pair was observed flying over the central portion of San Antonio Reservoir during fall 2016 surveys (Dudek 2016).

Bank Swallow

The bank swallow *(Riparia ripiaria)* is listed as threatened under CESA (CDFW 2021a). It primarily occurs along the Sacramento River and its tributaries from Tehama County to Sacramento County as well as along the Feather and lower American Rivers; in the Owens Valley; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou Counties; and small populations can be found near the coast from San Francisco County to Monterey County (CDFG 1992).

In their present range in California, bank swallows primarily nest in cavities build on the vertical faces of earthen riverbanks (CDFG 1992). Foraging areas for bank swallows include waterbodies and neighboring grasslands or agricultural fields where they catch flying terrestrial and aquatic insects. The species is considered present in the Salinas River and may forage or nest in the San Antonio and Nacimiento Rivers up- and down-stream of the reservoirs. Species is known to occur southwest of King City, near Greenfield, and Moss Landing more than 5 miles of the project site (CDFW 2021a).

Burrowing Owl

The western burrowing owl (*Athene cunicularia*) is a California species of special concern (CDFW 2021a). It occurs year-round in lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. It inhabits open, dry, grassland or desert with available small mammal burrows and forages on insects, small mammals, reptiles, birds, and carrion (Zeiner et al. 1990). Small mammal burrows are used for roosting and nesting; nests have also been observed in buildings, pipes, culverts, and nest boxes where burrows are scarce.

There are two CNDDB occurrences within 5 miles of the study area, with the closest occurrence inside the study area (CDFW 2021a). Potential habitat for western burrowing owl is present in grasslands throughout the study area, and numerous ground squirrel burrows that could be utilized by western burrowing owl were observed during the wildlife surveys. There are multiple CNDDB occurrence records of the species from uplands near the Nacimiento River approximately 2.2 miles east of the project site on Camp Roberts. The project site is not within the current breeding range of the species (Shuford and Gardali 2008). This species has potential to forage within the project site and the area near the San Antonio and Nacimiento Rivers, but it is generally considered absent from the study area elsewhere.

California Condor

California condor (*Gymnogyps californianus*) is listed as endangered under ESA and CESA and considered Fully Protected under the state Fish and Game Code (CDFW 2021a). Currently, California condors are found in parts of California, Arizona, Utah, and Baja California. In California, condors range from the Coast Ranges in Monterey County southward and east through the western Transverse Ranges, and along the Tehachapi and the Sierra Nevada range north to Fresno County (USFWS 2013). In 1982, only 22 individual condors remained in the wild, and in 1987, the last wild condor was captured as part of a captive breeding program. Adult and captive-bred condors were first released back into the wild in the 1990s; today, the population of California condors now exceeds 400, with more than 220 in the wild population split between California, Arizona/Utah, and Mexico (USFWS 2015). California condors typically nest in mountainous areas in cavities along cliff and rock faces and have also been recorded nesting in giant Sequoia (*Sequoiadendron giganteum*) and coast redwood (*Sequoia semervirens*) trees. Condors most often forage in open habitat such as grasslands, oak savannahs, and open scrublands in foothill and mountainous regions, and along the coastline in the Big Sur area. Approximately 60 condors occur along the Big Sur/central coast and in the Pinnacles National Monument area (USFWS 2015). A captive release and supplemental feeding site occurs in the Ventana Wilderness area and is managed by the Ventana Wildlife Society; another occurs in Pinnacles National Monument and is managed by the National Park Service. Although most of the condors that are based in these two areas tend to stay in those areas, some do fly more widely, including occasional overflights of the project site and study area. However, USFWS GPS data (from GPS transmitters attached to condors) show that the majority of overflights in 2003–2008 occurred at altitudes above 200 meters (approximately 660 feet) (USFWS 2015). Therefore, this species has potential to forage in the project site and study area but is not expected to nest in these areas due to the lack of suitable nesting substrate.

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is a California fully protected species (CDFW 2021a). The species occurs in foothills and mountains throughout California below 11,500 feet; it can be found in the nonbreeding season in lowlands such as the Central Valley. Golden eagles forage on lagomorphs, rodents, and other mammals, birds, and reptiles in grasslands, deserts, savannahs, and early successional forest and shrub habitats (Zeiner et al. 1990). Golden eagles nest primarily on cliffs and escarpments at any height, or in large trees in open areas. Nests are large platforms composed of sticks, twigs, and greenery. This species is known to nest in both the Gabilan Range and the Santa Lucia Mountains. It is observed regularly around San Antonio and Nacimiento Reservoirs (Roberson 2002). Nesting is known from along Nacimiento River near Camp Roberts, as well as 3.3 miles northwest of the San Antonio Reservoir and approximately 3.4 miles southeast of the project site (CDFW 2021a). Potentially suitable nesting habitat occurs in oak woodland on the project site and anticipated inundation areas, and suitable foraging habitat is present widely in the area. This species is expected to forage and could nest in unpopulated portions of the study area.

Least Bell's Vireo

Least Bell's vireo (*Vireo bellii pusillus*) is listed as endangered under FESA and CESA (CDFW 2021a). It formerly nested through the coastal slope of southern California, interior Coast Ranges of Central California, the San Joaquin and Sacramento Valleys and surrounding foothills, and parts of Inyo County. It now is limited to isolated locations of extensive riparian habitat in the southern California coastal slope and has bred in small numbers at widely scattered sites elsewhere in its former range (USFWS 2006). Least Bell's vireo nesting habitats in cismontane and coastal areas include southern willow scrub, mulefat scrub, arroyo willow riparian forest edge, wild blackberry thickets, and, more rarely, cottonwood forest, sycamore alluvial woodland, and southern coast live oak riparian forest. More specifically, they tend to occupy dry portions of intermittent streams that typically provide dense cover within one to two meters (3.3 to 6.6 feet) of the ground, often adjacent to a complex, stratified canopy. In some areas, least Bell's vireos also forage in upland habitats (59 FR 4846). This species was formerly common along the Salinas River and its tributaries, but was thought to be extirpated as a breeding species by about 1960 (Roberson 2002). However, since the 1980s, least Bell's vireos have been observed in suitable habitat along the Salinas River on several occasions, including three singing males in 1983. A single male was also observed along El Piojo Creek in southern Fort Hunter-Liggett, less than 10 miles west of the San Antonio Reservoir, in May 1988 (Roberson and Tenney 1993; Roberson 2002). In 2001, individuals have been reported during the breeding season as far north as Monterey County near San Juan Bautista (Roberson 2004; CDFW 2021a). Therefore, this species is considered to have a potential (albeit small) to nest and possibly forage in the project site and throughout the study area.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is a California species of special concern (CDFW 2021a). The species occurs year-round in lowlands and foothills throughout California, and only in winter on the coastal slope north of Mendocino County (Zeiner et al. 1990). It inhabits open habitats with perches such as scattered shrubs, trees, posts, fences, or utility lines. (Zeiner et al. 1990). Loggerhead shrike forage primarily on large insects, but also eat small birds, mammals, amphibians, reptiles, fish, and carrion. Nests are built in trees or shrubs with dense foliage, typically 1.3 to 50 feet above the ground. Eggs are laid from March to May, and young become independent in July or August (Zeiner et al. 1990). The breeding bird atlas project confirmed nesting within one atlas block surrounding San Antonio Reservoir, in an area where between two and 10 pairs were present. A similar density was found in an adjacent atlas block surrounding the northwest end of the reservoir (Roberson and Tenney 1993). Therefore, the project site and anticipated inundation areas likely support foraging habitat and may support nesting for the loggerhead shrike.

Long-Eared Owl

The long-eared owl (*Asio otus*) is a California species of special concern when breeding (CDFW 2021a). Its breeding range extends throughout California, except in the Central Valley, the Imperial and Coachella valleys in Imperial and Riverside counties, and much of the immediate coast. Long-eared owls may be migratory throughout most of their range and are thought to winter in most of their breeding range and southward across most of the United States and northern and central Mexico (Marks et al. 1994). Long-eared owls nest in dense woodlands and thickets adjacent to open grassland, shrubland, or woodland habitats used for foraging. The CNDDB includes no occurrences of long-eared owl for Monterey County, and the breeding bird atlas project detected no long-eared owls in the southern part of the county (CDFW 2021a; Roberson and Tenney 1993). However, largely because of the difficulty in detecting this species, its status in the area in poorly known. San Antonio Reservoir is believed to be within or very near the species' breeding range (Hunting 2008; Roberson 2002). Therefore, the species could forage and has a low potential to nest within the inundation area of the project site. It is expected to forage and may nest in unpopulated portions of the study area.

Northern Harrier

The northern harrier (*Circus cyaneus*) is a California species of special concern when breeding (CDFW 2021a). The species breeds throughout most of Canada and Alaska; south through the northern and central Great Basin, Rocky Mountains, and Great Plains; in the northeastern United States; and in scattered locales from central, coastal, and southwestern California south to Baja California, Mexico (Smith et al. 2011). Northern harriers winter across most of the coterminous United States south through Mexico, Central America, the Bahamas, and Cuba. In California, northern harriers breed in the Central Valley, Great Basin, most of the Coast Ranges, and in various locations along the entire coast (Davis and Niemela 2008). Northern harrier has been known to nest at San Antonio Reservoir. Nesting during the breeding bird atlas project was considered possible in the area around the northwest end of the reservoir, and CNDDB includes an occurrence approximately 0.25-mile northwest of the anticipated inundation area (Roberson 2002; Roberson and Tenney 1993; CDFW 2021a). Potential exists for nesting elsewhere in the project site and study area where dense herbaceous vegetation or dense scrub habitat occurs within or near open foraging habitat.

Short-Eared Owl

The short-eared owl (*Asio flammeus*) is a California species of special concern (CDFW 2021a). Mostly migrants from the north, some year-round Northern California residents of short-eared owl live the Great Basin region and the Sacramento-San Joaquin River Delta. Episodic breeding has been observed in the coastal central California and the San Joaquin Valley.

Habitat consists of fresh and saltwater marshes, lowland meadows, pastures, and irrigated alfalfa or grains fields. Tule patches or tall grass are needed for nesting and daytime seclusion. The short-eared owl nests on dry ground in depressions concealed in vegetation. Nesting pairs require open country with abundant concentrations of microtine rodents. In restoration areas on the San Joaquin Valley short, weedy vegetation may provide suitable habitat. Suitable habitat occurs in the project site and study area. Project is within species range and one known nesting location noted within the study area in the Salians River Lagoon (CDFW 2021a).

Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) is state listed as threatened (CDFW 2021a). The species occurs primarily within the Sacramento and San Joaquin Valleys and Sierra Nevada foothills but can also be found along the coast and inland areas of southern and central California (USFWS 2019a). Tricolored blackbirds forage in croplands, grasslands, flooded land, and pond edges (Zeiner et al. 1990). They nest in dense colonies in emergent marsh vegetation (such as cattails and tules) or upland sites with blackberries, nettles, thistles, and grain fields. Two colonies have been recorded within or near the San Antonio River, in the vicinity of the San Antonio Reservoir anticipated inundation area. One colony was at the edge of the anticipated inundation areas as late as 2012, possibly more recently (CDFW 2021a). A colony near this location was in upland habitat south of the river, in stinging nettles (*Urtica dioica*) and cocklebur (*Xanthium* sp.), approximately 1.5 miles of the Interlake Road Bridge, last observed in 1996 (CDFW 2021a; Roberson 2002). The potential for nesting elsewhere in the project site is low. Foraging potentially occurs in grasslands surrounding the reservoirs, and additional open habitats on the project site may support foraging during winter. This species is expected to occur and may nest within tall emergent marsh habitat within the study area downstream of the project site.

Western Snowy Plover

The western snowy plover Pacific coast population DPS (*Charadrius alexandrinus nivosus*) is federally listed as threatened. The Pacific coast population is defined as those individuals that nest within 50 miles of the Pacific Ocean on the mainland coast, peninsulas, offshore islands, bays, estuaries or rivers of the United States and Baja California, Mexico (USFWS 2019b). The current known breeding range of the Pacific coast population extends from Midway Beach, Washington to Bahia Magdalena in Baja California Sur, Mexico (USFWS 2019b). Some western snowy plovers remain in their coastal breeding areas year-round, while others migrate north or south for winter (USFWS 2007c). The majority of western snowy plovers' nest in California above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely-vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries; less commonly, they breed on bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars (USFWS 2016b). Not expected to nest or forage in the project site or within the anticipated inundation area as these are outside of the species range. Known to nest and forage downstream of the project site in the coastal dunes adjacent to the Salinas River Lagoon (CDFW 2021a).

White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is a California fully protected species. The species occurs in lowland areas west of the Sierra Nevada from the Sacramento Valley to western San Diego County. It is usually found near agricultural areas (Zeiner et al. 1990). White-tailed kites forage primarily on small mammals in open grasslands, farmlands, and emergent wetlands. Nests are located near the top of dense oak, willow, or other tree stands, typically 20-100 feet above the ground, and are composed of loosely piled sticks and twigs (Zeiner et al. 1990). Breeding occurs from February to October, with peak breeding from May to August. CNDDB includes no occurrences for the project vicinity (CDFW 2021a). Roberson and Tenney (1993) reported that nesting was possible and probably in adjacent atlas blocks at the northwest end of San Antonio Reservoir. Suitable breeding habitat occurs in oak woodland and oak savannah in the project site and anticipated inundation areas. Suitable foraging habitat is widespread. This species is expected to nest within riparian habitat along all three rivers in the study area.

Yellow-Billed Cuckoo

The western yellow-billed cuckoo (*Coccyzus americanus*) is federally listed as threatened. In California, persistent populations occur along the Sacramento River from Red Bluff to Colusa and along the South Fork Kern River from Isabella Reservoir to Canebrake Ecological Reserve. Other sites where populations have been recorded but may not breed or persist include the Feather River from Oroville to Verona in Butte, Yuba, and Sutter Counties; the Prado Flood Control Basin in San Bernardino and Riverside Counties; the Amargosa River near Tecopa in Inyo County; the Owens Valley near Lone Pine and Big Pine in Inyo County; the Santa Clara River in Los Angeles County; the

Mojave River near Victorville in San Bernardino County; and the Colorado River from Needles in San Bernardino County to Yuma in Imperial County (Laymon and Halterman 1987). Western yellow-billed cuckoos are primarily foliage gleaners. The primary food sources for this species are caterpillars, cicadas, katydids, and other insects; frogs and lizards; and fruits and seeds (National Park Service 2015). The western yellow-billed cuckoo is a Neotropical migratory species that travels between wintering grounds in Central and South America and breeding grounds in North America, often using river corridors as travel routes. It occupies low- to moderate-elevation riparian forests. The species requires large, contiguous stretches of multilayered riparian habitat for nesting. Important tree species for the western yellow-billed cuckoo are cottonwood, willow, alder, box elder (*Acer negundo*), mesquite, Arizona walnut (*Juglans major*), Arizona sycamore (*Platanus wrightii*), oak, netleaf hackberry (*Celtis reticulate*), velvet ash (*Fraxinus velutina*), Mexican elderberry (*Sambuccus mexicanus*), seepwillow (*Baccharis glutinosa*), and sometimes tamarisk (National Park Service 2015). Known from the Salinas River riparian corridor near the SRDF within the study area (MCWRA 2019). Not likely to occur on the project site or in the inundation area because of the lack of suitable, dense riparian forest habitat.

Yellow-Breasted Chat

Yellow-breasted chat (*Icteria virens*) is a California species of special concern for nesting. Its nesting range includes the eastern United States from Wisconsin south to the Gulf coast, and east to the Atlantic Coast; western breeding populations occur along the Pacific coast, within the Great Basin valleys, lower montane portions of the Rocky Mountains, and south into Arizona and New Mexico, with isolated populations in Texas (Dunn and Garrett 1997). It has a broad nesting range in California, including the northwestern part south along the Sierra Nevada foothills and along the coast through San Diego County, and in the eastern deserts in the Colorado River Valley, the Imperial Valley, the Owens Valley, and other scattered locations (Comrack 2008). Nesting is usually restricted to "early successional riparian habitats with a well-developed, dense understory shrub layer and an open canopy" (Comrack 2008). Yellow-breasted chat is known to occur along the San Antonio River, within the anticipated inundation areas, where it was confirmed nesting during Monterey County breeding bird atlas surveys (Roberson 2002; Roberson and Tenney 1993). Therefore, the species is considered present in the project site and is expected to occur within similar habitat in the study area.

Yellow Warbler

The yellow warbler (*Setophaga petechia*) is a California species of special concern for nesting. It nests from northern Alaska eastward to Newfoundland in Canada and southward to Georgia and northern Baja California, Mexico. The species nests in much of California but is absent from higher elevations of the Sierra Nevada and is present only locally in the eastern deserts. It is widespread and common as a migrant in spring and fall. The yellow warbler usually nests in wet, deciduous thickets, especially those dominated by willows, and in disturbed and early successional riparian vegetation (Lowther et al. 1999). A population of this species was recorded around the northwestern portion of San Antonio Reservoir during Monterey breeding bird atlas surveys, and this species likely nests in this area, including within the anticipated inundation areas (Roberson and Tenney 1993; Roberson 2002). This species is expected to occur within the project site and study area.

Migratory Birds

Non-special-status migratory birds have the potential to nest in the study area. Although these species are not considered special-status wildlife species, their occupied nests and eggs are protected by California Fish and Game Code Sections 3503 and 3503.5 and the Migratory Bird Treaty Act.

Fifty-seven bird species were observed in flight or roosting in the study area during the project surveys. No nesting surveys were conducted as part of the reconnaissance level surveys. Bird observation records reviewed in the Cornell Lab of Ornithology's online bird observation database, called eBird, indicate that at least 116 bird species have been observed within the study area (eBird 2021).

Mammals

American Badger

The American badger (*Taxidea taxus*) is a California species of special concern. American badgers occur throughout the state except for the humid coastal forests of northwestern California in Del Norte and Humboldt Counties (Williams 1986). American badgers occur in a wide variety of open, arid habitats including shrub, forest, and herbaceous habitat, but most commonly are associated with grasslands, savannas, mountain meadows, and open areas of desert scrub. They require sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground (Williams 1986). Badgers dig burrows for cover and reproduction, and frequently reuse old burrows (Zeiner et al. 1990). Dens are usually located in sandy soil in areas with sparse overstory cover. American badgers are active yearlong, and day and night (Zeiner et al. 1990). Open habitats occurring in the project vicinity, such as those surrounding San Antonio Reservoir and within the anticipated inundation areas, very likely support this species where a suitable prey base and friable soils are present. There are numerous occurrences for this species approximately 3.7 miles southeast of San Antonio Reservoir, between San Antonio Reservoir and San Miguel (CDFW 2021a). This species has potential to occur within the project site and unforested portions of the study area.

Monterey Dusky-Footed Woodrat

Monterey dusky-footed woodrat (*Neotoma macrotis luciana*) is a California species of special concern that occurs in the Coast Ranges of Monterey County and northern San Luis Obispo County (Carraway and Verts 1991). However, recent taxonomic revisions of woodrats in the genus Neotoma have resulted in the re-classification of woodrats in the project vicinity as Bryant's woodrat (*Neotoma bryanti bryanti*) (Patton and Álvarez-Castañeda 2005; Patton et al. 2014). However, as the regulatory agencies have not yet recognized these revisions, and CDFW still recognizes Monterey dusky-footed woodrat as a species of special concern, woodrats from this complex in the project vicinity are considered to be a special-status species in this EIR. Dusky-footed woodrats occur in chaparral, coastal scrub, and dense woodland. The build and occupy middens composed of "sticks, bark, plant cuttings, and miscellaneous objects piled in a conical heap … where brush, rock piles, or vegetative cover are abundant" (Carraway and Verts 1991). Although CNDDB includes no occurrences within 5 miles of the project site, it includes several occurrences to the north and south, just that are slightly beyond 5 miles (CDFW 2021a). A woodrat, unknown species, midden was observed within the project site during reconnaissance surveys in 2016. Therefore, this species has potential to occur where scrub or dense woodland habitat is found in the project site. This species is not anticipated to occur within the riparian habitat in the downstream study area due to periodic flooding and lack of suitable habitat.

Monterey Ornate Shrew

Monterey ornate shrew (*Sorex ornatus salarius*) is a California species of special concern. This subspecies inhabits coastal salt-marshes and adjacent sandhill areas in the vicinity Monterey County and riparian, wetland and upland terrestrial communities in the vicinity of the Salinas River Delta. Historic records show the subspecies in the vicinity of the mouth of the Pajaro River in Santa Cruz County (Bolster 1998). Shrews use low dense vegetation for foraging, cover from predators, and nesting sites. The Monterey shrew (Owen and Hoffman. 1983) Known to occur downstream of the project site near the Salinas River Lagoon and Elkhorn Slough (CDFW 2021a). Not expected to nest or forage in the project site or within the proposed inundation area as these are outside of the species' range.

Mountain Lion, Central Coast Central ESU

Mountain Lion, Central Coast Central ESU (*Puma concolor*) is a candidate to be listed as threatened under the California Endangered Species Act and is one of six subpopulations divided by interstate freeways or major highways within California. The geographic range of the Central Coast Central ESU is southern Monterey Bay to the Ventura Area (Subpopulation #2) (CDFW 2020).

Mountain lions are primarily solitary, territorial, predators which occur in low densities and require a large home range. The home range needs to contain a sustainable deer population and habitat connectivity to allow for successful dispersal and gene flow. Mountain lions are typically associated with riparian, chaparral, oak woodlands, coniferous forests, grasslands, and occasionally in rocky desert upland habitat (CDFW 2020). The project site and study area are located in the Central Coast – Central ESU range. Suitable undisturbed woodland habitat is present in the project site. Bay Area Puma Project (2021) reports sighting of mountain lion east and south of the project site. Additionally, suitable undisturbed woodland habitat is present in riparian habitat of the study area. Bay Area Puma Project (2021) reports sighting of mountain lion within the Salinas River watershed just south of the confluence with the Nacimiento River in the Big Sandy State Wildlife Area in San Miguel.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is a California species of special concern. The species occurs throughout the state except for the high Sierra Nevada from Shasta to Kern Counties, and the northwestern corner from Del Norte and western Siskiyou Counties to Mendocino County, from sea level up to mixed conifer forests. Pallid bats use a variety of habitats such as grasslands, shrublands, woodlands, and forests, but are most common in open, dry areas with rock outcrops or cliffs for roosting (Zeiner et al. 1990). Pallid bats forage over open ground for a wide variety of insects and arachnids. They are a yearlong resident in most of their range and hibernate in winter near their summer roost. Roosting sites must protect bats from high temperatures, and include caves, crevices, mines, and occasionally hollow trees and buildings. Night roosts may include porches and open buildings (Zeiner et al. 1990). This species is unlikely to roost in the project site or anticipated inundation areas, which lack rocky outcrops suitable for roosting, although a small potential may exist for the species to roost in hollow trees. Bats roosting in the area may forage over a variety of communities occurring in the project site. This species is considered possible to roost and very likely forages within the study area.

Salinas Pocket Mouse

Salinas pocket mouse (*Perognathus inornatus psammophilus*) is a California species of special concern. It occurs in the Salinas Valley, from the Salinas Valley southward to at least Hog Canyon, Monterey County (Williams 1986; Williams et al. 1993). Habitat preferences for this species are not well understood, but it is known to occur in grassland, desert scrub, and oak savannah communities in sandy and other friable soils, especially where plant cover is not dense (Williams 1986; Brylski 1998). Many of these communities occur in the project site and anticipated inundation areas. The nearest CNDDB occurrence is from approximately 1.7 miles east of Nacimiento Dam in 1995 (CDFW 2021a). Therefore, this species has potential to occur in the project site, where scrub or dense woodland habitat is present. This species is not anticipated to occur within the riparian habitat in the downstream study area due to periodic flooding and lack of suitable substrate.

Townsend's Big-Eared Bat

Townsend's big-eared bat (*Corynorhinus townsendii*) is a California species of special concern (CDFW 2021a). It ranges throughout the western United States; British Columbia, Canada; and Mexico (Kunz and Martin 1982). In the United States, it occurs in a continuous distribution in all of the western states and east into western South Dakota, northwestern Nebraska, southwestern Kansas, western Oklahoma, and western Texas (Piaggio et al. 2009). Townsend's big-eared bat occurs throughout California with the exception of alpine and subalpine areas of the Sierra Nevada, although it has been found in the subalpine zone in the White Mountains to the east of the Sierra Nevada (Szewczak et al. 1998). Townsend's big-eared bat is primarily associated with mesic areas characterized by coniferous and deciduous forests and riparian communities, although it also occurs in xeric areas (Kunz and Martin 1982). In California, it roosts in limestone caves and lava tubes located in coastal lowlands, agricultural valleys, hillsides with mixed vegetation, human-built structures (Kunz and Martin 1982), mines (López-González and Torres-Morales 2004), and the basal hollows of old-growth redwood trees (*Sequoia sempervirens*) on the north coast of California (Zielinski and Gellman 1999). Roosting habitat is absent on the project site, and this species is not expected to roost there or in the anticipated inundation areas. However, this species may occasionally forage over suitable vegetation communities on occasion. The closest species CNDDB occurrence is approximately 4.8 miles southwest of San Antonio Reservoir (CDFW 2021a).

Western Mastiff Bat

Western mastiff bat (*Eumops perotis californicus*) is a California species of special concern (CDFW 2021a). The species occurs in southeastern San Joaquin Valley, Coastal Ranges from Monterey County to southern California, and from the coast eastward to the Colorado Desert (Zeiner et al. 1990). Wester mastiff bats use a variety of open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, and desert scrub. Suitable roosting habitat includes rock outcrops and buildings for roosting, with vertical faces to allow room to drop off to take flight (Zeiner et al. 1990). Western mastiff bats forage at night and rarely use night roosts. Western mastiff bats are known to commonly share roosts with other large bat species (Zeiner et al. 1990). Although western mastiff bats are yearlong residents in California and are known to shift day roosts throughout the year, whether they are seasonally migratory is unknown (Pierson and Rainey 1998). Although not expected to roost on the project site or anticipated inundation areas, due to the absence of suitable cliffs, crevices, and trees for roosting, this species may forage over the project site on occasion. CNDDB includes no occurrences within 5 miles of the project site (CDFW 2021a).

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is a California species of special concern (CDFW 2021a). The species occurs from Shasta County to the Mexican border, west of the Sierra Nevada crest. Most individuals in California make short migrations in March-May and September-October between winter and summer habitats (Zeiner et al. 1990). Roosting occurs primarily in trees (sometimes in shrubs) in forests and woodlands from sea level up to mixed conifer forests, typically 2–40 feet above the ground. Foraging occurs at night in a variety of open habitats, including grasslands, shrublands, open woodlands and forests, and croplands. Western red bats usually do not roost with other species but may forage with other species (Zeiner et al. 1990). There are no CNDDB occurrences within 5 miles of the study area. The closest occurrence is approximately 50 miles south of the study area (CDFW 2021a). Potential roost trees for western red bat are present in the project site and study area within riparian woodland and ornamental trees with potential foraging habitat present in open areas.

4.3.3.6 Critical Habitat

There is USFWS-designated critical habitat within the study area including lands designated for western snowy plover adjacent to the Salinas River Lagoon. Critical habitat designated for Monterey spineflower occurs north and south of study area on Salinas River State Beach and Fort Ord. NMFS designates critical habitat for anadromous fish. Designated critical habitat for the South-Central California Coast Steelhead DPS falls within the study area along the Salinas River and its tributaries including the Nacimiento River, San Antonio River, and the Arroyo Seco.

4.3.3.7 Essential Fish Habitat

EFH in the study area was identified according to National Oceanic and Atmospheric Administration's EFH mapper (National Marine Fisheries Service 2021a) and includes the Salinas River Lagoon (to approximately river mile [RM] 2 and the lower reaches of the Old Salinas River Channel, which are considered EFH for Pacific Coast coastal pelagic species and Pacific Coast groundfish.

The fishery management plan (FMP) for coastal pelagic species includes five species: northern anchovy, Pacific sardine, Pacific (chub) mackerel, jack mackerel, and market squid. In the study area, the principle federally managed coastal pelagic species is northern anchovy, although other coastal pelagic species may also be present. EFH for coastal pelagic species in the study area is defined to be all estuarine waters.

The Pacific Coast Groundfish FMP manages 90-plus species over a large and ecologically diverse area. Groundfish species are comprised of flatfish, rockfish, roundfish (e.g., lingcod, Pacific cod, cabezon), and elasmobranchs (sharks and skates). In the study area, the principal federally managed groundfish species is starry flounder. EFH for groundfish includes all waters and substrate within areas designated as habitat areas of particular concern (HAPC). The HAPC in the study area is estuarine.

4.3.3.8 Wildlife Movement Corridors

Wildlife corridors can be viewed over broad spatial scales, from those connecting continents (e.g., Isthmus of Panama) to structures crossing canals or roads. Most wildlife corridors analyzed within the context of land use planning, including those analyzed in this EIR, are moderate in scale and facilitate regional wildlife movement among habitat patches and through human-dominated landscapes.

The project site is outside major habitat blocks identified in the *California Essential Habitat Connectivity Project* (Spencer et al. 2010). However, the western portion of San Antonio Reservoir falls within an area designated as a "Less Cost" essential connectivity area that connects habitat blocks to the north and south. More locally, the project site and the San Antonio Reservoir area include relatively few encumbrances to wildlife movement, other than the reservoirs themselves. Wildlife accessing the Sierra de Salinas to the north or the Santa Lucia Mountains to the northwest is able to travel along the north and south shores of San Antonio Reservoir without encountering substantial barriers. In addition, relatively little development currently lies between the portals for the two reservoirs. The most developed area in the project vicinity is south and southeast of the Nacimiento Dam, in the communities of Nacimiento Reservoir and Heritage Ranch. Agriculture associated with the Salinas Valley to the east of the project site and, to a lesser extent, the Lockwood Valley northwest of San Antonio Reservoir presumably limit wildlife movement in those areas.

4.3.4 Impact Analysis

4.3.4.1 Methods for Evaluating Impacts

The evaluation of potential impacts on special-status species and natural communities in the study area was based on a review of the available literature and survey data regarding the status and known distribution of special-status species in the study area. In addition, impacts were evaluated using data results from the SVOM, including estimated reservoir stages and downstream flows. The methods for analysis of impacts on biological resources are based on professional standards and information cited throughout this section. The key effects were identified and evaluated based on the environmental characteristics of the study area and the expected magnitude, intensity, and duration of activities related to the construction and operation of the proposed project and Tunnel-Only Alternative.

Construction impacts consist of temporary effects that would result in temporary habitat disturbance in construction areas, as well as fugitive dust generated by the movement of earth, and the permanent effects from constructing new tunnel or reservoir dam infrastructure at Nacimiento and San Antonio Reservoirs. Operation of the proposed project and Tunnel-Only Alternative would consist of periodic dam and tunnel maintenance activities, such as worker visits to clear debris from the Tunnel Intake Structure, and changes to reservoir surface water levels and water releases from Nacimiento and San Antonio Dams. Operational impacts for the proposed project include periodic inundation of the area surrounding San Antonio Reservoir, up to an increased maximum water surface elevation of 787 feet, compared to the existing maximum WSE of 780 feet at that reservoir.

The methods for analysis of impacts on biological resources are organized into direct and indirect impacts. Direct impacts are those effects that are directly caused by project construction and operation. Indirect impacts are those effects of the project that occur either later in time or at a distance from the project location but are reasonably foreseeable, such as downstream sedimentation in adjacent habitats that is influenced by upstream construction activities. Such indirect impacts are captured within the study area buffer. Direct and indirect impacts can be either permanent or temporary. Impacts on habitat are generally considered temporary when the habitat is restored to preconstruction conditions within one year. The study area and land cover mapping area for vegetation and aquatic resources includes a 500-foot-wide buffer outside of the temporary and permanent impact areas, with the exception of Nacimiento Reservoir, which does not include a buffer. The buffer areas were assessed for potential temporary and indirect impacts on vegetation and aquatic resources.

Permanent direct impacts on biological resources were quantified using the estimated amount of land cover that would be converted as a result of construction of the new project facilities compared to existing conditions. Temporary direct impacts on biological resources were quantified using the estimated amount of land cover that would be temporarily disturbed during project construction that would be restored to pre-project conditions within one year of disturbance. Temporarily affected habitat areas located within the new maximum inundation area of San Antonio Reservoir were addressed as operational impacts to avoid double counting habitat effects and because inundation impacts at San Antonio Reservoir could be considered permanent impacts if habitat could not be restored at these locations. It is assumed that the conditions on parcels of land surrounding the reservoir could be maintained similar to existing conditions (e.g., grazing).

Direct impacts on biological resources identified within the study area were determined using GIS software. The study area and associated impact areas were overlaid on the vegetation community, wildlife habitat, and wetland data to quantify the permanent and temporary impacts associated with the construction and operation of the proposed project and Tunnel-Only Alternative. Impacts on occurrences of special-status plants known to occur in the study area were determined by overlaying the study area over the mapped occurrences and determining the area of overlap. It is assumed the tunnel alignment will avoid work in wetlands and will bore beneath them and other existing natural communities.

Construction impacts are restricted to construction of facilities and associated construction access and staging. Direct and indirect impacts on special-status species and their habitats were assessed using the estimated amounts of suitable habitat that would be converted by construction or indirectly disturbed during construction compared to existing conditions. In general, permanent and temporary impacts on potential habitat for special-status species are overestimated because the entirety of the land cover is considered affected even when specific habitat requirements may be absent at specific locations.

Operational impacts are restricted to operation of the new tunnel and reservoir facilities. To assess potential operational impacts on biological resources, both direct impacts within and indirect impacts downstream of the reservoirs, the study area also includes the downstream portions of the San Antonio and Nacimiento Rivers east of the reservoir spillways, the Salinas River (starting from its confluence with the Nacimiento River and ending at the Salinas River Lagoon), the Salinas River Lagoon, the Old Salinas River channel, Moss Landing Harbor, and any associated riparian/wetland corridor along these waterways. The project has a potential to affect the timing and quantity of water flowing through these river sections, which could result in direct or indirect impacts on existing plant, fish, and wildlife species. The impact analysis for fish, particularly as it relates to steelhead, takes into consideration the existing low abundance of the species in the study area and the existing stressors on the population. Consequently, even minor changes in the timing or quantity of flow in river reaches downstream of the reservoirs during key life stages of steelhead were considered to have an impact on this species. Hydrologic modeling was completed to estimate tunnel transfer volumes, reservoir drawdowns, reservoir WSEs, and reservoir discharges that would occur due to the proposed project and Tunnel-Only Alternative. The results of the hydrologic modeling, described in Chapter 2, *Project Description*, and analyzed in Section 4.1, *Hydrology and Water Quality*, were used to estimate future hydrological changes within and downstream of the reservoirs and is the basis of the operational impact analysis to biological resources in the study area. Operational impacts on vegetation and special-status wildlife used average monthly exceedance data which compared modeled baseline conditions of flow, and groundwater recharge to the modeled proposed project and Tunnel-Only Alternative projections. Reservoir inundation changes and the maximum inundation area boundaries were also analyzed to estimate which areas would experience increased or decreased inundation under the proposed project and Tunnel-Only Alternative modeled results compared to modeled baseline results. A description of how the hydrologic modeling was used to assess operational changes in the reservoirs with regards to fish populations follows.

4.3.4.2 Methods for Evaluating Reservoir Fisheries Impacts

Reservoir operation changes associated with interlake transfers to meet downstream demands and flood control criteria could change the pattern and amplitude of reservoir levels and fluctuations. Potential impacts related to changes in reservoir levels and fluctuations were evaluated using results from the SVOM. The model is discussed further in Section 2.5.1.1, *Operations*. Reservoir level and area affect fish populations; in general, greater reservoir area and less fluctuations result in larger fish populations and greater fish productivity (Von Geldern 1971; Edwards et al. 1983; Twomey et al. 1984). Reservoir level fluctuations can reduce fish cover, dehydrate nests, expose nests to wave erosion, and cause adults to desert nests, leaving eggs and juveniles exposed to increased predation (Mitchell 1982; Stuber et al. 1982; Edwards et al. 1983; Twomey et al. 1984).

Impacts on reservoir fisheries were determined through separate analyses of fish productivity (relative to reservoir levels) and spawning success (dependent on reservoir drawdown rates). Fish habitat criteria were developed for productivity and spawning success, based on standard practice and professional judgement. Criteria development is discussed in more detail in Appendix E, *Biological Resource Attachments,* page E-99. Fish productivity at Nacimiento and San Antonio Reservoirs was rated as excellent, good, fair, or poor, depending on reservoir elevation. Reservoir levels categorized as excellent are believed to provide optimum fish habitat and the largest fish populations. Reductions in fish populations would be expected as reservoir levels decline (i.e., reservoir levels fall into progressively lower categories. The negative effect of low reservoir level on fish populations is supported by a study on Nacimiento Reservoir (Von Geldern 1971). A fish productivity index was calculated for each month within the period of record by assigning monthly predicted reservoir elevation a category (excellent, good, fair, or poor); assigning a point value for excellent (4), good (3), fair (2), or poor (1) ratings; and then multiplying by a monthly weighting factor (3 for April and May, 2 for June through November, 1 for December through March) that provides a more accurate impact assessment because each month does not contribute equally to annual fish production levels. The fish productivity index was used to compare the proposed project and Tunnel-Only Alternative against the modeled baseline and each other.

Criteria also were developed to analyze the effects of reservoir drawdown on spawning success of largemouth bass, smallmouth bass, and sunfish (redear and bluegill) (Appendix E, *Biological Resource Attachments,* page E-99). Spawning success criteria were developed for these species and rated as excellent, good, fair, or poor.

The fish production indices and the spawning success criteria were used in conjunction with hydrologic model results to assess impacts. Simulated mean monthly reservoir levels for the modeled baseline condition are assumed to represent current conditions (see Section 4.1, *Hydrology and Water Quality*). Modeled baseline elevations were compared with the elevations of the proposed project and Tunnel-Only Alternative using simulated reservoir levels for water years 1968 to 2014. Detailed results for reservoirs are presented in Appendix E, *Biological Resource Attachments*, **Tables E-7 through E-10**, and summarized in the text.

The significance of impacts on reservoir fisheries under the proposed project and Tunnel-Only Alternative was determined by comparing production and spawning indices under modeled baseline conditions to these indices under modeled conditions for the proposed project and Tunnel-only Alternative. Generally, reservoir species are likely to recover from single years of poor reservoir conditions, but reduced fish populations are more likely if poor conditions continue over several consecutive years. Thus, the magnitude, timing, and repetition of changes in the indices were considered in assigning significance.

If the frequency (number of months) of *Excellent* productivity criteria are substantially reduced or the frequency of *Poor* productivity criteria are substantially increased (compared to modeled baseline conditions), then this would be considered a substantial change in reservoir productivity. The reduction in spawning criteria would be considered a substantial change in spawning conditions for bass and sunfish if spawning criteria are reduced (compared to modeled baseline conditions) from excellent or good to fair or poor during any 3 months during the spawning period in a year and for 2 or more successive years.

4.3.4.3 Thresholds of Significance

Appendix G of the CEQA Guidelines provides guidance for assessing whether a project would have significant impacts on the environment. In consideration of project-specific environmental conditions, and based on Appendix G of the CEQA Guidelines*,* MCWRA has determined that an impact on biological resources would be considered significant if the project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS, or by NMFS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS;
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

4.3.4.4 Applicable Avoidance and Minimization Measures

MCWRA has incorporated AMMs into the project design to prevent the occurrence of or to reduce potential environmental impacts. The AMMs applicable to biological resources include the following:

- **AMM GEN-1**, Spill Prevention and Control
- **AMM GEN-2**, Equipment Maintenance and Fueling

- **AMM GEN-3**, Hazardous Materials Containment
- **AMM GEN-4**, Waste Management
- **AMM GEN-5**, Maintenance and Parking of Construction Vehicles
- **AMM GEN-6**, Staging, Stockpiling of Soil, and Access
- **AMM GEN-8**, Dust Management Controls
- **AMM BIO-1**, Worker Environmental Awareness Training
- **AMM BIO-2**, Construction Best Management Practices and Monitoring for Fish, Wildlife, and Plant Species Habitats, and Natural Communities
- **AMM BIO-3**, Decontamination of Equipment for Aquatic and Terrestrial Invasive Species
- **AMM BIO-4**, Control of Invasive Plant Species during Construction and Operation
- **AMM BIO-5**, Restoration of Temporarily-Disturbed Areas

A complete description of the measures is provided in Section 2.6, *Avoidance and Minimization Measures*.

4.3.4.5 Impacts and Mitigation Measures

The extent of permanent and temporary construction impacts on land covers present on the project site, quantified as described in Section 4.3.4.1, *Methods for Evaluating Impacts*, of the proposed project and Tunnel-Only Alternative are shown in **Table 4.3-8a** and **Table 4.3-8b.**

Table 4.3-8a. Acreages of Permanent Direct Construction Impacts on Natural Communities and Other Land Cover Types in the Proposed Project and Tunnel-Only Alternative

Community Type	Construction Areas			Permanent Direct Impact Totals	
	Tunnel Intake Structure (acres)	Energy Dissipation Structure (acres)	San Antonio Dam Spillway Modification (acres)	Proposed Project (acres)	Tunnel-Only Alternative [1] (acres)
Sensitive Natural Communities					
Blue oak woodland	–	0.90	0.01	0.91	0.90
Coast live oak woodland	0.01	–	–	0.01	0.01
Scrub oak chaparral	0.05	–	–	0.05	0.05
Valley oak woodland	0.10	–	–	0.10	0.10
Subtotal	*0.16*	*0.90*	*0.01*	*1.07*	*1.06*
Common Natural Communities					
California annual grassland	0.44	6.57	0.02	7.03	7.01
Coastal scrub	–	0.79	–	0.79	0.79
Forest and Woodland	–	0.33	–	0.33	0.33
Subtotal	*0.44*	*7.69*	*0.02*	*8.15*	*8.13*
Other Land Cover Types					
Ruderal	0.05	–	–	0.05	0.05
Developed	2.12	–	0.24	2.36	2.12
Barren	–	–	–	–	–
Subtotal	*2.17*	–	*0.24*	*2.41*	*2.17*
Total	**2.77**	**8.59**	**0.27**	**11.63**	**11.36**

[1] Permanent direct impact totals for the Tunnel-Only Alternative exclude impacts from the San Antonio Dam Spillway Modification construction area.

Table 4.3-8b. Acreages of Temporary Direct Construction Impacts on Natural Communities and Other Land Cover Types in the Proposed Project and Tunnel-Only Alternative

	Construction Areas				Temporary Direct Impact Totals	
Community Type	**Tunnel Intake Structure (acres)**	**Energy Dissipation Structure (acres)**	**Tunnel [1] (acres)**	**San Antonio Dam Spillway Modification (acres)**	**Proposed Project (acres)**	**Tunnel-Only Alternative [2] (acres)**
Sensitive Natural Communities						
Blue oak woodland	0.06	4.09	–	0.17	4.32	4.15
Coast live oak woodland	0.05	–	–	–	0.05	0.05
Scrub oak chaparral	0.17	–	–	–	0.17	0.17
Valley oak woodland	0.44	–	–	–	0.44	0.44
Subtotal	*0.72*	*4.09*	–	*0.17*	*4.98*	*4.81*
Common Natural Communities						
California annual grassland	4.86	14.68	–	29.93	49.47	19.54
Coastal scrub	–	1.23	–	0.67	1.90	1.23
Forest and Woodland	–	3.49	–	2.06	5.55	3.49
Subtotal	*4.86*	*19.40*	–	*32.66*	*56.92*	*24.26*
Other Land Cover Types						
Ruderal	2.17	–	–	0.86	3.03	2.17
Developed	1.96	–	–	1.67	3.63	1.96
Barren	–	1.83	–	0.04	1.87	1.83
Subtotal	*4.13*	*1.83*	–	*2.57*	*8.53*	*5.96*
Total	**9.71**	**25.32**	**–**	**35.40**	**70.43**	**35.03**

1 All proposed Interlake Tunnel impact acreages will be located underground and therefore would not impact surface land covers including sensitive natural communities.

2 Temporary direct impact totals for the Tunnel-Only Alternative exclude impacts from the San Antonio Dam Spillway Modification construction area.

Impact BIO-1: Impacts on Riparian Habitat

Riparian habitats are present throughout the study area including the proposed inundation area, San Antonio River, Nacimiento River, Salinas River, and portions of the shoreline at San Antonio Reservoir (**Table 4.3-2 and Figure 4.3-3**). Riparian habitat does not occur within the proposed construction areas of the project site (**Figure 4.3-4**).

Construction

Under the proposed project or Tunnel-Only Alternative, construction would not directly impact riparian habitat as this sensitive natural community does not occur within the proposed construction areas of the project site (**Table 4.3-8a** and **Table 4.3-8b**). Indirect impacts due to possible erosion and sedimentation could occur within riparian habitat located outside and downstream of the construction areas under both the proposed project and Tunnel-Only Alternative.

Features have been incorporated into the design of the proposed project and Tunnel-Only Alternative to avoid and minimize permanent and temporary impacts on riparian habitats, including **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM IO-1** through **AMM BIO-5** (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*). These AMMs include measures that would be effective at confining potential impacts from construction-related spills or accidents to the project site, precluding off-site impacts on riparian habitats. These AMMs would also limit indirect impacts on riparian habitats because they would train construction workers on the importance of preserving riparian habitats outside of the construction footprint and require fencing of sensitive natural communities. The AMMs would also restrict off-road driving in the construction area, where avoided riparian habitat could be damaged or destroyed. AMMs for controlling invasive species by removing, bagging, and disposing at a waste facility would reduce the potential for the spread of invasive plant species into riparian habitats. The AMMs would also limit indirect impacts on riparian habitats by implementing a SWPPP that would protect water quality and riparian habitats outside of the construction area from erosion and sedimentation.

Operation

Based on historical (water years 1959–2020) water levels for Nacimiento Reservoir, which reflect seasonal patterns of runoff, precipitation, water withdrawals for water-supply purposes, and other reservoir releases, average reservoir levels increase January through April and decrease May through December (see Section 4.1, *Hydrology and Water Quality)*. Inflows (or lack thereof) to the reservoir and reservoir operations combine to cause water levels at Nacimiento Reservoir to fluctuate (i.e., rise or fall). The greatest increases in historical water-level fluctuations occurred in winter when the reservoir fills in response to runoff from seasonal rains. By contrast, the greatest drawdowns have occurred July–October (see Section 4.1, *Hydrology and Water Quality*).

Based on the SVOM modeling results illustrated on **Figure 4.3-5**, operation of Nacimiento Reservoir under the proposed project or Tunnel-Only Alternative is likely to result in water surface elevation fluctuations within a similar range as modeled baseline conditions. Water elevations would range from 668 to 800 feet with both the proposed project and the Tunnel-Only Alternative compared to similar modeled baseline conditions, which ranged from 670 to 800 feet in elevation across all year types (**Figure 4.3-6**). Despite similar range of fluctuations, the modeled proposed project and Tunnel-Only Alternative scenarios are estimated to result in lower average reservoir stage of 735 feet elevation across all year types compared to modeled baseline conditions which reached 759 feet elevation. Currently, riparian habitat has not been identified along the shoreline of Nacimiento Reservoir; therefore, no direct or indirect impacts on riparian habitat are expected in relation to the potential fluctuations and potential drawdown periods modeled for the proposed project and Tunnel-Only Alternative along the shoreline of Nacimiento Reservoir.

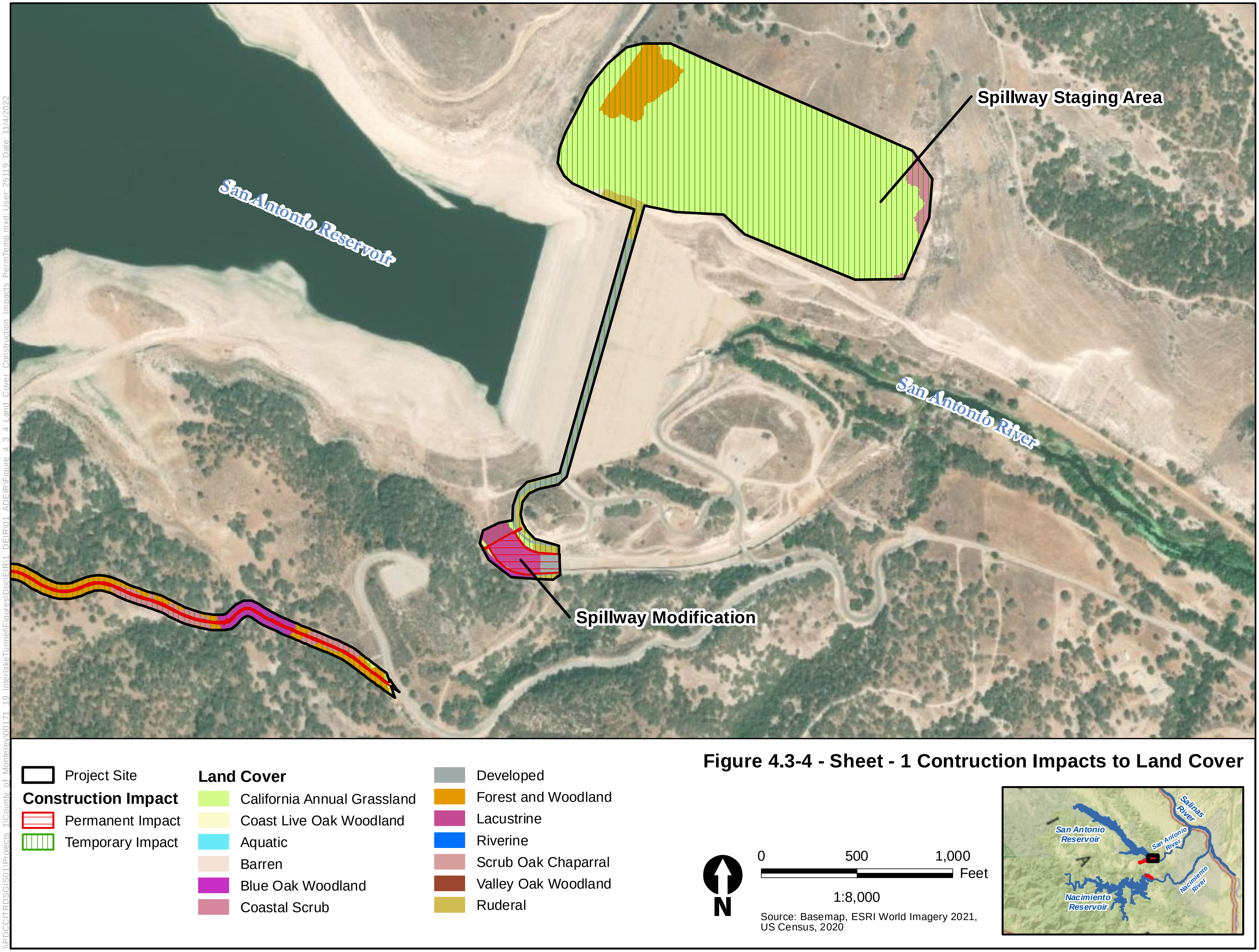
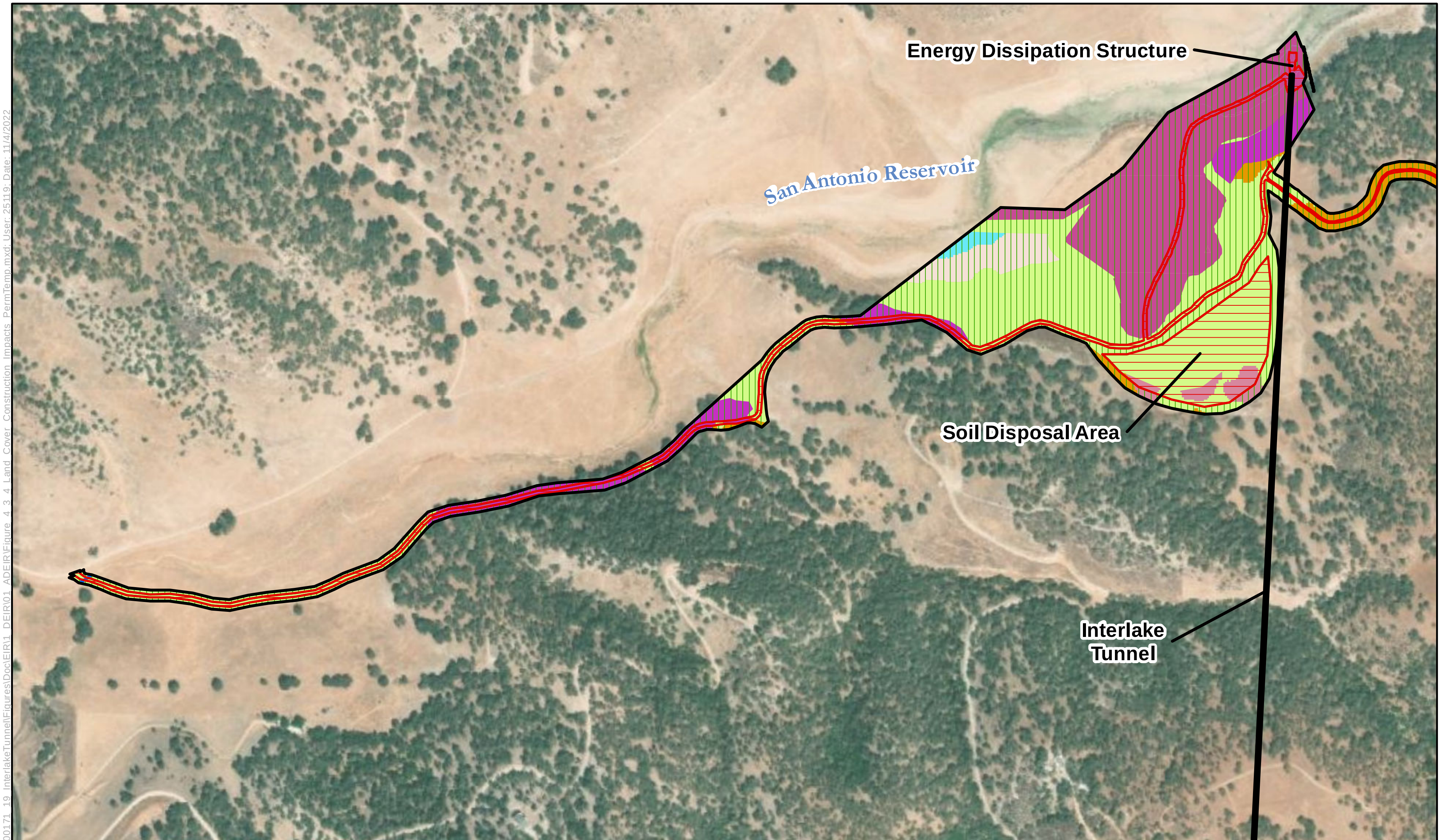


Figure 4.3-4 - Sheet - 1 Contruction Impacts to Land Cover



Project Site

Construction Impact

Permanent Impact

Temporary Impact

Land Cover

California Annual Grassland

Coast Live Oak Woodland

Aquatic

Barren

Blue Oak Woodland

Coastal Scrub

Developed

Forest and Woodland

Lacustrine

Riverine

Scrub Oak Chaparral

Valley Oak Woodland

Ruderal

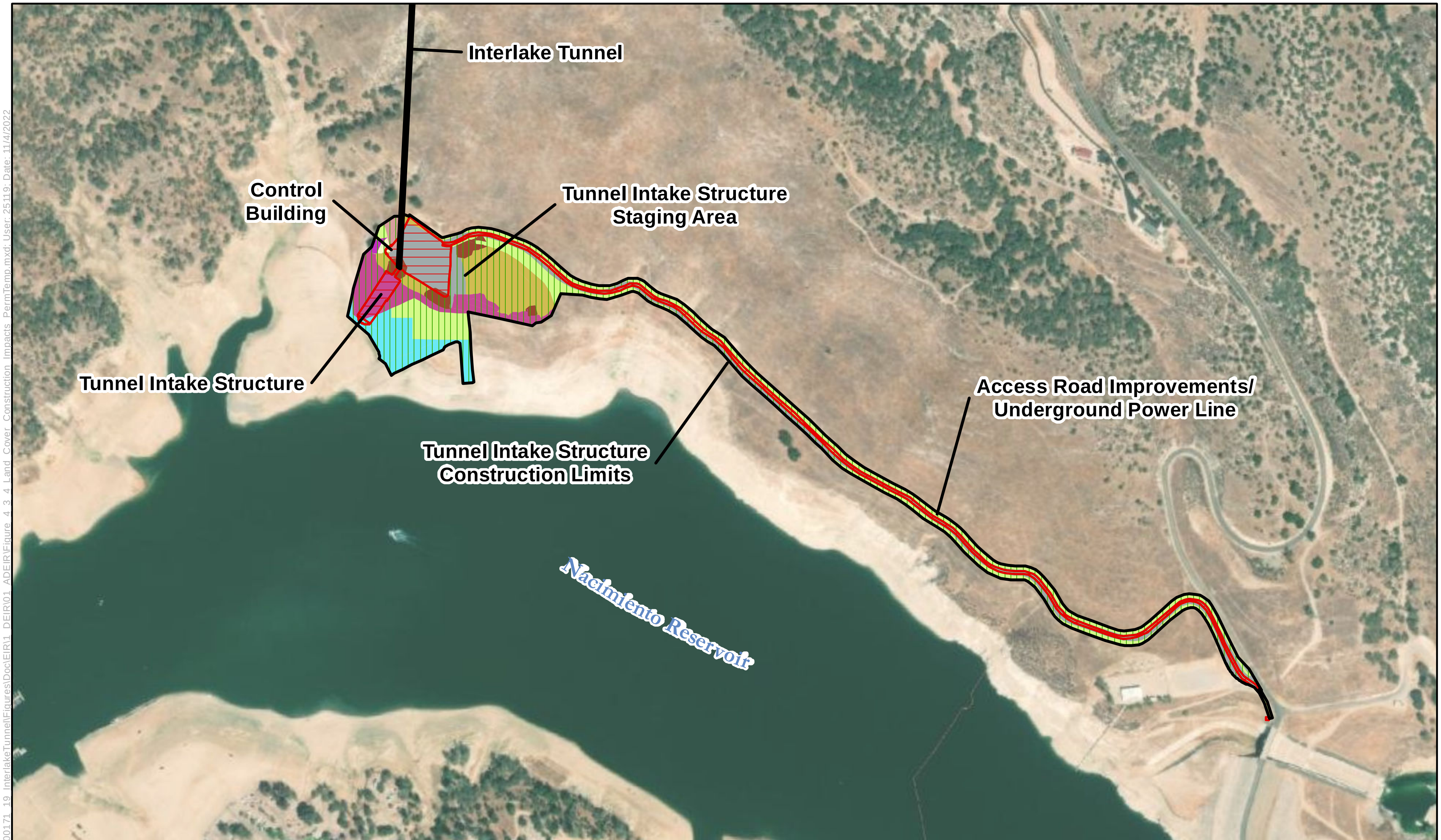
Figure 4.3-4 - Sheet - 2 Contruction Impacts to Land Cover

N

0 500 1,000 Feet

1:8,000

Source: Basemap, ESRI World Imagery 2021, US Census, 2020



Project Site

Construction Impact

Permanent Impact

Temporary Impact

Land Cover

California Annual Grassland

Coast Live Oak Woodland

Aquatic

Barren

Blue Oak Woodland

Coastal Scrub

Developed

Forest and Woodland

Lacustrine

Riverine

Scrub Oak Chaparral

Valley Oak Woodland

Ruderal

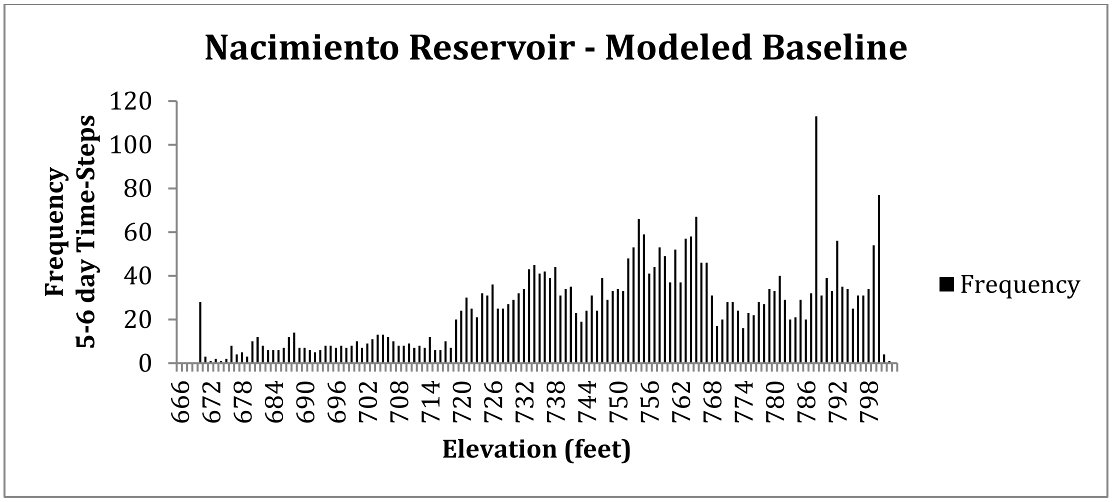
Figure 4.3-4 - Sheet - 3 Contruction Impacts to Land Cover

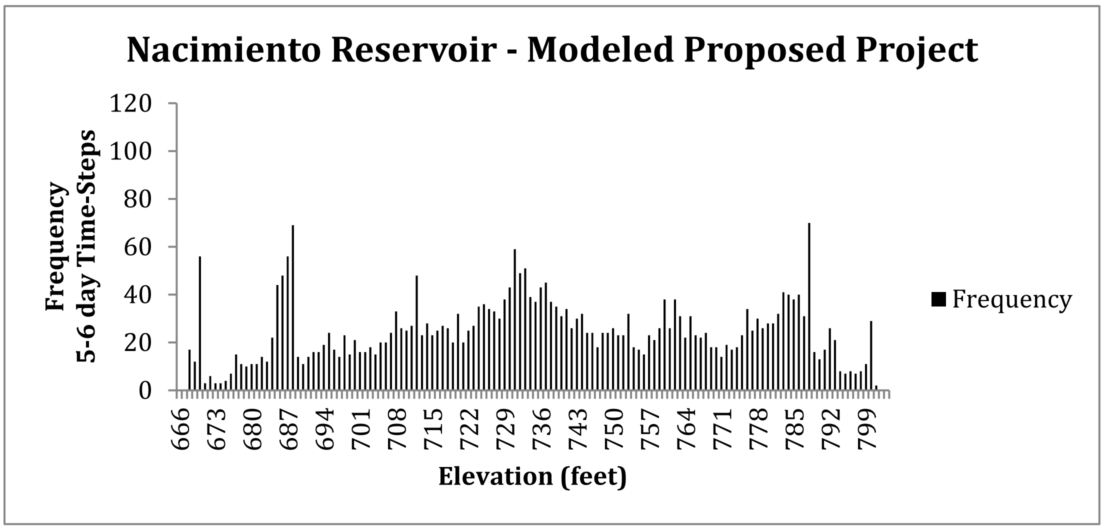
N

0 500 1,000 Feet

1:8,000

Source: Basemap, ESRI World Imagery 2021, US Census, 2020





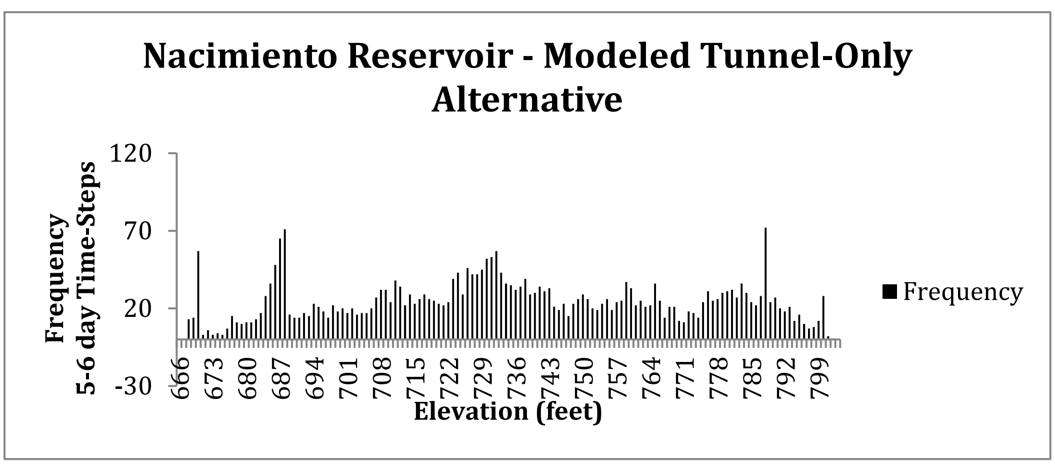
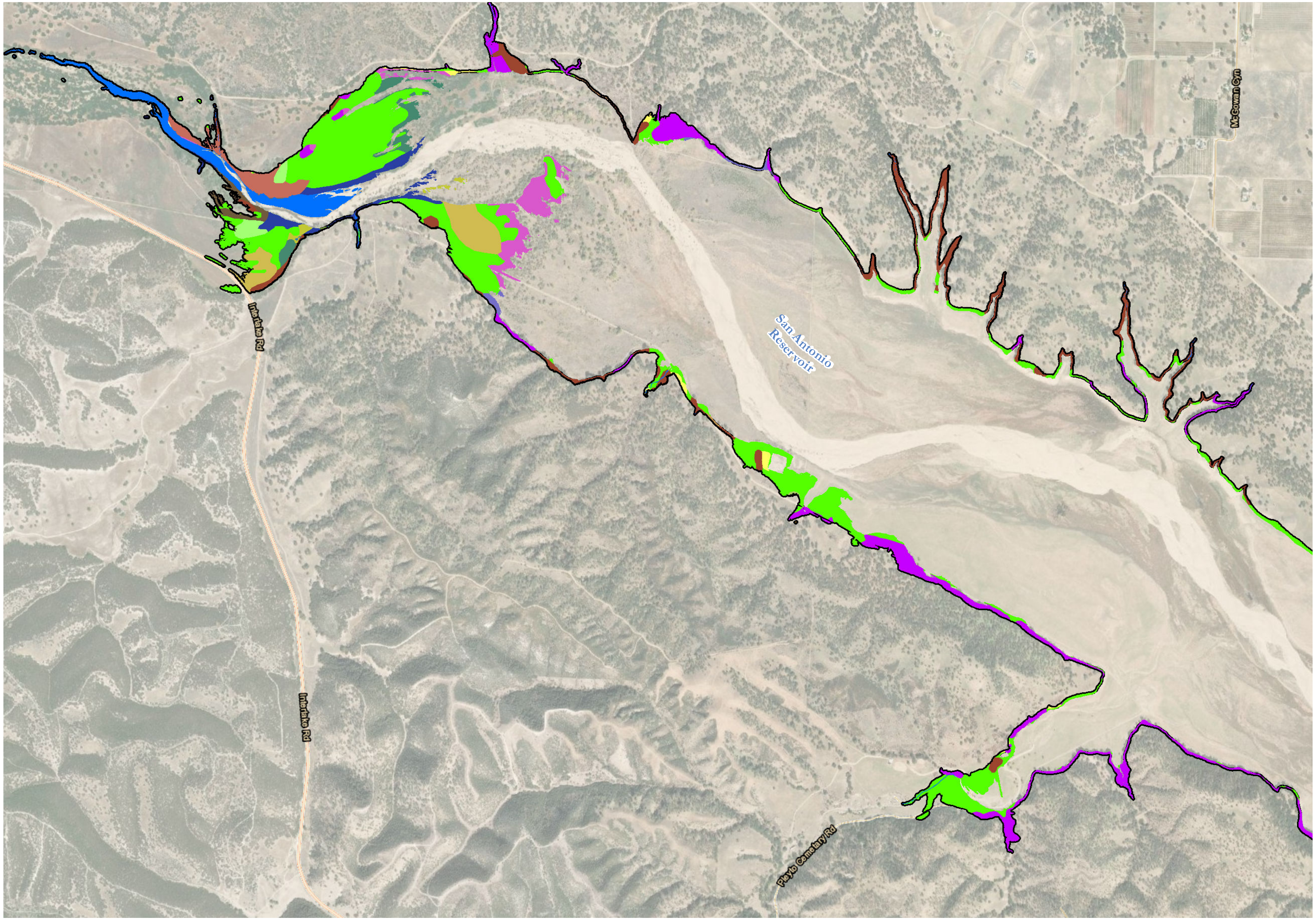
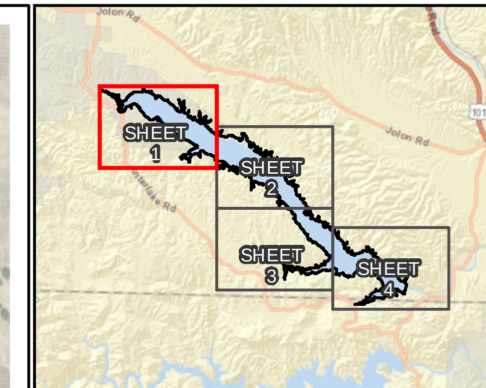


Figure 4.3-5. Total Modeled Reservoir Stage Levels at Nacimiento Reservoir Across All Year Types

Modeled baseline conditions at San Antonio Reservoir also indicate fluctuations in reservoir stage during the past water years ranging from 642 to 775 feet in elevation (**Figure 4.3-7**). Water elevations would range from 646 to 788 feet with the proposed project and 645 to 783 feet in elevation with the Tunnel-Only Alternative. The main difference would be that the proposed project and Tunnel-Only Alternative are estimated to establish higher average reservoir stages totaling 736 feet and 733 feet in elevation, respectively, across all year types compared to modeled baseline conditions, which reached an average elevation of 704 feet.

Currently, 46.52 acres of riparian habitat occurs adjacent to the existing shoreline of San Antonio Reservoir, primarily at the northwestern end of the reservoir where the upper reaches of the San Antonio River flow into the reservoir. Based on the modeling results, operations under the proposed project would result in infrequent inundation of the existing 46.52 acres of riparian habitat located adjacent to the shoreline in an area referred to as the proposed maximum inundation area (**Figure 4.3-6**). Modeling data suggest inundation may occur in the maximum inundation area for up to 14 days per year for the life of the proposed project (across all year types), as shown on **Figure 4.3-8**. Riparian types include primarily cottonwood-willow riparian forest and mixed willow riparian forest, which dominate the upper reaches of the San Antonio River floodplain. These habitats are well adapted to periodic flooding and inundation such that impacts from the proposed periodic inundation would be considered negligible (Whitlow and Harris 1979).





Legend

- Proposed Maximum Water Surface Elevation at San Antonio Reservoir
- Arroyo Willow Thickets
- Barren
- Black Cottonwood Forest
- Blue Oak Woodland
- California Annual Grassland
- California Buckeye Groves
- California Buckwheat Scrub
- Coyote Brush Scrub
- Forest and Woodland
- Fremont Cottonwood Forest
- Fremont Cottonwood/Arroyo Willow Forest
- Freshwater Emergent Wetland
- Mixed Riparian Forest and Woodland
- Mulefat Thickets
- Nuttall's Scrub Oak Scrubland
- Perennial Needlegrass
- Riverine
- Ruderal
- Sandbar Willow Thickets
- Shining Willow Thickets
- Valley Oak Woodland
- Valley Oak Woodland/California Buckwheat Scrub
- Valley Oak Woodland/Fremont Cottonwood Forest

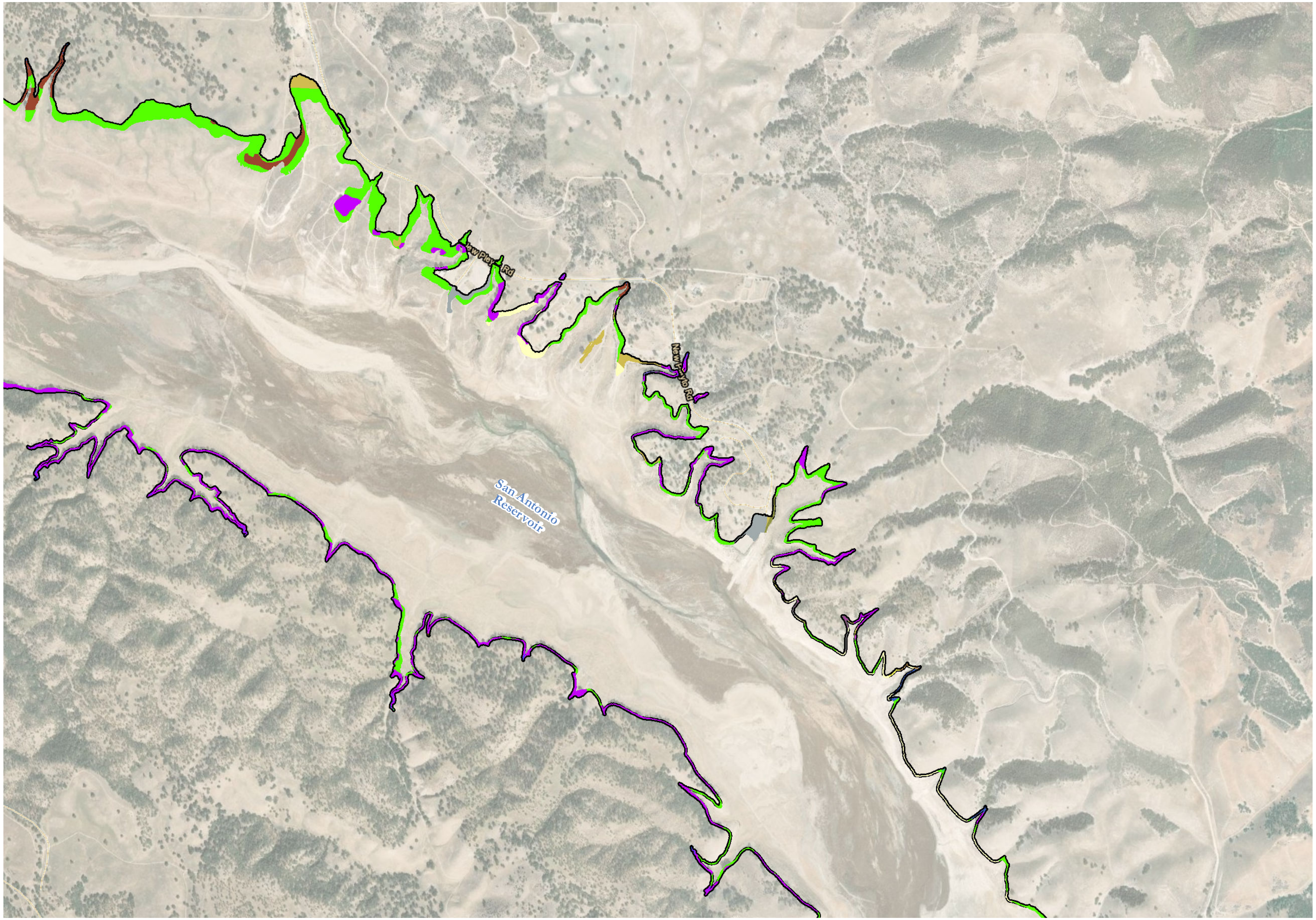
Source: Basemap, ESRI 2021; Horizon 2016;SWAP 2015; TNC and AIS 2008; TNC, AIS, & Stanford University 2014; Cal-IPC et al. 2014

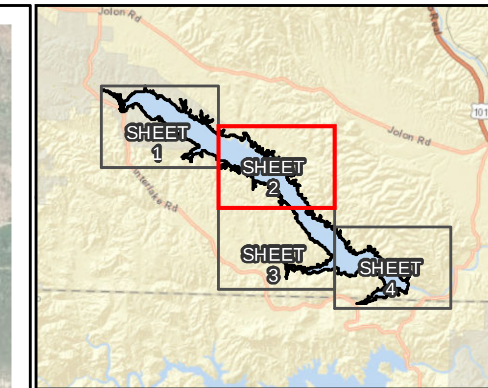
N

0 750 1,500 Feet

1:20,000

Figure 4.3- - Sheet 1
Land Cover within the Proposed San Antonio Reservoir Maximum Inundation Area





Legend

- Proposed Maximum Water Surface Elevation at San Antonio Reservoir
- Arroyo Willow/Mulefat Thickets
- Barren
- Blue Oak/Scrub Oak Woodland
- Blue Oak Woodland
- California Annual Grassland
- California Buckwheat Scrub
- Coastal Scrub
- Coyote Brush Scrub
- Developed
- Forest and Woodland
- Mulefat Thickets
- Nuttall's Scrub Oak Scrubland
- Riverine
- Ruderal
- Valley Oak Woodland
- Valley Oak/Blue Oak Woodland

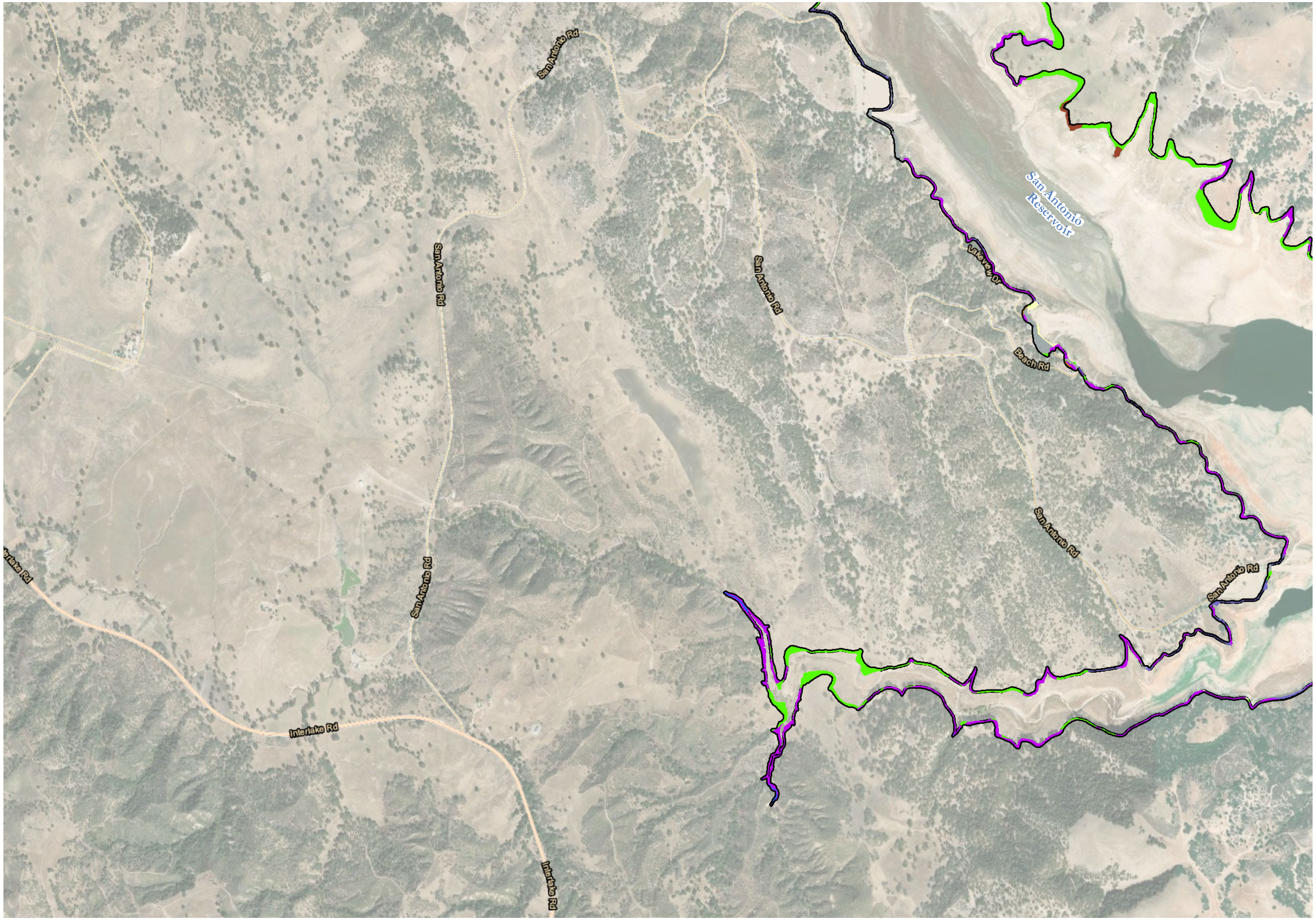
Source: Basemap, ESRI 2021; Horizon 2016;SWAP 2015; TNC and AIS 2008; TNC, AIS, & Stanford University 2014; Cal-IPC et al. 2014

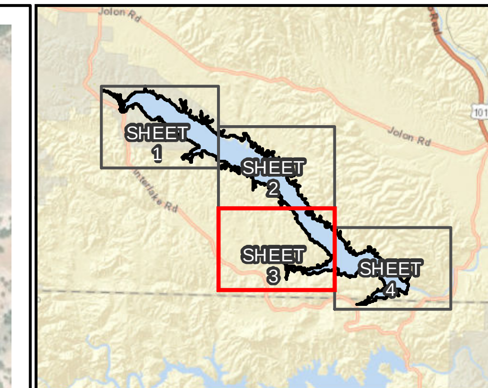
N

0 750 1,500 Feet

1:20,000

Figure 4.3- - Sheet 2
Land Cover within the Proposed San Antonio Reservoir Maximum Inundation Area





Legend

- Proposed Maximum Water Surface Elevation at San Antonio Reservoir
- Barren
- Blue Oak Woodland
- California Annual Grassland
- Coastal Scrub
- Coyote Brush Scrub
- Developed
- Forest and Woodland
- Mulefat Thickets
- Riverine
- Valley Oak Woodland

Source: Basemap, ESRI 2021; Horizon 2016;SWAP 2015; TNC and AIS 2008; TNC, AIS, & Stanford University 2014; Cal-IPC et al. 2014

N

0 750 1,500
Feet
1:20,000

Figure 4.3- - Sheet 3
Land Cover within the Proposed San Antonio Reservoir Maximum Inundation Area

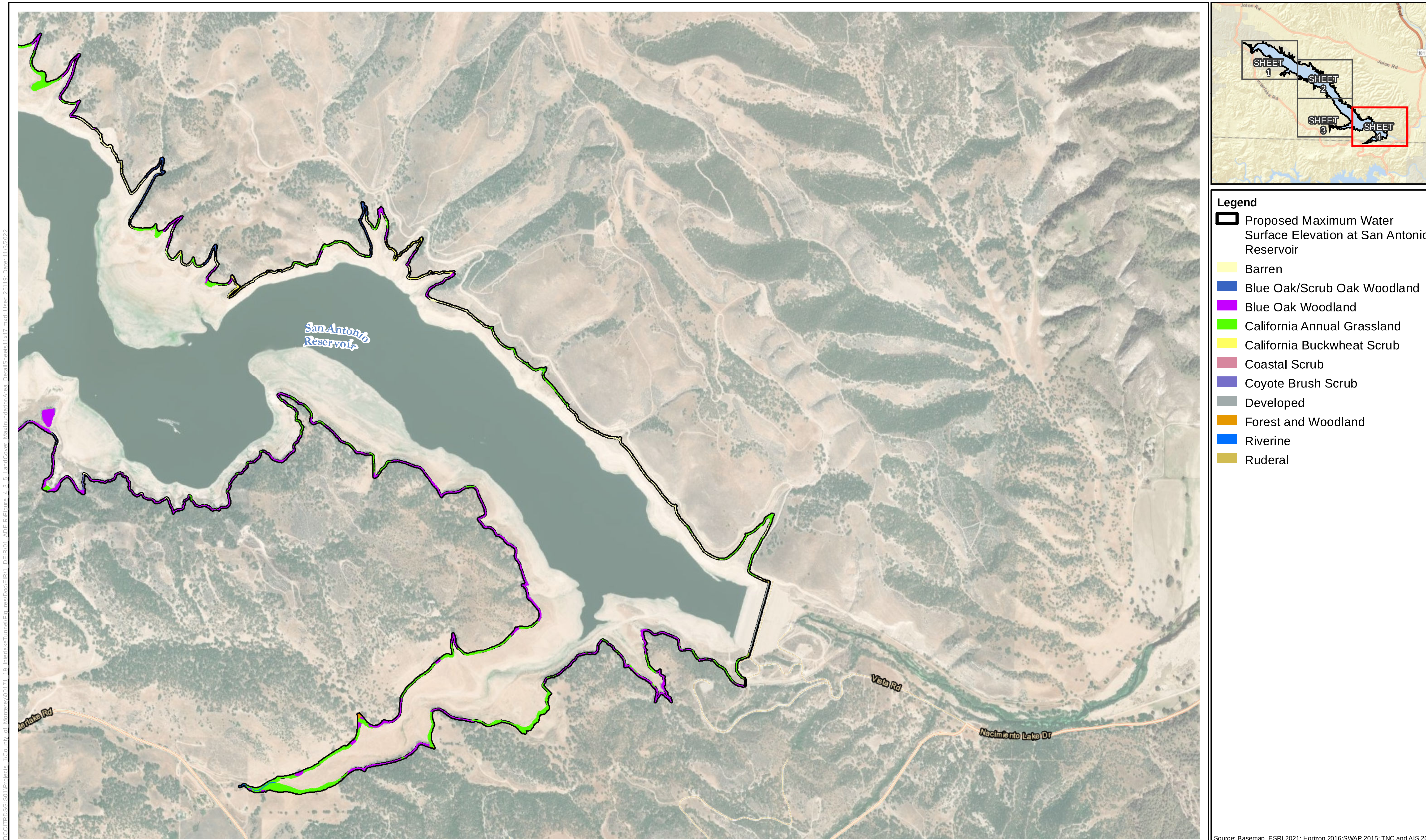
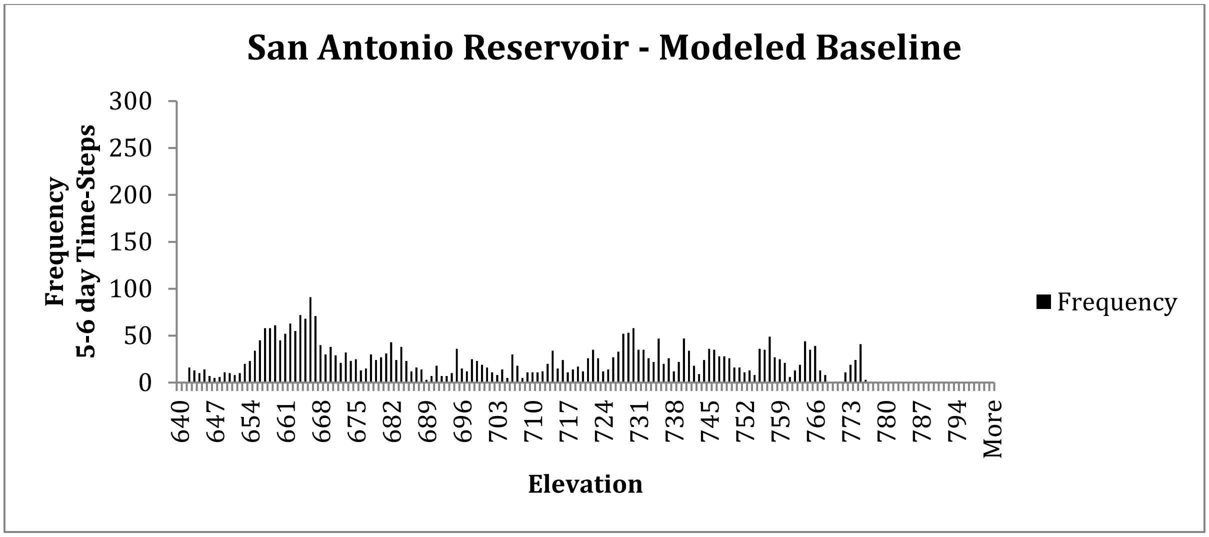
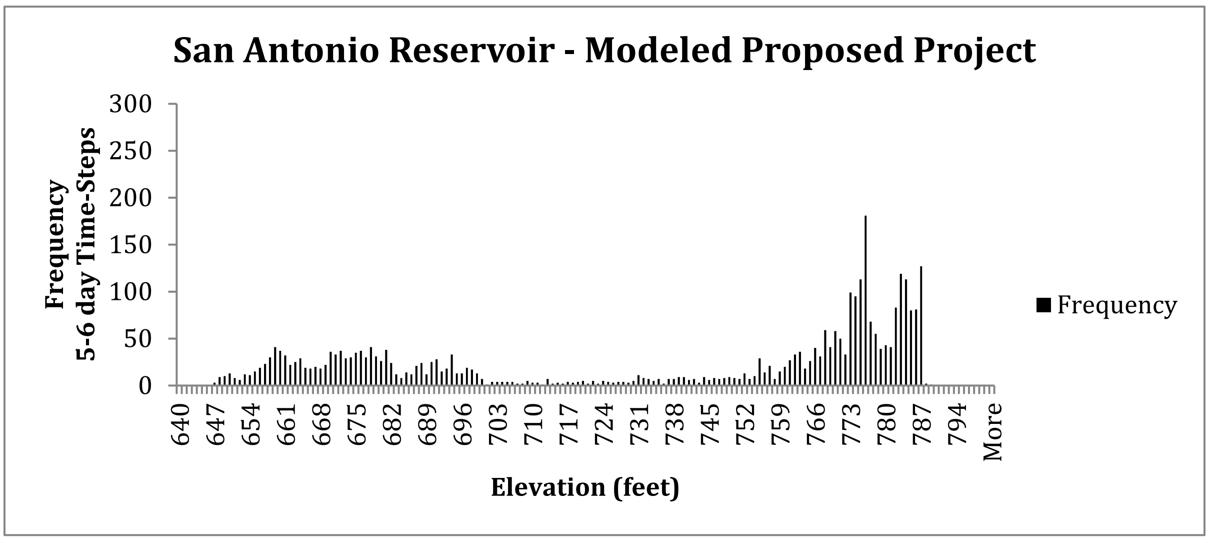


Figure 4.3- - Sheet 4
Land Cover within the Proposed San Antonio Reservoir Maximum Inundation Area





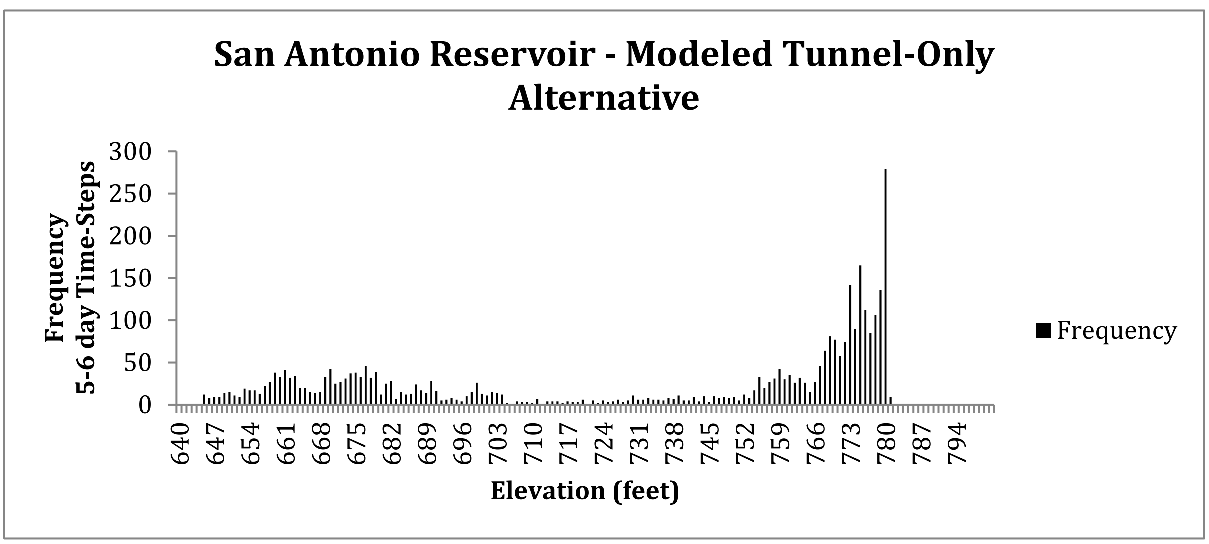


Figure 4.3-7. Total Modeled Reservoir Stage Levels at San Antonio Reservoir Across All Year Types

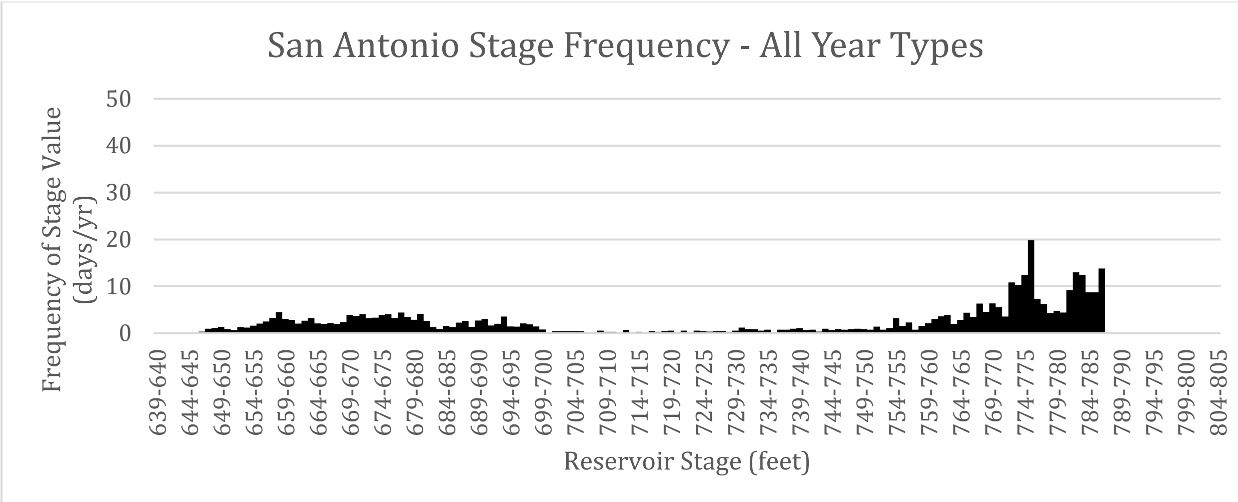


Figure 4.3-8. Modeled Proposed Project Annual Reservoir Stage Levels at San Antonio Reservoir Across All Year Types

The Tunnel-Only Alternative would not involve an increase in the maximum water surface elevation at San Antonio Reservoir and existing riparian habitat would not be exposed to a level of inundation beyond what has currently been possible with the existing spillway infrastructure at San Antonio Dam at an elevation of 780 feet. Approximately 36.21 acres of riparian habitat at or below the existing maximum water surface elevation of 780 feet would experience infrequent annual increases in duration of inundation, similar to existing conditions. This variable frequency and duration of inundation, which equates to approximately 30 days per year on average for the life of the project across all year types, as shown on **Figure 4.3-9**, would not negatively affect existing riparian habitats located within the current maximum inundation area because they are well adapted for these conditions (Whitlow and Harris 1979).

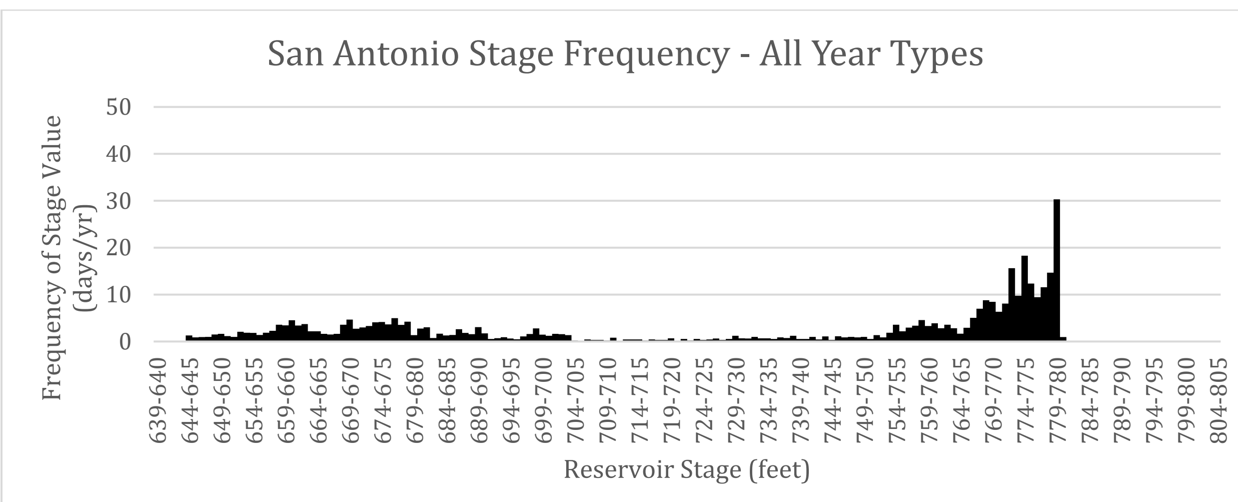


Figure 4.3-9. Modeled Tunnel-Only Annual Reservoir Stage Levels at San Antonio Reservoir Across All Year Types

Model results suggest that operations under both the proposed project and Tunnel-Only Alternative could decrease average annual total reservoir releases from Nacimiento Reservoir compared to modeled baseline conditions (Appendix D, *Existing and Proposed Hydrology Conditions,* **Table D-7**). Model results suggest that the proposed project and Tunnel-Only Alternative would have greater flows compared to modeled baseline conditions from July through October (e.g. conservation releases) but lower flows in November and December (e.g. flood control releases; see Appendix D, *Existing and Proposed Hydrology Conditions,* **Table D-7**). These results indicate that flows along the lower reaches of the Nacimiento River would not change substantially overall, especially during the growing season for riparian communities (February to June). Modeled flows during the dry years are estimated to decrease on average slightly in January through March and October through November compared to modeled baseline conditions under both the proposed project and Tunnel-Only Alternative but are estimated to be higher on average from March to May (see Appendix D, *Existing and Proposed Hydrology Conditions,* **Table D-7**). The flow analysis cited in impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity*, indicates that the modeled flows for recurrence intervals greater than approximately 2-2.5 years at Nacimiento River under the proposed project and Tunnel-Only Alternative would be reduced compared to modeled baseline conditions. This would have a beneficial impact on riparian habitat, allowing for a more stable system with increased vegetation growth. In dry water years, model results for both the proposed project and the Tunnel-Only Alternative indicate a slight decline in groundwater recharge could occur under the Nacimiento River. However, in normal water years, the total annual groundwater recharge is estimated to increase compared to modeled baseline conditions in groundwater aquifers underlying the Nacimiento River for the proposed project and Tunnel-Only Alternative. But when all water years are averaged, there would be modest increase (5 percent for the proposed project and 4 percent Tunnel-Only Alternative) as well as in normal years (18 percent for the proposed project and 17 percent Tunnel-Only Alternative). Thus, across all water year types, modeled flows for both the proposed project and the Tunnel-Only Alternative would not vary substantially from modeled baseline conditions during the growing season; therefore, riparian habitats downstream of the project site would not be substantially affected.

SVOM modeling suggests operations under both the proposed project and Tunnel-Only Alternative could generally increase average annual total reservoir releases from San Antonio Reservoir. San Antonio River flows[2] below the reservoir are estimated to be similar to modeled baseline conditions on average across all water years for the proposed project and Tunnel-Only Alternative during December to March. However, the proposed project and Tunnel-Only Alternative are estimated to have greater flows compared to modeled baseline conditions from April to May and August through October with lower flows in June and July (Appendix D, *Existing and Proposed Hydrology Conditions,* **Table D-7**). Groundwater recharge would also vary during wet and normal water years, while increasing in dry water years, a beneficial impact (see Section 4.1, *Hydrology and Water Quality*). Flows downstream would generally increase for most of the modeled flood years. Increased flood events would affect vegetation while also providing channel scouring and reshaping that would likely promote additional riparian vegetation growth in new portions of the floodplain. Flows would also increase during dry years under both the proposed project and Tunnel-Only Alternative potentially benefitting the riparian habitat in the lower reaches of the San Antonio River.

[2] Under a 50 percent exceedance probability for all water year types.

Generally, Salinas River flows[3] estimated at various nodes are similar between modeled baseline conditions and modeled proposed project and Tunnel-Only Alternative scenarios (Appendix D, *Existing and Proposed Hydrology Conditions,* **Table D-7**). Modeled proposed project and Tunnel-Only Alternative scenarios estimated greater flows compared to modeled baseline conditions in September and October at Los Lobos, Soledad, and the Salinas River diversion facility (a beneficial impact) and lower estimated flows compared to modeled baseline conditions in May and June at Chualar, Spreckels, upstream of the Salinas River diversion facility, and the Salinas River lagoon. For locations on the Salinas River downstream of the San Antonio River, modeled increases in the 48-year flood range from 13 percent to 28 percent, with an average increase of 23 percent. The trend is the same for the modeled Tunnel-Only Alternative scenario.

As mentioned previously, increased flood events could affect riparian vegetation while providing channel scouring and reshaping that would likely promote additional riparian vegetation growth in new portions of the floodplain. For a large, dynamic system like the Salinas River, riparian habitat is not expected to be substantially affected by these modeled flow increases. Typically, both the proposed project and Tunnel-Only Alternative would increase groundwater recharge up to 20 percent in each Salinas River aquifer (Upper Valley, Forebay, 180/400-Foot, and Monterey) during dry years compared to modeled baseline conditions. However, in dry years the Paso Robles subbasin would experience a small decrease (6.5 percent) in groundwater recharge. Further, recharge underlying the Salinas River would experience a modest total decrease (1.5 to 3 percent) in wet and normal years, with the Paso Robles subbasin experiencing the greatest decrease in groundwater recharge in normal years and no change in wet years. However, the total groundwater recharge when all water year types are considered would result in increased total groundwater recharge under both the proposed project and the Tunnel-Only Alternative. This would be considered a beneficial effect on riparian habitat.

As presented in Section 2.5.1.1, *Operations*, the modeled results provide an approximation of potential operational effects from operating the proposed project and Tunnel-Only Alternative but are unable to capture the real-time reservoir operational decision-making that occurs to reduce downstream effects of reservoir releases, including releases to meet downstream regulatory requirements (e.g., minimum releases). The ability to maximize water supply and minimize downstream effects is reflected in MCWRA's historical reservoir operations and minimum release records. Furthermore, MCWRA-managed reservoir releases have been and would continue to be consistent with the flow prescriptions for steelhead developed in consultation with NMFS (MCWRA 2005). Therefore, the potential for operational impacts under the proposed project and Tunnel-Only Alternative associated with reduced frequency of flows or incidences of dry conditions (modeled zero flow) in the Nacimiento River, as predicted by the SVOM model, would be negligible given real-time operational decision-making and MCWRA's historical reservoir operations and minimum release records, especially those that have occurred during successive years of drought conditions.

For impact analyses and mitigation measures for channel maintenance flows in the downstream portions of the Nacimiento, San Antonio, and Salinas Rivers, refer to Impact BIO-8p, *South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch*.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative would occur outside of riparian habitats, and there would be no direct impacts from construction to this habitat. **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** would be incorporated into the design of the proposed project and Tunnel-Only Alternative and would avoid and minimize indirect impacts on riparian habitats downstream of the work areas during construction. Therefore, impacts on riparian habitats from construction of the proposed project or Tunnel-Only Alternative would be **less than significant**.

Operation of the proposed project or Tunnel-Only Alternative would not result in significant direct impacts on riparian habitat. Potential indirect impacts in the lower reaches of the San Antonio and Nacimiento Rivers due to fluctuations in flows would not be substantial, based on evaluation of the SVOM modeling. Potential direct and indirect impacts on riparian habitats would be less than significant because these communities are well adapted to fluctuations in flows and inundation. In addition, indirect impacts on the Salinas River riparian system are expected to be less than significant because modeled downstream flows and groundwater recharge will not change substantially compared to modeled baseline conditions. Therefore, impacts on riparian habitats from operation of the proposed project or Tunnel-Only Alternative would be **less than significant**.

Impact BIO-2: Impacts on Listed, Candidate, Sensitive, or Special-Status Riparian Plant Species

Suitable habitat for three special-status riparian species (Jolon clarkia, Abbott's bush-mallow, and Davidson's bush-mallow) is present throughout the study area including the proposed inundation area, San Antonio River, Nacimiento River, Salinas River, and portions of the shoreline at each reservoir (**Figure 4.3-3**). Riparian habitat does not occur within the proposed construction areas of the project site and known extant populations of special-status riparian species are not reported from the project site.

Construction

Under the proposed project and Tunnel-Only Alternative, construction would not directly affect special-status or sensitive riparian plant species because suitable habitat does not occur within the proposed construction areas of the project site. In addition, indirect impacts on special-status or sensitive riparian plant species would be minimized through the incorporation of **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*).

Operation

As described in Impact BIO-1, *Impacts on Riparian Habitat*, operation of the proposed project or Tunnel-Only Alternative would result in only temporary impacts on riparian habitats suitable for the three special-status riparian plant species known from the region due to infrequent inundation.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative would occur outside of riparian habitats; thus, no direct impacts from construction are anticipated on special-status riparian species. Potential indirect impacts would be avoided or minimized through incorporation of **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** into the design of the proposed project and Tunnel-Only Alternative. Impacts on special-status riparian plant species from construction of the proposed project or Tunnel-Only Alternative would be **less than significant**.

Operation of the proposed project or Tunnel-Only Alternative would not result in significant impacts on special-status riparian plant species if they are present in areas of San Antonio Reservoir's proposed inundation area and in the lower reaches of the San Antonio, Nacimiento, and Salinas Rivers, as described in Impact BIO-1, *Impacts on Riparian Habitat*. These riparian species are well adapted to fluctuations in flows and inundation. Therefore, impacts on special-status riparian plant species from operation of the proposed project or Tunnel-Only Alternative would be **less than significant**.

Impact BIO-3: Impacts on Terrestrial Habitat

Terrestrial habitats are present throughout the project site and adjacent to the riparian corridors of the study area **(Figure 4.3-3)**. These include California annual grassland, coastal scrub, forest and woodland, blue oak woodland, valley oak woodland, coast live oak woodland, and scrub oak chaparral (**Table 4.3-8a** and **Table 4.3-8b**).

Construction

Construction of the proposed project or Tunnel-Only Alternative would result in direct permanent and temporary impacts on terrestrial habitats, including sensitive natural communities like blue oak, valley oak, and coast live oak woodlands as well as scrub oak chaparral located within the project site. Permanent direct impacts associated with construction include earth moving, vegetation removal, ground filling, and hydrological interruption to construct the main project elements. Access and staging would also result in the temporary disturbance of these terrestrial habitats during construction. **Table 4.3-8a** and **Table 4.3-8b** show the acreages of direct permanent and temporary impacts on terrestrial habitat due to construction under both the proposed project and Tunnel-Only Alternative.

Indirect impacts due to construction of the proposed project or Tunnel-Only Alternative could occur within terrestrial habitat located outside the construction areas due to erosion and sedimentation during construction. **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*) are incorporated into the proposed project and Tunnel-Only Alternative to avoid and minimize indirect permanent and temporary impacts on terrestrial habitats, including sensitive communities (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*). These AMMs include measures that would be effective at confining potential impacts from construction-related spills or accidents to the project site, precluding off-site impacts on terrestrial habitats. These AMMs would limit impacts on terrestrial habitats because they would train construction workers on the importance of preserving terrestrial habitats outside of the construction footprint and require fencing of sensitive natural communities where avoidance is feasible. The AMMs would restrict off-road driving in the construction area, where avoided terrestrial habitat could be damaged or destroyed. AMMs for controlling invasive species by removing, bagging, and disposing at a waste facility would reduce the potential for the spread of invasive plant species into terrestrial habitats. The AMMs would also limit impacts on terrestrial habitats by implementing a SWPPP that would protect habitats outside of the construction area from erosion and sedimentation. Once construction is complete, the AMMs would also include restoration of temporarily disturbed areas to pre-project conditions utilizing native plantings.

Operation

Inundation caused by the operation of the proposed project would result in direct permanent impacts on sensitive terrestrial communities around San Antonio Reservoir due to increases in reservoir storage. Proposed project operations in San Antonio Reservoir would result in inundation of approximately 127.95 acres of sensitive terrestrial communities located within the maximum inundation areas, as shown in **Table 4.3-9** and **Figure 4.3-5.** Although infrequent annual inundation is predicted by the SVOM model, this inundation would result in the slow, permanent conversion of native upland vegetation types to ruderal or barren lands over the life of the proposed project. Terrestrial sensitive communities include California buckwheat scrub, coyote brush scrub, perennial needlegrass grassland, California buckeye groves, scrub oak woodland, blue oak woodland, and valley oak woodland, which are not adapted to annual wetted conditions expected at San Antonio Reservoir within the maximum inundation area.

Table 4.3-9. Acreages of Permanent Direct Operation Impacts on Sensitive Terrestrial Communities in the Proposed Project Maximum Inundation Area at San Antonio Reservoir

Terrestrial Community	Proposed Project
Perennial Needlegrass Grassland*	0.14
California Buckwheat Scrub*	3.26
Coyote Brush Scrub*	4.70
Coastal Scrub*	–
California Buckeye Groves*	0.05
Nuttall's Scrub Oak Woodland*	0.28
Blue Oak Woodland*	79.22
Valley Oak Woodland*	40.30
Total	**127.95**

*Indicates sensitive natural communities.

The Tunnel-Only Alternative would not involve an increase in the maximum water surface elevation at San Antonio Reservoir and existing terrestrial habitats would not be exposed to a level of inundation beyond what has currently been possible with the existing spillway infrastructure at San Antonio Dam at an elevation of 780 feet. Therefore, modeled increases in inundation under the Tunnel-Only Alternative would be similar to modeled baseline conditions.

No other proposed project or Tunnel-Only Alternative operational direct or indirect impacts are expected to affect terrestrial habitats downstream of the reservoirs as they are restricted to outside of the active floodplains.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant impacts on sensitive terrestrial habitats by removal of vegetation in these communities. Indirect impacts due to construction under the proposed project or Tunnel-Only Alternative due to erosion and sedimentation into terrestrial habitats located outside of the construction area would be avoided with implementation of applicable **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **BIO-5**. Impacts on sensitive natural communities in the construction footprints would be considered significant, even with the AMMs incorporated into the project design to reduce habitat effects because sizeable amounts of habitat would be permanently lost. These communities are rare and/or declining in California and elsewhere, and construction activities could further degrade the quality of sensitive habitat. Implementation of **MM BIO-3.1** and **MM BIO-3.2** would reduce the level of impact to less than significant because all locations of sensitive natural communities in and within 250 feet of the project footprint would be identified and mapped, and the preservation of in-kind communities for each affected sensitive natural community at identified ratios would ensure survival of the affected sensitive natural community in perpetuity. In addition, temporary impacts on both common and sensitive communities would be restored once construction is complete. Construction impacts would be **less than significant with mitigation**.

Operation of the proposed project could result in significant impacts on sensitive terrestrial communities due to annual inundation from increases in reservoir storage at San Antonio Reservoir. Impacts on sensitive communities in the proposed inundation area would be significant because these communities are rare and/or declining in California and elsewhere. Implementation of **MM BIO-3.2** would reduce the level of impact to less than significant because all locations of sensitive terrestrial habitat in the proposed inundation area would be identified and mapped, and the preservation of in-kind communities for each affected stand at identified ratios would ensure survival of the affected community in perpetuity. Impacts from operation of the proposed project would be **less than significant with mitigation**.

Operation of the Tunnel-Only Alternative would result in infrequent inundation, similar to existing current operations. Therefore, impacts from operations on sensitive terrestrial communities under the Tunnel-Only Alternative would be **less than significant.**

Mitigation Measures

Mitigation Measure BIO-3.1 Avoid Impacts on Sensitive Natural Communities and Native Trees During Construction

MCWRA will avoid project impacts on sensitive natural communities and native trees through the establishment of activity exclusion zones, in which no ground-disturbing activities will take place, including construction staging or other temporary work areas. Activity exclusion zones for sensitive natural communities and native trees will be established around each community or stand within each of the construction areas, the boundaries of which will be clearly marked with construction exclusion fencing or its equivalent. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur in 250 feet of the community or tree resource. The size of activity exclusion zones may be reduced through consultation with a qualified biologist and with concurrence from CDFW or, for any federally protected communities of concern, from USFWS based on site-specific conditions.

Mitigation Measure BIO-3.2 Compensate for Permanent and Temporary Impacts on Sensitive Natural Communities and Native Trees

Prior to any activities that would result in impacts on sensitive natural communities and native trees within the construction work areas or proposed increase in maximum WSE at San Antonio Reservoir, MCWRA will permanently protect, restore, and/or enhance sensitive community habitat (i.e., oak woodland, coastal scrub, perennial grassland) on lands owned by MCWRA adjacent to the area of impact in perpetuity. At a minimum, a 1:1 mitigation ratio would be established (1 acre protected for every 1 acre removed) but the final mitigation ratios will be based on site-specific information and determined through coordination with local, state and/or federal agencies (counties, CDFW, USFWS) during project permit processing.

Impact BIO-4: Impacts on Listed, Candidate, Sensitive, or Special-Status Terrestrial Plant Species

Suitable habitat, which provides the potential for occurrence, for 50 terrestrial special-status plant species is present within the study area. Of these species, approximately 29 have potential to occur in the project site (**Table 4.3-10**). Only one of these (Nuttall's scrub oak) was observed in the project site during the reconnaissance-level surveys.

Table 4.3-10. Special-Status Terrestrial Plant Species Potentially Occurring in the Project Site

Plants	
Bristlecone fir	Ojai fritillary
Carmel Valley bush-mallow	Pale-yellow layia
Carmel Valley malacothrix	Prostrate vernal pool navarretia
Chaparral ragwort	Robbins' nemacladus
Davidson's bush-mallow	San Antonio collinsia
Dwarf calycadenia	San Francisco collinsia
Hardham's evening-primrose	San Luis Obispo owl's-clover
Hooked popcornflower	San Simeon baccharis
Indian Valley spineflower	Santa Lucia bush-mallow
Jolon clarkia	Santa Lucia dwarf rush
Koch's cord moss	Santa Lucia monkeyflower
La Panza mariposa lily	Santa Lucia purple amole
Lemmon's jewelflower	Straight-awned spineflower
Mason's neststraw	Yellow-flowered eriastrum
Nuttall's scrub oak [1]	
Total Number of Special-Status Plant Species with Potential to occur in the Project Site	**29**

[1] Confirmed present in the project site.

Construction

Construction of the proposed project or Tunnel-Only Alternative could result in permanent loss of suitable terrestrial habitat for up to 29 special-status plant species with the potential to occur in the project site. Suitable terrestrial habitats include California annual grassland, blue oak woodland, coast live oak woodland, valley oak woodland, scrub oak chaparral, coastal scrub, and forest and woodland. **Table 4.3-10** identifies the species that could occur within the project site for both the proposed project and Tunnel-Only Alternative, which could be affected by vegetation removal or habitat degradation during construction. The acreages shown in **Table 4.3-8a** and **Table 4.3-8b** list the land cover impacts where these 29 special-status plant species may be found. The actual acreage impacts on special-status plant species would be much less than the overall land cover impacts listed in **Table 4.3-8a** and **Table 4.3-8b**.

Preconstruction and construction **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **BIO-5** (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*) are part of the design of the proposed project and Tunnel-Only Alternative and would limit impacts on special-status plants. Construction workers would be trained on the importance of avoiding special-status species and require fencing of sensitive habitats and any occupied special-status plant habitats where avoidance is feasible. The AMMs would also restrict off-road driving in the construction area, where avoided special-status plants could be damaged or destroyed. AMMs for controlling invasive species by removing, bagging, and disposing at a waste facility would reduce the potential for the spread of invasive plant species into occupied special-status plant habitats. The AMMs would also limit impacts on special-status plants by implementing a SWPPP that would protect habitats outside of the construction area from erosion and sedimentation.

These AMMs would not prevent the direct permanent loss of or degradation of suitable habitat for special-status plants in the footprint for proposed project or Tunnel-Only Alternative. Under the proposed project or Tunnel-Only Alternative, construction of facilities could result in the potential loss and habitat modification for 29 species that may occur in the work areas through removal and habitat quality degradation, which could include disturbance of the seed bank and changes to soil structure and mycorrhizal (symbiotic fungal) systems. Direct permanent impacts on the species' potential habitats could result from earth moving and vegetation removal for construction of facilities of the Tunnel Intake Structure, Energy Dissipation Structure, as well as the San Antonio Dam Spillway Modification. The new roads associated with the outlet structure would also result in permanent impacts on species' potential habitats. Potential species' habitats include California annual grassland, blue oak woodland, coast live oak woodland, valley oak woodland, scrub oak chaparral, coastal scrub, and forest and woodland. Permanent impacts on potential special-status plant habitat would occur during construction activities for all facilities in both the proposed project and Tunnel-Only Alternative, with the exception of the underground tunnel.

Under the proposed project or Tunnel-Only Alternative, construction activities would also result in the direct temporary disturbance of special-status plant habitat during construction. Temporary impacts on potential special-status plant habitat would occur during construction activities for most facilities, except those associated with the underground tunnel. Temporary impacts would result from construction staging and access. Construction would result in temporary impacts on California annual grassland, blue oak woodland, coast live oak woodland, valley oak woodland, scrub oak chaparral, coastal scrub, and forest and woodland.

Potential indirect impacts on special-status plants from the construction of the proposed project or Tunnel-Only Alternative from changes to special-status plant habitat outside the construction area due to erosion and sedimentation from earth moving during construction would be avoided by implementation of BMPs, including preparation and implementation of a SWPPP.

Operation

Operation of the proposed project would result in direct permanent impacts on terrestrial habitats suitable for 29 special-status plant species in the San Antonio inundation area due to increases in reservoir storage. The proposed project would also result in permanent impacts on Nuttall's scrub oak, a CNPS Rank 1B.1 species observed in the proposed maximum inundation area (**Table 4.3-10**). Operation of the Tunnel-Only Alternative would result in infrequent inundation, similar to current operations within the existing reservoir inundation area where special-status terrestrial species are not expected. Therefore, impacts on special-status plant species from operations under the Tunnel-Only Alternative are not anticipated.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant impacts on special-status plant species by potentially reducing the number of individuals of present special-status plants or reducing the quality or acreage of suitable habitat for 29 sensitive plant species. Indirect impacts due to construction under the proposed project or Tunnel-Only Alternative due to erosion and sedimentation in suitable special-status plant habitats located outside of the construction area would be avoided with implementation of **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5**. These potential impacts on special-status plants in the construction footprint would be significant because their loss could decrease genetic diversity for the species (CDFW 2018a). Although measures would be implemented before and during construction to avoid and minimize impacts on special-status plants, the proposed project or Tunnel-Only Alternative would still result in the loss and habitat quality degradation of their habitats. The permanent losses of special-status plants and their habitats would be a significant impact. Implementation of **MM BIO-4.1** and **MM BIO-4.2** would reduce the level of impact to less than significant because all locations of special-status plants in and within 250 feet of the project construction footprint would be identified and mapped, and the permanent protection of occupied habitat for each affected species at identified ratios would ensure some of the populations of these species would survive in perpetuity. Construction impacts for the proposed project and Tunnel-Only Alternative on special-status plant species would be **less than significant with mitigation**.

Operation of the proposed project could result in significant impacts on special-status terrestrial plant species if they are present in areas of the proposed increase in maximum inundation area at San Antonio Reservoir by potentially reducing the number of special-status plants. These potential impacts on special-status plants in the San Antonio Reservoir proposed maximum inundation area would be significant because their loss could decrease genetic diversity for the species (CDFW 2018a). Implementation of **MM BIO-4.1** and **MM BIO-4.2** would reduce the level of impact to less than significant because all locations of special-status plants in the San Antonio Reservoir proposed maximum inundation area would be identified and mapped, and the permanent protection of occupied habitat for each affected species at identified ratios would ensure some of the populations of these species would survive in perpetuity. Proposed project operations impacts on special-status plant species would be **less than significant with mitigation**.

Operation of the Tunnel-Only Alternative would result in infrequent inundation, similar to existing current operations. Therefore, impacts from operations under the Tunnel-Only Alternative to special-status plant species would be **less than significant.**

Mitigation Measures

Mitigation Measure BIO-4.1 Conduct Appropriately Timed Surveys for Special-Status Plant Species Prior to Construction and Operations

MCWRA will employ qualified botanists to conduct special-status plant surveys of the construction footprint, including all permanent and temporary construction impact areas and a 250-foot-wide buffer area to encompass areas where impacts may occur. MCWRA will also employ qualified botanists to conduct special-status plant surveys in terrestrial habitat within the San Antonio Reservoir inundation area proposed for the proposed project or Tunnel-Only Alternative. The surveys will be conducted in accordance with *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2021), or the most current industry-accepted protocols. Surveys will occur during the season that special-status plant species would be evident and identifiable, which generally is during their blooming period. The surveys will be conducted no more than 3 years prior to the start of ground-disturbing activities and/or project operations. The results of the surveys will be submitted in a report to CDFW and/or USFWS for review no less than 1 year prior to the start of ground-disturbing activities and/or project operations.

The survey report will identify the location and description of all work areas and the location and description of all occupied habitat for special-status plant species. The report will also identify locations where effective avoidance measures could be implemented. In areas where no special-status plant species are present, no further mitigation will be required.

Mitigation Measure BIO-4.2 Establish Activity Exclusion Zones Around Special-Status Plants in Temporary Impact Areas and Compensate for Permanent Impacts on Special-Status Plant Species

Where surveys determine that a special-status plant species is present in or adjacent to an area where temporary ground-disturbing activities would take place, MCWRA will avoid project impacts on the species through the establishment of activity exclusion zones, in which no ground-disturbing activities will take place, including construction staging or other temporary work areas. Activity exclusion zones for special-status plant species will be established around each occupied habitat site, the boundaries of which will be clearly marked with construction exclusion fencing or its equivalent. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur within 250 feet of the occupied habitat. The size of activity exclusion zones may be reduced through consultation with a qualified biologist and with concurrence from CDFW or, for any federally listed species, from USFWS based on site-specific conditions.

Prior to any activities that would result in permanent impacts on special-status plants, including Nuttall's scrub oak, MCWRA will permanently protect compensation occupied habitat. At minimum, a 1:1 mitigation ratio would be established (1 acre preserved for every 1 acre removed), but the final mitigation ratios will be based on site-specific information and determined through coordination with local, state, and/or federal agencies (counties, CDFW, USFWS) during project permit processing.

Impact BIO-5: Impacts on Wetland and Non-Wetland Water Habitats

Wetland and non-wetland water habitats are present throughout the study area including the portions of the shoreline at each reservoir, the proposed inundation area, San Antonio River, Nacimiento River, Salinas River, Salinas River Lagoon, and OSR (**Figures 4.3-2 and 4.3-3;** Appendix E, *Biological Resource Attachments,* Land Cover Mapbook). Wetland habitat does not occur within the proposed construction areas of the project site. Non-wetland waters in the form of open reservoir water occur in the wetted portions of the proposed construction areas of the project site, including the Tunnel Intake Structure, Energy Dissipation Structure, and the San Antonio Dam Spillway Modification.

Construction

Under the proposed project or Tunnel-Only Alternative, construction would not directly affect wetland habitat because it does not occur within the proposed construction areas. Potential indirect impacts from construction of the proposed project or Tunnel-Only Alternative on wetland habitats located downstream of the construction areas would be avoided or minimized with the incorporation of **AMM GEN-1** through **AMM GEN-6**, **MM GEN-8**, and **AMM BIO-1** through **AMM**

BIO-5 (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*) into the project design of the proposed project and Tunnel-Only Alternative.

The proposed project and Tunnel-Only Alternative would result in direct impacts on open reservoir waters (mapped as lacustrine on **Figure 4.3-4)**. Permanent impacts would result from construction of the Tunnel Intake and Energy Dissipation Structures under both the proposed project and Tunnel-Only Alternative. Permanent impacts would also occur from the San Antonio Dam Spillway Modification as part of the proposed project. Temporary impacts would result from construction staging in the form of cofferdams and access by construction personnel under both the proposed project and Tunnel-Only Alternative. **Table 4.3-11** shows the acreages of direct permanent and temporary impacts on open reservoir waters (i.e., lacustrine) in each project construction area under both the proposed project and Tunnel-Only Alternative, which are similar in scope.

Table 4.3-11. Acreage of Direct Impacts on Open Reservoir Water under the Proposed Project and Tunnel-Only Alternative

	Project Construction Areas				Impact Totals	
Community Type	**Tunnel Intake Structure (acres)**	**Energy Dissipation Structure (acres)**	**Interlake Tunnel [1] (acres)**	**San Antonio Dam Spillway Modification (acres)**	**Proposed Project (acres)**	**Tunnel-Only Alternative (acres)**
Permanent Impacts						
Lacustrine	0.40	1.03	–	0.80	2.24	1.44
Temporary Impacts						
Lacustrine	3.09	14.88	–	0.31	18.27	17.97

[1] The Interlake Tunnel would be located underground; therefore, there would be no impacts on open reservoir water.

MCWRA has incorporated **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8,** and **AMM BIO-1** through **AMM BIO-5** (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*) into the design of the proposed project and Tunnel-Only Alternative to avoid and minimize indirect impacts on adjacent wetlands and open reservoir waters (i.e., lacustrine) in the project site. These AMMs would avoid impacts on adjacent wetlands and limit impacts on open reservoir waters because they would require construction worker training on the importance of preserving wetlands and non-wetland waters outside of the construction footprint and require fencing of adjacent wetlands where avoidance is feasible. The AMMs would also restrict off-road driving in the construction area, where avoided wetlands could be damaged or destroyed. AMMs for controlling invasive species by removing, bagging, and disposing at a waste facility would reduce the potential for the spread of invasive plant species into adjacent wetlands and open reservoir waters. The AMMs would also limit impacts on adjacent wetlands and open reservoir waters by implementing a SWPPP that would protect habitats outside of the construction area from erosion and sedimentation. Although these preconstruction and construction measures are part of the proposed project and Tunnel-Only Alternative, the measures would not prevent the permanent loss or habitat quality degradation of open reservoir waters in both proposed construction footprints.

Operation

Operation of the proposed project in the San Antonio Reservoir would result in the infrequent inundation of wetland and non-wetland waters (i.e., drainage features). Proposed project operations would result in infrequent inundation of approximately 0.07 acre of wetland habitat at San Antonio Reservoir in the form of freshwater emergent wetland and 21.24 acres of non-wetland waters in the form of drainage features located within the maximum inundation areas as shown on **Figure 4.3-5**. This inundation would be temporary, as described in Impact BIO-1, *Impacts on Riparian Habitat*, and shown on **Figures 4.3-8** and **4.3-9**.

Other proposed project or Tunnel-Only Alternative operational impacts expected to wetland and non-wetland water habitats in the study area (i.e., downstream of the project site) would be similar to those described under Impact BIO-1, *Impacts on Riparian Habitat*, for riparian habitats. Thus, wetland and open water habitats located in the study area may experience temporary short-term impacts due to potential fluctuating changes in flow and groundwater recharge. These would not be considered substantial, given the modeling results that show the similar monthly fluctuations compared to modeled baseline flows and groundwater recharge conditions across all years. Furthermore, real-time reservoir operational decision-making that would occur to reduce downstream effects of reservoir releases, including releases to meet downstream regulatory requirements (e.g., minimum releases) and flood protection, as they have in the past, would decrease any changes for long-term, permanent impacts on existing wetlands and non-wetland waters present in the study area.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative would occur outside of wetland habitats, and there would be no direct temporary or permanent impacts from construction to this habitat. Indirect impacts due to construction under the proposed project or Tunnel-Only Alternative due to erosion and sedimentation into wetlands located outside of the construction area would be avoided or minimized with incorporation of **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5**.

Construction of the proposed project or Tunnel-Only Alternative would result in direct impacts on open reservoir waters (i.e., lacustrine) due to installation of the project facilities proposed under the proposed project and Tunnel-Only Alternative as well as from erosion and sedimentation into non-wetland waters located outside of the construction area. However, the impacts on open reservoir waters would not be considered significant because they would be minimal in amount compared to the remaining open waters of the reservoirs. Implementation of **MM BIO-5.1** would require pre-construction surveys within construction work areas to allow for the identification and avoidance of sensitive biological resources. Therefore, impacts on open reservoir waters (i.e., lacustrine) from construction of the proposed project or Tunnel-Only Alternative would be **less than significant with mitigation**.

Operation of the proposed project or Tunnel-Only Alternative would not result in significant impacts on wetlands and non-wetland waters due to increases in reservoir storage at San Antonio Reservoir and fluctuations at Nacimiento Reservoir. Potential impacts in the lower reaches of the San Antonio and Nacimiento Rivers due to fluctuations in downstream flows and groundwater recharge would not be substantial, based on the modeling results and existing operational procedures. Potential temporary impacts on wetlands and non-wetland waters habitats would be less than significant because these communities are well adapted to current fluctuations in the reservoirs and within the downstream channels. In addition, impacts on the wetlands and non-wetland waters of the Salinas River are expected to be less than significant because downstream flows would not change substantially. Therefore, impacts on wetlands and non-wetland waters from operation of the proposed project and Tunnel-Only Alternative would be **less than significant**.

Mitigation Measure

Mitigation Measure BIO-5.1 Pre-Construction Surveys for Sensitive Biological Resources in Construction Work Areas

Prior to construction, all work areas will be surveyed by a qualified biologist for sensitive biological resources, including, but not limited to, habitats, such as wetlands and non-wetland waters, and special-status plants and wildlife. Areas to be protected will be marked with environmentally sensitive fencing and crews will be advised that these areas are no-work zones during construction.

Impact BIO-6: Impacts on Listed, Candidate, Sensitive, or Special-Status Wetland Plant Species

Suitable wetland habitat for one special-status plant species, saline clover, is present downstream of the project site in the Salinas River Lagoon and OSR. Wetland habitats that would support special-status plant species do not occur within the proposed construction areas of the project site.

Construction

Construction of the proposed project or Tunnel-Only Alternative would not directly impact special-status wetland plant species as suitable habitats do not occur within the proposed construction areas. In addition, there would be no indirect impacts on special-status wetland plant species from construction staging, access, or other related activities as these impacts would be avoided and minimized with incorporation of **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*) into the design of the proposed project and Tunnel-Only Alternative.

Operation

Operation of the proposed project would not result in direct permanent impacts on wetland habitats in the upper reaches of the San Antonio River floodplain within the project site due to fluctuations in inundation. In addition, potential impacts on wetlands and non-wetland waters are not expected to occur downstream of the reservoirs in the San Antonio and Nacimiento Rivers under operations proposed by both the project and the Tunnel-Only Alternative. Moreover, none of the regional special-status wetland species have the potential to occur in these portions of the study area as the elevations are outside of the species' ranges. Therefore, operations would not affect special-status wetland plant species.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative would occur outside of wetland habitats, and **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8,** and **AMM BIO-1** through **AMM BIO-5** would be in place to avoid and minimize indirect impacts. In addition, no direct or indirect impacts on special-status wetland species downstream of the project site are expected from operational activities under the proposed project or the Tunnel-Only Alternative. Therefore, impacts on special-status wetland species from construction and operation of the proposed project and Tunnel-Only Alternative would be **less than significant**.

Impact BIO-7: Impacts on Reservoir Fish and Wildlife Habitat

Construction

Construction of the proposed project or Tunnel-Only Alternative would result in the permanent and temporary loss of shoreline and reservoir bottom habitat for reservoir fish species. The affected area would be a small fraction of the total habitat available to fish in the reservoirs. Construction activities that disturb soil and sediments in the reservoir bottom and adjacent upland areas could increase erosion and mobilization of sediments, potentially resulting in increased turbidity and suspended sediment in the reservoirs that could lead to direct impacts on individuals or indirect impacts through degradation of spawning and rearing habitat in the reservoirs. Spills or leaks of gasoline, oil, or other contaminants during construction could contaminate surface waters in the reservoirs and injure or kill individuals. However, with incorporation of **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*), as well as other pollution prevention and control measures that would be required as part of the SWPPP (see subsection titled *Erosion Control* in Section 2.4.7, *Utilities*), potential impacts on fish and aquatic habitat would be avoided or minimized.

Operation

Project operations represent the primary source of potential impacts on reservoir fisheries. Reservoir fish are an important forage item for wildlife (e.g., bald eagle) and several species (large and smallmouth bass, sunfish) are recreationally important. The only special status fish species with potential to occur in the reservoirs is Monterey hitch. However, project-related changes in reservoir volumes and water surface fluctuations would not be expected to have impacts on Monterey hitch in the reservoirs because hitch do not spawn in lakes or reservoirs, adults are typically pelagic (occupy waters other than shoreline and bottom) in lakes, and hitch are not as greatly affected by reservoir elevations or as dependent (directly) on shoreline habitat as other target species (Moyle 2002). Therefore, the following analysis focuses on potential impacts of reservoir operations under the proposed project or Tunnel-Only Alternative on bass and sunfish populations in these reservoirs.

Nacimiento Reservoir

Operation of Nacimiento Reservoir, as reflected in the SVOM modeled output for the proposed project, can be expected to lower average water surface elevations substantially (see Section 4.1, *Hydrology and Water Quality,* and **Table D-5** in Appendix D, *Existing and Proposed Hydrology Conditions*) and cause substantial declines in reservoir productivity criteria compared to modeled baseline conditions. Under the proposed project, model results suggest that the frequency (number of months) of *excellent* fish productivity conditions would be reduced by 64 percent (from 84 months to 30 months), while the frequency of *poor* productivity conditions would increase 57 percent (from 229 months to 360 months) over the 47-year simulated period compared to modeled baseline conditions (**Table 4.3-12**). The largest reductions in monthly frequency of excellent conditions (ranging from 67 to 72 percent) would occur in March through June (**Table 4.3-12**). The frequency of poor conditions would increase in every month, with the largest increases (90 to 113 percent) occurring in January through March (**Table 4.3-12**). Model results suggest that over the 47-year simulated period, there would be 18 modeled years where months with excellent productivity conditions would be reduced, and there would be 34 modeled years with an increase in the frequency of months with poor productivity conditions. In addition, model results show that the fish production index (which considers the varying monthly importance for fish productivity) could decrease an average of 20 percent for the year compared to modeled baseline conditions (**Table 4.3-13**). The largest average monthly decrease was shown in the modeling to occur during January (26 percent). Reduced reservoir levels during wet or normal water year types would be the cause of reduced productivity compared to modeled baseline conditions.

Operation of Nacimiento Reservoir under the Tunnel-Only Alternative would also be expected to lower average water surface elevations substantially (see Section 4.1, *Hydrology and Water Quality* and **Table D-5** in Appendix D, *Existing and Proposed Hydrology Conditions*) and cause similar, but slightly greater, impacts on reservoir fish populations compared to the proposed project. Model results suggest that the trends in fish productivity under the Tunnel-Only Alternative would be similar to those under the model results for the proposed project (**Table 4.3-12** and **Table 4.3-13**). Reduced reservoir levels during all water year types under the Tunnel-Only Alternative would be the cause of reduced productivity compared to modeled baseline conditions.

Table 4.3-12. Number of Months per Fish Habitat Category at Nacimiento Reservoir over the Simulated Period

Month	Excellent			Good			Fair			Poor		
	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel Only	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel Only	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel Only	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel Only
Oct	1	1	1	2	1	1	18	4	4	26	41	41
Nov	1	1	1	2	1	1	17	4	4	27	41	41
Dec	0	0	0	3	2	2	21	5	3	23	40	42
Jan	1	0	0	6	4	3	24	9	10	16	34	34
Feb	3	2	2	15	7	7	16	13	13	13	25	25
Mar	15	5	5	9	14	14	13	9	8	10	19	20
Apr	19	6	8	5	16	12	11	5	7	12	20	20
May	18	5	8	5	16	11	10	4	6	14	22	22
Jun	13	4	4	8	8	6	6	13	14	20	22	23
Jul	7	2	3	7	3	2	12	17	17	21	25	25
Aug	4	2	2	3	2	1	18	10	13	22	33	31
Sep	2	2	2	3	0	0	17	7	4	25	38	41
Total	**84**	**30**	**36**	**68**	**74**	**60**	**183**	**100**	**103**	**229**	**360**	**365**

Table 4.3-13. Fish Production Index Comparisons between Modeled Baseline, Modeled Proposed Project, and Modeled Tunnel-Only Alternative Scenarios Using Monthly Values over the 47-year Simulated Period

Month	Modeled Baseline	Modeled Proposed Project		Modeled Tunnel-Only Alternative		Maximum Index Possible
		Index	Difference (percent)	Index	Difference (percent)	
Nacimiento Reservoir						
October	144	112	-22	112	-22	376
November	142	112	-21	112	-21	188
December	74	56	-24	54	-27	188
January	86	64	-26	63	-27	188
February	102	80	-22	80	-22	188
March	123	99	-20	98	-20	188
April	375	306	-18	306	-18	564
May	363	294	-19	297	-18	564
June	216	176	-19	170	-21	376
July	188	152	-19	154	-18	376
August	166	134	-19	136	-18	376
September	152	120	-21	114	-25	376
Total	**2,131**	**1,705**	**-20**	**1,696**	**-20**	**3,948**
San Antonio Reservoir						
October	110	224	104	208	89	376
November	108	220	104	206	91	188
December	54	111	106	104	93	188
January	54	114	111	108	100	188
February	59	117	98	112	90	188
March	66	129	95	124	88	188
April	213	399	87	390	83	564
May	210	402	91	393	87	564
June	140	256	83	252	80	376
July	140	244	74	242	73	376
August	130	234	80	232	78	376
September	120	228	90	220	83	376
Total	**1,404**	**2,678**	**91**	**2,591**	**85**	**3,948**

Spawning success, based on reservoir fluctuations during the spawning period, would also be affected for all species. Modeling results suggest that, under the proposed project, the amplitude of reservoir fluctuations from month to month would increase compared to modeled baseline conditions, and the frequency of excellent conditions across the spawning season would decrease by 19 percent (from 113 months to 92 months) for bass and 17 percent (from 133 months to 111 months) for sunfish (**Table 4.3-14**). Over the 47-year simulated period, the modeled results reflected 21 years with impacts (i.e., any reduction in frequency of spawning categories) on bass spawning and 28 years with impacts on sunfish spawning. Although spawning success would be reduced under the modeled proposed project compared to the modeled baseline, success during most years would remain good to excellent for all species (**Table 4.3-15**), and spawning criteria would not be reduced from excellent or good to fair or poor during three or more months during the spawning period in a year over two or more successive years (**Table 4.3-15**). Because of this, the impact on spawning success from proposed project operations for all species would not be substantial compared to modeled baseline conditions. Operation of Nacimiento Reservoir under the Tunnel-Only Alternative would cause similar impacts on spawning (**Table 4.3-16**). The frequency of excellent conditions across the spawning season, based on an evaluation of the modeled output, would decrease by 20 percent (from 113 months to 90 months) for bass and by 16 percent (from 133 months to 112 months) for sunfish (**Table 4.3-14**). Over the 47-year simulated period, there would be 22 years with impacts on bass spawning and 31 years with impacts on sunfish spawning. Although spawning success would be reduced under the Tunnel-Only Alternative, based on an evaluation of the modeled output, success during most years would remain good to excellent for all species (**Table 4.3-12**), and spawning criteria would not be reduced from excellent or good to fair or poor during three or more months during the spawning period in a year over two or more successive years (**Table 4.3-13**). Therefore, the impact on spawning success from Tunnel-Only Alternative operations would not be substantial.

San Antonio Reservoir

Operation of San Antonio Reservoir under the proposed project can be expected to raise the WSE substantially (see Section 4.1, *Hydrology and Water Quality,* and **Table D-5** in Appendix D, *Existing and Proposed Hydrology Conditions*) and cause substantial increases in fish productivity compared to modeled baseline conditions. Under the proposed project, an evaluation of modeled output found the frequency of months with excellent productivity conditions would substantially increase, and the frequency of months with poor productivity conditions would substantially decrease (**Table 4.3-17**). In addition, the fish production index (which considers the varying monthly importance for fish productivity) was found to increase an average of 91 percent for the year compared to modeled baseline conditions (**Table 4.3-13**). The largest average monthly increase would occur during January (111 percent). Model results suggest that over the 47-year simulated period (Wys 1968–2014), there would be no years with adverse impacts on fish production. Higher reservoir levels during wet, normal, and some dry water year types would be the cause of greater productivity compared to modeled baseline conditions. This would be a beneficial impact. Operation of San Antonio Reservoir under the Tunnel-Only Alternative would also be expected to raise the WSE substantially (see Section 4.1, *Hydrology and Water Quality*). Model results suggest that the trend in fish productivity under the Tunnel-Only Alternative would be similar to that under the proposed project (**Table 4.3-13** and **Table 4.3-14**). Over the 47-year simulated period, there would be no years with adverse impacts on fish production. Higher reservoir levels during wet, normal, and some dry water year types would be the cause of greater productivity compared to modeled baseline conditions. This would be a beneficial impact.

Table 4.3-14. Frequency of Months in Each Spawning Success Category for Largemouth Bass, Smallmouth Bass, Bluegill, and Redear Sunfish over the 47-year Simulated Period

Species	Excellent			Good			Fair			Poor		
	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel-Only Alternative	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel-Only Alternative	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel-Only Alternative	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel-Only Alternative
Nacimiento Reservoir												
Bass	113	92	90	33	43	46	14	22	21	28	31	31
Sunfish	133	111	112	27	52	48	31	31	33	44	41	41
San Antonio Reservoir												
Bass	166	155	153	5	12	12	4	3	3	13	18	20
Sunfish	197	191	188	5	10	13	10	7	6	23	27	28

Table 4.3-15. Change in Spawning Success Category from Excellent or Good to Fair or Poor Relative to Modeled Baseline Conditions at Nacimiento Reservoir Under the Modeled Proposed Project Scenario

Water Year Type	Water Year	Bass				Sunfish				
		Mar	Apr	May	Jun	Apr	May	Jun	Jul	Aug
Dry	1968	0	0	0	0	0	0	0	0	-1
Wet	1969	0	0	0	0	0	0	0	0	0
Normal	1970	0	0	-1	0	0	0	0	0	0
Normal	1971	0	0	0	0	1	0	0	0	-1
Dry	1972	0	0	0	0	0	0	0	0	0
Wet	1973	0	0	-1	-1	0	0	0	0	0
Normal	1974	0	0	0	0	0	0	-1	0	0
Normal	1975	0	0	0	0	0	0	-1	0	0
Dry	1976	0	-1	-1	-1	0	-1	0	0	0
Dry	1977	0	0	0	0	0	0	0	0	0
Wet	1978	0	0	0	0	0	0	0	0	0
Normal	1979	0	0	-1	0	0	0	0	0	-1
Wet	1980	0	0	0	0	0	0	0	1	0
Normal	1981	0	0	1	0	0	0	0	0	0
Wet	1982	0	0	0	0	0	0	0	0	0
Wet	1983	0	0	0	0	0	0	0	0	0
Normal	1984	-1	0	0	0	1	0	0	0	-1
Dry	1985	0	0	-1	0	0	0	0	0	1
Wet	1986	0	0	0	1	0	0	-1	0	0
Dry	1987	0	0	0	-1	0	0	1	1	1
Dry	1988	0	0	0	0	0	0	0	0	0
Dry	1989	0	0	0	0	0	0	0	0	0
Dry	1990	0	0	0	0	0	0	0	0	0
Dry	1991	0	0	0	0	0	0	0	0	0
Normal	1992	0	0	0	0	0	0	0	0	0
Wet	1993	0	-1	-1	0	0	0	-1	0	0
Dry	1994	0	-1	0	0	0	0	0	0	0
Wet	1995	0	0	-1	-1	0	0	0	0	0
Normal	1996	0	0	1	0	0	0	0	0	-1
Normal	1997	0	0	0	0	0	0	1	0	0
Wet	1998	0	0	0	0	0	0	0	0	0
Normal	1999	0	0	0	0	0	0	0	0	0
Normal	2000	0	0	0	0	0	0	0	0	0
Normal	2001	0	0	0	0	0	0	0	0	0
Normal	2002	0	0	0	0	0	0	0	0	0
Normal	2003	0	1	0	0	1	0	1	1	0

Water Year Type	Water Year	Bass				Sunfish				
		Mar	Apr	May	Jun	Apr	May	Jun	Jul	Aug
Normal	2004	0	0	-1	0	0	-1	0	0	0
Wet	2005	0	0	0	0	0	0	0	-1	0
Wet	2006	0	0	0	0	0	0	0	0	0
Dry	2007	0	0	0	0	0	0	0	0	0
Normal	2008	0	0	0	0	0	0	0	0	0
Normal	2009	0	0	0	0	0	0	0	0	0
Wet	2010	0	0	0	0	0	0	0	0	0
Wet	2011	0	0	-1	0	0	0	0	0	0
Dry	2012	0	0	0	0	0	-1	0	1	1
Normal	2013	0	0	0	0	0	0	0	0	0
Dry	2014	0	0	1	1	0	0	0	0	0

Notes: Negative values (red) indicate reduction in spawning success category from Excellent or Good to Fair or Poor, while positive values (green) indicate improvement in spawning success category from Fair or Poor to Excellent or Good. If spawning criteria are reduced compared to modeled baseline conditions (indicated by negative [red] values) during any three months during the spawning period in a year and for two or more successive years then this is considered to be a substantial change.

Table 4.3-16. Change in Spawning Success Category from Excellent or Good to Fair or Poor Relative to Modeled Baseline Conditions at Nacimiento Reservoir Under the Modeled Tunnel-Only Alternative Scenario

Water Year Type	Water Year	Bass				Sunfish				
		Mar	Apr	May	Jun	Apr	May	Jun	Jul	Aug
Dry	1968	0	0	0	0	0	0	0	0	-1
Wet	1969	0	0	0	0	0	0	0	0	-1
Normal	1970	0	0	0	0	0	0	0	0	0
Normal	1971	0	0	0	0	1	0	0	0	-1
Dry	1972	0	0	0	0	0	0	0	0	0
Wet	1973	0	0	-1	-1	0	0	0	0	0
Normal	1974	0	0	0	0	0	-1	0	0	0
Normal	1975	0	0	0	0	0	-1	0	0	0
Dry	1976	0	-1	-1	0	-1	-1	0	0	0
Dry	1977	0	0	0	0	0	0	0	0	0
Wet	1978	0	0	0	0	0	0	0	0	0
Normal	1979	0	0	0	0	0	0	0	0	-1
Wet	1980	0	0	0	0	0	0	0	1	0
Normal	1981	0	0	1	0	0	0	0	0	0
Wet	1982	0	0	0	-1	0	0	0	0	0
Wet	1983	0	0	0	0	0	0	0	0	0
Normal	1984	-1	0	0	0	1	0	0	0	-1
Dry	1985	0	0	0	0	0	0	0	0	1
Wet	1986	0	0	-1	0	0	0	-1	0	0

Water Year Type	Water Year	Bass				Sunfish				
		Mar	Apr	May	Jun	Apr	May	Jun	Jul	Aug
Dry	1987	0	0	0	1	0	1	1	1	1
Dry	1988	0	0	0	-1	0	0	0	0	0
Dry	1989	0	0	0	0	0	0	0	0	0
Dry	1990	0	0	0	0	0	0	0	0	0
Dry	1991	0	0	0	0	0	0	0	0	0
Normal	1992	0	0	0	0	0	-1	0	0	0
Wet	1993	0	-1	-1	0	0	0	-1	0	0
Dry	1994	0	-1	0	0	0	0	0	0	0
Wet	1995	0	0	-1	-1	0	0	0	0	0
Normal	1996	0	0	1	0	0	0	0	0	-1
Normal	1997	0	0	0	0	0	0	0	0	0
Wet	1998	0	0	0	0	0	0	0	0	0
Normal	1999	0	0	0	0	0	0	0	0	0
Normal	2000	0	0	0	0	0	0	0	0	0
Normal	2001	0	0	0	0	0	0	0	0	0
Normal	2002	0	0	0	-1	0	0	0	0	-1
Normal	2003	0	1	0	0	1	0	1	1	0
Normal	2004	0	0	-1	0	0	-1	0	0	0
Wet	2005	0	0	0	0	0	0	0	-1	0
Wet	2006	0	0	0	0	0	0	0	0	0
Dry	2007	0	0	0	0	1	0	1	1	1
Normal	2008	0	0	0	0	0	0	0	0	0
Normal	2009	0	0	0	0	0	0	0	0	0
Wet	2010	0	0	0	0	0	0	0	0	0
Wet	2011	0	0	-1	0	0	0	0	0	0
Dry	2012	0	0	0	0	0	-1	0	1	1
Normal	2013	0	0	0	0	0	0	0	0	0
Dry	2014	0	0	1	1	0	0	0	0	0

Notes: Negative values (red) indicate reduction in spawning success category from Excellent or Good to Fair or Poor, while positive values (green) indicate improvement in spawning success category from Fair or Poor to Excellent or Good. If spawning criteria are reduced compared to modeled baseline conditions (indicated by negative [red] values) during any three months during the spawning period in a year and for two or more successive years, then this is considered to be a substantial change.

Table 4.3-17. Number of Months per Fish Habitat Category at San Antonio Reservoir over the Simulated Period

Month	Excellent			Good			Fair			Poor		
	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel-Only Alternative	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel-Only Alternative	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel-Only Alternative	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel-Only Alternative
October	1	17	12	1	6	8	3	2	5	42	22	22
November	1	15	11	1	8	9	2	2	5	43	22	22
December	1	16	12	1	7	8	2	2	5	43	22	22
January	1	18	14	1	6	8	2	1	3	43	22	22
February	1	19	17	2	5	5	5	3	4	39	20	21
March	2	22	18	3	5	8	7	6	7	35	14	14
April	2	22	21	4	8	8	10	4	4	31	13	14
May	2	24	24	4	6	4	9	3	4	32	14	15
June	2	24	24	4	1	0	9	7	7	32	15	16
July	2	24	24	4	0	0	9	3	2	32	20	21
August	1	21	19	4	3	5	7	1	2	35	22	21
September	1	19	16	1	5	7	8	0	1	37	23	23
Total	**17**	**241**	**212**	**30**	**60**	**70**	**73**	**34**	**49**	**444**	**229**	**233**

Spawning success, based on reservoir fluctuations during the spawning period, would also be affected for all species. Modeling results suggest that under the proposed project, amplitude of fluctuations from month to month would increase moderately compared to modeled baseline conditions, and the frequency of excellent conditions across the spawning season would decrease by 7 percent (from 166 months to 155 months) for bass and by 5 percent (from 197 months to 191 months) for sunfish (**Table 4.3-14**). Over the 47-year simulated period, there would be 8 years with impacts on bass spawning and 11 years with impacts on sunfish spawning. Although spawning success would be reduced slightly under the proposed project, success during most years would remain excellent for all species (**Table 4.3-15**), and spawning criteria would not be reduced from excellent or good to fair or poor during three or more months during the spawning period in a year over two or more successive years (**Table 4.3-15**). Therefore, impacts on spawning success would not be substantial compared to modeled baseline conditions. Operation of San Antonio Reservoir under the Tunnel-Only Alternative could cause similar impacts on spawning: the frequency of excellent conditions across the spawning season would decrease by 8 percent (from 166 months to 153 months) for bass and by 5 percent (from 197 months to 188 months) for sunfish (**Table 4.3-14**). Over the 47-year simulated period, the modeled output indicated there would be 11 years with impacts on bass spawning and 11 years with impacts on sunfish spawning. Although spawning success would be reduced slightly under the Tunnel-Only Alternative, success during most years would remain excellent for all species (**Table 4.3-13**), and spawning criteria would not be reduced from excellent or good to fair or poor during three or more months during the spawning period in a year over two or more successive years (**Table 4.3-16**). Therefore, impacts on spawning success would not be substantial compared to modeled baseline conditions.

Reduced reservoir productivity related to changed Nacimiento Reservoir operations under the proposed project and Tunnel Only Alternative could result in fewer fish for wildlife species that forage in Nacimiento Reservoir, such as bald eagle and diving birds (e.g., grebes). Although fish are an important forage item for bald eagle, bald eagles are opportunistic feeders and therefore will also feed on waterfowl, shorebirds, waterbirds, a variety of small terrestrial animals, and carrion (U.S. Fish and Wildlife Service 2022).The degree to which centrarchids (large- and smallmouth bass, sunfish) in Nacimiento Reservoir provide forage for overwintering bald eagles is unknown. However, centrarchids are typically found at greater depths in the reservoir during winter than at other times of the year in response to colder temperatures, which suggests that these species may be less available as forage for wintering bald eagle than other fish species that are less sensitive to reservoir operations (e.g., carp, white bass). During operation of the proposed project and Tunnel Only Alternative, there would be an adequate depth and reservoir volume for grebes and other diving birds to forage for fish. Any project-related reduction in fish populations and associated grebe foraging could be offset, wholly or in part, by increased fish concentrations in response to reduced reservoir volumes. Although potential long-term implications of a reduced reservoir volume on grebe foraging conditions is unknown, given the relatively low numbers of bald eagles competing for resources at Nacimiento Reservoir and the opportunistic feeding behavior of the species, reservoir operations are not expected to result in a substantial change in foraging conditions at Nacimiento Reservoir for bald eagle.

By contrast, the predicted increase in reservoir productivity at San Antonio Reservoir associated with higher water levels in that reservoir would result in more fish for these wildlife species. Under the proposed project, model results suggest that surface area could increase at San Antonio Reservoir by 1,386 acres on average across all modeled years. This would be a substantial increase in surface area compared to the predicted decrease of 780 acres at Nacimiento Reservoir from operations under the proposed project. Similar changes would occur under the Tunnel Only Alternative; on average, surface area would increase by 1,300 acres at San Antonio Reservoir and decrease by 821 acres at Nacimiento Reservoir. Because substantially more bald eagles overwinter at San Antonio Reservoir compared to Nacimiento Reservoir (U.S. Fish and Wildlife Service and National Marine Fisheries Service 2000) and more surface area would be created at San Antonio Reservoir than would decrease at Nacimiento Reservoir, a greater number of bald eagles stand to benefit from, rather than be affected by, reservoir operations under the proposed project or Tunnel Only Alternative.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative would affect a small amount of shoreline and reservoir bottom habitat compared to the total amount of habitat available to reservoir species. **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** would be in place to protect water quality in the reservoir and impacts on reservoir fish species would be avoided. Therefore, impacts associated with construction of the proposed project and Tunnel-Only Alternative would be **less than significant**.

Under operation of the proposed project or Tunnel-Only Alternative, reduced reservoir volume at Nacimiento Reservoir could substantially reduce reservoir productivity in the reservoir, which would have a substantial adverse effect on fish species that are affected by reservoir elevations or that are directly dependent on shoreline habitat (e.g., large- and smallmouth bass, sunfish). Although these species are not state or federally listed or species of special concern, these fish species are important as forage for wildlife species such as bald eagle and diving birds such as grebes (an important prey species for bald eagle) and are popular recreational species with the public. However, under the proposed project and Tunnel Only Alternative, the predicted increase in the fish production index would substantially exceed the predicted reduction in the fish production index at Nacimiento Reservoir and could benefit substantially more bald eagles at San Antonio Reservoir than would be adversely affected at Nacimiento River. Therefore, the operational impacts on reservoir fish species productivity at Nacimiento Reservoir for the proposed project and Tunnel-Only Alternative would be **less than significant**.

Impact BIO-8: Impacts on Listed, Candidate, Sensitive, or Special-Status Wildlife Species

Construction and operation of the proposed project or Tunnel-Only Alternative could result in permanent loss of suitable habitat for up to 54 of the 70 special-status wildlife species with the potential to occur in the study area. Suitable habitats include aquatic (i.e., lacustrine), California annual grassland, blue oak woodland, coast live oak woodland, valley oak woodland, scrub oak chaparral, coastal scrub, riparian, wetland, and forest/woodland land cover types. **Table 4.3-18** identifies the proposed work areas that potentially contain suitable habitat for special-status wildlife species, and which could be affected by vegetation removal or habitat degradation during construction. The acreages shown in **Table 4.3-8a** and **Table 4.3-8b** are for construction impacts on land covers where special-status wildlife species may be found. The acreages shown in **Table 4.3-10** are for operational impacts on land covers from proposed reservoir inundation, which may support special-status wildlife species.

The analyses of construction and operational impacts for special-status wildlife species are presented for individual species or groups of species, where appropriate. The design of the proposed project and Tunnel-Only Alternative would incorporate **AMM GEN-1** through **AMM GEN-**

6, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*), which would reduce potential impacts on special-status wildlife species. For example, construction workers would be trained on the importance of avoiding special-status wildlife and plant species, and fencing would be required around sensitive habitats where avoidance during construction is feasible. The AMMs would also restrict off-road driving in construction areas to prevent disturbance in and damage to habitats that would be avoided during construction (e.g., those adjacent to work areas or in activity exclusion zones). Although these AMMs would reduce impacts during construction, they would not prevent the permanent loss of habitat or degradation of habitat, described further below by species, as a result of construction of the proposed project or Tunnel-Only Alternative.

Invertebrates

Impact BIO-8a: Native Bumble Bees

Suitable habitats for Crotch bumble bee and western bumble bee are present in the proposed construction areas of the project site and in the area of proposed increase maximum inundation area at San Antonio Reservoir. Habitats include scrub oak woodland, blue oak woodland, and valley oak woodland in the construction areas and perennial needlegrass grassland, California buckeye groves, scrub oak woodland, blue oak woodland, and valley oak woodland in the inundation area. Western bumble bee has been reported near the Salinas River floodplain (CDFW 2021a). Although not federally or state listed, Crotch bumble bee and western bumble bee are candidates for listing and considered at-risk throughout their ranges. Recent studies have shown that these species have experienced significant reductions in both their range and relative abundance and are far less common than they were historically in areas where the species persist (CDFW 2021a).

Construction

Construction of the proposed project or Tunnel-Only Alternative could result in permanent and temporary losses of suitable Crotch bumble bee and western bumble bee habitat **(Table 4.3-8a** and **Table 4.3-8b)**. Clearing and grubbing, excavation, and other activities could result in the destruction of nests or mortality of bees from being crushed or buried by equipment. Crotch and western bumble bees could also be struck by vehicles and equipment traveling along access roads during construction.

Operation

Inundation caused by the operation of the proposed project at San Antonio Reservoir could result in the permanent loss of suitable habitat for Crotch bumble bee and western bumble bee due to vegetation degradation by infrequent inundation in upland habitats over time (**Table 4.3-9**).

CEQA Conclusion

Construction and operation of the proposed project or Tunnel-Only Alternative could result in significant impacts on Crotch bumble bee and western bumble bee from removal of suitable habitat and loss of individuals if they are present. These impacts would be significant because the proposed project or Tunnel-Only Alternative could reduce the local populations of these rare bumble bees through direct mortality and habitat loss if they are present. Implementation of **MM BIO-8.1**, **MM BIO-8.2** and **MM BIO-8.3** would reduce the level of impact to less than significant because surveys would be conducted to identify patches of native food plants, temporarily disturbed habitat would be restored, and permanent loss of habitat containing suitable native food plants would be compensated for through off-site habitat preservation. Impacts on Crotch bumble bee and western bumble bee from construction and operation of the proposed project and Tunnel-Only Alternative would be **less than significant with mitigation**.

Table 4.3-18. Construction Areas with Suitable Habitat for Special-Status Wildlife Species

Project Construction Areas	Crotch bumble bee	Western bumble bee	Monterey hitch	Monterey roach	Arroyo toad	California red-legged frog	Foothill yellow-legged frog	Western spadefoot toad	Coast Range newt	Coast horned lizard	Northern California legless lizard	San Joaquin coachwhip	Two-striped gartersnake	Western pond turtle	Bald eagle	Burrowing owl	Coopers hawk	Ferruginous hawk	Golden eagle	Loggerhead shrike	Northern harrier	White-tailed kite	American badger	Special-status Bats	Monterey dusky-footed woodrat	Salinas pocket mouse	Mountain Lion
Tunnel Intake Structure	X	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Energy Dissipation Structure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X
Interlake Tunnel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Antonio Dam Spillway Modification	X	X	-	-	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Mitigation Measures

Mitigation Measure BIO-8.1 Protect Special-status Invertebrates and their Host and Food Plants from Herbicide and Pesticide Use

To minimize potential impacts on Crotch bumble bee and western bumble bee from herbicide drift, herbicide application by MCWRA's maintenance staff will be limited to areas immediately adjacent to project facilities and will be conducted using handheld equipment. Herbicides and pesticides will be applied only by applicators with current licenses and/or certifications from the California Department of Pesticide Regulation. The applicator will follow the herbicide label directions. Spray nozzles will be kept within 24 inches of target vegetation during spraying. The most current information on herbicide toxicity on wildlife will be used to inform future decisions about herbicide and pesticide use during construction and operations.

Mitigation Measure BIO-8.2: Assess Habitat Suitability and Survey for Presence of Crotch Bumble Bee and Western Bumble Bee Food Plants

During special-status plant surveys (**MM BIO-4.1**), qualified botanists hired by MCWRA will identify and map locations of patches of native plants in the taxa most associated with Crotch bumble bee and western bumble bee that would be permanently or temporarily affected by construction.

Mitigation Measure BIO-8.3: Compensate for Loss of Crotch Bumble Bee and Western Bumble Bee Habitat

MCWRA will compensate for permanent loss of suitable bumble bee foraging habitat (as identified through implementation of **MM BIO-8.2**) by including suitable native nectar- and pollen-producing plants commonly used as food sources by Crotch and western bumble bees in mitigation plans for sensitive natural communities (**MM BIO-3.2**). Native plants of the following genera are appropriate for Crotch bumble bee: *Antirrhinum*, *Asclepias*, *Phacelia*, *Chaenactis*, *Clarkia*, *Dendromecon*, *Eriogonum*, *Eschscholzia*, *Lupinus*, *Medicago*, and *Salvia*. Native plants of the following taxa are appropriate for western bumble bee: *Asteraceae*, *Ceanothus*, *Centaurea*, *Chrysothamnus*, *Cirsium*, *Eriogonum*, *Geranium*, *Grindelia*, *Lupinus*, *Melilotus*, *Monardella*, *Rubus*, *Penstemon*, *Solidago*, and *Trifolium*. MCWRA will compensate for permanent loss of suitable Crotch and western bumble bee habitat by planting native bumble bee food plants in restoration or preservation areas at minimum ratio of 1:1 (acres lost: acres planted).

MCWRA will compensate for temporary loss of suitable Crotch and western bumble bee habitat by including native bumble bee food plants in the aforementioned taxa in planting palettes for on-site restoration of sensitive natural communities (**MM BIO-3.2**) or temporarily disturbed grassland.

Habitat will be maintained in the on-site and off-site restoration/preservation areas by periodically re-seeding the areas with native bumble bee food plants as needed.

Impact BIO-8b: Smith's Blue Butterfly

Suitable habitat in the form of coastal scrub and dunes for Smith's blue butterfly is present adjacent to the Salians River Lagoon and OSR downstream of the project site within the lower reach of the study area. Known occurrences have been reported from the coastal dunes within, north, and south of the study area (CDFW 2021a).

Construction

Construction of the proposed project or Tunnel-Only Alternative would not impact Smith's blue butterfly or its suitable habitat as this species occurs only in coastal areas of Central California, over 50 river miles downstream of the project site.

Operations

Operations of the proposed project or Tunnel-Only Alternative would not impact suitable habitat for the Smith's blue butterfly. Modeling results described in Impact BIO-1, *Impacts on Riparian Habitat*, indicate that the flows under the modeled proposed project and Tunnel-Only Alternative scenarios in the Salinas River Lagoon would generally be similar to modeled baseline conditions.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative would occur outside of suitable coastal habitats, and **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** would be in place to avoid downstream indirect impacts. In addition, any unexpected indirect impacts from flooding of suitable adjacent coastal scrub and dune habitats surrounding the Salinas River Lagoon during operation, as reflected in the modeled proposed project or the Tunnel-Only Alternative scenarios, would be minor and short-lived, similar to modeled baseline conditions. Therefore, impacts on Smith's blue butterfly or its suitable habitat from construction and operation of the proposed project and Tunnel-Only Alternative would be **less than significant**.

Amphibians

Impact BIO-8c: Arroyo Toad, California Red-Legged Frog, and Foothill Yellow-Legged Frog

Suitable habitat for arroyo toad, California red-legged frog, and foothill yellow-legged frog occurs in the proposed construction areas of the project site and the riparian corridors of the San Antonio and Nacimiento River floodplains. Suitable habitat for arroyo toad and California red-legged frog occurs within the proposed inundation areas northwest of the project site along the upper reaches of the San Antonio River and its associated tributaries as well as along the Salinas River floodplain. Arroyo toad is known from along the upper reaches of the San Antonio River and California red-legged frog has been sighted in the Salinas River (CDFW 2021a).

Construction

Construction of the proposed project or Tunnel-Only Alternative could result in the permanent and temporary losses of suitable aestivation or dispersal habitat for California red-legged frog and foothill yellow-legged frog (**Table 4.3-8a** and **Table 4.3-8b**). Clearing and grubbing, excavation, and other construction activities could result in destruction of burrows, and mortality or injury of individuals from being crushed or buried by equipment. California red-legged frog and foothill yellow-legged frog could be struck by vehicles and equipment traveling along access roads during construction. Construction activities and lighting could also result in disruption of foraging activities or dispersal. Spills or leaks of gasoline, oil, or other contaminants during construction could contaminate suitable habitat and cause illness or mortality of individuals.

Operations

Inundation in the area between the existing maximum WSE and proposed increased maximum WSE at San Antonio Reservoir caused by the operation of the proposed project could result in the permanent loss of suitable breeding and dispersal habitats for arroyo toad and California red-legged frog in the upper reaches of the San Antonio River if they are present (**Table 4.3-9**). Up to approximately 127.95 acres of terrestrial habitats (dispersal) could be periodically inundated in this area during operations.

MCWRA adaptively manages flows in the Nacimiento, San Antonio, and Salinas Rivers to facilitate and enhance fish and wildlife habitats, including habitats for amphibians in these rivers, as part of the adopted flow prescription for the SVWP (MCWRA 2005a). This flow prescription stipulates that MCWRA must release a minimum of 60 cfs to the Nacimiento River throughout the year, provided that the surface elevation of Nacimiento Reservoir remains above an elevation of 687.8 feet (MCWRA 2005a Since inception of the SVWP, MCWRA has successfully managed reservoir operations under varying hydrologic conditions to achieve the flow requirements.

As described in Section 2.5.1.1, *Operations*, operation of the proposed project and Tunnel-Only Alternative would allow for reservoir operational flexibility that could change the way reservoir storage, water supply and reservoir releases are managed on a real-time basis by reservoir operations managers. These changes could affect the rate, volumes and frequency of reservoir releases seasonally in some years that could affect downstream flows.

Changes to how the San Antonio and Nacimiento Reservoirs are operated under the proposed project and Tunnel-Only Alternative could result in impacts on arroyo toads, California red-legged frogs, or foothill yellow-legged frogs, if present downstream, in the San Antonio, Nacimiento, and Salinas Rivers. The amounts and timing of water releases relative to modeled baseline operations could affect deposited egg masses and larvae by either reducing the amount of water in the system during the spring and summer months, which could result in egg stranding and tadpole die-offs, or by having higher relative flows (i.e., flows peaking relative to previous months) during periods when amphibians are typically depositing eggs or rearing tadpoles, which could dislodge both and result in injury or mortality or disrupt instream foraging habitat (i.e., altering and scouring substrates). Arroyo toads lay eggs on mud, sand, or gravel in shallow, slow moving streams and unseasonal flows have been identified in the species recovery plan as a potential threat to egg masses and larvae (Thomson et al. 2016; USFWS 1999). California red-legged frog breeds in a variety of habitats but streams selected for breeding are shallow and slow moving, and high flows during the spring put eggs and tadpoles at risk (USFWS 2002). Foothill yellow-legged frog breeding is correlated with the seasonal timing of streamflow and increasing air and water temperature (CDFW 2018).

The following discussion summarizes the modeling results but as noted above does not reflect how the reservoirs have historically operated or would necessarily be operated in the future when considering regulatory requirements for minimal flow releases under the SVWP flow prescriptions. The hydrologic model results for the modeled proposed project and Tunnel-Only Alternative scenarios show that reservoir operational releases could result in a three-fold increase in the number of years having at least one zero-flow timestep and the overall number of zero-flow timesteps (a timestep represents 5 days) for the Nacimiento River over the modeling period, compared to the modeled baseline (**Table 4.3-19**). Although flow prescriptions will continue to be met and zero-flow days will not occur, these modeling results suggest additional operational considerations will be required for periods similar to these modeled zero-flow timesteps. All but one of the additional years occurred during periods of exceptionally dry conditions, meaning modeled baseline conditions were generally already poor. These zero flow timesteps occur across several months but the bulk (76 percent) occur between June and October. Though the modeling indicates no flow during these timesteps, it does not mean there would be no water available in stream pools; however, it does imply that those pools could dry sooner than in a normal year, which could affect larvae that don't metamorphosize before instream pools dry down. California red-legged frog is known to breed between November to late April and in Coast Range streams the species has been documented laying eggs between February and March and metamorphosis can occur in as little as 3.5 months (Thomson et al. 2016). Arroyo toad begins breeding in late February in coastal populations and late March or April at higher elevation sites located inland and metamorphosis can occur in as little as 65 days (Thomson et al. 2016). Foothill yellow-legged frog breeding starts as early as late March or early April at lower elevations and the time of year can vary by as much as two months among water years and during a shorter timer period during drought years, though they typically metamorphose in late August or early September (CDFW 2019b). Considering this information, the increased number of zero flow timesteps could shorten the amount of water available for larval rearing in the Nacimiento River if the species breeds there; however, this effect would not be considered substantial when considering the species life histories, the infrequency of these events, the time of year they would occur in, and that under the adopted flow prescription for the SVWP, releases from Nacimiento Dam would need to meet minimum flow requirements of 60 cfs (MCWRA 2005a).

The results for the Salinas River between Nacimiento River and San Antonio River under the modeled proposed project and Tunnel-Only Alternative scenarios show similar increases in zero flow timesteps, approximately 2.5 times as many as the modeled baseline. As a result, the effects on these species would be relatively similar, except for the foothill yellow-legged frog because the Salinas River is not a typical habitat for the species (a low gradient river dominated by fines). The Soledad and Spreckels reaches of the Salinas River under the proposed project and Tunnel-Only Alternative scenarios would be the same as modeled baseline conditions in regard to zero flow frequency.

The modeling results for the San Antonio River show a decrease in the number of timesteps with zero flow conditions for both the modeled proposed project and Tunnel-Only Alternative scenarios compared to the modeled baseline, which would improve the availability of water for amphibian larval rearing.

The hydrologic results for monthly exceedance flows for modeled baseline conditions, modeled proposed project, and modeled Tunnel-Only Alternative are summarized by month for the Salinas (Spreckels, Soledad and the reach above confluence with San Antonio), Nacimiento, and San Antonio Rivers in Appendix E, *Biological Resource Attachments*, **Figure E-1**. The results of the modeling for each river and reach are summarized below.

The median flow values for the Nacimiento River under the modeled proposed project and Tunnel-Only Alternative scenarios across all water years would not substantially differ relative to modeled baseline conditions during the more sensitive periods for amphibians; however, during some years (see Appendix E, *Biological Resource Attachments*, **Figure E-1,** Nacimiento All Years at 25 Percent Exceedance) water releases from the Nacimiento Reservoir would substantially increase between April and May and peak in July and August. Higher flows during these times run the risk of washing out arroyo toad and foothill yellow-legged frog egg masses and washing out larvae for all three species as well as altering instream foraging habitat.

Table 4.3-19. Frequency of Dry Conditions (Number of 5- or 6-Day Model Intervals with Zero Flow) in the Nacimiento River for the Modeled Baseline, Modeled Proposed Project, and Modeled Tunnel-Only Alternative Scenarios

Water Year Type	Scenario	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	% Change from Modeled Baseline
All Years	Modeled Baseline	0	0	0	0	0	6	7	16	6	12	0	6	53	–
All Years	Modeled Proposed Project	6	5	0	6	6	18	22	26	23	22	6	6	146	175
All Years	Modeled Tunnel-Only Alternative	6	5	0	6	6	18	22	26	25	24	6	6	150	183
Dry	Modeled Baseline	0	0	0	0	0	0	0	0	0	6	0	0	6	–
Dry	Modeled Proposed Project	6	5	0	6	6	18	22	26	23	13	0	6	131	179
Dry	Modeled Tunnel-Only Alternative	6	5	0	6	6	18	22	26	23	12	0	6	130	177
Normal	Modeled Baseline	0	0	0	0	0	0	0	0	0	6	0	0	6	–
Normal	Modeled Proposed Project	0	0	0	0	0	0	0	0	0	9	6	0	15	150
Normal	Modeled Tunnel-Only Alternative	0	0	0	0	0	0	0	0	2	12	6	0	20	233
Wet	Modeled Baseline	0	0	0	0	0	0	0	0	0	0	0	0	0	–
Wet	Modeled Proposed Project	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wet	Modeled Tunnel-Only Alternative	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The median flow values for the San Antonio River under the modeled proposed project and Tunnel-Only Alternative scenarios across all water years would be relatively similar to modeled baseline conditions, which generally provides unsuitable flow conditions for arroyo toad and foothill yellow-legged frog egg laying and larvae for all species beginning in May when flows increase from around 50 cfs to close to 300 cfs by June.

The median flow values under both the modeled proposed project and Tunnel-Only Alternative scenarios across all water years for the Salinas River between its confluence with the San Antonio River and upstream to its confluence with Nacimiento River would be similar to modeled baseline conditions, which do not create unfavorable spikes in flow during the most sensitive time periods for amphibians. Flows do begin to rise from July to September relative to modeled baseline conditions (50 cfs up to 200 cfs), which could wash out smaller amphibian larvae and disrupt foraging habitat; however, arroyo toad and California red-legged frog tadpoles could have already gone through metamorphosis by July. The rate of change under the modeled proposed project scenario is relatively gradual where the modeled Tunnel-Only Alternative scenario has a relatively steeper increase in flow.

The median flow values at the Soledad reach of the Salinas River under the modeled proposed project and Tunnel-Only Alternative scenarios would be relatively similar to modeled baseline conditions with all water years combined, which would not result in substantial increases in flow during the more sensitive periods for amphibians. During some years (see Appendix E, *Biological Resource Attachments*, **Figure E-1**) water releases as part of both the modeled proposed project and Tunnel-Only Alternative scenarios would result in small increased flows between March and April (approximately 120 cfs to 140 cfs), which could have localized effects on egg masses and larvae but these events would be relatively infrequent.

The median flow values under both the modeled proposed project and Tunnel-Only Alternative scenarios at the Spreckels reach of the Salinas River would be similar to modeled baseline conditions, which have relatively normal seasonal flow pattern with no spikes in flow during sensitive periods for amphibians (Appendix E, *Biological Resource Attachments,* **Figure E-1**).

Impacts from maintenance activities required for operation under the proposed project or Tunnel-Only Alternative are expected to be minimal because maintenance activities would be conducted mostly in previously disturbed areas during daytime hours and using existing roadways and in areas that are generally subject to existing maintenance activities. If present, frogs or toads could be struck by vehicles and equipment traveling along access roads during operation, but this is unlikely to occur because frog and toad movement mostly occurs at night.

Safety nighttime lighting would be installed at the inlet and outlet areas, where potential upland dispersal habitat is present. Lighting could cause frogs and toads to avoid using areas illuminated by these new sources of light or modify movement pathways to avoid the lighted areas. Lighting could also make arroyo toad, California red-legged frog, and foothill yellow-legged frog vulnerable to predation. As part of project design, safety lighting would be shielded to minimize off-site light spill and glare and be screened and directed away from adjacent uses to the highest degree possible. This would minimize the operational impacts of new lighting on arroyo toad, California red-legged frog, and foothill yellow-legged frog.

New or increased amounts of contaminants such as gasoline, oil, and herbicides could enter suitable habitats for arroyo toad, California red-legged frog, and foothill yellow-legged frog from adjacent new or regraded roads or new facilities, which could cause illness or mortality of individuals. However, operations that would occur under the proposed project and Tunnel-Only Alternative would involve a minimal increase in the amount of maintenance activities and the use of potential contaminants, and such activities would generally occur in the same areas as under existing conditions.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant impacts on California red-legged frog from removal of suitable dispersal habitat and potential loss of individuals if they are present. Construction could also result in new or increased contaminants entering suitable habitat, vehicle strikes, disturbance of habitat or injury or mortality of individuals. Implementation of **MM BIO-3.1**, **MM BIO-3.2**, **MM BIO-5.1**, **MM BIO-8.4**, **MM BIO-8.5**, and **MM BIO-8.6** would reduce these impacts because surveys would be conducted to determine presence, protective measures would be implemented during construction, and compensation would be provided for the permanent and temporary losses of suitable habitat. Construction of the proposed project and Tunnel-Only Alternative would be ***less than significant with mitigation***.

Operation of the proposed project or Tunnel-Only Alternative could affect foothill yellow-legged frog, California red-legged frog, and arroyo toad eggs and larvae during drier years on the Nacimiento River and in some years when water releases peak between April and July if eggs and larvae are present.

Operation of the proposed project would result in periodic inundation of San Antonio Reservoir at a higher maximum WSE compared to existing conditions, which could result in significant impacts on arroyo toad and California red-legged frog if they are found to utilize the habitat that would be converted. These impacts would be significant because the loss of such habitat could reduce local toad and frog populations through direct mortality and habitat loss. Implementation of **MM BIO-3.2** and **MM BIO-8.6** would reduce impacts because compensation would be provided for the permanent losses of suitable habitat. Operation of the proposed project would be **less than significant with mitigation**.

Operation of the Tunnel-Only Alternative would not result in an increased maximum WSE at San Antonio Reservoir and therefore would not result in the loss of arroyo toad and California red-legged frog habitat. Impacts from operation of the Tunnel-Only Alternative would be **less than significant**.

Mitigation Measures

Mitigation Measure BIO-8.4: Assess Habitat Suitability and Survey Suitable Habitat for Arroyo Toad, California Red-Legged Frog, Foothill Yellow-Legged Frog, Western Spadefoot Toad, Coast Range Newt, Western Pond Turtle, Coast Horned Lizard, Northern California Legless Lizard, San Joaquin Coachwhip, and Two-Striped Gartersnake

Prior to construction, MCWRA will employ qualified biologists to assess habitat suitability and conduct surveys for arroyo toad, California red-legged frog, foothill yellow-legged frog, western spadefoot toad, Coast Range newt, western pond turtle, Coast horned lizard, Northern California legless lizard, San Joaquin coachwhip, and two-striped gartersnake in the project site and where potentially suitable habitat is within 250 feet of the project site where impacts from operation may occur. Qualified biologists are defined as those who have experience evaluating habitat and conducting focused surveys for these species. The timing and frequency of surveys will be conducted in accordance with the following conditions.

- Survey Protocol for the Arroyo Toad (USFWS 1999)
- Habitat assessment and surveys for California red-legged frog will be conducted in accordance with the *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog*, which provide direction for site assessments and recommend up to eight surveys that are conducted over a period of 9–12 months (USFWS 2005c).
- Habitat assessment and surveys for western spadefoot toad, Coast Range newt, western pond turtle, Coast horned lizard, and two-striped gartersnake (i.e., intermittent streams, riparian areas) will be conducted concurrently with the California red-legged frog and arroyo toad surveys.

The qualified biologists will prepare and submit reports describing the methods and results of the habitat assessments and surveys to MCWRA, CDFW, and USFWS.

Mitigation Measure BIO-8.5: Implement Protective Measures for Special-Status Amphibian Species During Construction

If special-status amphibian species are found in the project site either incidentally or during surveys conducted in accordance with **MM BIO-8.4**, MCWRA will implement the following protective measures.

- Occupied aquatic habitat will not be removed or filled until special-status amphibian species have been relocated to suitable habitat outside of disturbance areas or other steps are taken to avoid mortality of individuals or effects on the population as determined in consult with the applicable agencies (i.e., USFWS and/or CDFW).
- Occupied aquatic habitat that will not be removed or disturbed will be protected with exclusion fencing along the edge of the work area a minimum of 250 feet from the aquatic habitat. The fencing will be installed to prevent individuals from entering the work area but will not completely enclose it or exclude dispersal to and from it. The USFWS-approved biologist will assist with preparing the fence plans and will be present during installation. The fencing will be installed to a depth of 6 inches and be at least 30 inches above grade. The contractor will avoid placing fencing on top of ground squirrel burrows. The fence will be pulled taut at each support to prevent folds or sagging. A USFWS/CDFW-approved biologist will also walk all fence lines daily to look for individuals stranded along fence lines. Fencing will be inspected and maintained in good condition throughout work and will be removed after work is complete and all construction equipment is removed from the work area.
- A USFWS/CDFW-approved biologist will oversee ground-disturbing work in California red-legged frog or Arroyo Toad upland and dispersal habitats during the rainy season (generally October 15 to May 1) when frogs may be dispersing. The biologist will survey work areas for frogs and for rodent burrows in potential upland habitat immediately prior to the start of any ground-disturbing work (including moving equipment into the area). If a special-status amphibian species is found, it will be moved out of the work area in accordance with USFWS and/or CDFW. Disturbance of suitable habitat will be minimized to the maximum extent feasible.

- In the event a special-status amphibian species is trapped, construction will cease until the individual has been relocated to an appropriate location as described in a USFWS/CDFW-approved relocation plan. The plan will include trapping and relocation methods, relocation sites, and post-relocation monitoring. Only USFWS/CDFW-approved biologists will be allowed to relocate listed species to outside of the construction area.
- No work will occur in suitable upland or dispersal habitats during or 24 hours following a rain event in occupied habitat. Following a rain event, no work will proceed until a designated biologist has inspected the work areas and verified that there are no special-status amphibian species present. A rain event is to be considered precipitation of at least 0.25 inch within a 24-hour period.
- Activities in suitable upland or dispersal habitat will occur during daylight hours (from 30 minutes before sunrise to 30 minutes after sunset). Artificial lighting at a work site will be prohibited during the hours of darkness when working in suitable upland/dispersal habitat, except when necessary for driver or pedestrian safety. For any night work, the driving path and work area will be surveyed for special-status amphibian species immediately prior to work and nighttime work will be monitored by a designated biologist.

Mitigation Measure BIO-8.6: Compensate for Permanent and Temporary Losses of Occupied Aquatic and Upland Habitats for Arroyo Toad, California Red-Legged Frog, and Foothill Yellow-Legged Frog

MCWRA will compensate for the permanent and temporary losses of occupied aquatic habitat and associated upland habitat through the purchase of mitigation credits at an approved conservation bank or through acquiring and protecting habitat in perpetuity at a location approved by USFWS and/or CDFW. Permanent impacts will be mitigated at a 3:1 ratio (habitat restored or preserved: habitat affected) and temporary impacts will be mitigated at a 1:1 ratio (habitat restored or preserved: habitat affected), or as required by USFWS and/or CDFW for the project. Details of the compensatory mitigation (i.e., quantification of the permanent and temporary losses of occupied aquatic habitat and associated upland habitat) will be further developed in consultation with USFWS and/or CDFW.

Impact BIO-8d: Western Spadefoot Toad and Coast Range Newt

Suitable habitat for Coast Range newt occurs throughout the proposed construction areas of the project site, the proposed inundation area, and the floodplains of the Nacimiento, San Antonio, and Salinas Rivers. Western spadefoot toad habitat occurs within the proposed inundation area as well as downstream of the project site in shallow riverine sites along the Nacimiento, San Antonio, and Salinas Rivers. Western spadefoot toad is known to occur east of the Nacimiento River floodplain and the Coast Range newt was observed along the Salinas River under the Hwy 68 bridge in the study area (CDFW 2021a).

Construction

Construction of the proposed project or Tunnel-Only Alternative could result in permanent and temporary losses of suitable Coast Range newt and western spadefoot toad habitat (**Table 4.3-8a** and **Table 4.3-8b**). Clearing and grubbing, excavation, and other construction activities could result in destruction of burrows and mortality or injury of individuals from being crushed or buried by equipment. Coast Range newt and western spadefoot toad could also be struck by vehicles and equipment traveling along access roads during construction. In addition, work in or adjacent to suitable habitats during the breeding season could destroy developing eggs and/or larvae. Construction activities and lighting could result in the disruption of foraging activities or dispersal. Spills or leaks of gasoline, oil, or other contaminants during construction could contaminate suitable habitat and cause illness or mortality of individuals.

Operations

An increase in the maximum WSE at San Antonio Reservoir from operation of the proposed project could result in the permanent loss of suitable habitats for western spadefoot toad and Coast Range newt in the area between the existing maximum inundation area at 780 feet and the new proposed maximum inundation area at 787 feet (**Table 4.3-9**).

Impacts from maintenance activities required for operation under the proposed project or Tunnel-Only Alternative are expected to be minimal because maintenance activities would be conducted mostly in previously disturbed areas during daytime hours and using existing roadways used as part of the existing maintenance activities. If present, Coast Range newt or western spadefoot toad could be struck by vehicles and equipment traveling along access roads during operation, but this is unlikely to occur because movement mostly occurs at night.

Safety nighttime lighting would be installed at the inlet and outlet areas, where potential habitat is present. Lighting could cause Coast Range newt and western spadefoot toad to avoid using areas illuminated by these new sources of light or modify movement pathways to avoid the lighted areas. Lighting could also make them vulnerable to predation. As part of project design, safety lighting would be shielded to minimize off-site light spill and glare and be screened and directed away from adjacent uses to the highest degree possible. This would minimize the operational impacts of new lighting on Coast Range newt and western spadefoot toad.

New or increased amounts of contaminants such as gasoline, oil, and herbicides could enter suitable habitat from adjacent new or regraded roads or new facilities, which could cause illness or mortality of individuals. However, operations activities that would occur under the proposed project and Tunnel-Only Alternative would involve a minimal increase in the amount of maintenance activities and the use of potential contaminants, and such activities would generally occur in the same areas as under existing conditions.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant impacts on Coast Range newt and western spadefoot toad from removal of suitable habitat and potential loss of individuals if they are present. Operation of the proposed project or Tunnel-Only Alternative could affect Coast Range newt and western spadefoot toad as a result of new or increased contaminants entering habitat, vehicle strikes, disturbance of habitat or injury or mortality of individuals, and impeded movement from upgraded roads and new facilities. Implementation of **MM BIO-3.1**, **MM BIO-3.2**, **MM BIO-5.1**, and **MM BIO-8.4** would reduce the level of impact because surveys would be conducted to determine presence, protective measures would be implemented during construction, and compensation would be provided for the permanent and temporary losses of suitable habitat. Construction of the proposed project and Tunnel-Only Alternative would be **less than significant with mitigation**.

Under the proposed project, inundation of San Antonio Reservoir could result in significant impacts on Coast Range newt and western spadefoot toad from removal of suitable habitat and potential loss of individuals if they are present. These impacts would be significant because the implementation of the proposed project could reduce the local Coast Range newt and western spadefoot toad populations through direct mortality and habitat loss. Coast Range newt and western spadefoot toad populations have declined substantially, although they are still found within most of their historical range in California (CDFW 2021a). Implementation of **MM BIO-3.2** and **MM BIO-8.4** would reduce the level of impact because compensation would be provided for the permanent losses of suitable habitat. Impacts from operation of the proposed project would be **less than significant with mitigation**.

Operation of the Tunnel-Only Alternative would not result in an increased maximum WSE at San Antonio Reservoir and therefore would not result in the loss of Coast Range newt and western spadefoot toad habitat. Impacts from operation of the Tunnel-Only Alternative would be **less than significant**.

Reptiles

Impact BIO-8e: Coast Horned Lizard, Northern California Legless Lizard, and San Joaquin Coachwhip

Suitable habitat for Coast horned lizard, Northern California legless lizard, and San Joaquin coachwhip occurs throughout the proposed construction areas of the project site, the proposed inundation area, and downstream of the project site along the Nacimiento, San Antonio, and Salinas River floodplains. Northern California legless lizard is known from the San Antonio River (CDFW 2021a; Thomson et al. 2021) and may occur in the upper reaches of the San Antonio River. Coast horned lizard and San Joaquin coachwhip have been reported east of the Nacimiento River floodplain on Camp Roberts (CDFW 2021a).

Construction

Construction of proposed project or Tunnel-Only Alternative could result in permanent and temporary losses of suitable Coast horned lizard, Northern California legless lizard, and San Joaquin coachwhip habitats (**Table 4.3-8a** and **Table 4.3-8b**). Clearing and grubbing, excavation, and other construction activities could result in destruction of burrows and mortality or injury of individuals from being crushed or buried by equipment. Coast horned lizard, Northern California legless lizard, or San Joaquin coachwhip could also be struck by vehicles and equipment traveling along access roads during construction. Construction activities and lighting could result in the disruption of foraging activities or dispersal. Spills or leaks of gasoline, oil, or other contaminants during construction could contaminate suitable habitat and cause illness or mortality of individuals.

Operations

Inundation caused by the operation of the proposed project in the San Antonio Reservoir could result in the permanent loss of suitable habitats for Coast horned lizard, Northern California legless lizard, or San Joaquin coachwhip (**Table 4.3-9**).

Impacts from maintenance activities required for operation under the proposed project or Tunnel-Only Alternative are expected to be minimal because maintenance activities would be conducted mostly in previously disturbed areas and using existing roadways. Nonetheless, if present, Coast horned lizard, Northern California legless lizard, or San Joaquin coachwhip could be struck by vehicles and equipment traveling along access roads during operation.

Safety nighttime lighting would be installed at the inlet and outlet areas, where potential habitat is present. Lighting could cause Coast horned lizard, Northern California legless lizard, or San Joaquin coachwhip to avoid using areas illuminated by these new sources of light or modify movement pathways to avoid the lighted areas. Lighting could also make Coast horned lizard, Northern California legless lizard, or San Joaquin coachwhip vulnerable to predation. As part of project design, safety lighting would be shielded to minimize off-site light spill and glare and be screened and directed away from adjacent uses to the highest degree possible. This would minimize the operational impacts of new lighting on Coast horned lizard, Northern California legless lizard, and San Joaquin coachwhip.

New or increased amounts of contaminants such as gasoline, oil, and herbicides could enter suitable habitat from adjacent new or regraded roads or new facilities, which could cause illness or mortality of individuals. However, operations activities that would occur under the proposed project and Tunnel-Only Alternative would involve a minimal increase in the amount of maintenance activities and the use of potential contaminants, and such activities would generally occur in the same areas as under existing conditions.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant impacts on Coast horned lizard, Northern California legless lizard, and San Joaquin coachwhip from removal of suitable habitat and potential loss of individuals if they are present. Operation of the proposed project or Tunnel-Only Alternative could affect Coast horned lizard, Northern California legless lizard, and San Joaquin coachwhip as a result of new or increased contaminants entering habitat, vehicle strikes, disturbance of habitat or injury or mortality of individuals, and impeded movement from upgraded roads and new facilities. Implementation of **MM BIO-3.1**, **MM BIO-3.2**, **MM BIO-5.1**, and **MM BIO-8.4** would reduce the level of impact because surveys would be conducted to determine presence, protective measures would be implemented during construction, and compensation would be provided for the permanent and temporary losses of suitable habitat. Impacts from construction of the proposed project and Tunnel-Only Alternative would be **less than significant with mitigation**.

Operation of the proposed project would result in periodic inundation of San Antonio Reservoir at a higher maximum WSE compared to existing conditions, which could result in significant impacts on Coast horned lizard, Northern California legless lizard, and San Joaquin coachwhip from removal of suitable habitat and potential loss of individuals if they are present. These impacts would be significant because the implementation of the proposed project could reduce the local Coast horned lizard, Northern California legless lizard, and San Joaquin coachwhip populations through direct mortality and habitat loss. Coast horned lizard, Northern California legless lizard, and San Joaquin coachwhip populations have declined substantially, although they are still found within most of their historical range in California (CDFW 2021a). Implementation of **MM BIO-3.2** and **MM BIO-8.4** would reduce the level of impact because compensation would be provided for the permanent losses of suitable habitat. Operation of the proposed project would be **less than significant with mitigation**.

Operation of the Tunnel-Only Alternative would not result in an increased maximum WSE at San Antonio Reservoir and therefore would not result in the loss of Coast horned lizard, Northern

California legless lizard, and San Joaquin coachwhip habitat. Impacts from operation of the Tunnel-Only Alternative would be **less than significant**.

Impact BIO-8f: Two-Striped Gartersnake and Western Pond Turtle

Suitable habitat for two-striped gartersnake and western pond turtle occurs in the wetted portions of the Tunnel Intake Structure, Energy Dissipation, and San Antonio Dam Spillway Modification work areas as well as the area of proposed increase in maximum WSE at San Antonio Reservoir, and downstream of the project site along the Nacimiento, San Antonio, and Salinas Rivers. Western pond turtle is known to occur in the Nacimiento Reservoir, Nacimiento River, and Salinas River (CDFW 2021a).

Construction

Construction of the proposed project or Tunnel-Only Alternative could result in permanent and temporary losses of suitable habitat for two-striped gartersnake and western pond turtle (**Table 4.3-8a** and **Table 4.3-8b**). Clearing and grubbing, excavation, and other construction activities could result in the destruction of nest sites and mortality or injury of eggs or individuals from being crushed or buried by equipment. Two-striped gartersnake and western pond turtle could be struck by vehicles and equipment traveling along access roads during construction. Construction activities could also result in disruption of foraging activities or dispersal. Spills or leaks of gasoline, oil, or other contaminants during construction could contaminate suitable aquatic habitat and cause illness or mortality of individuals.

Operations

Inundation caused by the operation of the proposed project in the San Antonio Reservoir could result in the conversion of suitable habitats for two-striped gartersnake and western pond turtle into deeper open water habitat, which would be a loss of habitat for two-striped gartersnake but would be equally suitable for western pond turtle. Any decreases in operational levels at Nacimiento Reservoir would generally decrease the amount of reservoir habitat but would increase the amount of riverine and wetland habitat at the upper end of the reservoir, which may be more favorable to two-striped gartersnake but no substantial effect on western pond turtle is anticipated. Potential changes in flow values, as described in Impact BIO-1, *Impacts on Riparian Habitat*, and Impact BIO-8c, *Arroyo Toad, California Red-Legged Frog, and Foothill Yellow-Legged Frog*, could affect two-striped gartersnake and western pond turtle individuals and their suitable habitat in the lower reaches of the Nacimiento and San Antonio Rivers.

Impacts from maintenance activities required for operation under the proposed project or Tunnel-Only Alternative are expected to be minimal because maintenance activities would be conducted mostly in previously disturbed areas and using existing roadways. Nonetheless, if present, two-striped gartersnake or western pond turtle could be struck by vehicles and equipment traveling along access roads during operation.

Safety nighttime lighting would be installed at the inlet and outlet areas, where potential habitat is present. Lighting could cause two-striped gartersnake or western pond turtle to avoid using areas illuminated by these new sources of light or modify movement pathways to avoid the lighted areas. Lighting could also make two-striped gartersnake or western pond turtle vulnerable to predation. As part of project design, safety lighting would be shielded to minimize off-site light spill and glare and be screened and directed away from adjacent uses to the highest degree possible. This would minimize the operational impacts of new lighting on two-striped gartersnake and western pond turtle.

New or increased amounts of contaminants such as gasoline, oil, and herbicides could enter suitable habitat for two-striped gartersnake or western pond turtle habitat from adjacent new or regraded roads or new facilities, which could cause illness or mortality of individuals. However, operations activities that would occur under the proposed project and Tunnel-Only Alternative would involve a minimal increase in the amount of maintenance activities and the use of potential contaminants, and such activities would generally occur in the same areas as under existing conditions.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant impacts on two-striped gartersnake and western pond turtle from removal of suitable habitat and potential loss of individuals if they are present. Implementation of **MM BIO-3.1**, **MM BIO-3.2**, **MM BIO-5.1**, and **MM BIO-8.4** would reduce the level of impact because surveys would be conducted to determine presence, protective measures would be implemented during construction, and compensation would be provided for the permanent and temporary losses of suitable habitat. Impacts from construction of the proposed project and Tunnel-Only Alternative would be **less than significant with mitigation**.

Operation of the proposed project or Tunnel-Only Alternative could affect two-striped gartersnake and western pond turtle as a result of new or increased contaminants entering habitat, vehicle strikes, disturbance of habitat or injury or mortality of individuals, and impeded movement from upgraded roads and new facilities. Operation of the proposed project would result in periodic inundation of San Antonio Reservoir at a higher maximum WSE compared to existing conditions, which could result in a loss of habitat for two-striped gartersnake if it is present. For operations of both the proposed project and Tunnel-Only Alternative, potential flow value changes in the lower reaches of the San Antonio and Nacimiento Rivers could result in impacts on two-striped gartersnake and western pond turtle from removal of suitable habitat and potential loss of individuals if they are present. These impacts would be significant because the implementation of the proposed project or Tunnel-Only Alternative could reduce the local two-striped gartersnake and western pond turtle populations through direct mortality and habitat loss. Two-striped gartersnake and western pond turtle populations have declined substantially, although they are still found within most of their historical range in California (CDFW 2021a). Implementation of **MM BIO-3.1**, **MM BIO-3.2**, **MM BIO-5.1**, and **MM BIO-8.4** would reduce the level of impact because surveys would be conducted to determine presence, protective measures would be implemented during construction, and compensation would be provided for the permanent and temporary losses of suitable habitat. Impacts from operation of the proposed project and Tunnel-Only Alternative would be **less than significant with mitigation**.

Birds

Impact BIO-8g: Bald Eagle and Golden Eagle

Suitable nesting and foraging habitat for bald eagle and golden eagle occurs throughout the project site, including the proposed inundation area, and the study area. The bald eagle is known to forage, overwinter, and nest in the vicinity of San Antonio and Nacimiento Reservoirs and Rivers (Roberson

2002; CDFW 2021a) including the project site. The golden eagle has been reported throughout the unpopulated portions of the study area (CDFW 2021a).

The population trend of golden eagle in California is largely unknown, but the species is threatened by loss of foraging areas, loss of nesting habitat, pesticide poisoning, lead poisoning and collision with man-made structures such as wind turbines (CDFW 2021a). Bald eagle population decline has been attributed to habitat modification from urban developments; agriculture; timber harvest; pesticides and contaminants, including lead poisoning; off-road vehicles and other human disturbances; electrocution and collision at power lines; and shooting (CDFW 2021a).

Construction

Construction of proposed project or Tunnel-Only Alternative could result in permanent and temporary losses of suitable foraging habitats for bald and golden eagles as well as suitable nesting habitat for golden eagles (**Table 4.3-8a** and **Table 4.3-8b**). Habitat loss could result from vegetation removal in terrestrial habitats and conversion to unsuitable land cover types. Noise and vibration from operation of vehicles and equipment, and presence of construction crews could result in temporary disturbance of active golden eagle and bald eagle foraging or nesting activities. Tunneling and spillway modification activities could result in additional temporary disturbance from noise and vibration in proposed project site vicinity.

Operations

Inundation caused by the operation of the proposed project in the San Antonio Reservoir could result in the permanent loss of suitable nesting habitats for the bald and golden eagles (**Table 4.3-9**). As discussed in Impact BIO-7, *Impacts on Reservoir Fish and Wildlife Habitat*, the changes in reservoir operations are anticipated to generally decrease fish productivity at Nacimiento Reservoir and increase productivity at San Antonio Reservoir. There may be localized effects on wintering and nesting bald eagles foraging for fish at Nacimiento Reservoir but considering the proximity of the two reservoirs (approximately 2 miles at the closest point), the increased productivity at San Antonio Reservoir could offset the loss in prey resources at Nacimiento Reservoir. In addition, given the relatively low numbers of bald eagles competing for resources at Nacimiento Reservoir and the opportunistic feeding behavior of the species, reservoir operations are not expected to result in a substantial change in foraging conditions at Nacimiento Reservoir for bald eagle. Because substantially more bald eagles overwinter at San Antonio Reservoir compared to Nacimiento Reservoir (U.S. Fish and Wildlife Service and National Marine Fisheries Service 2000) and more surface area would be created at San Antonio Reservoir than would decrease at Nacimiento Reservoir, a greater number of bald eagles stand to benefit from, rather than be affected by, reservoir operations under the proposed project or Tunnel Only Alternative.

Maintenance activities required for operation under the proposed project or Tunnel-Only Alternative could result in impacts on golden eagle and bald eagle. Although small mammals are not their preferred prey, bald eagles could become ill or die from eating rodents that have ingested rodenticides used at the facilities. Use of rodenticides at the facilities could also cause illness or mortality of golden eagle from eating rodents that have ingested rodenticide.

The new transmission lines installed for the energy dissipation structure could cause injury or mortality of golden eagle and bald eagle through electrocution and line collisions

Noise and other disturbances from maintenance are not anticipated to affect foraging bald eagles and golden eagles.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant impacts on bald and golden eagles from removal of suitable habitat. Operation of the proposed project or Tunnel-Only Alternative may result in disturbance of bald and golden eagles if the use of rodenticides is used and cause illness, injury, or morality of bald or golden eagles if rodenticides are ingested. Collision with new transmission lines could cause injury or death of individuals from electrocution. Impacts could be significant because implementation of the proposed project or Tunnel-Only Alternative could reduce the local golden eagle and bald eagle populations through direct mortality and habitat loss. Implementation of **MM BIO-3.1**, **MM BIO-3.2**, **MM BIO-8.7**, **MM BIO-8.8**, **MM BIO-8.9**, and **MM BIO-8.10** would reduce the level of impact because vegetation would be removed during the nonbreeding season, surveys would be conducted to determine if golden eagle and bald eagle are in or near work areas, no-disturbance buffers would be established around active foraging sites, and impacts on sensitive natural communities in which golden eagles and bald eagles may forage would be compensated for through habitat restoration and preservation. Impacts from construction of the proposed project or Tunnel-Only Alternative would be **less than significant with mitigation**.

Operations of the proposed project and Tunnel-Only Alternative are anticipated to reduce fish productivity at Nacimiento Reservoir and though this could result in localized effects on wintering and nesting bald eagles, the anticipated increase in productivity at San Antonio Reservoir would offset this loss by providing increased foraging opportunities. Implementation of **MM BIO-3.2** and **MM BIO-8.9** would further reduce the level of impact because impacts on sensitive natural communities in which golden eagles and bald eagles may forage would be compensated for through habitat restoration and preservation and measures would be enacted to minimize the potential for wildlife to accidentally ingest rodenticide during operations. Impacts from construction and operation of the proposed project and Tunnel-Only Alternative would be **less than significant with mitigation**.

Mitigation Measures

Mitigation Measure BIO-8.7: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

MCWRA will, to the maximum extent feasible, remove trees, shrubs, and herbaceous vegetation during the non-breeding season for most migratory birds (generally between October 1 and January 31). Removing vegetation during this period is highly preferable because if an active nest is found during preconstruction surveys in vegetation (e.g., tree) that would be removed during construction, the vegetation cannot be removed until the end of the nesting season, which could delay construction. If vegetation cannot be removed between October 1 and the end of January, or if ground cover re-establishes in areas where vegetation has been removed, the affected area will be surveyed for nesting birds, as discussed below.

Mitigation Measure BIO-8.8: Conduct Focused Surveys for Golden Eagle and Bald Eagle and Implement Protective Measures if Found

Prior to the start of construction, MCWRA will employ qualified wildlife biologists (experienced with raptor identification and behaviors) to conduct focused surveys for golden eagle and bald eagle activity (i.e., foraging sites and nests) in suitable habitat in the project site and within a 2-mile radius of the project site. The surveys will be conducted in accordance with the *Interim Golden Eagle Inventory and Monitoring Protocols and other Recommendations*, *Protocol for Evaluating Bald Eagle Habitat and Populations in California*, *Bald Eagle Breeding Survey Instructions*, and *Updated Eagle Nest Survey Protocol* (USFWS 2020d).

Although not anticipated, if an occupied golden eagle or bald eagle nest is identified in the survey area (project site plus a 2-mile radius), a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the site within each breeding season (January 1–August 31 for golden eagle; January 1–July 31 for bald eagle) or until a qualified wildlife biologist determines that the young have fledged and the nest is no longer active. The extent of the buffer will be 1 mile or as determined by the biologist in coordination with USFWS and CDFW and will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. If it is determined that the no-disturbance buffer cannot be maintained, MCWRA and the qualified biologist will consult with USFWS and CDFW about implementing alternative protective measures such as a reduced buffer with full-time nest monitoring by a qualified biologist.

Mitigation Measure BIO-8.9: Protect Special-status Wildlife from Rodenticide Use

To minimize the potential for wildlife to be poisoned by ingesting rodenticide, use of rodenticides by the MCWRA staff will be minimized to the maximum extent feasible and limited to areas immediately surrounding project facilities. Facilities will be maintained in a manner to reduce the potential for nuisance rodents, including sealing openings in structures, securely storing trash bins. Wherever feasible, alternatives to rodenticide will be used for rodent eradication, such as traps, if they can be used safely around other wildlife.

Mitigation Measure BIO-8.10: Construct Overhead Power Lines and Associated Equipment Following Suggested Practices to Reduce Bird Collisions with Power Lines

MCWRA will ensure that new transmission lines and associated equipment will be properly fitted with wildlife protective devices to isolate and insulate structures to prevent injury or mortality of birds. Protective measures shall follow the guidelines provided in *Reducing Avian Collisions with Power Lines: The State of the Art* (Avian Power Line Interaction Committee 2012), or the current guidelines in place at the time the transmission lines are installed, and will include insulating hardware or conductors against simultaneous contact, using poles that minimize impacts on birds, and increasing the visibility of conductors and wires to prevent or minimize bird collisions.

Impact BIO-8h: Bank Swallow, Great Blue Heron, Least Bell's Vireo, Western Yellow-Billed Cuckoo, Yellow-Breasted Chat, Yellow Warbler, Long-Eared Owl and Short-Eared Owl

Suitable habitat for bank swallow, great blue heron, least bell's vireo, western yellow-billed cuckoo, yellow-breasted chat, yellow warbler, long-eared owl and short-eared owl is present in riparian communities of the study area downstream of the project site. The upper reaches of the Nacimiento and San Antonio Rivers support potential habitat for these species with the exception of western yellow-billed cuckoo. Each species has been reported from the project region (CDFW 2021a).

Construction

Construction of the proposed project or Tunnel-Only Alternative would not result in disturbances of suitable habitats for bank swallow, great blue heron, least bell's vireo, western yellow-billed cuckoo, yellow-breasted chat, yellow warbler, long-eared owl and short-eared owl (**Table 4.3-8a** and **Table 4.3-8b**). Under the proposed project or Tunnel-Only Alternative, construction would not directly impact riparian habitat as this sensitive natural community does not occur within the proposed construction areas (**Table 4.3-8a** and **Table 4.3-8b**). Indirect impacts due to possible erosion and sedimentation could occur within riparian habitat located outside and downstream of the construction areas under both the proposed project and Tunnel-Only Alternative. However, **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*) would be incorporated into the design of the proposed project and Tunnel-Only Alternative to avoid and minimize permanent and temporary impacts on riparian habitats.

Operations

Inundation caused by the operation of the proposed project at San Antonio Reservoir and potential changes in flow values downstream of the reservoirs would not result in the permanent loss of riparian habitat in the project site that is also suitable nesting or foraging habitats for bank swallow, great blue heron, least Bell's vireo, western yellow-billed cuckoo, yellow-breasted chat, yellow warbler, long-eared owl, and short-eared owl as described in Impact BIO-1 (**Table 4.3-9**). Because the riparian habitats suitable to support these species in the study area are well-adapted to the proposed temporary inundation under the proposed project and Tunnel-Only Alternatives, habitat disturbances to these species are expected to be minimal.

Impacts from maintenance activities required for operation under the proposed project or Tunnel-Only Alternative are expected to be minimal because maintenance activities would be conducted mostly in previously disturbed areas during daytime hours and using existing roadways away from riparian habitat. Therefore, noise and other disturbances from maintenance are not anticipated to affect foraging bank swallows, great blue herons, least Bell's vireos, western yellow-billed cuckoos, yellow-breasted chats, yellow warblers, long-eared owls, and short-eared owls.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative would occur outside of riparian habitats, and there would be no direct impacts from construction to suitable habitat for bank swallow, great blue heron, least Bell's vireo, western yellow-billed cuckoo, yellow-breasted chat, yellow warbler, long-eared owl, and short-eared owl. **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*) incorporated into the proposed project and Tunnel-Only Alternative would also avoid indirect impacts on riparian habitats downstream of the work areas during construction. Impacts from construction of the proposed project and Tunnel-Only Alternative would be **less than significant**.

Operation of the proposed project or Tunnel-Only Alternative would not result in habitat loss for bank swallow, great blue heron, least Bell's vireo, western yellow-billed cuckoo, yellow-breasted chat, yellow warbler, long-eared owl, and short-eared owl. Infrequent reservoir inundation and downstream flow changes in the lower reaches of the San Antonio and Nacimiento Rivers are not expected to permanently affect riparian habitats in the study area as described in Impact BIO-1, *Impacts on Riparian Habitat*,. Therefore, potential impacts on suitable bank swallow, great blue heron, least Bell's vireo, western yellow-billed cuckoo, yellow-breasted chat, yellow warbler, long-eared owl, and short-eared owl habitat from operation of the proposed project or Tunnel-Only Alternative would be **less than significant**.

Impact BIO-8i: Coast Horned Lark, Loggerhead Shrike, and Western Burrowing Owl

Suitable habitat for Coast horned lark, loggerhead shrike, and western burrowing owl occurs within the proposed construction areas of the project site and within the proposed inundation area. Each species has been reported from the project region (CDFW 2021a).

Conversion of native habitats in the Salinas Valley and Central Coast has resulted in a decline of local Coast horned lark and loggerhead shrike populations. Burrowing owl populations have declined in central and southern coastal breeding areas, and the species has experienced moderate breeding range reductions statewide. Burrowing owl population declines are attributed to the loss, degradation, and modification of suitable habitat, and the eradication of ground squirrels that provide the owls with burrows for nesting, protection from predators, and shelter (CDFG 2012).

Construction

Construction of proposed project or Tunnel-Only Alternative could result in permanent and temporary losses of suitable habitats for Coast horned lark, loggerhead shrike, and western burrowing owl if they are present (**Table 4.3-8a** and **Table 4.3-8b**). Habitat loss could result from vegetation removal and conversion to unsuitable land cover types. Clearing and grubbing, excavation, and other construction activities could result in destruction of nests and burrows or nest abandonment, which could cause injury or mortality of eggs or nestlings. Noise and vibration from operation of vehicles and equipment, and presence of construction crews could result in temporary disturbance of active nesting or foraging activities. Tunneling and spillway modification activities would result in additional temporary disturbance from noise and vibration in the project site vicinity. Nighttime construction lighting could temporarily disturb active nest sites if they are in the illuminated area.

Operations

An increase in the maximum WSE at San Antonio Reservoir from operation of the proposed project could result in the permanent loss of suitable habitats for Coast horned lark, loggerhead shrike, and western burrowing owl if they are present in the area between the existing maximum inundation area at 780 feet and the new proposed maximum inundation area at 787 feet (**Table 4.3-9**).

Impacts from maintenance activities required for operation under the proposed project or Tunnel-Only Alternative are expected to be minimal because maintenance activities would be conducted mostly in previously disturbed areas during daytime hours and using existing roadways. Noise and other disturbances from maintenance are not anticipated to affect foraging Coast horned lark, loggerhead shrike, and western burrowing owl.

Western burrowing owls are not expected to nest in the project site as it is outside of the known breeding range. Therefore, burrowing owl nests are not anticipated to be located near facilities that would be maintained, and noise and other disturbances from maintenance are not expected to affect nesting burrowing owls. Use of rodenticides at the facilities could cause illness or mortality of western burrowing owl because they could feed on rodents that have ingested rodenticide. The new transmission lines installed for the reservoirs could cause mortality of burrowing owl through electrocution.

Safety nighttime lighting would be installed at the inlet and outlet areas, where potential habitat is present. Artificial lighting could deter Coast horned lark and loggerhead shrike from nesting in illuminated areas or deter burrowing owls from overwintering in these areas. As part of project design, safety lighting would be shielded to minimize off-site light spill and glare and be screened and directed away from adjacent uses to the highest degree possible. This would minimize the operational impacts of new lighting on Coast horned lark, loggerhead shrike, and western burrowing owl.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant impacts on Coast horned lark, loggerhead shrike, and western burrowing owl from removal of suitable habitat and potential loss or disturbance of active nests or wintering sites if they are present. Construction could result in disturbance of Coast horned lark, loggerhead shrike, or western burrowing owl from human-generated noise and disturbance at the project site, or illness or morality of burrowing owl from ingestion of rodents that have consumed rodenticide. Collision with new transmission lines could cause injury or death of individual owls from electrocution. These impacts would be significant because the implementation of the proposed project or Tunnel-Only Alternative could reduce the local Coast horned lark, loggerhead shrike, and western burrowing owl populations through direct mortality and habitat loss. Implementation of **MM BIO-3.1**, **MM BIO-3.2**, **MM BIO-8.7**, **MM BIO-8.9**, **MM BIO-8.10**, **MM BIO-8.11**, **MM BIO-8.12**, and **MM BIO-8.13** would reduce the level of impact because vegetation would be removed during the nonbreeding season, surveys would be conducted to determine if Coast horned lark or loggerhead shrike are nesting or if burrowing owl is wintering in or near work areas, no-disturbance buffers would be established around active nests or wintering sites, measures would be enacted to minimize the potential for wildlife to accidentally ingest rodenticide, and impacts on sensitive natural communities in which Coast horned lark, loggerhead shrike, or burrowing owls may nest or forage would be compensated for through habitat restoration or protection. Impacts from construction of the proposed project or Tunnel-Only Alternative would be **less than significant with mitigation**.

Under the proposed project, inundation due to an increase in the maximum WSE at San Antonio Reservoir could result in significant impacts on Coast horned lark, loggerhead shrike, and western burrowing owl from removal of suitable habitat and potential loss of individuals if they are present.

Implementation of **MM BIO-3.2** and **MM BIO-8.9** would reduce the level of impact because measures would be enacted to minimize the potential for wildlife to accidentally ingest rodenticide and impacts on sensitive natural communities in which Coast horned lark, loggerhead shrike, or burrowing owls may nest or forage would be compensated for through habitat restoration or protection. Impacts from operation of the proposed project would be **less than significant with mitigation**.

Operation of the Tunnel-Only Alternative would not result in an increased maximum WSE at San Antonio Reservoir, and therefore would not result in the loss of Coast horned lark, loggerhead shrike, and western burrowing owl from removal of suitable habitat and potential loss of individuals. However, this alternative may still result in illness or mortality of individuals from eating rodents that have ingested rodenticide. Implementation of **MM BIO-8.9** would reduce the level of impact because measures would be enacted to minimize the potential for wildlife to accidentally ingest rodenticide. Impacts from operation of the Tunnel-Only Alternative would be **less than significant with mitigation**.

Mitigation Measures

Mitigation Measure BIO-8.11: Conduct Preconstruction Surveys for Nesting Migratory Birds and Implement Protective Measures if Found

For special-status species where survey protocols have been established by CDFW, USFWS, or pre-existing technical advisory committees, those survey protocols will supersede this measure (i.e., **MM BIO-8.8** for golden eagle/bald eagle and **MM BIO-8.12** for burrowing owl). MCWRA will employ qualified wildlife biologists with knowledge of the relevant species to conduct nesting bird surveys before the start of construction. A minimum of two separate surveys will be conducted for migratory birds, including raptors. Surveys for nesting migratory birds will include examining all potential nesting habitat in and within 50 feet of work areas on foot and/or using binoculars. The survey area for nesting raptors will encompass potential habitat within 500 feet of work areas. If possible, the first survey will be conducted during the height of the breeding season (March 1 to June 1) and the second survey will be conducted within 1 week prior to the start of construction. If no active nests are detected during these surveys, no additional measures are required.

If an active nest is found in the survey area, a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the site until the end of the breeding season (September 30) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the project area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with USFWS and CDFW and will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species. If it is determined that the no-disturbance buffer cannot be maintained, MCWRA and the qualified biologist will consult with USFWS and CDFW about implementing alternative protective measures such as a reduced buffer with full-time nest monitoring by a qualified biologist.

Mitigation Measure BIO-8.12: Conduct Surveys for Western Burrowing Owl Prior to Construction and Implement Avoidance and Minimization Measures if Found

MCWRA will employ qualified biologists (experienced at identification of burrowing owls and their habitat) to conduct burrowing owl surveys in accordance with CDFW's *2012 Staff Report on Burrowing Owl Mitigation* (2012 Staff Report) (California Department of Fish and Game 2012). Biologists will conduct four surveys during the breeding season as follows: (1) one survey between February 15 and April 15, and (2) a minimum of three surveys at least 3 weeks apart between April 15 and July 15, with at least one survey after June 15. Biologists will also conduct four surveys spread evenly throughout the non-breeding season (September 1 to

January 31). A report describing the methods and results of the survey will be submitted to CDFW within 30 days of completing the surveys.

MCWRA will employ qualified biologists to conduct preconstruction take avoidance surveys for active burrows according to methodology in the 2012 Staff Report. If burrowing owls are found during any of the surveys, MCWRA will implement **MM BIO-8.13** which requires habitat to be replaced at a conservation area before permanent impacts occur. Because ample lead time is necessary to acquire and protect replacement habitat, these efforts should begin as soon as possible after presence of burrowing owls is determined.

Regardless of results from the surveys described above, take avoidance (preconstruction) surveys will be conducted no less than 14 days prior to and 24 hours before initiating ground-disturbing activities (i.e., two surveys).

Because burrowing owls may re-colonize a site after a few days, subsequent surveys will be conducted if more than 2 days pass between project activities. If no burrowing owls are found, no further mitigation is required. If burrowing owls are found, MCWRA will implement the following measures summarized from the 2012 Staff Report.

- Occupied burrows will not be disturbed during the breeding season (February 1–August 31).
- A 250-foot-wide buffer area will be established around occupied burrows. No construction will be authorized within the buffer unless a qualified biologist determines through non-invasive methods that egg laying and incubation have not begun or that juveniles are foraging independently and are capable of independent survival.
- To the maximum extent possible, burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls will be avoided.
- To the maximum extent possible, destruction of unoccupied burrows in temporary impact areas will be avoided, and visible markers will be placed near burrows to ensure they are not collapsed.
- Occupied burrows that cannot be avoided will have exclusion devices installed and be collapsed. Burrow exclusion will be conducted only by qualified biologists during the non-breeding season, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping.
- Qualified biologists will conduct additional take avoidance surveys, as described above.
- Qualified biologists will monitor the project site for burrowing owls during project construction activities.
- Impacts on burrowing owls and their habitat will be minimized by using buffer areas, visual screens, and other measures during project construction activities. Recommended buffer distances in the 2012 Staff Report will be used or site-specific buffers and visual screens will be determined through information collected during site-specific monitoring and consultation with CDFW.
- Fumigation, treated bait, or other means of poisoning nuisance animals will not be used in areas where burrowing owls are known or suspected to occur (e.g., sites observed with nesting owls, designated use areas).

- Use of treated grain to poison mammals will be restricted to the months of January and February.

Mitigation Measure BIO-8.13: Restore Temporarily Disturbed Habitat and Compensate for the Permanent Loss of Occupied Burrowing Owl Habitat

If burrowing owls have been documented to occupy burrows at the project site in the last 3 years, CDFW considers the site occupied and mitigation is required.

Where habitat will be temporarily disturbed, MCWRA will restore the disturbed area to pre-project conditions, including soil decompaction and revegetation. Prior to any activities that would result in permanent impacts on occupied habitat for burrowing owl, the MCWRA will acquire replacement habitat and permanently protect the habitat in accordance with the 2012 Staff Report. Mitigation will be provided at a minimum 1:1 ratio, but the final ratios will be determined through coordination with CDFW. Replacement habitat will be established through a conservation easement and/or credits will be purchased at a CDFW-approved conservation bank. For mitigation land under a conservation easement, a mitigation land management plan will be prepared to ensure the long-term success of the habitat and will require monitoring and reporting. MCWRA will fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment. A qualified biologist or CDFW may determine that permanent habitat protection may be warranted if there is potential that temporary effects may render a nesting site (nesting burrow and satellite burrows) unsustainable or unavailable, depending on the timeframe, resulting in reduced survival or abandonment.

Impact BIO-8j: Northern Harrier, Cooper's Hawk, Ferruginous Hawk, Sharp-Shinned Hawk, Prairie Falcon, and White-Tailed Kite

Suitable habitat for northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite occurs within the proposed construction areas on the project site, within the proposed inundation area, and downstream of the project site along the Nacimiento, San Antonio, and Salinas River floodplains. Each species has been reported from the project region (CDFW 2021a). Historically, white-tailed kite populations were substantially reduced by habitat loss, shooting, and egg collection, and the long-term trend suggests a continued decline (ebird 2021).

Construction

Construction of proposed project or Tunnel-Only Alternative could result in permanent and temporary losses of suitable habitats for northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite if they are present (**Table 4.3-8a** and **Table 4.3-8b**). Habitat loss could result from vegetation removal and conversion to unsuitable land cover types. Clearing and grubbing, excavation, and other construction activities could result in destruction of nests or nest abandonment, which could cause injury or mortality of eggs or nestlings. Noise and vibration from operation of vehicles and equipment, and presence of construction crews could result in temporary disturbance of active nesting, overwintering, or foraging activities. Tunneling and spillway modification activities could result in additional temporary disturbance from noise and vibration in the project site vicinity. Nighttime construction lighting could temporarily disturb active nest sites or overwintering habitat if they are in the illuminated area.

Operations

An increase in the maximum WSE at San Antonio Reservoir from operation of the proposed project could result in the permanent loss of suitable habitats for the northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite if they are present in the area between the existing maximum inundation area at 780 feet and the new proposed maximum inundation area at 787 feet (**Table 4.3-9**).

Maintenance activities required for operation the proposed project or Tunnel-Only Alternative could result in impacts on northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite. Noise and vibration from vehicles and equipment, and presence of maintenance crews could disturb individuals if maintenance activities are near active nests. Although maintenance activities would be temporary and short term, they could result in disturbance of active nests if conducted during a sensitive period in the nesting process (e.g., when fledglings are beginning to fly). Use of rodenticides at the facilities could cause illness or mortality of individuals because they could feed on rodents that have ingested rodenticide.

The new transmission lines installed for the reservoirs could cause mortality of northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite through electrocution.

Safety nighttime lighting would be installed at the inlet and outlet areas, where potential habitat is present. Artificial lighting could deter northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite from nesting in illuminated areas. As part of project design, safety lighting would be shielded to minimize off-site light spill and glare and be screened and directed away from adjacent uses to the highest degree possible. This would minimize the operational impacts of new lighting on northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant impacts on northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite from removal of suitable habitat and potential loss or disturbance of active nests if they are present. Construction of the proposed project or Tunnel-Only Alternative could result in disturbance of northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite from human-generated noise and disturbance at the project site, or illness or morality from ingestion of rodents that have consumed rodenticide. Collision with new transmission lines could cause injury or death of individuals from electrocution. These impacts would be significant because construction of the proposed project or Tunnel-Only Alternative could reduce the local northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite populations through direct mortality and habitat loss. Implementation of **MM BIO-3.1**, **MM BIO-3.2**, **MM BIO-8.7**, **MM BIO-8.9**, **MM BIO-8.10**, and **MM BIO-8.11** would reduce the level of impact because vegetation would be removed during the nonbreeding season, surveys would be conducted to determine if northern harrier, Cooper's hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite are nesting in or near work areas, no-disturbance buffers would be established around active nests, and impacts on sensitive natural communities in which northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite may nest, overwinter, or forage would be compensated for through habitat restoration or protection. Impacts from construction of the proposed project or Tunnel-Only Alternative would be **less than significant with mitigation**.

During operation of the proposed project, inundation due to an increase in the maximum WSE at San Antonio Reservoir could result in significant impacts on northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite from removal of suitable habitat, potential loss or disturbance of active nests if they are present, or illness or mortality of individuals from eating rodents that have ingested rodenticide. Implementation of **MM BIO-3.2** and **MM BIO-8.9** would reduce the level of impact because impacts on habitat would be compensated for through habitat restoration or protection and measures would be enacted to minimize the potential for wildlife to accidentally ingest rodenticide. Impacts from operation of the proposed project would be **less than significant with mitigation**.

Operation of the Tunnel-Only Alternative would not result in an increased maximum WSE at San Antonio Reservoir and therefore would not result in the loss of habitat for northern harrier, Cooper's hawk, ferruginous hawk, sharp-shinned hawk, prairie falcon, and white-tailed kite or potential loss or disturbance of active nests if they are present. However, this alternative may still result in illness or mortality of individuals from eating rodents that have ingested rodenticide. Implementation of **MM BIO-8.9** would reduce the level of impact because measures would be enacted to minimize the potential for wildlife to accidentally ingest rodenticide. Impacts from operation of the Tunnel-Only Alternative would be **less than significant with mitigation**.

Impact BIO-8k: Tricolored Blackbird

Suitable habitat for tricolored blackbird occurs adjacent to the proposed construction areas of the project site, within the proposed inundation area along the upper reach of the San Antonio River, and downstream of the project site along the Nacimiento, San Antonio, and Salinas River floodplains. Two known occurrences have been reported from the northern portion of San Antonio Reservoir, near the San Antonio River within the project site. Nesting colonies are not expected in project site construction work areas (CDFW 2021a; Roberson 2002). Urban development, agricultural conversion, and harvesting of silage fields have caused a dramatic decline in the tricolored blackbird population from loss of suitable breeding and foraging habitats and loss of reproductive breeding efforts (USFWS 2019a).

Construction

Construction of the proposed project or Tunnel-Only Alternative could result in the temporary disturbances of suitable habitat for the tricolored blackbird if they are present (**Table 4.3-8a** and **Table 4.3-8b**). Habitat disturbance could result from noise and vibration made by vehicle and equipment operations, and presence of construction crews. Tunneling and spillway modification activities could result in additional temporary disturbance from noise and vibration in the project site vicinity.

Operations

An increase in the maximum WSE at San Antonio Reservoir from operation of the proposed project could result in the permanent loss of suitable nesting habitat for tricolored blackbird if they are present in the area between the existing maximum inundation area at 780 feet and the new proposed maximum inundation area at 787 feet (**Table 4.3-9**).

Impacts from maintenance activities required for operation under the proposed project or Tunnel-Only Alternative are expected to be minimal because maintenance activities would be conducted mostly in previously disturbed areas during daytime hours and using existing roadways. Noise and other disturbances from maintenance are not anticipated to affect foraging tricolored blackbirds.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant temporary disturbance of tricolored blackbird foraging activities from human generated noise and disturbance near open areas adjacent to the proposed work areas. Construction impacts would be significant because the proposed project or Tunnel-Only Alternative could affect tricolored blackbird populations through loss of suitable habitat. Implementation of **MM BIO-3.1**, **MM BIO-3.2**, and **MM BIO-8.11** would reduce the level of impact because impacts on sensitive natural communities in which tricolored blackbird may utilize would be compensated for through habitat restoration and preconstruction surveys and avoidance would be conducted to minimize temporary disturbances during construction. Impacts from construction of the proposed project or Tunnel-Only Alternative would be **less than significant with mitigation**.

Operation of the proposed project could result in significant habitat loss for tricolored blackbird due to an increase in the maximum WSE at San Antonio Reservoir if the species is present. Operation impacts would be significant because the proposed project could affect tricolored blackbird populations through loss of suitable habitat. Implementation of **MM BIO-3.2** would reduce the level of impact because impacts on sensitive natural communities in which tricolored blackbird may utilize in the project region would be compensated for through habitat restoration. Impacts from operation of the proposed project would be **less than significant with mitigation**.

Operation of the Tunnel-Only Alternative would not result in an increased maximum WSE at San Antonio Reservoir and therefore would not result in the loss of habitat for tricolored blackbird. Impacts from operation of the Tunnel-Only Alternative would be **less than significant**.

Impact BIO-8l: Western Snowy Plover

Suitable habitat for western snowy plover occurs downstream of the project site along the coastal strand adjacent to the mouth of the Salinas River Lagoon. Western snowy plover is known to nest along the coastline adjacent to the Salinas River Lagoon (CDFW 2021a).

Construction

Construction of the proposed project or Tunnel-Only Alternative would not impact western snowy plover or its suitable habitat as this species occurs only in coastal areas of Central California, over 50 river miles downstream of the project site.

Operations

Operations of the proposed project or Tunnel-Only Alternative would not impact suitable habitat for the western snowy plover. Modeling results described in Impact BIO-1, *Impacts on Riparian Habitat*, indicate that the flows in the Salinas River Lagoon for the modeled proposed project and Tunnel-Only Alternative scenarios would generally be similar to modeled baseline conditions.

CEQA Conclusion

Under the proposed project or Tunnel-Only Alternative, the new facilities would be constructed outside of suitable coastal habitats and **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** would be in place to avoid downstream indirect impacts such as erosion and sedimentation. In addition, any unexpected indirect impacts from flooding to suitable adjacent coastal scrub and dune habitats surrounding the Salinas River Lagoon under the modeled proposed project or the Tunnel-Only Alternative scenarios would be minor and short-lived similar to modeled baseline conditions. Therefore, under the proposed project or Tunnel-Only Alternative, construction and operations impacts on western snowy plover or its suitable habitat would be **less than significant**.

Mammals

Impact BIO-8m: Hoary Bat, Long-eared Myotis, Pallid Bat, Townsend's Big-eared Bat, Western Red Bat, Western Mastiff Bat, Western Small-Footed Myotis, Yuma Myotis, and Colonies of Non-special-status Roosting Bats

Suitable habitat for hoary bat, long-eared myotis, pallid bat, Townsend's big-eared bat, western red bat, western mastiff bat, western small-footed myotis, Yuma myotis, and colonies of non-special-status roosting bats (referred to as special-status bats herein) is present at the project site, including the proposed inundation area. Potential habitat is also present along the Nacimiento, San Antonio, and Salinas Rivers in the study area. Each species has been reported from the project region (CDFW 2021a). Many bat species are rare, declining, or have unknown population sizes. Historical and ongoing challenges of bats include habitat loss, alteration, and disturbance; new challenges include wind energy, climate change, and emerging diseases such as white-nose syndrome (CDFW 2021a).

Construction

Construction of the proposed project or Tunnel-Only Alternative could result in permanent and temporary losses of suitable habitat for special-status bats if they are present (**Table 4.3-8a** and **Table 4.3-8b**). Habitat loss could result from vegetation removal and conversion to unsuitable land cover types. Clearing and grubbing, excavation, and other construction activities could result in destruction of roost or roost abandonment, which could cause injury or mortality of individuals, including non-volant (i.e., non-flying) pups.

Removal of existing trees during construction could result in the permanent loss of roosting habitat for bats, including maternity, seasonal migration, and/or winter roosting habitats. Tree removal during construction could also result in injury or mortality of bats, including non-volant pups, or eviction from roosts during the daytime when they would be disoriented and vulnerable to predation. Bats displaced from roost sites would have to compete with other bats for new roost locations.

Nighttime construction lighting could temporarily disturb bat foraging activities. Noise and vibration from operation of vehicles and equipment, and presence of construction crews could result in temporary disturbance of bats roosting near work areas.

Operations

An increase in the maximum WSE at San Antonio Reservoir from operation of the proposed project could result in the permanent loss of oak woodlands and grasslands, which serve as suitable roosting and foraging habitat for special-status bats if present in the area between the existing maximum inundation area at 780 feet and the new proposed maximum inundation area at 787 feet (**Table 4.3-9**).

Operation of the Tunnel-Only Alternative would result in infrequent inundation, similar to current operations within the existing reservoir inundation area where special-status bats are not expected to roost. Therefore, impacts on special-status bats from operations under the Tunnel-Only Alternative are not anticipated.

Maintenance activities required for operation the proposed project or Tunnel-Only Alternative are expected to be minimal because maintenance activities would be conducted mostly in previously disturbed areas during daytime hours and using existing roadways. Noise and vibration from vehicles and equipment, and presence of maintenance crews could disturb individuals if maintenance activities are near active roosts. These types of disturbances would be temporary and short term and are not anticipated to adversely affect special-status bats.

Safety nighttime lighting would be installed at the inlet and outlet areas, where potential habitat is present. New lighting could deter bats from using areas that are illuminated by these new sources of light, but lighting may also attract insects and increase foraging opportunities around the lights. As part of project design, safety lighting would be shielded to minimize off-site light spill and glare and be screened and directed away from adjacent uses to the highest degree possible. This would minimize the operational impacts of new lighting on special-status bats.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant impacts on special-status bats from removal of suitable habitat and potential loss or disturbance of active roosts and displacement of bats from roost sites if they are present, which could reduce the local populations of these special-status bats through direct mortality and habitat loss. Implementation of **MM BIO-3.1**, **MM BIO-3.2**, and **MM BIO-8.14** would reduce the level of impact because surveys for special-status bats would be conducted, protective measures would be implemented, roosting habitat that is permanently lost would be replaced and protected on-site or at an off-site preservation area, impacts on oak woodland would be minimized, and impacts on sensitive natural communities in which special-status bats may roost or forage would be compensated for through habitat restoration and preservation. Impacts from construction of the proposed project or Tunnel-Only Alternative would be **less than significant with mitigation**.

Under the proposed project, inundation due to an increase in the maximum WSE at San Antonio Reservoir could result in significant habitat loss for special-status bats if they are present. Impacts from operation would be significant because they could reduce the local populations of these special-status bats through direct mortality and habitat loss. Implementation of **MM BIO-3.2** would reduce the level of impact because impacts on sensitive natural communities in which special-status bats may roost or forage would be compensated for through habitat restoration and preservation. Impacts from operation of the proposed project would be **less than significant with mitigation**.

Operation of the Tunnel-Only Alternative would not result in an increased maximum WSE at San Antonio Reservoir and therefore would not result in the loss of habitat for special-status bats. Impacts from operation of the Tunnel-Only Alternative would be **less than significant**.

Mitigation Measures

Mitigation Measure BIO-8.14: Conduct Surveys and Implement Protection Measures for Special-Status Bat Species Prior to Tree Trimming and Removal

Prior to tree trimming or removal, MCWRA will employ a qualified biologist to conduct pre-construction surveys and implement protective measures for hoary bat, long-eared myotis, pallid bat, Townsend's big-eared bat, western red bat, western mastiff bat, western small-footed myotis, Yuma myotis, and other tree-roosting bats. Prior to initiating tree trimming or removal, a qualified biologist will examine the trees to be removed or trimmed to identify suitable bat roosting habitat. Because of the limited preferred timeframe for tree removal (September 15 to October 31), the tree habitat assessment should be conducted early enough to provide information to inform tree removal planning. The biologists will identify high-quality habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, larger snags), and the area around these features will be searched for bats and bat sign. If the tree can be adequately assessed and no habitat for roosting bats is present, no further actions are necessary and tree removal or trimming may commence. Because signs of bat use are not easily found, and trees cannot be completely surveyed for bat roosts, MCWRA will implement the following protective measures listed below for trees containing potential roosting habitat.

- Trimming or removal of trees with potentially suitable bat roosting habitat will be avoided during the maternity season (generally between April 1 and September 15) and the hibernation season (generally from November 1 to March 1).
- Removal of trees providing bat roosting habitat will be conducted only before maternity colonies establish (generally from March 1 to March 31) or after they disperse (generally September 15 to October 31).
- If a maternity roost is found, the roost will be protected until September 15 or until the qualified biologist has determined the roost is no longer active. Appropriate no-work buffers around the roost will be established under direction of the qualified biologist. Buffer distances may vary depending on the species and activities being conducted.
- Trimming and removal of trees (between September 15 and October 31) with suitable roosting habitat will be monitored by a qualified biologist. Tree trimming and removal will be conducted using a two-phase removal process conducted over two consecutive days. In the afternoon on the first day, limbs and branches will be removed using chainsaws only. Only branches or limbs without cavities, crevices, or deep bark fissures will be removed; branches and limbs with these features will be avoided. On the second day, the entire tree will be removed. The qualified biologist will search through downed vegetation for injured or dead bats. Observation of injured or dead special-status bats will be reported to CDFW.

Impact BIO-8n: Monterey Shrew and Salinas Harvest Mouse

Suitable habitat for Monterey shrew and Salinas harvest mouse occurs downstream of the project site along the riparian corridor of the Salinas River. Both species are known to occur in the study area near the Salinas River Lagoon and Elkhorn Slough (CDFW 2021a).

Construction

Construction of the proposed project or Tunnel-Only Alternative would not impact Monterey shrew and Salinas harvest mouse or its suitable habitat as these species occur north of the project site in the coastal portion of the study area, approximately 50 river miles from the project site.

Operations

Operations of the proposed project or Tunnel-Only Alternative would not impact suitable habitat for the Monterey shrew and Salinas harvest mouse. Modeling results described in Impact BIO-1, *Impacts on Riparian Habitat*, indicate that the flows in the Salinas River Lagoon under the modeled proposed project and Tunnel-Only Alternative scenarios would generally be similar to modeled baseline conditions.

CEQA Conclusion

Under the proposed project or Tunnel-Only Alternative, the new facilities would be constructed outside of suitable coastal habitats and **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** would be in place to avoid downstream indirect impacts. In addition, any unexpected indirect impacts from flooding to suitable adjacent coastal riparian and wetland habitats surrounding the Salinas River Lagoon under the modeled proposed project or the Tunnel-Only Alternative scenarios would be minor and short-lived similar to modeled baseline conditions. Therefore, under the proposed project or Tunnel-Only Alternative, construction and operations impacts on Monterey shrew and Salinas harvest mouse or their suitable habitats would be **less than significant**.

Impact BIO-8o: American Badger, Monterey Dusky-Footed Woodrat, Salinas Pocket Mouse, and Mountain Lion

Suitable habitats for American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion are present at the project site including the proposed inundation area. Potential habitat is also present along the Nacimiento, San Antonio, and Salinas Rivers in the study area. Each species has been reported from the project region (CDFW 2021a). These special-status mammal species were once common in California, but populations have been significantly reduced from trapping, hunting, and habitat loss. Although the current population numbers are not fully known, these species are now considered uncommon and threatened by habitat loss and fragmentation, vehicle strikes, trapping, predation, and depredation, including ingestion of rodenticide (CDFW 2021a).

Construction

Construction of proposed project or Tunnel-Only Alternative could result in the permanent and temporary losses of suitable habitat for American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion if they are present (**Table 4.3-8a** and **Table 4.3-8b**). Habitat loss could result from vegetation removal and conversion to unsuitable land cover types. Clearing and grubbing, excavation, and other construction activities could result in the destruction of dens or nests and mortality or injury of individuals from being crushed or buried by equipment. American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion could also be struck by vehicles and equipment traveling along access roads during construction.

Construction activities, including ongoing human presence in the project site, and roadway use, could result in disruption of breeding or foraging activities or other movements in individuals' home ranges. Noise and vibration created during operation of vehicles, equipment, and construction crews could result also in temporary disruption of foraging or breeding behaviors or alteration of movement patterns. Construction activities for tunneling could result in additional temporary disturbance from noise and vibration in those areas. Nighttime construction lighting could temporarily disturb foraging activities.

Operations

An increase in the maximum WSE at San Antonio Reservoir from operation of the proposed project could result in the permanent loss of suitable habitats for American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion if they are present in the area between the existing maximum inundation area at 780 feet and the new proposed maximum inundation area at 787 feet (**Table 4.3-9**).

Maintenance activities required for operation the proposed project or Tunnel-Only Alternative are expected to be minimal because maintenance activities would be conducted mostly in previously disturbed areas during daytime hours and using existing roadways. Noise and vibration from vehicles and equipment, and presence of maintenance crews could disturb individuals if maintenance activities are near active nests or dens. These types of disturbances would be temporary and short term and are not anticipated to adversely affect American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion.

American badger and mountain lion are not anticipated to den near facilities that would be maintained, as they infrequently occupy developed areas (Williams 1986 and Lay 2008), and noise and other disturbances from maintenance are not anticipated to affect denning mammals. However, use of rodenticides at the facilities could cause illness or mortality of American badger and mountain lion because they could feed on rodents that have ingested rodenticide.

Safety nighttime lighting would be installed at the inlet and outlet areas, where potential habitat is present. New lighting could deter American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion from using areas that are illuminated by these new sources of light. As part of project design, safety lighting would be shielded to minimize off-site light spill and glare and be screened and directed away from adjacent uses to the highest degree possible. This would minimize the operational impacts of new lighting on American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could result in significant impacts on American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion from removal of suitable habitat and potential loss or disturbance of active dens or nests if they are present. These impacts would be significant because the proposed project or Tunnel-Only Alternative could reduce local populations of American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion through direct mortality and habitat loss. Implementation of **MM BIO-3.1**, **MM BIO-3.2**, **MM BIO-8.9**, and **MM BIO-8.15** would reduce the level of impact because surveys would be conducted to determine if suitable or occupied dens/nests are present in or near work areas. Furthermore, no-disturbance buffers would be established around active den sites, and impacts on sensitive natural communities in which American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion may den, nest, or forage would be compensated for through off-site habitat restoration and preservation. Impacts from construction of the proposed project or Tunnel-Only Alternative would be **less than significant with mitigation**.

Under the proposed project, inundation due to an increase in the maximum WSE at San Antonio Reservoir could result in significant impacts on local populations of American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion through habitat loss if they are present. Operation of the proposed project may also result in impacts on American badger and mountain lion if rodenticides are ingested, which would be a significant impact because it could reduce local populations of American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion populations through direct mortality. Implementation of **MM BIO-3.2** and **MM BIO-8.9** would reduce the level of impact because impacts on sensitive natural communities in which American badger, Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion may den, nest, or forage would be compensated for through off-site habitat restoration and preservation, and measures would be enacted to minimize the potential for wildlife to accidentally ingest rodenticides. Impacts from construction and operation of the proposed project would be **less than significant with mitigation**.

Operation of the Tunnel-Only Alternative would not result in an increased maximum WSE at San Antonio Reservoir and therefore would not result in the loss of habitat for local American badger Monterey dusky-footed woodrat, Salinas pocket mouse, and mountain lion. However, this alternative may still result in illness or mortality of individuals from eating rodents that have ingested rodenticide. Implementation of **MM BIO-8.9** would reduce the level of impact because measures would be enacted to minimize the potential for wildlife to accidentally ingest rodenticides. Impacts from operation of the Tunnel-Only Alternative would be **less than significant with mitigation**.

Mitigation Measures

Mitigation Measure BIO-8.15: Implement Protective Measures to Avoid and Minimize Potential Impacts on American Badger, Monterey Dusky-Footed Woodrat, Salinas Pocket Mouse, and Mountain Lion

Where suitable habitat is present for American badger, Monterey dusky-footed woodrat, and Salinas pocket mouse in and within 200 feet of work areas where ground disturbance will occur, MCWRA will implement the following protective measures.

- MCWRA will retain qualified biologists (experienced with the identification of suitable badger dens, woodrat nests, and pocket mouse nesting sites) to conduct a preconstruction survey for active badger dens, woodrat nests, and pocket mouse nesting sites prior to temporary or permanent ground disturbance. The preconstruction survey will be conducted no less than 14 days and no more than 30 days before the beginning of ground disturbance. The biologists will conduct den and nest searches by systematically walking transects through the area to be disturbed and a 200-foot buffer area. Transect distance should be based on the height of vegetation such that 100 percent visual coverage of the disturbance area is achieved. If a suitable or occupied den or nest is found during the survey, the biologist will record the den/nest dimensions, the shape of the den/nest entrance, presence of tracks, scat, or prey remains, den/nest occupancy (i.e., suitable, potentially occupied, or occupied), recent excavations at the den/nest site, and the den/nest location.

- To the maximum extent feasible, disturbance or destruction of suitable dens or nests for American badger, Monterey dusky-footed woodrat, and Salinas pocket mouse in temporarily affected areas will be avoided.
- Any occupied or potentially occupied American badger den, Monterey dusky-footed woodrat nest, and/or Salinas pocket mouse nest will be avoided by establishing an exclusion zone 100 feet from the den/nest entrance. If the den/nest cannot be avoided, MCWRA will contact CDFW for direction on additional steps to be taken.
- Unoccupied suitable dens/nests that would be destroyed by construction may be removed by hand excavation by a biologist or under the supervision of a biologist; a mini excavator may be used to facilitate excavation of dens/nests.

Where suitable habitat is present for mountain lion in and within 200 feet of work areas where ground disturbance will occur, MCWRA will implement the following protective measures.

- Within 1 year but no less than 3 months prior to initiating construction, MCWRA will retain a qualified biologist to identify known and potential wildlife corridors, wildlife crossings, and known mountain lion movement data in the project footprint and surrounding 5 miles.
- Qualified biologist(s) will identify potential mountain lion movement areas, potential denning areas, and compile mountain lion movement and territory data from mountain lion telemetry and other studies, followed by camera and track surveys to determine the location of transit areas, communication posts, and potential denning areas. Based on research documenting mountain lion avoidance behavior of human disturbance and roads, camera and track surveys would be conducted within 2,000 feet of the project footprint (Wilmers et al. 2013). CDFW will be consulted in the final survey design and will be given the environmental footprints. The biologists will prepare a report summarizing the survey observations and results, including maps depicting the locations of potential mountain lion use area and den sites and, if possible, occupancy. The report will be submitted to MCWRA and CDFW. Mountain lion den types will be defined as follows:
  - **Known Den—**Any existing natural den or human-made structure that is used or has been used at any time in the past by a mountain lion. Evidence of use may include historical records; past or current radio telemetry or tracking study data; mountain lion sign, such as tracks, scat, and/or prey remains; or other reasonable proof that a given den is being or has been used by a mountain lion. USFWS discourages use of the terms ”active” and “inactive” with other species when referring to any den because denning animals may change dens often, with the result that the status of a given den may change frequently and abruptly. Mountain lions may move the litter to one or more additional den sites throughout her home range by the time kittens are weaned at 2 to 3 months (Pierce and Bleich 2003).
  - **Potential Den—**Any thick vegetation, boulder piles, rocky outcrops or undercut cliffs within the species’ range for which available evidence is insufficient to conclude that it is being used or has been used by a mountain lion (Logan and Sweanor 2001). Potential dens will include the following characteristics: (1) refuge from predators (e.g., coyotes, golden eagles, other cougars) or (2) shielding of litter from heavy rain and hot sun.
- Prior to construction, MCWRA will retain qualified biologists to implement preconstruction surveys of previously identified potential mountain lion dens to determine if mountain lion sign is in the vicinity. Preconstruction surveys are to be conducted no less than 14 days and

no more than 30 days before the initiation of construction at each environmental footprint (e.g., 2 weeks ahead of the construction crew for linear components). Construction activities will not occur within 2,000 feet of a potential den during the breeding and natal period (February 1 to September 30). If a known den is present within the permanent project footprint or within 2,000 feet of the project footprint, consultation with CDFW will occur. A summary report will be prepared by the biologist(s) and submitted to MCWRA and CDFW following completion of all mountain lion avoidance and minimization activities. If special-status mammal species are determined to not be present in the project area or a qualified biologist (experienced with predatory mammals) concludes that there is a very low likelihood that the special-status mammal species is present, then no additional mitigation is required. If special-status mammal species are determined to be present in the project area, then **MM BIO-3.2** will provide the required compensation for habitat loss.

Fish

Impact BIO-8p: South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch

Collectively, the Nacimiento, San Antonio, and Salinas Rivers and the Salinas River Lagoon provide suitable habitat for several special-status fish species, including steelhead (and rainbow trout of steelhead descent), tidewater goby, Monterey roach, Pacific lamprey, and Monterey hitch. As described in Section 4.3.3.5, Special-Status Species, subsection *Special-Status Wildlife*, *Fish*, each of these species has the potential to occur in one or more of these habitats. In addition, these rivers and the lagoon are designated by NMFS as critical habitat for steelhead (70 FR 52573–52579, September 2, 2005). In the study area, designated critical habitat includes all stream channels within the designated stream reaches from the Pacific Ocean to the base of Nacimiento and San Antonio Dams. The lateral extent of designated critical habitat extends up to the ordinary high-water line as defined by the U.S. Army Corps of Engineers or the bankfull elevation where ordinary high-water has not been designated (70 FR 52522, September 2, 2005).

Construction

Construction of the proposed project or Tunnel-Only Alternative would not affect steelhead or tidewater goby or the habitat of these species because the reservoirs do not support these species. The nearest suitable habitat for steelhead is located on the Nacimiento and San Antonio Rivers immediately downstream of the dams, while tidewater goby occurs within the Salinas River Lagoon. Implementation of standard construction BMPs and other pollution prevention and control BMPs that would be required as part of the SWPPP (see subsection titled *Erosion Control* in Section 2.4.2.7, *Utilities*) would protect water quality in the reservoirs and downstream receiving waters during construction, govern cofferdam installation and dewatering, and prevent the introduction and spread of aquatic invasive species. These actions would avoid or minimize construction-related impacts on steelhead, rainbow trout, tidewater goby, Monterey roach, Pacific lamprey, and Monterey hitch.

Operations

Reservoirs

Fluctuations in reservoir WSEs from proposed project and the Tunnel Only Alternative operations would not affect steelhead because no steelhead occur in the reservoirs. Project operations with the potential to affect reservoir fish species, including other special-status fish and important recreational species, are described under Impact BIO-7, *Impacts on Reservoir Fish and Wildlife Habitat*

Rivers

MCWRA adaptively manages flows in the Nacimiento, San Antonio and Salinas Rivers to facilitate and enhance steelhead migration as part of the adopted SVWP flow prescription (MCWRA 2005a). As identified in **Table 4.1-2** in Section 4.1, *Hydrology and Water Quality*, the SVWP flow prescription stipulates that MCWRA must release a minimum of 60 cfs to the Nacimiento River from January through May for steelhead spawning and egg incubation and from June through December for juvenile steelhead rearing, provided that the surface elevation of Nacimiento Reservoir remains above 687.8 feet (MCWRA 2005a). Since inception of the SVWP, MCWRA has successfully managed reservoir operations under varying hydrologic conditions to achieve the flows requirements.

Operation of the proposed project and Tunnel-Only Alternative would allow reservoir operational flexibility that could change the way reservoir storage operations, water supplies, and reservoir releases are managed on a real-time basis by reservoir operations managers. These changes could affect the rate, volume, and frequency of reservoir releases seasonally in some years, which could affect downstream flows.

To approximate the potential for reservoir operations effects, the SVOM model was used to estimate changes in river flows under a modeled scenario that prioritizes water supply storage using the Interlake Tunnel. Because this modeled scenario is only one of many potential scenarios, the results should be interpreted to represent potential changes and may not represent the actual changes that would occur under real-time reservoir operations.

Project operations could result in potential flow-related effects on aquatic habitats and fish migration, spawning, and rearing in river reaches below Nacimiento and San Antonio Dams from alterations to the amount and timing of flows. The following sections describe potential operational impacts on aquatic habitats and fish spawning and rearing, based on modeled river flows. Potential operational impacts on fish migration, based on modeled river flows are summarized under Impact BIO-9, *Potential to Interfere with Fish or Wildlife Species Movement*.

<u>Nacimiento River</u>

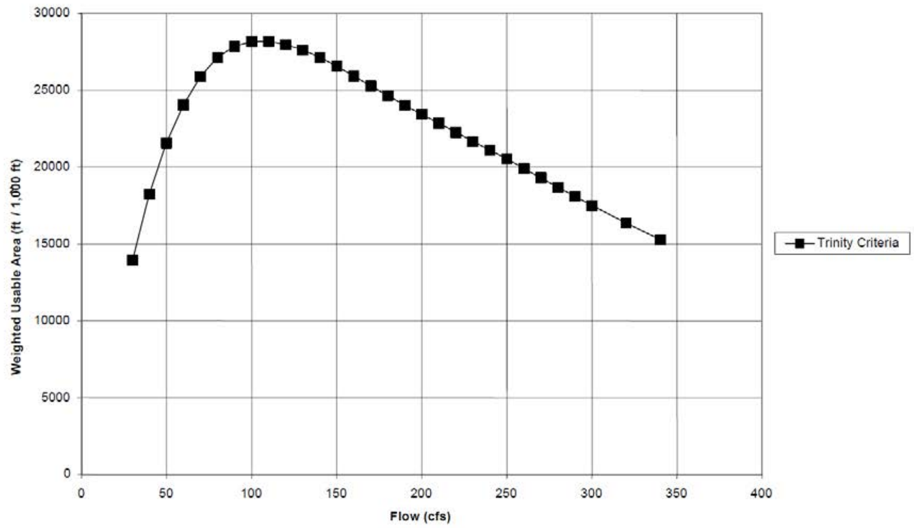
Under the proposed project and Tunnel-Only Alternative, modeled monthly flows would follow the same general pattern as monthly flows under modeled baseline conditions, although there would be some exceptions. Across all years, flows would generally decrease in winter and increase in spring, summer, and early fall. This is indicative of reduced flood control releases from Nacimiento Reservoir during winter storms and increased conservation releases during summer months. The frequency of low-magnitude flows (i.e., a flow that has a 95 percent probability of occurrence) would decrease in most months (Appendix E, *Biological Resource Attachments*, **Table E-11**). The magnitude and timing of these flow changes would vary by water year type. Peak flows (5 percent exceedance flow) in winter and early spring could be reduced by as much as 94 percent (Appendix E, *Biological Resource Attachments*, **Table E-12;** see January for proposed project and Tunnel-Only Alternative) in wet years compared to modeled baseline conditions, while median (50 percent exceedance) and higher magnitude (25 and 5 percent exceedance) flows from mid-spring through early fall could increase by as much as 528 percent (e.g., August in a normal year) in wet and normal years compared to modeled baseline conditions (Appendix E, *Biological Resource Attachments*, **Tables E-**

12 and E-13; see 5, 25 and 50 percent exceedances). By contrast, modeled low-magnitude (95 percent exceedance) flows in the fall could be reduced by as much as 100 percent (e.g., October in a normal year) in wet (Appendix E, *Biological Resource Attachments*, **Table E-12**; see 95 percent exceedance) and normal (Appendix E, *Biological Resource Attachments*, **Table E-13**; see 95 percent exceedance) years compared to modeled baseline conditions. In the winter and spring, flows could be reduced by as much as 100 percent (multiple months) in dry years (see Appendix E, *Biological Resource Attachments*, **Table E-14;** see 95 percent exceedance) compared to modeled baseline conditions.

Under the proposed project and Tunnel-Only Alternative, modeling results suggest that the frequency of simulated 5- to 6-day timesteps with a modeled zero flow could increase overall by 93 timesteps (175 percent) and 97 timesteps (183 percent), respectively, compared to modeled baseline conditions (**Table 4.3-20**). If zero-flow conditions were to occur, impacts on steelhead, especially juvenile steelhead, which require suitable conditions year-round for growth and survival, could be substantial. Although zero-flow conditions are indicated under modeled baseline conditions, they have not occurred historically under past or present operations and are not expected under the proposed project. Zero-flow conditions are very unlikely to happen under real-time reservoir operations due to operational flexibility (see Chapter 2, *Project Description*). These zero-flow modeling results suggest operational constraints would be more complex under the proposed project than the baseline condition; however, MCWRA would continue to meet flow requirements. Although daily flow is not simulated, project operations under the proposed project and the Tunnel-Only Alternative would not affect existing flow ramping requirements that are in place to protect steelhead fry when flow is reduced below 420 cfs.

The management period for steelhead spawning and egg incubation in the Nacimiento River is January through May, while the management period for juvenile steelhead rearing is from June through December (NMFS 2007). Note that because juvenile steelhead rear year-round in the Nacimiento River, the management period for steelhead rearing from January through May is governed by the minimum releases made for spawning. Spawning habitat area in the river tends to reach maximum abundance at approximately 100 cfs; 80 percent of maximum spawning habitat area is present at 60 cfs (**Figure 4.3-10**) (NMFS 2007). Pursuant to flow prescriptions for steelhead developed in consultation with NMFS, MCWRA manages releases from Nacimiento Dam from January through May to meet minimum flow requirements of 60 cfs for steelhead spawning and egg incubation and from June through December to meet minimum flow requirements of 60 cfs for juvenile steelhead rearing, provided that the surface elevation of Nacimiento Reservoir remains above elevation 687.8 feet (MCWRA 2005a). Together, these minimum releases ensure that adequate spawning and rearing conditions are maintained in the Nacimiento River below Nacimiento Dam throughout the steelhead spawning and egg incubation period (January through May) and rearing period (all months).

Figure 4.3-10. Composite Weighted Useable Area versus Flow Relationships for Steelhead Trout Spawning at Nacimiento River



Source: MCWRA (2005b).

Under the proposed project and the Tunnel-Only Alternative, modeling results suggest that minimum releases (60 cfs) for steelhead spawning (January through May) would not be met as frequently as they are under modeled baseline conditions (**Table 4.3-21**). Based on modeling results, the number of timesteps where modeled flows would be less than the 60 cfs minimum release for spawning could increase by 60 timesteps (214 percent) under both the proposed project and the Tunnel-Only Alternative compared to modeled baseline conditions (**Table 4.3-21**). This could occur in 4 out of 47 simulated years compared to 2 years under modeled baseline conditions. Impacts could occur in 3 dry years and 1 normal year compared to 1 dry year and 1 normal year under modeled baseline conditions. It should be noted that any flow effects related to changed reservoir operations in dry years would not have an effect on adult steelhead spawning in the Nacimiento River because the Salinas River does not support passage for adult steelhead in dry years; therefore, adult steelhead would not have access to spawning habitat in the Nacimiento River (see Impact BIO-9, *Potential to Interfere with Fish or Wildlife Species Movement*, for a description of impacts on adult migration). Modeling results also suggest that dry conditions (modeled zero flow) could also increase during the steelhead spawning season (January to May) compared to modeled baseline conditions. Based on modeling results, the number of timesteps with modeled zero flows during the spawning season (January to May) could increase from zero under modeled baseline conditions to 23 under both the proposed project and Tunnel-Only Alternative (**Table 4.3-20**). This could occur in 2 years (dry years) compared to no years under modeled baseline conditions. Adverse impacts on steelhead spawning in the Nacimiento River would be expected if the frequency of minimum releases were reduced or periods of zero flow were to occur, as the modeling suggests. However, as described below, zero-flow conditions and reductions in minimum-flow releases in the Nacimiento River are unlikely to happen under real-time reservoir operations due to operational flexibility and mandated flow requirements.

Table 4.3-20. Frequency of Dry Conditions (Number of 5- to 6-Day Model Intervals with Zero Flow) in the Nacimiento River for the Modeled Proposed Project and Tunnel-Only Alternative Scenarios

Year Type	Scenario	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	% Change from Modeled Baseline
All Years	Modeled Baseline	0	0	0	0	0	6	7	16	6	12	0	6	53	–
All Years	Modeled Proposed Project	6	5	0	6	6	18	22	26	23	22	6	6	146	175
All Years	Modeled Tunnel-Only Alternative	6	5	0	6	6	18	22	26	25	24	6	6	150	183
Dry	Modeled Baseline	0	0	0	0	0	0	0	0	0	6	0	0	6	–
Dry	Modeled Proposed Project	6	5	0	6	6	18	22	26	23	13	0	6	131	179
Dry	Modeled Tunnel-Only Alternative	6	5	0	6	6	18	22	26	23	12	0	6	130	177
Normal	Modeled Baseline	0	0	0	0	0	0	0	0	0	6	0	0	6	–
Normal	Modeled Proposed Project	0	0	0	0	0	0	0	0	0	9	6	0	15	150
Normal	Modeled Tunnel-Only Alternative	0	0	0	0	0	0	0	0	2	12	6	0	20	233
Wet	Modeled Baseline	0	0	0	0	0	0	0	0	0	0	0	0	0	–
Wet	Modeled Proposed Project	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wet	Modeled Tunnel-Only Alternative	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4.3-21. Frequency that Flow Releases Would Be Less than the 60 cfs Minimum Release for Steelhead Spawning and Rearing in the Nacimiento River for the Modeled Proposed Project and Tunnel-Only Alternative Scenarios

Month	Number of 5- to 6-Day Timesteps with Predicted Flows Less than 60 cfs Across All 47 Simulated Years		
	Modeled Baseline	Modeled Proposed Project	Modeled Tunnel-Only Alternative
January	12	23	23
February	7	17	17
March	0	12	12
April	3	18	18
May	6	18	18
June	6	18	18
July	8	22	22
August	17	27	27
September	18	36	39
October	12	70	76
November	15	90	92
December	20	55	54
Total During Spawning Season (January–May)	**28**	**88**	**88**
Total During Rearing Season (All Months)	**124**	**406**	**416**

However, reduced frequency of minimum flow releases for spawning and increased frequency of dry conditions in dry years may reduce spawning success for adult resident rainbow trout (i.e., non-migratory rainbow trout of steelhead descent) in the Nacimiento River. Unlike for Pacific salmon, anadromy is not a requirement for steelhead to reach maturity and reproduce, and juvenile steelhead have the ability to mature in freshwater and spawn without ever having migrated to the ocean. Adult resident rainbow trout of steelhead descent can provide a potentially significant contribution to steelhead population dynamics in drainages where they occur, even in reaches accessible to anadromous adults (Harvey et al. 2021). Note that dry conditions (modeled zero flow) do not necessarily mean that the Nacimiento River would be dry over its entire length. The SVOM hydrologic model computes predicted flow values at the downstream end of the modeled reach and accounts for infiltration and evapotranspiration, which together may cause surface flow to disappear at the downstream end of the modeled reach. Under these circumstances, it is likely that river segments closest to the dam would continue to have flow, albeit very low, or standing water in isolated pools. At a minimum, instances of modeled zero flow in the reach may result in habitat connectivity issues that restrict in-river movement of resident (non-migratory) fish, including steelhead juveniles and individuals that have matured in-river to adulthood, and substantially reduce spawning habitat area for resident individuals. Therefore, under conditions of the proposed project and the Tunnel-Only Alternative, the predicted reduction in frequency of minimum releases (60 cfs) for steelhead spawning and incidents of modeled zero flow described above for adult steelhead, if they were to occur, could negatively affect spawning of resident rainbow trout, including in dry years. However, as described below, zero-flow conditions and reductions in minimum flow releases in the Nacimiento River are unlikely to happen under real-time reservoir operations.

Under the proposed project and Tunnel-Only Alternative, the availability of useable spawning habitat for adult steelhead in the Nacimiento River could be reduced compared to modeled baseline conditions. Results of hydrologic modeling show that project operations during the steelhead spawning season could result in an overall 5 percent reduction in the frequency of flows between 33 and 330 cfs; this flow range spans the range of useable spawning habitat in the Nacimiento River, based on a weighted useable area (WUA) curved developed for the Nacimiento River (MCWRA 2005). Modeling results also show that flows in the 60 to 190 cfs flow range, which corresponds to the highest quantity of steelhead spawning WUA (**Figure 4.3-10**), could be reduced 8 percent compared to modeled baseline conditions. The reduction in the frequency of high flows (5 percent exceedance flow) in January through March in wet years (Appendix E, *Biological Resource Attachments*, **Table E-12**; see 5 percent exceedance) would not adversely affect adult steelhead spawning because these high flows far exceed the range of flows that support useable spawning habitat in the Nacimiento River.

Juvenile steelhead rear year-round in the Nacimiento River below Nacimiento Dam and require suitable flow and temperature conditions year-round for growth and survival. The highest quality rearing habitat is believed to be within the first 3 miles downstream of Nacimiento Dam, although juvenile rainbow trout presumed to include anadromous steelhead have been observed in the river up to 7.7 miles downstream from the dam (MCWRA 2014c). Warm water temperatures are presumed to seasonally limit the use of the lower reaches of the river by juvenile steelhead. Increased flows in April through October in wet and normal years may have a beneficial effect on the quantity and quality of juvenile rearing habitat in the Nacimiento River provided that water quality conditions in the reservoir are similar as under existing conditions (see additional discussion on water quality below). Higher spring, summer, and early fall flows would increase wetted channel area, add more depth to habitats used by juvenile steelhead (especially riffle and run habitats favored by young steelhead), and result in generally improved habitat conditions (e.g., cooler temperatures) that could extend farther downstream from the dam compared to modeled baseline conditions. However, modeling results suggest that under dry conditions the frequency of 5- to 6-day timesteps with modeled zero flow during the juvenile rearing season (all months) could increase by 93 timesteps (175 percent) under the proposed project and by 97 timesteps (183 percent) under the Tunnel-Only Alternative compared to modeled baseline conditions (**Table 4.3-20**). Across all years, impacts could occur in 11 out of 47 simulated years under both the proposed project and Tunnel-Only Alternative. This represents an additional 7 years with impacts (5 dry years and 2 normal years) under proposed project conditions and an additional 7 years (4 dry years and 3 normal years) under Tunnel-Only Alternative conditions. This suggests that project operations may extend the number of sequential years of adverse flow conditions compared to modeled baseline conditions if instances of zero flow as modeled were to occur. However, as described below, zero-flow conditions and reductions in minimum-flow releases in the Nacimiento River are unlikely to happen under real-time reservoir operations.

Results of hydrologic modeling suggest that minimum releases (60 cfs) for juvenile steelhead rearing (all months) would not be met as frequently as they are under modeled baseline conditions. Based on modeling results, the number of timesteps where modeled flows would be less than the minimum release of 60 cfs for juvenile rearing could increase by 282 timesteps (227 percent) under the proposed project and by 292 timesteps (235 percent) under the Tunnel-Only Alternative compared to modeled baseline conditions (**Table 4.3-21**). This could occur in 19 years (8 dry years, 5 normal years, and 6 wet years) under the proposed project and 21 years (8 dry years, 7 normal years, and 6 wet years) under the Tunnel-Only Alternative out of 47 simulated years. This represents an additional 14 years under the proposed project and 16 years under the Tunnel-Only Alternative compared to the 5 years (3 dry years and 2 normal years) under modeled baseline conditions. The additional 7 years with impacts associated with dry conditions and the reduced frequency of minimum releases for juvenile steelhead rearing predicted by the model for the proposed project and the Tunnel-Only Alternative could have a significant impact on juvenile steelhead rearing in the Nacimiento River if instances of reduced frequency of minimum releases (60 cfs), as modeled, were to occur. However, as described below, zero-flow conditions and reductions in minimum-flow releases in the Nacimiento River are unlikely to happen under real-time reservoir operations.

As presented in Section 2.5.1.1, *Operations*, the modeled results provide an approximation of potential operational effects from operating the proposed project and Tunnel-Only Alternative but are unable to capture the real-time reservoir operational decision-making that occurs to reduce downstream effects of reservoir releases, including releases to meet downstream regulatory requirements (e.g., minimum releases). The ability to maximize water supply and minimize downstream effects is reflected in MCWRA's historical reservoir operations and minimum release records. Furthermore, MCWRA-managed reservoir releases have been and would continue to be consistent with the flow prescriptions for steelhead developed in consultation with NMFS (MCWRA 2005a), which stipulates that releases from Nacimiento Dam must meet minimum flow requirements of 60 cfs for steelhead spawning and egg Incubation from January through May and from June through December to meet minimum flow requirements of 60 cfs for juvenile steelhead rearing, provided that the surface elevation of Nacimiento Reservoir remains above elevation 687.8 feet (MCWRA 2005a). Therefore, the potential for operational impacts under the proposed project and Tunnel-Only Alternative associated with reduced frequency of minimum flow releases for spawning and rearing steelhead or incidences of dry conditions (modeled zero flow) in the Nacimiento River, as predicted by the SVOM model, would be negligible, given real-time operational decision-making and MCWRA's historical reservoir operations and minimum release records, especially those that have occurred during successive years of drought conditions.

Changes in seasonal streamflows under the proposed project or Tunnel-Only Alternative have the potential to alter a variety of water quality parameters. Generally, increases in streamflow typically provide a beneficial response to water quality affecting fish; conversely, reductions in streamflows are more typically associated with water quality changes that adversely affect fish. Reductions in streamflow during summer are generally more likely to degrade water quality with increased water temperatures, greater extremes in dissolved oxygen, and potential increases in undesirable algae. As previously mentioned, modeled monthly flows under the proposed project or Tunnel-Only Alternative would generally decrease in winter and increase in spring, summer, and fall and minimum-flow releases of 60 cfs would be maintained year-round to meet downstream streamflow requirements. Therefore, water quality impacts on fish in the Nacimiento River related to changes in streamflows under the proposed project or Tunnel-Only Alternative would not be expected to occur.

Changes in the quality of reservoir waters under the proposed project or Tunnel-Only Alternative have the potential to alter water quality parameters in the Nacimiento River, which could affect the quality of water released from Nacimiento Dam. As described in Impact HWQ-1, *Impacts on Surface or Groundwater Quality* (see Section 4.1, *Hydrology and Water Quality*), operation of Nacimiento Reservoir under the proposed project or Tunnel-Only Alternative would result in lower reservoir volumes, which could lead to increased water temperatures, decreased dissolved oxygen levels, and increased phosphorus levels in the reservoir and, ultimately, the Nacimiento River. Under low reservoir volumes and degraded reservoir water quality, the mostly likely changes would be increased water temperatures, increased dissolved oxygen fluctuations, and increased levels of cyanobacteria in the Nacimiento River. Under existing conditions, these impacts very likely occur to some extent, especially during dry years or successive dry years, in response to reduced reservoir volumes and lower reservoir releases, although there is no information to suggest that this has led to adverse conditions for fish in the Nacimiento River. Under the proposed project and the Tunnel-Only Alternative, low reservoir volumes would occur more frequently in dry years and some normal years compared to existing conditions and could result in a more protracted period of less favorable water quality conditions in the river within years of reduced reservoir levels or by increasing the annual frequency of occurrence of less favorable water quality conditions in the Nacimiento River. However, the impact on water quality in the Nacimiento River was determined to be less than significant (see Impact HWQ-1, *Impacts on Surface or Groundwater Quality*, in Section 4.1, *Hydrology and Water Quality*), and no impacts on fish in the Nacimiento River from water quality changes associated with reduced reservoir levels have been identified for the Nacimiento River under existing conditions. Therefore, water quality impacts on fish in the Nacimiento River related to reduced reservoir levels would not be expected under the proposed project or Tunnel-Only Alternative.

<u>Channel Maintenance Flows</u>

The proposed project and Tunnel-Only Alternative would change the magnitude, frequency, and duration of high flow flood events in the Nacimiento, San Antonio, and Salinas rivers through changes in reservoir volumes associated with the diversion of water through the tunnel from Nacimiento Reservoir to San Antonio Reservoir. These high flow flood events are necessary to maintain the physical character of the stream channel and are referred to as channel maintenance flows (Schmidt and Potyondy 2004). Maintenance of the physical habitat is essential for healthy aquatic and terrestrial habitat and reducing flood risk. For example, channel maintenance flows are important for maintaining pools, riffles, and channel meanders, preventing vegetation from encroaching on the channel, and providing the necessary conditions essential for maintaining healthy riparian vegetation and the benefits it provides (Schmidt and Potyondy 2004). With respect to fish habitat, a substantial change in the magnitude, frequency, and duration of channel maintenance flows can affect the abundance and quality of habitats in the river that are needed for adult holding, spawning and egg incubation, and juvenile rearing and also affect the abundance and quality of riparian habitat, an important habitat component of salmonid streams.

The magnitude, frequency, and duration of flood flows necessary for performing channel maintenance can vary depending on the characteristics of the channel morphology. Flows near bankfull discharge (the discharge which just begins to inundate the floodplain) often control the form of alluvial channels, though flows below and above bankfull are also needed to convey all of the sediment sizes in a gravel-bed river (Knighton 1998; Schmidt and Potyondy 2004). Generally, it is suggested that flood flows with a recurrence interval of one to two years corresponds to the bankfull discharge (Schmidt and Potyondy 2004). Therefore, for purposes of evaluating potential impacts on fish habitat from changes in channel maintenance flows, this analysis focuses on flow events with a recurrence interval of 1.5 and 2.0 years. It is assumed that flows with these recurrence intervals likely represent bankfull discharge in the Nacimiento River. However, this analysis also evaluates how changes in less frequent but higher magnitude flood flows (4.8- and 9.6-year events) may also affect channel maintenance processes, such as sediment transport, in the rivers.

Determination of the flow magnitude that corresponds to different recurrence intervals (e.g., the 1.5-, 2.0-, 4.8-, and 9.6-year flood) is typically based on peak instantaneous flows. The hydrology analysis used for the effects analysis is based on modeled 5- to 6-day timestep flows and does not include peak instantaneous flows (see Impact HWQ-3*, Result in Erosion or Siltation,* in Section 4.1, *Hydrology and Water Quality*). However, for this analysis it is assumed that modeled 5- to 6-day timestep data provide a reasonable estimate of potential effects on channel maintenance flows that could be expected from operating the proposed project or Tunnel-Only Alternative.

The modeled results for the proposed project and Tunnel-Only Alternative reflect an increase in the flow that corresponds to the 1.5-year flood on the Nacimiento River by 166 to 195 percent compared to modeled baseline conditions, and the flow that corresponds to the 2-year flood would be unchanged from modeled baseline conditions (Appendix D, *Existing and Proposed Hydrology Conditions*, **Table D-12**). Substantial increases in channel maintenance flows could lead to accelerated bank erosion and channel widening, downward incision (i.e., erosion and deepening) of the channel, and floodplain disconnection from the river. These geomorphic responses could lead to reductions in useable habitat for fish and other aquatic organisms from the accelerated transport of gravels out of the reach and increased algal scour and wash-out of organic matter that reduce the quantity and quality of habitat for benthic macroinvertebrates (an important food item for fish, including steelhead) (Poff et al. 1997). By contrast, higher flows that correspond to the 4.8- and 9.6-year flood would decrease by 48 to 86 percent compared to modeled baseline conditions (Appendix D, *Existing and Proposed Hydrology Conditions*, **Table D-12**). Substantial reductions in the frequency or magnitude of these flood flows can lead to a variety of physical changes (e.g., lowered gravel entrainment, increased fine sediments in gravels, and vegetation encroachment) that can in turn lead to reductions in useable habitat for fish, including steelhead, and other aquatic biota through reduced quantity and/or quality of habitat for spawning, feeding, and rearing.

Little is currently known about the geomorphic processes in the lower Nacimiento River, which has been affected by the ongoing alteration of flows and retention of coarse-grained sediment entering the reservoir from the upper reaches of the Nacimiento River. Therefore, it is difficult to accurately predict what the precise response of the channel would be from the changes in flood flow frequency and magnitude that are predicted to occur. However, if the quantity or quality of useable habitat for steelhead in the Nacimiento River were reduced because of the indirect effects of altered flood flows on geomorphic processes, the impact on the steelhead population could be substantial because any reduction in habitat could reduce or eliminate the steelhead population. The magnitude of the predicted changes in hydrology in the river below the reservoir from operation of the proposed project or Tunnel-Only Alternative suggest that indirect effects of altered floodflows on geomorphic processes are possible. Although the magnitude of those indirect effects could be substantial, it is not precisely known.

San Antonio River

Under the modeled proposed project and Tunnel-Only Alternative scenarios, monthly flows would follow the same general pattern as monthly flows under modeled baseline conditions, although there would be some exceptions. Across all years, flow would generally increase in winter and early spring and decrease in late spring through summer (Appendix E, *Biological Resource Attachments*, **Table E-15;** see all exceedances). In late summer and early fall, the change in flows under the proposed project and Tunnel-Only Alternative would be variable. The magnitude and timing of these flow changes would vary by water year type. Peak winter flows (5 percent exceedance) from January to March would increase by as much as 854 percent (February, proposed project) in wet years (Appendix E, *Biological Resource Attachments,* **Table E-16**, see 5 percent exceedance) and by as much as 475 percent (February, Tunnel-Only Alternative) in normal years (Appendix E, *Biological Resource Attachments,* **Table E-17;** see 5 percent exceedance) compared to modeled baseline conditions, while median and higher flows from May to October would generally decrease by as much as 49 percent (September, 25 percent exceedance flow) in wet years (Appendix E, *Biological Resource Attachments,* **Table E-16**, see 25 percent exceedance) and by as much as 56 percent (September, 25 percent exceedance flow) in normal years (Appendix E, *Biological Resource Attachments,* **Table E-17**; see 25 percent exceedance) compared to modeled baseline conditions. By contrast, median and higher flows from May to October in dry years would increase substantially compared to modeled baseline conditions (Appendix E, *Biological Resource Attachments*, **Table E-18**, see 5, 25, and 50 percent exceedances).

The extent that adult steelhead spawn in the San Antonio River is unknown; however, it is believed to be low (NMFS 2007). The management period for steelhead spawning and egg incubation in the San Antonio River is the same as it is in the Nacimiento River (i.e., January through May). However, steelhead spawning and rearing habitat in the San Antonio River below San Antonio Dam is limited by substrate, channel form and temperature conditions, as well as flow (MCWRA 2005a). During a survey of the San Antonio River in 2004, NMFS noted the presence of riparian vegetation, gravels, and shading that could very likely provide suitable spawning and rearing habitat (NMFS 2007). Although studies to determine flow-habitat relationships in the San Antonio River have not been implemented, releases from San Antonio Dam are managed year-round to meet minimum flow requirements of 10 cfs to maintain spawning and rearing opportunities for steelhead below the dam provided that the surface elevation of San Antonio Reservoir remains above elevation 666 feet, the reservoir's minimum pool.

Under conditions of the proposed project or the Tunnel-Only Alternative, minimum releases (10 cfs) for steelhead spawning (January through May) would be met in all months. This represents a slight improvement (a benefit) over modeled baseline conditions (modeling results show that under modeled baseline conditions minimum releases of 10 cfs are not met for 6 of the 5- to 6-day timesteps over the 47-year simulated period). No dry conditions (modeled zero flow) would occur under proposed project or Tunnel-Only Alternative conditions, and is unchanged from modeled baseline conditions. As noted for the Nacimiento River, dry conditions (zero flow) have not occurred in the San Antonio River under historical reservoir operations.

The extent that juvenile steelhead rear in the San Antonio River below San Antonio Dam is unknown; however, it is believed to be low (NMFS 2007). The predicted higher spring, summer, and early fall flows in dry years (Appendix E, *Biological Resource Attachments*, **Table E-18**; see 50, 25, and 0.05 percent exceedances) under proposed project and Tunnel-Only Alternative conditions would be expected to result in generally improved habitat conditions for rearing juvenile steelhead compared to modeled baseline conditions, for the same reasons as described for the Nacimiento River. Hydrologic modeling results show that minimum releases for rearing would be met in all months and years under conditions of the proposed project, but would not be met for 9 of the 5- to 6-day timesteps under the Tunnel-Only Alternative. However, reductions in minimum-flow releases in the San Antonio River are not likely to happen under real-time reservoir operations for the same reasons described for the Nacimiento River.

As described in Section 4.1, *Hydrology and Water Quality*, operation of San Antonio Reservoir under the proposed project and Tunnel-Only Alternative is not anticipated to adversely affect water quality in the San Antonio River. Furthermore, the predicted increase in flows from May to October in dry years under the proposed project and Tunnel-Only Alternative (Appendix E, *Biological Resource Attachments*, **Table E-18**; see all exceedances) could result in generally improved water quality conditions (e.g., cooler water temperatures and higher dissolved oxygen) in the San Antonio River compared to existing conditions. Therefore, no water quality impacts on juvenile steelhead in the San Antonio River would be expected under the proposed project or the Tunnel-Only Alternative.

Under the proposed project and Tunnel-Only Alternative, other special-status species such as Monterey roach and Monterey hitch may also benefit from the increase in dry season (May to October) flows in dry years (Appendix E, *Biological Resource Attachments*, **Table E-18;** see 50 percent exceedance), and potential beneficial water quality effects associated with these higher flows.

Channel Maintenance Flows

Under the proposed project and Tunnel-Only Alternative, the flows that correspond to the 1.5- and 2-year flood on the San Antonio River would be reduced between 1 and 37 percent compared to modeled baseline conditions (Appendix D, *Existing and Proposed Hydrology Conditions*, **Table D-12**). By contrast, higher flows that correspond to the 4.8- and 9.6-year flood on the San Antonio River would increase between 5 and 49 percent, except for the flow that corresponds to the 4.8-year flood under the Tunnel-Only Alternative which would be reduced by 2 percent compared to modeled baseline conditions (Appendix D, *Existing and Proposed Hydrology Conditions*, **Table D-12**). The change in flows corresponding to the 1.5- and 4.8-year would probably not have a substantial effect on geomorphic processes because they would differ by no more than 5 percent from modeled baseline conditions. However, flows corresponding to the 2-year flood and flows corresponding to the 9.6-year flood would differ substantially from modeled baseline conditions and could result in indirect effects on the steelhead population. Little is currently known about the geomorphic processes in the San Antonio River, which has been affected by the ongoing alteration of flows and retention of coarse-grained sediment entering the reservoir from the upper reaches of the San Antonio River. Therefore, it is difficult to accurately predict what the precise response of the channel would be from the changes in flood flow frequency and magnitude that are predicted to occur for flows corresponding to the 2- and 9.6-year flood. However, if the quantity or quality of useable habitat for steelhead in the San Antonio River were reduced because of the indirect effects of altered flood flows on geomorphic processes, the impact on the steelhead population in the San Antonio River could be substantial because any reduction in habitat could reduce or eliminate the steelhead population in the San Antonio River. The magnitude of the predicted changes in hydrology in the river below the reservoir from operation of the proposed project or Tunnel-Only Alternative suggest that indirect effects of altered flood flows on geomorphic processes are possible. Although the magnitude of those indirect effects could be substantial, it is not precisely known, and further evaluation is required.

Salinas River

The following describes fisheries impacts for three broad reaches of the Salinas River: the Salinas River from the mouth of the Nacimiento River to the mouth of the San Antonio River (Salinas River upstream of San Antonio River confluence), the Salinas River from the mouth of the San Antonio River downstream to Soledad (Los Lobos and Soledad reaches), and the Salinas River downstream of Soledad to the Salinas River lagoon (Chualar and Spreckels reaches). These reaches provide important habitat for steelhead migration, and year-round habitat for other special-status fish species; summer rearing habitat for steelhead is not supported in the Salinas River (NMFS 2007). Therefore, the following addresses impacts on special-status fish species other than steelhead. As previously mentioned, operations effects on steelhead migration in the Salinas River are addressed in Impact BIO-9, *Potential to Interfere with Fish or Wildlife Species Movement*.

Salinas River Upstream San Antonio River Confluence

Under the proposed project and Tunnel-Only Alternative, modeled monthly flows would follow the same general pattern as monthly flows under modeled baseline conditions, although there would be some exceptions. Across all years, flows would generally decrease in winter and increase in spring, summer, and early fall, and the frequency of low magnitude flows (i.e., a flow that has a 95 percent probability of occurrence) would increase in summer and early fall (Appendix E, *Biological Resource Attachments*, **Table E-19**; see all exceedances). The magnitude and timing of these flow changes would vary by water year type. Peak winter flows (5 percent exceedance flow) from January to March would decrease by as much as 34 percent (February, both scenarios) in wet years compared to modeled baseline conditions (Appendix E, *Biological Resource Attachments,* **Table E-20**, see 5 percent exceedance) and most flows from May to October would increase by as much as 354 percent (July, proposed project) during wet years (Appendix E**,** *Biological Resource Attachments***, Table E-20**; see 5, 25, and 50 percent exceedances) and by as much as 526 percent (August, proposed project) in normal years (Appendix E, *Biological Resource Attachments,* **Table E-21**; see 5, 25, and 50 percent exceedances) compared to modeled baseline conditions. By contrast, low flows (75 and 95 percent exceedance flow) in May to October would increase by as much as 100 percent (multiple months, both scenarios) in dry years compared to modeled baseline conditions (Appendix E**,** *Biological Resource Attachments,* **Table E-22**; see75 and 95 percent exceedances).

Under the proposed project and Tunnel-Only Alternative, resident fish populations of all species would be expected to benefit from the increase in flows from May to October in wet and normal years. However, modeling results suggest that dry conditions under the proposed project and Tunnel-Only Alternative (i.e., modeled 5- to 6-day-timesteps with zero flow) could occur from May to October in dry years and in October in normal years (**Table 4.3-22**). Based on modeling results, dry conditions could occur in 6 out of 47 simulated years under both the proposed project and Tunnel-Only Alternative, three years more than under modeled baseline conditions. Zero flow conditions, if they were to occur, would limit the gains made from the predicted increase in flows from May to October. However, modeled project-related zero flow conditions in the Salinas River upstream of the San Antonio River are not likely to happen under real-time reservoir operations for the same reasons previously mentioned for the Nacimiento River, including compliance with SVWP flow prescriptions.

The 34 percent decrease in winter peak flows from January to March in wet years would not be expected to adversely affect resident fish populations as flows would still be relatively high (range: 6,300 cfs to 10,400 cfs) during these months (Appendix E**,** *Biological Resource Attachments,* **Table E-20**; see 5 percent exceedance).

Salinas River from the San Antonio River Confluence to Soledad (Los Lobos and Soledad Reaches)

This reach of the Salinas River contains two modeled reaches: the Los Lobos reach (upstream reach) and the Soledad reach (downstream reach). In general, monthly flows in the Los Lobos and Soledad reaches under the modeled proposed project and Tunnel-Only Alternative scenarios would follow the same general pattern as monthly flows under modeled baseline conditions, although there would be some exceptions. Across all years, flows would generally decrease in winter and increase in spring, summer, and fall (Appendix E, *Biological Resource Attachments*, **Tables E-23** and **E-27**; see all exceedances). The frequency of low magnitude flows (i.e., a flow that has a 95 percent probability of occurrence) would increase in most months from June through November in the Los Lobos reach only (Appendix E, *Biological Resource Attachments,* **Table E-24**; see 95 percent exceedance). The magnitude and timing of these flow changes would vary by water year type. Peak winter flows (5 percent exceedance flow) from January to March in wet years would decrease by as much as 18 percent (March, both scenarios) in the Los Lobos reach (Appendix E, *Biological Resource Attachments,* **Table E-24**; see 5 percent exceedance) and by as much as 10 percent (March, both scenarios) in the Soledad reach (Appendix E**,** *Biological Resource Attachments,* **Table E-28**; see 5 percent exceedance) compared to modeled baseline conditions. Tributary inflow downstream of the Los Lobos reach would ameliorate project effects in January and February in wet years in the Soledad reach (peak flows would increase in these months). Median (50 percent exceedance) and 25 percent exceedance flows from May through October would be reduced in normal years (Appendix E, *Biological Resource Attachments,* **Tables E-25** and **E-29**; see 25 and 50 percent exceedances) and would generally increase in dry years (Appendix E, *Biological Resource Attachments,* **Tables E-26** and **E-30**; see 25 and 50 percent exceedances) compared to modeled baseline conditions. Low-magnitude flows (95 percent exceedance flow) in April, May, and October would increase in the Los Lobos reach in dry years (Appendix E, *Biological Resource Attachments,* **Table E-26**; see 95 percent exceedance) and remain relatively unchanged in the Soledad reach (Appendix E**,** *Biological Resource Attachments,* **Table E-30**; see 95 percent exceedance) compared to modeled baseline conditions. Under dry conditions, modeling results show there would be no instances of 5- to 6-day timesteps with zero flow under the proposed project or the Tunnel-Only Alternative in either reach, the same as under modeled baseline conditions.

Under the proposed project and Tunnel-Only Alternative, resident fish populations of all species would be expected to be more limited by the increased frequency of low magnitude flows in April, May, and October in dry years. The change in winter peak flows from January to March in wet years in the Los Lobos reach and in the Soledad reach would not be expected to adversely affect resident fish populations as flows would still be relatively high (range: approximately 6,500 cfs to 11,200 cfs), even when reduced during these months (Appendix E**,** *Biological Resource Attachments***, Tables E-24 and E-28**; see 5 percent exceedance). Model results suggest that there would be no instances of dry conditions (i.e., modeled zero flow).

Table 4.3-22. Monthly Frequency of Simulated 5- to 6-Day Intervals with Modeled Zero Flow in the Salinas River Upstream of the San Antonio River and in the Chualar Reach under Conditions of the Modeled Baseline, Modeled Proposed Project, and Modeled Tunnel-Only Alternative Scenarios

Year Type	Project Scenario	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	% Change from Modeled Baseline
Salinas River upstream San Antonio River Confluence															
All Years	Modeled Baseline	0	0	0	0	0	6	7	16	0	6	0	0	35	–
All Years	Modeled Proposed Project	0	0	0	0	6	12	22	26	6	15	0	0	87	149
All Years	Modeled Tunnel-Only Alternative	0	0	0	0	6	12	22	26	6	18	0	0	90	157
Dry	Modeled Baseline	0	0	0	0	0	6	7	16	0	0	0	0	29	–
Dry	Modeled Proposed Project	0	0	0	0	6	12	22	26	6	6	0	0	78	169
Dry	Modeled Tunnel-Only Alternative	0	0	0	0	6	12	22	26	6	6	0	0	78	169
Normal	Modeled Baseline	0	0	0	0	0	0	0	0	0	6	0	0	6	–
Normal	Modeled Proposed Project	0	0	0	0	0	0	0	0	0	9	0	0	9	50
Normal	Modeled Tunnel-Only Alternative	0	0	0	0	0	0	0	0	0	12	0	0	12	110
Wet	Modeled Baseline	0	0	0	0	0	0	0	0	0	0	0	0	0	–
Wet	Modeled Proposed Project	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wet	Modeled Tunnel-Only Alternative	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salinas River at Chualar															
All Years	Modeled Baseline	6	0	0	6	31	85	92	94	87	46	6	6	459	–
All Years	Modeled Proposed Project	7	0	0	5	25	66	77	81	67	42	6	6	382	-17

Year Type	Project Scenario	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	% Change from Modeled Baseline
All Years	Modeled Tunnel-Only Alternative	7	0	0	5	25	65	77	82	72	42	6	6	387	-16
Dry	Modeled Baseline	6	0	0	6	23	48	48	46	39	22	0	6	244	–
Dry	Modeled Proposed Project	7	0	0	5	18	36	36	39	24	18	0	6	189	-23
Dry	Modeled Tunnel-Only Alternative	7	0	0	5	18	36	36	39	24	18	0	6	189	-23
Normal	Modeled Baseline	0	0	0	0	8	37	44	48	48	18	0	0	203	–
Normal	Modeled Proposed Project	0	0	0	0	7	30	41	42	43	18	0	0	181	-11
Normal	Modeled Tunnel-Only Alternative	0	0	0	0	7	29	41	43	48	18	0	0	186	-4
Wet	Modeled Baseline	0	0	0	0	0	0	0	0	0	6	6	0	12	–
Wet	Modeled Proposed Project	0	0	0	0	0	0	0	0	0	6	6	0	12	0
Wet	Modeled Tunnel-Only Alternative	0	0	0	0	0	0	0	0	0	6	6	0	12	0

<u>Salinas River Downstream of Soledad to the Salinas River Lagoon (Chualar and Spreckels Reaches)</u>

This reach of the Salinas River contains two modeled reaches: the Chualar reach (upstream reach) and the Spreckels reach (downstream reach). In general, modeled monthly flows in the Chualar and Spreckels reaches under the proposed project and Tunnel-Only Alternative would follow the same general pattern as monthly flows under modeled baseline conditions, although there would be some exceptions. Across all years, the change in winter flows would be variable with higher flows being reduced and intermediate and low flows generally increasing (Appendix E, *Biological Resource Attachments*, **Tables E-31** and **E-35**; see all exceedances). Similarly, the change in flows from spring through fall would be variable but would generally decrease, and the frequency of low magnitude flows (i.e., a flow that has a 95 percent probability of occurrence) would be unchanged compared to modeled baseline conditions in most months. Median and higher flows in winter (January through March) would generally decrease in the Chualar and Spreckels reaches in wet years compared to modeled baseline conditions, although peak (5 percent exceedance flow) flows would increase during January and February in both reaches (Appendix E, *Biological Resource Attachments*, **Tables E-32** and **E-36**; see 5, 25, and 50 percent exceedances). However, the change in winter flows in normal years would be variable, but overall flows would generally increase except in March compared to modeled baseline conditions (Appendix E, *Biological Resource Attachments*, **Tables E-33** and **E-37**; see all exceedances). By contrast, spring and summer flows (May to October) would generally decrease in the Chualar and Spreckels reaches in wet (Appendix E**,** *Biological Resource Attachments*, **Tables E-32** and **E-36**; see 5, 25, and 50 percent exceedances) and normal (Appendix E, *Biological Resource Attachments*, **Tables E-33** and **E-37**; see 5, 25, and 50 percent exceedances) years compared to modeled baseline conditions. In dry years, median and higher flows in late spring through early fall would generally increase compared to modeled baseline conditions (Appendix E, *Biological Resource Attachments*, **Tables E-34** and **E-38**; see 5, 25, and 50 percent exceedances). Under dry conditions, the frequency of low magnitude flows (95 percent exceedance flow) from January through December in the Chualar and Spreckels reaches in dry years would be similar to modeled baseline conditions, except during February and March when they would increase (Appendix E, *Biological Resource Attachments*, **Tables E-34** and **E-38**; see 95 percent exceedance). Under the proposed project and Tunnel-Only Alternative, the frequency of modeled 5- to 6-day timesteps with zero flow would decrease by as much as 17 percent under the proposed project and Tunnel-Only Alternative across all years in the Chualar reach (**Table 4.3-22**). There would be no instances of modeled zero flow in the Spreckels reach, the same as under modeled baseline conditions.

Under the proposed project and Tunnel-Only Alternative, resident fish populations of all species would be expected to slightly benefit from the increased frequency of permanent flows in the Chualar reach, although modeled zero flow would still occur in 17 years under both the proposed project and the Tunnel-Only Alternative, compared to 21 years under modeled baseline conditions. The change in winter peak flows in January through March in wet years in the Chualar and Spreckels reaches would not be expected to affect resident fish populations as flows would still be high (range: approximately 8,650 cfs to 8,950 cfs) during these months (Appendix E, *Biological Resource Attachments*, **Tables E-32** and **E-36**; see 5 percent exceedance).

Water Quality

Generally, water quality impacts on resident fish populations in the Salinas River under the proposed project or Tunnel-Only Alternative would most likely occur during periods when flows would be reduced compared to existing conditions. However, flow reductions that occur during winter months are unlikely to have impacts on resident fish populations because changes in streamflow in cold months have a more muted effect on water quality as primary production (e.g., algae and plankton growth) is greatly reduced, flows generally are higher, and deviations in dissolved oxygen or pH are seldom a problem during this time of year. Therefore, impacts on resident fish populations would not be expected from predicted reductions in winter flows under the proposed project and Tunnel-Only Alternative. Under the proposed project and Tunnel-Only Alternative, low flows (75 and 95 percent exceedance flows) during summer and early fall in dry years would be reduced in the Salinas River upstream of the San Antonio River confluence (Appendix E, *Biological Resource Attachments*, **Table E-22**; see 75 and 95 percent exceedances) and in the Los Lobos reach (Appendix E, *Biological Resource Attachments*, **Table E-26**; see 75 and 95 percent exceedances) compared to modeled baseline conditions. These flow reductions could lead to warmer water temperatures in those reaches during this time of year. However, under conditions of reduced flows water temperatures would be expected to remain within the range of existing seasonal and annual variability. Because resident fish populations of all species are generally tolerant of warm water temperatures, they would not be expected to be adversely affected by any increases in water temperature.

Channel Maintenance Flows

As shown in **Table D-12** (Appendix D, *Existing and Proposed Hydrology Conditions*), modeled results for the 1.5-year recurrence interval indicate the proposed project could increase flow up to 11 percent (below Nacimiento River Confluence) across all reaches of the Salinas River compared to the modeled baseline. The trend is similar for the Tunnel-Only Alternative. For moderate flow events with recurrence intervals of 2 years, 4.8 years, or 9.6 years, modeled results indicate the proposed project could decrease flows from 1 to 52 percent across all reaches of the Salinas River, with minor exceptions where flows could increase by up to 5 percent (Appendix D, *Existing and Proposed Hydrology Conditions*, **Table D-12**). The trend is similar for the Tunnel-Only Alternative.

As described in the subsection titled *Salinas River* in Section 4.3.3.2, *Vegetation and Land Cover*, the Salinas River has a sand-dominated bed and bank with a braided or single-thread channel depending on location within the watershed. This results in a channel bed that is mobile at relatively low flows and a planform that generally lacks the sequence of pools and riffles typically found in the tributary streams containing relatively coarse bed and bank materials. As such, the Salinas River does not support habitat features (e.g., pools and gravel riffles) needed by adult and juvenile steelhead for spawning and summer rearing. Instead, the Salinas River is used by adults and juveniles only for seasonal migration between the ocean and upstream spawning and rearing habitat. Therefore, the predicted change in flow events with recurrence intervals of 1.5 years, 2 years, 4.8 years, or 9.6 years, would not affect spawning and rearing habitat for steelhead in the Salinas River as channel features that support these habitat features are not present in the river. The predicted change in flow events with recurrence intervals of 1.5 years, 2 years, 4.8 years, or 9.6 years could affect side channel, island, and sand bar formation in the river; however, this would not be expected to have an adverse effect on channel habitats used by migrating steelhead as these channel features are formed and reformed on a regular basis under existing conditions.

Salinas River Lagoon

Under the modeled proposed project and Tunnel-Only Alternative scenarios, monthly flows would follow the same general pattern as monthly flows under modeled baseline conditions, although there would be some exceptions. Across all years, median and higher (50, 25, and 5 percent exceedance) flows would generally decrease in most months of the year, while lower magnitude flows (75 and 95 percent exceedance) would increase in most months (Appendix E, *Biological Resource Attachments*, **Table E-39**; see all exceedances). However, the magnitude and timing of these differences would vary by water year type. In wet years, winter and spring flows would generally decrease compared to modeled baseline conditions, although peak (5 percent exceedance) flows during this period would increase by as much as 7 percent (May, both scenarios) in all months except March when they would decrease (Appendix E, *Biological Resource Attachments*, **Table E-40**; see 5 percent exceedance). By contrast, the change in flows during the same period in normal years would be variable, with flows in March declining by as much as 25 percent (Appendix E, *Biological Resource Attachments*, **Table E-41**; see 5 percent exceedance). In dry years, flows from May through September would generally increase (Appendix E, *Biological Resource Attachments*, **Table E-42**; see all exceedances). Across all water years, most low magnitude (95 percent exceedance) flows would remain relatively unchanged compared to modeled baseline conditions, although low magnitude flows would decrease in May and September of wet years and increase in September of dry years compared to modeled baseline conditions (Appendix E, *Biological Resource Attachments*, **Tables E-40, E-41,** and **E-42**; see 95 percent exceedance). Model results also show that there would be no 5- to 6-day timesteps with modeled zero flow in the Salinas River lagoon, the same as under modeled baseline conditions.

Lagoon salinity varies seasonally and annually and plays a major role in fish species composition. Freshwater species that can tolerate brief exposure to moderately brackish water are likely to be more abundant in the lagoon during wet years when the lagoon converts substantially to fresh water, or in the upstream portions of the lagoon in dry years in response to freshwater input. Marine species can enter the lagoon and move upstream into the lower Salinas River channel when the sandbar is open, and some can also use the lagoon in summer if salinity conditions are suitable. Therefore, substantial changes in the timing or magnitude of flows entering the lagoon can alter baseline salinity conditions in the lagoon and result in impacts on fish populations in the lagoon.

A major concern is the conversion of the lagoon from brackish to primarily saltwater or freshwater habitats which can reduce spawning habitat for tidewater goby, a species that requires a specific range of salinity (2 to 27 ppt) for successful spawning (Moyle 2002). Another concern is affecting the seasonally harsh environmental conditions in the lagoon, especially during summer when freshwater flows to the lagoon are limited, that are partially responsible for maintaining the tidewater goby population in the lagoon by limiting invasion or permanent colonization by other species (FISHBIO 2018). In the lower estuary, marine fishes (e.g., arrow goby) that can enter the lagoon from the ocean when the lagoon is open may compete with or prey upon tidewater gobies when salinities in the lagoon favor these marine species. Therefore, proposed project or Tunnel-Only Alternative operations that substantially change the frequency and duration of lagoon opening or increase or decrease freshwater inflow to the lagoon, especially during the dry season (June–September), are assumed to have impacts on fish populations, including the endangered tidewater goby.

An analysis was performed to determine the difference in the monthly frequency from the modeled baseline that the entire volume of the lagoon would be replaced in a month due to the proposed project or Tunnel-Only Alternative. For this analysis, a lagoon volume of 771 acre-feet was assumed based on a relationship between lagoon volume and stage provided in the Salinas River Lagoon Management and Enhancement Plan (John Gilchrist and Associates et al. 1997). This volume was selected because it corresponds to a stage of 3 feet, which is the minimum stage that MCWRA must maintain the lagoon at when the lagoon is closed to the ocean, and represents the smallest lagoon volume (i.e., worst-case) when the lagoon mouth is closed. When the lagoon is open to the ocean, lagoon conditions are heavy influenced by tidal conditions that result in the influx of saltwater and cause the lagoon water surface elevation to fluctuate from 2 to 6 feet (MCWRA 2005a).

For this analysis, modeled median flows in May through September of all three water year types were investigated to determine the change (increase or decrease) in the rate that the entire lagoon volume (assuming no mixing of river and lagoon water) would be replaced compared to modeled baseline conditions. Across all water year types, the entire lagoon volume would be replaced from 0.2 to 4.22 times per month under the modeled proposed project and Tunnel-Only Alternative scenarios compared to 0.15 to 5.93 times per month under modeled baseline conditions (**Table 4.3-23**). Although the difference in the frequencies from modeled baseline would range from approximately 4 times slower (September of normal years) to approximately 5 times faster (July of dry years) compared to modeled baseline conditions (**Table 4.3-23**), the resultant freshwater inflows in these months under the proposed project and Tunnel-Only Alternative would be within the range of frequencies observed under modeled baseline conditions. Furthermore, monthly freshwater inflows to the lagoon would be less variable than under modeled baseline conditions. Tidewater goby, especially spawning adults, may benefit from having more consistent salinity conditions during months when the lagoon is closed.

As previously mentioned, conditions in the lagoon are heavily influenced by whether or not the lagoon is open to the ocean. According to MCWRA, once the lagoon is open to the ocean, flow of approximately of 80 to 150 cfs in the Salinas River at Spreckels will generally maintain the lagoon opening, although the lagoon has been observed to be open at flows as low as 30 cfs at Spreckels (MCWRA 2005a). An analysis of the change in frequency of flows of 30 cfs, 80 cfs, and 150 cfs at Spreckels for all water year types (normal, wet, and dry) indicates that the frequency of all three threshold flow values would increase by as much as 11 percent in dry years and the frequency of 80 cfs and 150 cfs flow thresholds would decrease by as much as 12 percent in wet and normal years under conditions of the proposed project or Tunnel-Only Alternative (**Table 4.3-24**). The frequency of 30 cfs threshold flows would increase in all water year types, but this increase would be most pronounced in dry years compared to modeled baseline conditions (**Table 4.3-24**). The effect of project operations on lagoon conditions, and therefore tidewater goby, is variable. Tidewater goby may be affected by more frequent and prolonged lagoon opening in dry years if lagoon conditions under the proposed project or Tunnel-Only Alternative become more saline and marine species that compete with or prey on tidewater goby become more abundant in the lagoon compared to existing conditions. However, tidewater goby may benefit from the reduction in the frequency of 80 cfs and 150 cfs threshold flows in wet and normal years that are responsible for maintaining the opening of the lagoon if the lagoon is open less frequently and leads to more stable lagoon conditions that are favored by tidewater goby.

Table 4.3-23. Number of Times per Month Entire Lagoon Volume Replaced Under Modeled Baseline, Proposed Project, and Tunnel-Only Alternative Scenarios

	Wet Year					Normal Year					Dry Year				
Scenario	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Modeled Baseline	13.61	5.42	2.92	1.70	4.18	5.89	3.45	1.94	1.69	5.93	1.83	0.35	0.18	0.15	0.54
Modeled Proposed Project	12.55	4.04	1.74	1.69	2.26	3.80	1.35	1.06	1.44	1.55	1.84	0.70	0.89	0.20	1.53
Modeled Tunnel-Only Alternative	12.94	4.22	1.75	1.70	2.26	3.86	1.33	1.06	1.39	1.55	1.87	0.70	0.89	0.20	1.46

Table 4.3-24. Percentage of Timesteps with Streamflow at Spreckels above Select Flow Thresholds Under Modeled Baseline, Proposed Project, and Tunnel-Only Alternative Scenarios

		Percentage of Timesteps with Streamflow at Spreckels above Select Thresholds											
		Modeled Baseline (Solid Line)				Modeled Tunnel-Only Alternative (Dashed)				Modeled Proposed Project			
Year Type		All	Wet	Normal	Dry	All	Wet	Normal	Dry	All	Wet	Normal	Dry
% of Timesteps above Flow	30 cfs	75%	95%	77%	51%	80%	96%	79%	62%	80%	96%	80%	62%
			Difference from Modeled Baseline			*4.0%*	*1.1%*	*2.2%*	*10.6%*	*4.3%*	*1.1%*	*2.5%*	*11.0%*
							Difference from Modeled Tunnel-Only Alternative			*0.3%*	*0.0%*	*0.3%*	*0.5%*
	80 cfs	58%	74%	64%	29%	53%	68%	51%	39%	53%	68%	52%	39%
			Difference from Modeled Baseline			*-4.8%*	*-5.9%*	*-12.1%*	*10.3%*	*-4.1%*	*-5.6%*	*-11.3%*	*10.7%*
							Difference from Modeled Tunnel-Only Alternative			*0.7%*	*0.2%*	*1.2%*	*0.4%*
	150 cfs	35%	53%	38%	10%	35%	52%	38%	11%	35%	52%	37%	11%
			Difference from Modeled Baseline			*0.0%*	*-0.3%*	*-0.7%*	*1.5%*	*-0.1%*	*-0.3%*	*-0.9%*	*1.5%*
							Difference from Modeled Tunnel-Only Alternative			*-0.1%*	*0.0%*	*-0.2%*	*0.0%*

cfs = cubic square feet.

White Bass Impacts on Steelhead and other Special-Status Species

Operation of the proposed project and Tunnel-Only Alternative would result in the transfer of water from Nacimiento Reservoir to San Antonio Reservoir via a tunnel. There is a very low possibility of the introduction of white bass from Nacimiento Reservoir to San Antonio Reservoir. If released from the reservoirs in sufficient numbers, white bass would pose a threat to special-status fish species in the Nacimiento, San Antonio, and Salinas rivers and Salinas River lagoon as they could develop self-sustaining populations and prey on these species. White bass spawn in the spring (mid-March to mid-May) and larvae could be present in the vicinity of the tunnel inlet from mid-March into late May or early June. Because newly hatched larvae are only 2 to 3 mm in length at hatching, larvae would be vulnerable to entrainment. However, the intake fish screens of the proposed project are sized at 1.75 mm opening, providing limited opportunity for transfer of larvae to San Antonio Reservoir.

Several factors must occur for white bass larvae to be vulnerable to entrainment: (1) tunnel operations must overlap the period that larvae are present in the reservoir (i.e., mid-March to early June); (2) larvae need to be present at the same depth as the fish screens and within the "zone of influence" of the tunnel inlet; and (3) larvae must be of a size that allows them to pass through the slots of the fish screens. As **Table 4.3-25** shows, tunnel transfers under the proposed project and Tunnel-Only Alternative would overlap with the larval period for white bass. The fish screens would be located slightly above elevation 730 feet, and tunnel transfers would occur at when reservoir surface elevations are at or above 760 feet. As **Table 4.3-26** shows, minimum reservoir stage during tunnel transfers during March through June are predicted to be 760 to 774 feet for the proposed project and Tunnel-Only Alternative, which places the top of the fish screens approximately 20 to 34 feet below the reservoir surface. As described in the Section 4.3.3, *Environmental Setting*, white bass larvae as small as 4 mm have been captured in trawls as deep as approximately 48 feet. Therefore, it may be possible, albeit extremely unlikely, for white bass larvae to be entrained with water being diverted into the tunnel and introduced into San Antonio Reservoir. Larvae that survive the transfer could then lead to the development of a population at San Antonio Reservoir. Although there is a modest chance of tunnel transfer of white bass into San Antonio Reservoir, this potential is considered very low, as described further below. The proposed project and Tunnel-Only Alternative would continue to be consistent with the CDFW MOU (CDFW and MCWRA 2018) and will continue monitoring white bass populations.

Table 4.3-25. Tunnel Transfer Days per Month under the Modeled Proposed Project and Tunnel-Only Alternative Scenarios

Month	All Year Types	Wet Years	Normal Years	Dry Years
Modeled Proposed Project				
October	1.3	0	1.4	2.6
November	0.7	0	0.2	2.5
December	0.5	7	0	2.1
January	1.1	4.2	0	0
February	4.3	12.6	1.8	0
March	8.9	22.4	5.9	0
April	8.3	21.2	5.2	0
May	7.0	18.9	3.4	0
June	2.3	8.5	0	0
July	1.4	5.2	0	0
August	0.4	1.6	0	0
September	0.6	2.3	0	0
Modeled Tunnel-Only Alternative				
October	1.2	0	1.1	2.6
November	0.7	0	0.2	2.5
December	0.5	0	0	2.1
January	1.1	4.2	0	0
February	4.6	12.5	2.3	0
March	9.2	22.4	6.4	0
April	7.1	20.4	3.2	0
May	6.6	17.8	3.6	0
June	4.4	9.6	3.6	0
July	3.0	10.8	0	0
August	1.1	3.9	0	0
September	0.6	2.3	0	0

Table 4.3-26. Predicted Minimum Reservoir Stage during Tunnel Transfers for the Modeled Proposed Project and Tunnel-Only Alternative Scenarios under All Year Types

Month	Minimum Reservoir Stage during Tunnel Flow (in feet)							
	All Year Types		Wet Years		Normal Years		Dry Years	
	Nacimiento	San Antonio	Nacimiento	San Antonio	Nacimiento	San Antonio	Nacimiento	San Antonio
Modeled Proposed Project								
October	771	741	–	–	785	783	771	741
November	763	756	–	–	784	783	763	753
December	760	759	–	–	–	–	760	759
January	764	680	764	680	–	–	–	–
February	760	711	760	711	787	782	–	–
March	760	720	760	720	779	772	–	–
April	763	753	763	753	783	778	–	–
May	763	761	763	761	786	783	–	–
June	774	773	774	773	–	–	–	–
July	777	777	777	777	–	–	–	–
August	795	786	795	786	–	–	–	–
Septembe r	790	784	790	784	–	–	–	–
Modeled Tunnel-Only Alternative Scenario								
October	771	741	–	–	786	776	771	741
November	763	753	–	–	784	775	763	753
December	760	759	–	–	–	–	760	759
January	764	681	764	681	–	–	–	–
February	761	711	761	711	775	774	–	–
March	760	720	760	720	779	773	–	–
April	764	752	764	752	779	773	–	–
May	762	760	762	760	779	777	–	–
June	773	772	773	772	780	779	–	–
July	777	777	777	777	–	–	–	–
August	780	779	780	779	–	–	–	–
Septembe r	790	777	790	777	–	–	–	–

Under current conditions, white bass at Nacimiento Reservoir are released to the Nacimiento River primarily during flood control releases based on past observations of white bass appearing in the Nacimiento River downstream of Nacimiento Dam following such releases (FISHBIO 2011). Adult white bass have also been observed in the Salinas River and lagoon (John Gilchrist and Associates et al. 1997). However, there is no evidence to suggest that white bass have successfully spawned in the Nacimiento River downstream of Nacimiento Dam or in the Salinas River. A major concern is that the development of a white bass population at San Antonio Reservoir could lead to greater numbers of white bass being released to river reaches below Nacimiento and San Antonio Dams than what occurs under existing conditions. White bass are of concern because they could prey on steelhead and other special-status fishes in the rivers downstream of the dams. A secondary concern is that white bass at San Antonio Reservoir could hybridize with striped bass that already occur at San Antonio Reservoir. Although the potential ramifications of striped bass/white bass hybrids being released to downstream rivers are unclear, it is assumed that hybrid bass could have the same negative consequences as white bass. However, it should be noted that striped bass presently occur in the Salinas River. Therefore, the potential already exists for striped bass to hybridize with white bass in the Salinas River, although the likelihood of this happening is probably low given the apparent low abundance of white bass in the Salinas River.

As previously mentioned, white bass have been observed in the Nacimiento River following flood control releases which suggests that this is the primary way in which white bass are released from Nacimiento Reservoir. It therefore stands to reason that this would also be the primary mechanism for white bass to be released from San Antonio Reservoir should they become established in that reservoir. Therefore, proposed project or Tunnel-Only Alternative operations that substantially increase the total volume of flood control releases or releases over the spillway are assumed to increase the chances of releasing white bass from the reservoirs and to have impacts on fish populations, including steelhead, in river reaches below the dams.

An analysis of modeled reservoir flood control releases and spills over the spillway was conducted for Nacimiento and San Antonio Reservoirs to determine the relative change in releases from modeled baseline that could result in the introduction of white bass to river reaches downstream of the Nacimiento and San Antonio Dams under conditions of the proposed project and Tunnel-Only Alternative. For flood control releases, the difference from modeled baseline in total annual volume of modeled monthly average releases for both reservoirs (combined total) represent the total net change in flood control releases from the reservoirs (**Table 4.3-27**). For releases over the spillways, the difference from modeled baseline in total annual volume released over the spillways for both reservoirs (combined total) represents the total net change in spill releases from the reservoir (**Table 4.3-28**). Under the proposed project and Tunnel-Only Alternative, modeled results suggest that the combined (both reservoirs) total monthly average volume of water released for flood control would decrease by 17,119 and 11,673 acre-feet, respectively, compared to modeled baseline conditions. In addition, modeled results suggest that the combined total monthly average volume that would be released over the spillways would decrease by 11,489 and 10,012 acre-feet under the proposed project and Tunnel-Only Alternative, respectively, compared to modeled baseline conditions. These trends are the same for Nacimiento Reservoir (**Table 4.3-27** and **Table 4.3-28**). Therefore, the chances of releasing white bass under the proposed project or Tunnel-Only Alternative are predicted to be less than it is under modeled baseline conditions, regardless of whether or not white bass develop a population at San Antonio Reservoir.

Table 4.3-27. Monthly Average Volume (acre-feet) of Flood Control Releases and Difference from Modeled Baseline for Nacimiento and San Antonio Reservoirs under the Modeled Proposed Project and Tunnel-Only Alternative Scenarios, Across All Years

	Modeled Baseline			Modeled Proposed Project			Difference from Modeled Baseline (Modeled Proposed Project)			Modeled Tunnel-Only Alternative			Difference from Modeled Baseline (Modeled Tunnel-Only Alternative)		
Month	Nacimiento	San Antonio	Combined	Nacimiento	San Antonio	Combined	Nacimiento	San Antonio	Combined	Nacimiento	San Antonio	Combined	Nacimiento	San Antonio	Combined
October	0	0	0	0	50	50	0	50	50	0	58	58	0	58	58
November	582	0	582	736	287	1,023	154	287	441	737	531	1,268	155	531	687
December	1,429	321	1,750	1,429	603	2,032	0	282	282	1,429	1,215	2,644	0	894	894
January	7,735	173	7,908	3,334	2,631	5,965	-4,401	2,458	-1,943	3,329	4,128	7,457	-4,405	3,954	-451
February	25,585	16	25,601	13,221	4,753	17,974	-12,364	4,737	-7,627	12,388	6,828	19,216	-13,197	6,813	-6,385
March	17,680	562	18,243	7,599	2,562	10,161	-10,081	1,999	-8,082	7,589	3,251	10,839	-10,091	2,688	-7,403
April	1,286	645	1,932	741	998	1,739	-545	352	-193	741	1,924	2,665	-545	1,278	733
May	963	454	1,418	803	584	1,387	-161	130	-30	802	813	1,615	-161	358	197
June	14	126	140	14	102	116	0	-24	-24	14	114	129	0	-12	-12
July	0	16	16	0	21	21	0	5	5	0	23	23	0	7	7
August	0	2	2	0	4	4	0	2	2	0	4	4	0	2	2
September	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals									**-17,119**						**-11,673**

Table 4.3-28. Average Monthly Volume (acre-feet) Released over the Nacimiento and San Antonio Reservoir Spillways and Difference from Modeled Baseline for the Modeled Proposed Project and Tunnel-Only Alternative Scenarios

	Modeled Baseline			Modeled Proposed Project			Difference from Modeled Baseline (Modeled Proposed Project)			Modeled Tunnel-Only Alternative			Difference from Modeled Baseline (Modeled Tunnel-Only Alternative)		
Month	Nacimiento	San Antonio	Combined	Nacimiento	San Antonio	Combined	Nacimiento	San Antonio	Combined	Nacimiento	San Antonio	Combined	Nacimiento	San Antonio	Combined
October	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
January	1,563	0	1,563	877	0	877	-685	0	-685	1,176	0	1,176	-387	0	-387
February	10,819	0	10,819	3,543	0	3,543	-7,276	0	-7,276	3,213	2,006	5,219	-7,606	2,006	-5,600
March	11,185	0	11,185	6,286	1,371	7,657	-4,899	1,371	-3,528	6,286	873	7,160	-4,899	873	-4,026
April	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: Reservoir releases over the spillway occur only during wet years.

CEQA Conclusion

Under the proposed project or Tunnel-Only Alternative, the new facilities would be constructed in the reservoirs that support Monterey hitch but do not support steelhead or its habitat. **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** (see full list in Section 4.3.4.4, *Applicable Avoidance and Minimization Measures*) would be in place to protect water quality in the reservoirs and avoid impacts on Monterey hitch in the reservoirs. Implementation of these measures would also protect the quality of water being released from the reservoirs, thereby avoiding downstream impacts where steelhead and other special-status fish and their habitat occur. Therefore, under the proposed project or Tunnel-Only Alternative, construction impacts on special-status fish, including steelhead, or their habitat would be **less than significant**.

Operation of the proposed project or Tunnel-Only Alternative would result in significant impacts on steelhead in the Nacimiento and San Antonio Rivers from changes in the frequency or magnitude of channel maintenance flows that could reduce the quantity or quality of spawning and rearing habitat in these river reaches. These impacts would be significant because the steelhead population is very low and any reduction in the quantity or quality of juvenile steelhead rearing habitat in these rivers could reduce or eliminate the steelhead population in the lower Nacimiento and San Antonio Rivers. In addition, changes in the frequency or magnitude of channel maintenance flows could also result in the loss or reduction in quality of habitat for other special-status fish in these river reaches for the same reasons described for steelhead. Implementation of **MM BIO-8.16** would reduce the level of impact related to changes in channel maintenance flows because monitoring would be conducted to determine whether modeled changes in channel maintenance flows are having an impact on the physical character of the Nacimiento and San Antonio Rivers to the detriment of spawning and rearing habitat for steelhead and other special-status fish. Corrective measures would be implemented to compensate for loss of spawning gravels. Impacts from operation of the proposed project or Tunnel-Only Alternative would be **less than significant with mitigation**.

Operation of the proposed project and Tunnel-Only Alternative would not be expected to increase the chances of releasing white bass from reservoirs, regardless of whether or not white bass develop a population in San Antonio Reservoir, because flood control releases—the likely primary mechanism for releasing white bass—are predicted to decrease under proposed project and Tunnel-Only Alternative operations. Therefore, white bass related mortality on special-status fish, including steelhead, in downstream river reaches would not be expected to increase as a result of operations. Impacts from operation of the proposed project or Tunnel-Only Alternative would be **less than significant**.

Operation of the proposed project or Tunnel-Only Alternative would not substantially affect the rate of lagoon filling, and monthly freshwater inflows to the lagoon would be less variable compared to modeled baseline conditions. Therefore, operation of the proposed project or Tunnel-Only Alternative would not be expected to reduce the tidewater goby population in the lagoon from habitat alteration. Impacts from operation of the proposed project or Tunnel-Only Alternative would be **less than significant**.

Mitigation Measures

Mitigation Measure BIO-8.16*: Develop and Implement a Set of Operations Rules Designed to Preserve Key Components of Peak-Flow Events Necessary for Channel and Habitat Maintenance and Implement Spawning Mitigation and Monitoring Plan if Needed*

In coordination with the California Department of Fish and Wildlife and National Marine Fisheries Service, MCWRA will develop and implement a set of rules for operations designed to preserve key components of peak-flow events necessary for channel and habitat maintenance in the Nacimiento and San Antonio Rivers. This will include preparation of a hydro-geomorphic monitoring and assessment plan by a geomorphologist and a hydrologist with experience with such hydro-geomorphic evaluations to determine the appropriate frequency and magnitude of flows needed to ensure that channel and habitat conditions do not decline substantially relative to existing conditions. Key components of the plan will include a statement of the goals and objectives and a detailed description of the sampling design and pre- and post-project monitoring and assessment methods. The number and location of monitoring stations shall be enough to characterize pre- and post-project trends in gravel inputs, storage, and outputs in the Nacimiento and San Antonio Rivers as well as associated changes in channel form (e.g., cross sections) and the size composition of the bed material. The plan will include pre- and post-project measurements of bedload transport rates, channel morphology, and bed (substrate) composition in the Nacimiento and San Antonio Rivers and a spawning mitigation and monitoring plan if monitoring detects a significant reduction in gravel loads in the Nacimiento or San Antonio Rivers.

The purpose of pre-project monitoring would be to define baseline bedload transport rates and channel and bed characteristics prior to tunnel construction and operation. These measurements would serve as a reference point for evaluating changes in the sediment budget of Nacimiento River following project operations.

The need for the spawning mitigation and monitoring plan will be based on the detection of significant changes in sediment (gravel) transport loads, channel form, and bed composition in the Nacimiento and San Antonio Rivers. Because proposed project or Tunnel-Only Alternative operations are expected to change the timing, frequency, and magnitude of floodflows in the river, any major changes in channel maintenance flows downstream of the dam could result in corresponding changes in gravel transport loads and potential changes in channel and bed characteristics such as bed incision, bank widening, and bed coarsening. Criteria will be established to detect changes in sediment transport in the Nacimiento and San Antonio Rivers. Possible areas to evaluate include, but are not limited to:

- Post-project measurements of gravel transport loads during peak-flow releases relative to pre-project levels.
- A comparison of pre- and post-project channel characteristics (bed elevations, channel widths, and slopes)
- A comparison of pre- and post-project bed composition measurements available for transport in the active channel of lower Nacimiento and San Antonio Rivers.

Because the frequency of monitoring will be dictated by the frequency of major flow events and environmental releases, sediment and channel monitoring will be conducted over a sufficient period to encompass at least three major flow events (≥ 500 cfs) during the post-project monitoring period.

Repeated measurements of sediment and channel characteristics over a number of years are necessary to detect major shifts in the sediment regime amid the variability in scour and fill dynamics that may occur over shorter time frames. Although it would be ideal to monitor an equal number of pre-project events, this will very likely not be possible because of the limited time frame before project implementation. In this case, the modeled or estimated sediment transport capacity of the river and the characterization of pre-project channel and bed characteristics will serve as the primary reference conditions for the post-project evaluation.

If needed, the spawning mitigation and monitoring plan could consist of, but would not be limited to, changes in releases from Nacimiento and San Antonio Reservoirs, vegetation removal, or other actions. The plan would include a description of the methods for determining the actions to be taken, such as changes in releases or areas in which vegetation would be removed; a description of the monitoring methods that would be used to ensure the effectiveness of mitigation; and a description of the implementation schedule, agency coordination requirements, funding commitments, reporting, and regulatory/permitting requirements of the program.

Impact BIO-9: Potential to Interfere with Fish or Wildlife Species Movement

Suitable habitat is required for wildlife species to provide food, water, cover, and other elements for survival. Depending on the species, a variety of habitats may be used throughout the life cycle, including reproduction and dispersal. Local movement, migration, and dispersal patterns vary for different species, and may be an important part of individual and species survival. In California, development, including agriculture, urbanization, and transportation, has resulted in substantial habitat reduction and fragmentation that presents barriers to local movements and migration for many wildlife species. Development has also resulted in additional risk to wildlife when moving through these areas, including risk of vehicle strikes on roadways.

CDFW and the California Department of Transportation have identified existing habitat blocks and linkages within the state, as well as missing linkages, and developed strategies for preserving and enhancing wildlife linkages through the California Essential Habitat Connectivity Project (Spencer et al. 2010). Mapped natural landscape blocks are large areas of mostly intact and well-conserved natural areas, and essential connectivity areas are connections between these blocks that have been identified as high priority for maintaining and enhancing ecological connectivity. In the Central Coast region, the essential connectivity areas often connect existing reserves across lands with more roads, agriculture, and urbanization, which can constrain wildlife movements. According to California Essential Habitat Connectivity Project mapping, there are multiple natural landscape blocks, essential connectivity areas, small natural areas, core reserves and corridors, potential riparian linkages, and missing linkages in the study area. Much of the study area is comprised of natural and agricultural land covers, and there is very little existing urban development to block wildlife movement except for roadways and irrigation infrastructure.

The project site is outside major habitat blocks identified in the California Essential Habitat Connectivity Project (Spencer et al. 2010). However, the western portion of San Antonio Reservoir falls within an area designated as a "Less Cost" essential connectivity area that connects habitat blocks to the north and south. More locally, the project site and the San Antonio Reservoir area include relatively few encumbrances to wildlife movement, other than the reservoirs themselves.

Wildlife accessing the Sierra de Salinas to the north or the Santa Lucia Mountains to the northwest is able to travel along the north and south shores of San Antonio Reservoir without encountering substantial barriers. In addition, relatively little development currently lies between the portals for the two reservoirs. The most developed area in the project vicinity is south and southeast of the Nacimiento Dam, in the communities of Nacimiento Reservoir and Heritage Ranch. Agriculture associated with the Salinas Valley to the east of the project site and, to a lesser extent, the Lockwood Valley northwest of San Antonio Reservoir presumably limit wildlife movement in those areas.

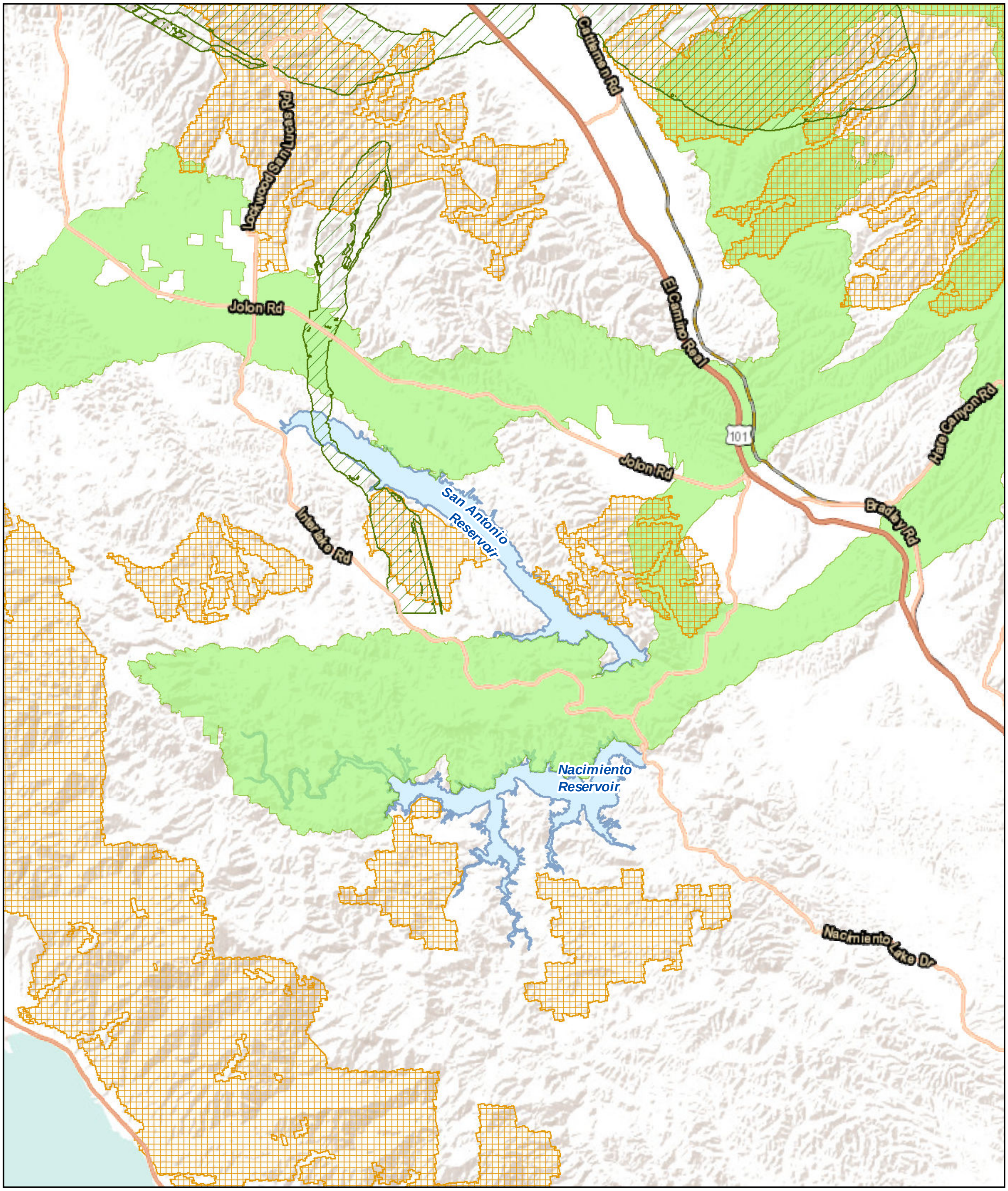
As discussed under Impact BIO-8, *Impacts on Listed, Candidate, Sensitive, or Special-Status Wildlife Species*, there is potential habitat for multiple special-status species, including suitable habitats for foraging, reproduction, migration, and dispersal, in the areas affected by project components. In addition, there is potential for non-listed wildlife to be in these areas, including deer, mountain lions, bobcats, foxes, raccoons, skunks, squirrels, raptors, birds, reptiles, and amphibians. These species may use the area for foraging, cover, breeding, and migration.

Construction

As discussed under Impact BIO-8, *Impacts on Listed, Candidate, Sensitive, or Special-Status Wildlife Species*, construction of the proposed project or Tunnel-Only Alternative would result in the permanent and temporary losses of suitable habitat for special-status wildlife species, including breeding, foraging, migration, and dispersal habitats. None of this habitat loss would be within existing natural landscape blocks and essential connectivity areas identified in the California Essential Habitat Connectivity Project mapping (**Figure 4.3-11**). Construction noise and activities and nighttime lighting could result in temporary disruption of wildlife movement by creating barriers or impediments to movement. Wildlife may adjust their typical foraging, migration and/or dispersal movements to avoid construction areas. These adjustments could result in increased energy expenditure or exposure to predation.

Temporary and permanent habitat loss would reduce availability or access to breeding/nursery sites in the construction footprint, including breeding sites for aquatic invertebrates and amphibians, upland burrow and den sites for reptiles, raptors, and mammals, nesting sites for birds and raptors, and roosting sites for mammals. Construction activities, noise, vibration, and increased human presence could also cause wildlife to avoid existing breeding/nursery sites, impeding the use of these areas.

Under the proposed project and the Tunnel-Only Alternative, construction activities would be limited to localized areas in the inundation zone of Nacimiento and San Antonio Reservoirs, as well as at the spillway at San Antonio Dam (proposed project only). These areas where proposed construction activities would occur are located in the eastern (downstream) portion of the reservoirs. The only special-status fish species with potential to occur in the reservoirs is Monterey hitch. Monterey hitch are stream spawners, and they potentially use the reservoirs for rearing. Although their use of habitats in the reservoirs is unknown, they are likely to make seasonal movements within the reservoir toward the western (upstream) portion of the reservoir prior to entering and spawning in spring in tributaries such as the Nacimiento and San Antonio Rivers.



Essential Connectivity Areas: Most Permeable Wildlife Corridors

Natural Landscape Blocks

Critical Linkages

Figure 4.3-11
Essential Connectivity

0 1 2
Miles
1:250,000

N

Source: Basemap, ESRI 2021; Horizon 2016;SWAP 2015; TNC and AIS 2008; TNC, AIS, & Stanford University 2014; Cal-IPC et al.

Other fish species of management concern in the reservoirs that also make seasonal movements toward the upstream reaches of the reservoirs prior to entering the Nacimiento and San Antonio Rivers in spring to spawn include white bass at Nacimiento Reservoir and striped bass at San Antonio Reservoir. However, because construction activities would be limited to the eastern portion of the reservoirs and a considerable distance away from their respective tributary rivers, the impact on fish movement in the reservoirs associated with construction activities would not be substantial.

Operation

Operations of the proposed project or Tunnel-Only Alternative would not create barriers to or impede terrestrial wildlife movement within existing natural landscape blocks and essential connectivity areas identified in the California Essential Habitat Connectivity Project mapping (**Figure 4.3-11**) the increase in the maximum inundation area of San Antonio Reservoir would not be substantial nor would it preclude connectivity surrounding the project site or downstream of the project site. The tunnel will be located underground and no other aboveground structures would block potential terrestrial wildlife movement.

Steelhead

Adults

The primary upstream migration period for adult steelhead in the Salinas River is December through April (NMFS 2007). Under current conditions, adult steelhead passage in December and January is provided through natural flows in the system. Since 2010, MCWRA has been augmenting natural flows in the Salinas River from February 1 through March 31 with releases from Nacimiento Reservoir and/or San Antonio Reservoir when specific triggers are met in an effort to maintain upstream passage conditions in the Salinas River that are similar to conditions that existed prior to implementation of the SVWP (see **Table 4.2-1**). In addition, adult upstream migration flows in April are addressed through managed releases for outmigrating smolts (described below) and project releases for diversions. Note that upstream adult migration during normal years is of most concern because little or no adult steelhead upstream passage occurs currently—nor is it likely that it occurred historically—during dry years because of inadequate flows in the Salinas River and lagoon closure. Adequate upstream passage for adults is typically provided by natural flows in the system during wet years. Therefore, the following evaluates the effects of project operations on adult upstream passage flows during normal years. Steelhead spawning success in the Salinas River basin is currently low, and a substantial reduction in the “window of opportunity” could reduce or eliminate the steelhead population.

Minimum flows needed for adult upstream migration vary by river reach. In 2005, NMFS developed an estimate of 260 cfs as the minimum flow necessary to support adult upstream passage in the Salinas River at Chualar and upstream of Soledad. Because a flow of 260 cfs at Chualar is highly correlated with a flow of 150 cfs at Spreckels, the minimum flow necessary to support adult upstream passage in the Salinas River at Spreckels, a minimum flow of 260 cfs at Chualar is also assumed to support adult upstream passage in the Salinas River at Spreckels. NMFS further recognized that the Salinas River channel is wider with a flatter gradient at Soledad and Bradley than it is at Chualar (NMFS 2007). Consequently, NMFS concluded that the minimum passage flow at Soledad and Bradley is likely higher than that at Chualar (i.e., 260 cfs) and evaluated two alternative higher flows (300 cfs and 380 cfs) for the Salinas River at Soledad and Bradley as part of their consultation for the SVWP (NMFS 2007).

To evaluate project effects on adult upstream passage in the Salinas River downstream of Soledad (i.e., Chualar and Spreckels reaches) in December and January when adult passage is provided by natural flows, this analysis used 260 cfs as the minimum flow for the Chualar reach and 150 cfs as the minimum flow for the Spreckels reach. For February and March when flows are managed for adult passage, the change (relative to modeled baseline) in "days of adult flow achieved" based on the model output were used to evaluate project effects on adult upstream passage in the Salinas River downstream of Soledad. Similarly, for April the change (relative to modeled baseline) in "days of smolt flow achieved," based on the model output were used to evaluate project effects on adult upstream passage in the Salinas River downstream of Soledad because adult passage in April is governed by releases for the smolt block flows (described below).

For the Salinas River upstream of Soledad (i.e., Salinas River upstream of the San Antonio River confluence, Los Lobos reach, and Soledad reach), minimum flow criteria used to evaluate project effects on adult upstream passage in December through April included 260 cfs for the Salinas River upstream of the San Antonio River confluence, and the more conservative (protective) minimum flow criteria of 380 cfs for the Los Lobos and Soledad reaches. The minimum flow criteria of 380 cfs for the Los Lobos and Soledad reaches was chosen because this minimum passage flow represents a worst-case scenario for these reaches where the minimum flow needed for efficient passage is uncertain.

For the Nacimiento and San Antonio Rivers, for which no specific flow criteria related to adult upstream passage have been established, the respective minimum release criteria for spawning for the Nacimiento River (60 cfs) and San Antonio River (10 cfs) were used to evaluate flow effects on adult upstream passage in these rivers.

In the Salinas River downstream of Soledad (Chualar and Spreckels reaches), modeling results suggest that upstream passage for adults under the modeled proposed project and Tunnel-Only Alternative scenarios would be slightly more restricted (i.e., fewer 5- to 6-day timesteps meeting minimum passage flows) in December (Chualar reach) and January (Spreckels reach) of normal years compared to modeled baseline conditions. In December, the number of 5- to 6-day timesteps with flows at or above 260 cfs in the Chualar reach is predicted to decrease by 2 timesteps (3 percent) under both the modeled proposed project and Tunnel-Only Alternative scenarios, and in January the number of 5- to 6-day timesteps with flows at or above 150 cfs in the Spreckels reach is predicted to decrease by 3 timesteps (3 percent) under the modeled proposed project scenario and by 2 timesteps (2 percent) under the modeled Tunnel-Only Alternative scenario (**Table 4.3-29**). By contrast, modeling results also show that adult passage conditions would improve compared to modeled baseline conditions in the Spreckels reach in December and in the Chualar reach in January (**Table 4.3-29**). In February and March, when releases are managed for maintaining adult upstream passage, the total number of adult passage days for these two months would increase by 3 days (less than 1 percent; a benefit) under the modeled proposed project scenario and decrease by 5 days (less than 1 percent; an impact) under the modeled Tunnel-Only Alternative scenario, compared to modeled baseline conditions (**Table 4.3-30**). In April, adult upstream releases are addressed through managed releases for downstream smolt passage. Under the modeled proposed project and Tunnel-Only Alternative scenarios, the total number of smolt passage days would be unchanged compared to the modeled baseline; therefore, April conditions for adult upstream passage would be expected to also be unchanged compared to modeled baseline conditions (**Table 4.3-30**). Because MCWRA-managed reservoir releases would continue to be consistent with the flow prescriptions for steelhead developed in consultation with NMFS, modeled decreases in fish passage days are not to be expected during actual operations (MCWRA 2005a). In reality, the anticipated increase in overall storage with the proposed project and Tunnel-Only Alternative is expected to result in more, not less, opportunities for meeting fish passage releases because the project would result in an increase in overall reservoir storage compared to existing conditions.

In the Salinas River upstream of Soledad (Soledad, Los Lobos, and Salinas River upstream of San Antonio River confluence reaches), modeling results suggest that upstream passage for adults under the proposed project and Tunnel-Only Alternative would be slightly more restricted in December (Soledad reach) and March (Los Lobos reach), compared to modeled baseline conditions. In December, the number of modeled 5- to 6-day timesteps with flows at or above 380 cfs in the Soledad reach would decrease by 1 timestep (1.75 percent) under both the proposed project and Tunnel-Only Alternative, and in March the number of 5- to 6-day timesteps with flows at or above 380 cfs in the Los Lobos reach would decrease by 2 timesteps (2.41 percent) under the modeled proposed project scenario compared to modeled baseline conditions (**Table 4.3-30**). Upstream passage for adult steelhead in all other months and reaches would be unchanged or less restricted compared to modeled baseline conditions (**Table 4.3-30**).

Table 4.3-29. Frequency of 5- to 6-Day Timestep Intervals that Meet Minimum Fish Passage Flows and Percentage Change from Modeled Baseline Conditions for SVOM Model Reaches for Modeled Baseline, Proposed Project, and Tunnel-Only Alternative Scenarios in Normal Water Years

SVOM Model Reach/Project Scenario	December		January		February		March		April	
	No. of Timestep Intervals	% Change from Modeled Baseline	No. of Timestep Intervals	% Change from Modeled Baseline	No. of Timestep Intervals	% Change from Modeled Baseline	No. of Timestep Intervals	% Change from Modeled Baseline	No. of Timestep Intervals	% Change from Modeled Baseline
Nacimiento River Modeled Baseline	114		111		94		128		85	
Nacimiento River Modeled Proposed Project	108	-5.26%	111	0%	90	-4.26%	128	0%	90	5.88%
Nacimiento River Modeled Tunnel-Only Alternative	108	-5.26%	111	0%	90	-4.26%	128	0%	91	7.06%
San Antonio River Modeled Baseline	132		132		110		132		126	
San Antonio River Modeled Proposed Project	132	0%	132	0%	110	0%	132	0%	128	1.59%
San Antonio River Modeled Tunnel-Only Alternative	132	0%	132	0%	110	0%	132	0%	128	1.59%
Salinas River above confluence Modeled Baseline	42		55		46		91		31	
Salinas River above confluence Modeled Proposed Project	42	0%	55	0%	46	0%	96	5.49%	44	41.94%
Salinas River above confluence Modeled Tunnel-Only Alternative	42	0%	55	0%	46	0%	92	1.10%	44	41.94%
Salinas River at Los Lobos Modeled Baseline	18		44		40		83		42	
Salinas River at Los Lobos Modeled Proposed Project	18	0%	44	0%	41	2.50%	81	-2.41%	50	19.05%
Salinas River at Los Lobos Modeled Tunnel-Only Alternative	18	0%	45	2.27%	41	2.50%	83	0%	53	26.19%
Salinas River at Soledad Modeled Baseline	57		63		46		90		31	
Salinas River at Soledad Modeled Proposed Project	56	-1.75%	63	0%	46	0%	90	0%	39	25.81%
Salinas River at Soledad Modeled Tunnel-Only Alternative	56	-1.75%	63	0%	46	0%	90	0%	38	22.58%
Salinas River at Chualar Modeled Baseline	69		99							
Salinas River at Chualar Modeled Proposed Project	67	-2.90%	102	3.03%						
Salinas River at Chualar Modeled Tunnel-Only Alternative	67	-2.90%	102	3.03%						
Salinas River at Spreckels Modeled Baseline	79		109							
Salinas River at Spreckels Modeled Proposed Project	80	1.27%	106	-2.75%						
Salinas River at Spreckels Modeled Tunnel-Only Alternative	81	2.53%	107	-1.83%						

Note: The following reach-specific minimum flow criteria were used to evaluate project effects on adult upstream passage: Nacimiento River – 60 cfs; San Antonio River – 10 cfs; Salinas River above confluence with San Antonio River – 260 cfs; Salinas River at Los Lobos and Soledad – 380 cfs; Salinas River at Chualar – 260 cfs; and Salinas River at Spreckels – 260 cfs. Gray shading represents reaches governed by flow prescriptions and for which impacts were assessed differently.

Table 4.3-30. Modeled Proposed Project and Tunnel-Only Alternative Scenario Fish Passage Days and Percent Change from Modeled Baseline for Steelhead Life Stages in the Salinas River at Chualar by Water Year Type

		Smolts		Kelts		Juveniles		Adults[1]	
Water Year Type	Project Scenario	No. of Days	% Change from Modeled Baseline	No. of Days	% Change from Modeled Baseline	No. of Days	% Change from Modeled Baseline	No. of Days	% Change from Modeled Baseline
Wet Years	Modeled Baseline	117		81		270			
	Proposed Project	117	0%	81	0%	240	-11.11%		
	Tunnel-Only Alternative	117	0%	81	0%	240	-11.11%		
Normal Years	Modeled Baseline	1,488		1,030		226		1,637	
	Proposed Project	1,488	0%	1,131	9.81%	206	-8.85%	1,640	0.18%
	Tunnel-Only Alternative	1,488	0%	1,080	4.85%	196	-13.27%	1,635	-0.12%
Dry Years	Modeled Baseline	0		0		0			
	Proposed Project	0	0%	0	0%	0	0%		
	Tunnel-Only Alternative	0	0%	0	0%	0	0%		
All Years	Modeled Baseline	1,605		1,111		496		1,637	
	Proposed Project	1,605	0%	1,212	9.09%	446	-10.08%	1,640	0.18%
	Tunnel-Only Alternative	1,605	0%	1,161	4.50%	436	-12.10%	1,635	-0.12%

[1] Adult upstream passage is evaluated for normal years only. See text for explanation.

In the Nacimiento River, modeling results suggest that the number of modeled 5- to 6-day timesteps with flows at or above 60 cfs would decrease by 6 timesteps (5.26 percent) in December and would decrease by 4 timesteps (4.26 percent) in February under both the modeled proposed project and Tunnel-Only Alternative scenarios compared to modeled baseline conditions (**Table 4.3-29**). If the frequency of flows at or above 60 cfs in the Nacimiento River were to decline, as the modeling suggests, then upstream passage for adults in the Nacimiento River in December and February could be more restricted under the modeled proposed project and Tunnel-Only Alternative scenarios compared to modeled baseline conditions. However, project-related impacts on upstream passage for adults in the Nacimiento River are unlikely to occur because MCWRA-managed reservoir releases would continue to be consistent with the flow prescriptions for steelhead developed in consultation with NMFS (MCWRA 2005a), thereby ensuring that a minimum flow of 60 cfs would be maintained during the adult steelhead migration season. Therefore, operation of the proposed project or Tunnel-Only Alternative would not be expected to interfere with the upstream migration of adult steelhead in the Nacimiento River compared to existing conditions.

In the San Antonio River, upstream passage for adults in December through April would be unchanged or slightly less restricted (April) under the modeled proposed project and Tunnel-Only Alternative scenarios compared to modeled baseline conditions (**Table 4.3-29**).

Smolts

In general, the outmigration of steelhead smolts begins in March and ends in late May or June (NMFS 2007). Since 2010, MCWRA has been making flow releases to augment natural flows in the Salinas River with releases from Nacimiento Reservoir and/or San Antonio Reservoir when specific triggers are met to restore flows conducive to smolt outmigration. This is accomplished by providing “block flow” releases that are timed to natural runoff events during the period March 15 through May 31 of normal water years (see **Table 4.2-1**). Note that the compliance point for the block flows is the Salinas River at Soledad. Downstream smolt migrations are also supported by managed releases for kelts (described below), which commence after block flows for smolt outmigration have been completed.

To evaluate potential project effects on smolt outmigration in the Nacimiento River and Salinas River upstream of Soledad, hydrologic modeling results (monthly 50 percent exceedance flows) for the proposed project and Tunnel-Only Alternative were reviewed for the Nacimiento River, Salinas River upstream of San Antonio River, and Los Lobos reaches from March through June for normal and dry water year types. Monthly median flows are most representative of average flow conditions and normal and dry years are of most concern because project operations can have a disproportional effect on normal and dry year flows that generally tend to be lower than flows that occur in wet years. Furthermore, although project operations do occur in wet years, flows typically remain sufficiently high for outmigrating smolts even when reduced by project operations. To evaluate potential project effects on smolt outmigration in the Salinas River at Soledad and in downstream reaches, “days of smolt flow achieved” under the modeled proposed project and Tunnel-Only Alternative scenarios were compared against “days of smolt flow achieved” for modeled baseline conditions. In addition, “days of kelt flow achieved” for the modeled proposed project and Tunnel-Only Alternative scenarios were compared against “days of kelt flow achieved” for modeled baseline conditions to evaluate project effects on smolt outmigration for the period immediately following completion of block flow releases for smolt outmigration.

Under the modeled proposed project and Tunnel-Only Alternative scenarios, modeling results suggest that monthly median flows in the Nacimiento River and Salinas River reaches upstream of Soledad during the smolt outmigration season would generally increase or be unchanged in most months of normal and dry years compared to modeled baseline conditions, although there would be some exceptions. In normal years, modeled monthly median flows in the Salinas River at Los Lobos would decrease by 3 percent in March (proposed project only), by 38 to 40 percent in May (modeled proposed project and Tunnel-Only Alternative scenarios, respectively), and by 6 to 9 percent in June (modeled proposed project and Tunnel-Only Alternative scenario, respectively) compared to modeled baseline conditions (Appendix E, *Biological Resource Attachments,* **Table E-25**; see 50 percent exceedance). In dry years, modeling results suggest that monthly median flows in the Salinas River upstream of the San Antonio River confluence and at Los Lobos would decrease by 8 percent in March compared to modeled baseline conditions (Appendix E, *Biological Resource Attachments,* **Tables E-22** and **E-26**; see 50 percent exceedance).

Steelhead smolts in the Nacimiento River and Salinas River reaches upstream of Soledad under the proposed project and Tunnel-Only Alternative could benefit from predicted increases in flows during the outmigration season in normal and dry years, but any gains could be diminished by the predicted reductions in flow that could occur in some months and reaches. However, most of these predicted flow reductions would be relatively small (less than 10 percent reduction from modeled baseline) and modeled monthly median flows in these reaches with reduced flows would still remain relatively high (226–600 cfs in normal years and 110–120 cfs in dry years) and would very likely provide smolts with sufficient passage conditions. In the Los Lobos reach of the Salinas River in May when the largest percentage decrease in flow (38 to 40 percent) is predicted to occur under the modeled proposed project and Tunnel-Only Alternative scenarios, the modeled monthly median flow in the Salinas River would still be relatively high (226–233 cfs). By comparison, the modeled monthly median flow in the Salinas River at Los Lobos is 171 cfs in April under modeled baseline conditions.

Under the proposed project and Tunnel-Only Alternative, modeling results suggest that the total number of smolt passage days in the Salinas River at Soledad would be unchanged in all water years compared to modeled baseline conditions (**Table 4.3-30**). Similarly, smolts outmigrating in the period following the block flow releases for smolt outmigration would also benefit from flow releases for kelts under the proposed project and Tunnel-Only Alternative as the number of kelt passage days is predicted to increase by 101 fish passage days (9.8 percent) and 50 fish passage days (4.9 percent), respectively, compared to modeled baseline conditions (**Table 4.3-30**).

Kelts

Post-spawning adults (kelts) that survive spawning in the Salinas River watershed may return to the ocean from January to June. Since 2010, MCWRA has been making flow releases to augment natural flows in the Salinas River with releases from Nacimiento Reservoir and/or San Antonio Reservoir when specific triggers are met to restore flows for adult migration and smolt outmigration, which also benefit downstream migrating kelts. In addition, releases are made to provide passage for downstream migrating kelts after smolt block-flow releases have been completed.

Although the relationship between flow and downstream passage success for migrating kelts in the Salinas River and tributaries has not been determined, it is assumed that conditions considered suitable for upstream migrating adults in those reaches should also provide suitable conditions for downstream migrating kelts. Therefore, the results for adult upstream passage previously presented for adults for January through April are also considered to be applicable to downstream migrating kelts. Similarly, the hydrologic modeling results (monthly median flows) previously presented for smolts were also used to evaluate potential project effects on downstream migrating kelts in these upstream river reaches in May and June. Potential project effects on downstream migrating kelts in the Salinas River below Soledad were evaluated by comparing the days of flow achieved for adults, smolts, and kelts under the modeled proposed project and Tunnel-Only Alternative scenarios against the days of flow achieved for adults, smolts, and kelts for modeled baseline conditions.

Modeling results suggest that passage conditions for steelhead kelts in the Nacimiento River and Salinas River upstream of Soledad during January through April would be unchanged or less restricted in most months and river reaches compared to modeled baseline conditions, based on results for adult upstream passage during these months (**Table 4.3-29**). However, modeling results suggest that passage conditions for kelts could be slightly more restricted in March in the Salinas River at Los Lobos, where the number of modeled 5- to 6-day timesteps with flows at or above 380 cfs would decrease by 2 timesteps (2.41 percent) under the modeled proposed project scenario compared to modeled baseline conditions (**Table 4.3-29**). In May and June, passage conditions for steelhead kelts upstream of Soledad would be less restricted in all months and reaches compared to modeled baseline conditions, except for the Salinas River at Los Lobos where monthly median flows would decrease. However, most of these flow reductions would be relatively small (less than 10 percent reduction from modeled baseline) and flows would remain relatively high in all affected reaches, as described previously for smolts (see subsection titled *Smolts* above for a description of flow reductions). Downstream of Soledad, conditions for migrating kelts under the modeled proposed project and Tunnel-Only Alternative scenarios would be improved or remain relatively unchanged compared to modeled baseline conditions, based on the number of days of flow achieved for adults, smolts, and kelts (**Table 4.3-30**).

Juveniles

Pre-smolt juveniles (i.e., fry and yearling parr) that migrate from upstream rearing areas to the lagoon in response to available habitat, competition, and environmental cues (e.g., flow and temperature) generally migrate down the Salinas River from April to June (NMFS 2007). Since 2010, MCWRA has been making flow releases to augment natural flows in the Salinas River with releases from Nacimiento Reservoir and/or San Antonio Reservoir when specific triggers are met to provide flow for juveniles to enter the lagoon (see **Table 4.2-1**). Because the smolt outmigration and kelt migration periods substantially overlap the period when juvenile may be moving downstream, flow releases for smolt outmigration, when they occur, and flow releases for kelt migration also provide for juvenile passage to the lagoon. Although the precise relationship between flow and downstream passage success for migrating juveniles in the Salinas River has not been determined, it is assumed that when flow conditions in the Salinas River are sufficient for steelhead smolt outmigration and kelt migration, flow conditions are also sufficient for juvenile steelhead passage to the lagoon. Flow prescriptions for juvenile migration include managed releases following smolt block-flow and kelt migration releases through June 30 to ensure conditions are sufficient for juveniles to enter the lagoon. Therefore, changes in flow under the proposed project or Tunnel-Only Alternative that reduce days of flow achieved for smolts, kelts, or juveniles are assumed to diminish conditions for juveniles to enter the lagoon.

Under the modeled proposed project and Tunnel-Only Alternative scenarios, modeling results suggest that steelhead juvenile migration to the lagoon could be restricted compared to modeled baseline conditions because the number of days of flow achieved for juvenile passage would be reduced by 20 passage days (9 percent) under the modeled proposed project scenario and 30 passage days (13 percent) under the modeled Tunnel-Only Alternative scenario in normal years, and would be reduced by as much as 30 passage days (11 percent) under both modeled project scenarios in wet years, compared to modeled baseline conditions (**Table 4.3-30**). However, juvenile passage to the lagoon would not be expected to be diminished when smolt block-flow and kelt migration releases are being made because the number of days of flow achieved for smolt and kelt passage would remain the same or increase compared to modeled baseline conditions (**Table 4.3-30**). Because MCWRA-managed reservoir releases would continue to be consistent with the flow prescriptions for steelhead developed in consultation with NMFS (MCWRA 2005a), predicted decreases in juvenile fish passage days are not to be expected. In reality, the anticipated increase in overall storage with the proposed project and Tunnel-Only Alternative is expected to result in more, not fewer, opportunities for meeting fish passage because the project would result in an increase in overall reservoir storage compared to existing conditions.

Salinas River Lagoon Access

Under modeled proposed project and Tunnel-Only Alternative scenario operations, monthly flows in normal and dry years would be relatively unchanged from December through June compared to modeled baseline conditions, although there would be some exceptions (Appendix E, *Biological Resource Attachments,* **Tables E-41** and **E-42**; see all exceedances). In normal years, high flows (5 and 25 percent exceedance flows) would be reduced 7 to 25 percent in March compared to modeled baseline conditions, although flows under these conditions would still be above 1,000 cfs. (Appendix E, *Biological Resource Attachments,* **Table E-41**; see 5 and 25 percent exceedances). In wet years, most monthly flows would be reduced by 10 percent or less from December through June compared to modeled baseline conditions, although low magnitude flows (95 percent exceedance) in May and June would be reduced by up to 60 percent (Appendix E, *Biological Resource Attachments,* **Table E-40**; see 95 percent exceedance flow in May). Peak flows in wet years would increase in all months, except December and March when they would be reduced by approximately 6 to 25 percent. However, under these conditions monthly peak flows (5 percent exceedance) would still be relatively high (2,360 cfs in December and 8,757 cfs in March (Appendix E, *Biological Resource Attachments,* **Table E-40**; see 5 percent exceedance).

A concern associated with proposed project and Tunnel-Only Alternative operations is delay or blockage of adult (pre- and post-spawn) migration and smolt outmigration during December to June caused by flow insufficient to breach and maintain the lagoon opening to the ocean. The connection to the ocean also affects lagoon hydrodynamics and the salinity of the lagoon. As stated previously for Impact BIO-8p, *South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch*, once the lagoon is open to the ocean a flow of approximately 80 to 150 cfs in the Salinas River at Spreckels will generally maintain the lagoon opening, although the lagoon has been observed to be open at flows as low as 30 cfs at Spreckels.

The greatest difference in monthly flows between the modeled proposed project or Tunnel-Only Alternative scenarios and modeled baseline conditions would occur during March, when peak flows (5 percent exceedance) in wet years would be reduced by as much as 600 cfs (Appendix E, *Biological Resource Attachments,* **Table E-40**; see 5 percent exceedance). Peak flows would also be reduced in February and March in normal years (Appendix E, *Biological Resource Attachments,* **Table E-41**; see 5 percent exceedance). However, under these conditions peak flows would still be above 8,700 cfs in wet years (Appendix E, *Biological Resource Attachments,* **Table E-40**; see 5 percent exceedance) and 1,450 cfs in normal years (Appendix E**,** *Biological Resource Attachments,* **Table E-41**; see 5 percent exceedance); therefore, project operations would not be expected to affect lagoon breaching. Although moderate and low monthly flows would be reduced in December through June in wet years, most monthly flows would be greater than 150 cfs and would be expected to be sufficient to maintain the lagoon opening (Appendix E, *Biological Resource Attachments,* **Table E-40**; see all exceedances).

Under the proposed project and Tunnel-Only Alternative, modeling results suggest that project operations would have varying effects on steelhead smolts migrating through the lagoon. Steelhead smolts would benefit from the increase in 25 percent exceedance flows in June of dry years if these flow increases improved passage conditions at the lagoon for smolts migrating to the ocean (Appendix E, *Biological Resource Attachments,* **Table E-42**; see 25 percent exceedance). However, any gains for steelhead smolts in dry years could be diminished by the reductions in 25 and 50 percent exceedance flows in May and June of normal years if these flow reductions shorten the duration that the lagoon is open to the ocean and restrict passage conditions for smolts migrating to the ocean. (Appendix E**,** *Biological Resource Attachments,* **Table E-41**; see 25 and 50 percent exceedances). Passage conditions for downstream migrating steelhead kelts at the lagoon could also be restricted by these same flow reductions in May and June of normal years. However, the lagoon could still remain open in May and June as modeled flows at Spreckles would greatly exceed 30 cfs in May and June (Appendix E, *Biological Resource Attachments,* **Table E-37**; see 25 and 50 percent exceedances; the lagoon has been observed to be open at flows as low as 30 cfs at Spreckels). Passage conditions at the lagoon for adults entering the lagoon from the ocean (December through April) would not be expected to change under modeled proposed project and Tunnel-Only Alternative scenario operations because flow conditions at the lagoon in December through April in normal years are relatively unchanged compared to modeled baseline conditions (Appendix E, *Biological Resource Attachments,* **Table E-41**; see all exceedances).

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative would not create barriers to or impede wildlife or fish movement within the reservoirs, or in the Nacimiento River, San Antonio River, Salinas River, or Salinas River lagoon. Therefore, under the proposed project or Tunnel-Only Alternative, construction impacts would be **less than significant** on fish and wildlife movement.

Operation of the proposed project or Tunnel-Only Alternative would not be expected to create barriers to or impede the movement of fish in the Nacimiento River, San Antonio River, Salinas River, or Salinas River lagoon because flows in the rivers and outflow from the Salinas River lagoon would be sufficient to maintain fish passage compared to existing conditions, and prescribed flows for fish passage would continue to be met. Therefore, under the proposed project or Tunnel-Only Alternative, operation impacts would be **less than significant** on fish movement.

Impact BIO-10: Potential to Conflict with Local Policies or Ordinances Protecting Biological Resources

Construction

Policies in the following plans address the conservation and enhancement of biological resources in the region, and thus would apply to, and protect, resources that could be affected by the proposed project and Tunnel-Only Alternative: Monterey County General Plan, San Luis Obispo County General Plan, Salinas River Lagoon Management and Enhancement Plan, Local Coastal Program for North Monterey County and the Central Salinas Valley Area Plan (Monterey County Resource

Management Agency 2010; San Luis Obispo County 2010; Monterey County Water Resources Agency 1997; California Coastal Commission 2022). In addition, there are several federal, state, and local agreements with the County of Monterey and the resource agencies that include conservation measures that pertain to the project. The applicable goals, objectives, policies, and measures of these plans and agreements are presented in Section 4.3.2.3, *Local Laws, Regulations, and Policies*. General plan policies and recommendations/agreements with federal, state, and local agencies protect vegetation and wetland resources such as special-status plant species, riparian habitat, oak woodlands, wetlands, and streams. The Monterey County General Plan also protects native trees and promotes removal of invasive plant species. A description of consistency with all local policies and ordinances that pertain to the proposed project and Tunnel-Only Alternative is provided in **Table 3** of Appendix C, *Consistency with Local Laws, Regulations, and Policies*.

Operation

Operations of the proposed project or Tunnel-Only Alternative could affect sensitive vegetation, native trees, non-wetland waters, and/or special-status species resources protected by local plans and policies. A description of consistency with all local policies and ordinances that pertain to the proposed project and Tunnel-Only Alternative is provided in **Table 3** of Appendix C, *Consistency with Local Laws, Regulations, and Policies*.

CEQA Conclusion

Construction of the proposed project or Tunnel-Only Alternative could have significant impacts on sensitive vegetation, native trees, non-wetland water, and/or special-status species resources protected by local general plan policies. **MM BIO-3.1**, **MM BIO-3.2**, **MM BIO-4.1**, **MM BIO-4.2**, **MM BIO-5.1**, and **MM BIO-8.1, MM BIO-8.2, MM BIO-8.3, MM BIO-8.5, MM BIO-8.6, MM BIO-8.7, MM BIO-8.8, MM BIO-8.9, MM BIO-8.10, MM BIO-8.11, MM BIO-8.12, MM BIO-8.13, MM BIO-8.14,** and **MM BIO-8.15** would reduce the level of these impacts because all locations of sensitive communities, non-wetland waters, and native trees in and within 250 feet of all construction areas would be identified and mapped, and the acquisition and permanent protection for each affected resource at identified ratios would ensure genetic diversity and survival in perpetuity, and would minimize and compensate for impacts on these protected sensitive resources including native trees as prescribed by local general plans and state and federal regulations. Impacts from construction of the proposed project and Tunnel-Only Alternative would be **less than significant with mitigation**.

Operation of the proposed project or Tunnel-Only Alternative could have significant impacts on sensitive vegetation, native trees, non-wetland water, and/or special-status species resources protected by local general plan policies. **MM BIO-3.2**, **BIO-4.1**, **BIO-4.2**, **BIO-8.1, MM BIO-8.4, MM BIO-8.6, MM BIO-8.9, MM BIO-8.13**, and **MM BIO-8.16** would reduce the level of these impacts because all locations of sensitive communities, non-wetland waters, and native trees in the project site would be identified and mapped, and the acquisition and permanent protection for each affected resource at identified ratios would ensure genetic diversity and survival in perpetuity, and would minimize and compensate for impacts on these protected sensitive resources including native trees as prescribed by local general plans and state and federal regulations. Impacts from operation of the proposed project and Tunnel-Only Alternative would be **less than significant with mitigation**.

4.3.5 Impact Summary

Table 4.3-31 provides a summary of the significance of impacts associated with biological resources.

Table 4.3-31. Significance of Impacts Associated with Biological Resources

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact BIO-1: Impacts on Riparian Habitat			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact BIO-2: Impacts on Listed, Candidate, Sensitive, or Special-Status Riparian Plant Species			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact BIO-3: Impacts on Terrestrial Habitat			
Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2**	Less than significant
	Operation: Significant	**MM BIO-3.2**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2**	Less than significant
	Operation: Less than significant	N/A	N/A
Impact BIO-4: Impacts on Listed, Candidate, Sensitive, or Special-Status Terrestrial Plant Species			
Proposed Project	Construction: Significant	**MM BIO-4.1** **MM BIO-4.2**	Less than significant
	Operation: Significant	**MM BIO-4.1** **MM BIO-4.2**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM BIO-4.1** **MM BIO-4.2**	Less than significant
	Operation: Less than significant	N/A	N/A
Impact BIO-5: Impacts on Wetland and Non-Wetland Water Habitats			
Proposed Project	Construction: Significant	**MM BIO-5.1**	Less than significant
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Significant	**MM BIO-5.1**	Less than significant
	Operation: Less than significant	N/A	N/A

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact BIO-6: Impacts on Listed, Candidate, Sensitive, or Special-Status Wetland Plant Species			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact BIO-7: Impacts on Reservoir Fish and Wildlife Habitat			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact BIO-8a: Native Bumble Bees			
Proposed Project	Construction: Significant	**MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3**	Less than significant
	Operation: Significant	**MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3**	Less than significant
	Operation: Significant	**MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3**	Less than significant
Impact BIO-8b: Smith's Blue Butterfly			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact BIO-8c: Arroyo Toad, California Red-Legged Frog, and Foothill Yellow-Legged Frog			
Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4** **MM BIO-8.5** **MM BIO-8.6**	Less than significant
	Operation: Significant	**MM BIO-3.2** **MM BIO-8.6**	Less than significant

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4** **MM BIO-8.5** **MM BIO-8.6**	Less than significant
	Operation: Less than Significant	N/A	N/A
Impact BIO-8d: Western Spadefoot Toad and Coast Range Newt			
Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
	Operation: Significant	**MM BIO-3.2** **MM BIO-8.4**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
	Operation: Less than significant	N/A	N/A
Impact BIO-8e: Coast Horned Lizard, Northern California Legless Lizard, and San Joaquin Coachwhip			
Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
	Operation: Significant	**MM BIO-3.2** **MM BIO-8.4**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
	Operation: Less than significant	N/A	N/A
Impact BIO-8f: Two-Striped Gartersnake and Western Pond Turtle			
Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
	Operation: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
	Operation: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-5.1** **MM BIO-8.4**	Less than significant
Impact BIO-8g: Bald Eagle and Golden Eagle			
Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.8** **MM BIO-8.9** **MM BIO-8.10**	Less than significant
	Operation: Significant	**MM BIO-3.2** **MM BIO-8.9**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.8** **MM BIO-8.9** **MM BIO-8.10**	Less than significant
	Operation: Significant	**MM BIO-3.2** **MM BIO-8.9**	Less than significant
Impact BIO-8h: Bank Swallow, Great Blue Heron, Least Bell's Vireo, Western Yellow-Billed Cuckoo, Yellow-Breasted Chat, Yellow Warbler, Long-Eared Owl and Short-Eared Owl			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact BIO-8i: Coast Horned Lark, Loggerhead Shrike, and Western Burrowing Owl			
Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.9** **MM BIO-8.10** **MM BIO-8.11** **MM BIO-8.12** **MM BIO-8.13**	Less than significant

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
	Operation: Significant	**MM BIO-3.2** **MM BIO-8.9**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.9** **MM BIO-8.10** **MM BIO-8.11** **MM BIO-8.12** **MM BIO-8.13**	Less than significant
	Operation: Significant	**MM BIO-8.9**	Less than significant
Impact BIO-8j: Northern Harrier, Cooper's Hawk, Ferruginous Hawk, Sharp-Shinned Hawk, Prairie Falcon, and White-Tailed Kite			
Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.9** **MM BIO-8.10** **MM BIO-8.11**	Less than significant
	Operation: Significant	**MM BIO-3.2** **MM BIO-8.9**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.7** **MM BIO-8.9** **MM BIO-8.10** **MM BIO-8.11**	Less than significant
	Operation: Significant	**MM BIO-8.9**	Less than significant
Impact BIO-8k: Tricolored Blackbird			
Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.11**	Less than significant
	Operation: Significant	**MM BIO-3.2**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.11**	Less than significant
	Operation: Less than significant	N/A	N/A

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact BIO-8l: Western Snowy Plover			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact BIO-8m: Hoary Bat, Long-eared Myotis, Pallid Bat, Townsend's Big-eared Bat, Western Red Bat, Western Mastiff Bat, Western Small-Footed Myotis, Yuma Myotis, and Colonies of Non-special-status Roosting Bats			
Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.14**	Less than significant
	Operation: Significant	**MM BIO-3.2**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.14**	Less than significant
	Operation: Less than significant	N/A	N/A
Impact BIO-8n: Monterey Shrew and Salinas Harvest Mouse			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact BIO-8o: American Badger, Monterey Dusky-Footed Woodrat, Salinas Pocket Mouse, and Mountain Lion			
Proposed Project	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.9** **MM BIO-8.15**	Less than significant
	Operation: Significant	**MM BIO-3.2** **MM BIO-8.9**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-8.9** **MM BIO-8.15**	Less than significant
	Operation: Significant	**MM BIO-8.9**	Less than significant
Impact BIO-8p: South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Significant	**MM BIO-8.16**	Less than significant

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Tunnel-Only Alternative	<u>Construction</u>: Less than significant	N/A	N/A
	<u>Operation</u>: Significant	**MM BIO-8.16**	Less than significant
Impact BIO-9: Potential to Interfere with Fish or Wildlife Species Movement			
Proposed Project	<u>Construction</u>: Less than significant	N/A	N/A
	<u>Operation</u>: Less than significant	N/A	N/A
Tunnel-Only Alternative	<u>Construction</u>: Less than significant	N/A	N/A
	<u>Operation</u>: Less than significant	N/A	N/A
Impact BIO-10: Potential to Conflict with Local Policies or Ordinances Protecting Biological Resources			
Proposed Project	<u>Construction</u>: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-4.1** **MM BIO-4.2** **MM BIO-5.1** **MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3** **MM BIO-8.5** **MM BIO-8.6** **MM BIO-8.7** **MM BIO-8.8** **MM BIO-8.9** **MM BIO-8.10** **MM BIO-8.11** **MM BIO-8.12** **MM BIO-8.13** **MM BIO-8.14** **MM BIO-8.15**	Less than significant
	<u>Operation</u>: Significant	**MM BIO-3.2** **MM BIO-4.1** **MM BIO-4.2MM BIO-8.1** **MM BIO-8.4** **MM BIO-8.6** **MM BIO-8.9** **MM BIO-8.13** **MM BIO-8.16**	Less than significant

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Tunnel-Only Alternative	Construction: Significant	**MM BIO-3.1** **MM BIO-3.2** **MM BIO-4.1** **MM BIO-4.2** **MM BIO-5.1** **MM BIO-8.1** **MM BIO-8.2** **MM BIO-8.3** **MM BIO-8.5** **MM BIO-8.6** **MM BIO-8.7** **MM BIO-8.8** **MM BIO-8.9** **MM BIO-8.10** **MM BIO-8.11** **MM BIO-8.12** **MM BIO-8.13** **MM BIO-8.14** **MM BIO-8.15**	Less than significant
	Operation: Significant	**MM BIO-3.2** **MM BIO-4.1** **MM BIO-4.2** **MM BIO-8.1** **MM BIO-8.4** **MM BIO-8.6** **MM BIO-8.9** **MM BIO-8.13** **MM BIO-8.16**	Less than significant

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4.4 Cultural Resources

4.4.1 Overview

This section describes the environmental and regulatory settings associated with cultural resources, including prehistoric and historic-era archaeological sites[1] as well as historic-era buildings, structures, landscapes, districts, and linear features, and discusses the potential for impacts resulting from construction and operation of the proposed project and the Tunnel-Only Alternative. Information in this section is drawn primarily from the cultural resources technical report prepared for the project by Horizon Water and Environment, LLC with contributions from Dudek & Associates, Inc. in 2018 (Horizon 2018).

Please refer to Section 4.5, *Tribal Cultural Resources*, for discussions of tribal cultural resources (TCRs) and traditional cultural properties (TCPs).

4.4.1.1 Study Area

The cultural resources study area consists of the following project features:

- The areas encompassing the project components, which include lands above the tunnel (see Figures 2-4, 2-5, 2-9, and 2-13).
- The area around San Antonio Reservoir that could be inundated following project implementation (see Figures 2-17a through 2-17k). This is understood to be the land area between:
  - The existing maximum WSE (780 feet) and
  - The with-project maximum WSE (787 feet).
- All areas related to construction of the project components (e.g., staging areas, access roads, soil disposal area) (see Figures 2-4, 2-5, 2-9, and 2-13).

An additional 50-foot buffer was also incorporated into the study area at some locations, including the area around San Antonio Reservoir that could be inundated following project implementation as well as around the tunnel portals and along access routes. This buffer is intended to ensure adequate survey coverage and allow a margin for potential future changes, such as future design refinements to road alignments, staging areas, tunnel shaft locations, or other project components.

The proposed tunnel alignment is not included in the cultural resources study area because the tunnel would be located deep below the ground surface in Pleistocene-aged or older deposits, which would preclude the potential for encountering cultural resources (see Section 4.2, *Geology, Soils, and Seismicity, and Paleontological Resources*).

[1] *Prehistoric archaeological sites* are places where Native Americans lived or carried out activities during the prehistoric period, which is generally defined as before the early 1800s in the study area. Historic-era archaeological sites reflect the activities of people after initial exploration and settlement by the Spanish in the region during the early 1800s. Native American sites can also reflect the historic era. Prehistoric and historic-era sites may contain artifacts, cultural features, subsistence remains, and/or human burials.

4.4.1.2 Scoping Comments

MCWRA received one scoping comment letter from the Native American Heritage Commission pertaining to cultural resources. This comment letter noted that a records search and archaeological inventory survey should be completed for the project and that consultation with California Native American tribes affiliated with the study area should be conducted as early as possible. MCWRA has complied with this request, as described further in Section 4.4.4.1, *Methods for Evaluating Impacts*. Refer to Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* for a complete list of public comments received during the public scoping period.

4.4.2 Regulatory Setting

4.4.2.1 Federal Laws, Regulations, and Policies

A USACE CWA Section 404 permit would be required for the proposed project and the Tunnel Only Alternative construction. As a result, the project constitutes a federal undertaking as defined by Title 54 United States Code (U.S.C.) section 300101 of the National Historic Preservation Act (NHPA) and mandates compliance with 54 U.S.C. section 306108, commonly known as Section 106 of the NHPA, and its implementing regulations found under Title 36 of the Code of Federal Regulations (CFR) section 800, as amended in 2001. To comply with NHPA Section 106, the project proponent must "take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register." Resources included in or eligible for inclusion in the National Register of Historic Places (NRHP) are referred to as *historic properties*. However, compliance with Section 106 of the NHPA is beyond the scope of this EIR. Assuming MCWRA certifies this EIR and approves the proposed project or the Tunnel-Only Alternative, then MCWRA would move forward in seeking appropriate permits from USACE and coordinating on any associated federal environmental review that may be required. Accordingly, Section 106 compliance is not discussed further.

U.S. Army Garrison at Fort Hunter Liggett

Approximately 382 acres of the study area are located at the upstream end of San Antonio Reservoir, on property managed by the U.S. Army Garrison at Fort Hunter Liggett (FHL). FHL has prepared an Integrated Cultural Resources Management Plan Historic Properties Component (HPC) (FHL 2000:1–2). The document presents a set of 12 Standard Operating Procedures (SOPs) that enable FHL to comply with NHPA Section 106 in a programmatic manner. As noted above, compliance with Section 106 is beyond the scope of this EIR. However, assuming MCWRA certifies this EIR and approves the proposed project or the Tunnel-Only Alternative, then MCWRA would be required to adhere to these SOPs.

4.4.2.2 State Laws, Regulations, and Policies

CEQA and State CEQA Guidelines

Pub. Res. Code Section 21084.1 and CEQA Guidelines Section 15064.5 define a *historical resource* for purposes of CEQA as follows:

- A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in, the California Register of Historical Resources (CRHR) (Pub. Res. Code Section 5024.1, Title 14 California Code of Regulations [CCR] Section 4850 *et seq.*).

- A resource included in a local register of historical resources, as defined in Pub. Res. Code Section 5020.1(k), or identified as significant in a historical resource survey meeting the requirements of Pub. Res. Code Section 5024.1(g), will be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided that the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be *historically significant* if the resource meets the criteria for listing in the CRHR (Pub. Res. Code Section 5024.1, Title 14 CCR Section 4852).
- Per CEQA Guidelines section 15064.5, even if a resource does not meet the above criteria, a lead agency is not precluded from determining that the resource may be a historical resource.

The CRHR is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (Pub. Res. Code Section 5024.1[a]). The CRHR criteria are based on NRHP criteria (Pub. Res. Code Section 5024.1[b]). Certain resources are determined by CEQA to be included automatically in the CRHR, including California properties formally eligible for or listed on the NRHP. In order to be considered eligible for the CRHR, a historical resource must generally be at least 50 years old. Prehistoric or historic-period resources must also be significant at the local, state, and/or federal level under one or more of the following criteria in order to be considered a historical resource eligible for the CRHR:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage (Events);
- Is associated with the lives of persons important in our past (Persons);
- Embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values (Design/Construction); or
- Has yielded, or may be likely to yield, information important in prehistory or history (Informational Potential) [14 CCR Section 4852(b)].

For a resource to be eligible for the CRHR, it must also retain enough integrity to be recognizable as a historical resource and convey its significance. A resource that does not retain sufficient integrity to meet the NRHP criteria may still be eligible for listing in the CRHR.

4.4.2.3 Local Laws, Regulations, and Policies

Monterey County

The *Monterey County General Plan* (County of Monterey 2010) guides land use and development in the County's unincorporated areas and contains goals and policies directing growth and protecting cultural resources. Goals and policies in the General Plan related to cultural resources include encouraging conservation and identification of archaeological resources, native Californian cultural sites, sacred places, and burial sites; establishing a Native Californian Advisory Panel; and preserving structures and areas that contribute to the County's historical heritage.

San Luis Obispo County

The *San Luis Obispo County General Plan* (2010) guides land use and development in San Luis Obispo County's unincorporated areas and contains goals and policies directing growth and protecting cultural resources. Goals and policies in the general plan related to cultural resources include preserving and protecting County historical resources and known and potential Native American and archaeological resources.

4.4.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to cultural resources is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.4.3 Environmental Setting

4.4.3.1 Prehistory

Prehistoric research in the Central Coast region dates back to the early 1900s, although the bulk of archaeological excavations date to the 1960s and later. Jones et al. (2007) summarize earlier archaeological work that was completed by researchers such as Reinman, Clemmer, Pohorecky, Leonard and colleagues, and others. Based on these studies and later work, Jones et al. (2007) present a synthetic overview of prehistoric adaptive change in California's Central Coast, a region that spans the coastal and peri-coastal areas of San Mateo County in the north to San Luis Obispo County in the south.

The temporal framework promoted by Jones et al. (2007) and others (Farquhar et al. 2011; Stevens et al. 2013) spans a period of approximately 10,000 to 12,000 years and is divided into six different periods. The periods track perceived changes in prehistoric culture through changes in artifact types and frequency and faunal remains identified in the archaeological record over time. **Table 4.4-1** summarizes the cultural chronology.

Table 4.4-1. California Central Coast Chronology

Temporal Period	Date Range[1]
Paleo-Indian	Pre-9950 BP
Millingstone	9950–5450 BP
Early	5450–2550 BP
Middle	2550–950 BP
Middle-Late Transition	950–700 BP
Late	700–181 BP

Source: Jones et al. 2007.
[1] Year Before Present (BP). Present is 1950 AD.

Paleo-Indian Period

The Paleo-Indian Period represents initial human occupation in the area; however, evidence of their presence is quite sparse across the region. On the mainland, artifacts dating to this time are mainly isolated artifacts or sparse lithic scatters. In the San Luis Obispo area, fluted points are documented near the towns of Nipomo and Santa Margarita. The traditional interpretation is that people living during this time were highly mobile hunters whose subsistence efforts focused on large mammals.

Erlandson et al. (2007) proposes an alternative perspective and suggests a "kelp highway" hypothesis for the peopling of the Americas. Proponents of this model argue that the earliest inhabitants of the region focused their economic pursuits on coastal resources. Archaeological sites that support this hypothesis are mainly from the Santa Barbara Channel Islands.

Millingstone Period

In contrast to sparse evidence for the Paleo-Indian Period, archaeologists report sites dating to the Millingstone Period at several locations across the Central Coast. David Banks Rogers first identified this pattern in southern California as containing abundant handstones, millingstones, cores, and cobble tools, along with a sparse, simple flaked stone assemblage. Wallace further documented the pattern, and Greenwood recognized a Central Coast Millingstone component at the archaeological site CA-SLO-2 (located south of Morro Bay). Since that time, archaeologists have documented additional sites with Millingstone components along the central coast (Fitzgerald and Jones 1999).

Millingstone assemblages are characterized by abundant millingstones and handstones, core and core-cobble tools, thick rectangular (L-series) *olivella* beads, and a low incidence of projectile points, which, when present, can be lanceolate or large, side-notched varieties (Jones et al. 2007). Eccentric crescents are also found in Millingstone components. Sites are often associated with shellfish remains and small mammal bones, which suggests a collecting-focused economy. Contrary to these findings, deer remains are abundant at some Millingstone sites (cf. Jones et al. 2008), which suggests a flexible subsistence focus. People living during the Millingstone era appear to have been highly mobile.

Early Period

The Early Period corresponds with the earliest era of what Rogers called the *Hunting Culture* (Jones et al. 2007:138). According to Rogers, the Hunting Culture continues through to the time of the Middle-Late Transition, as defined in the present framework. The Early Period is marked by a greater emphasis on formalized flaked stone tools, such as projectile points and bifaces, and the initial use of mortar and pestle technology. Early Period sites are located in more varied environmental contexts than Millingstone sites, suggesting more intensive use of the landscape than previously evidenced.

Archaeologists have long debated whether the shift in site locations and artifact assemblages during this period represents either population intrusion as a result of mid-Holocene warming trends, or an in-situ adaptive shift. The initial use of mortars and pestles during this period appears to reflect a more labor-intensive economy associated with the adoption of acorn processing.

Middle Period

The trend toward greater labor investment is apparent in the Middle Period. During this time, there is increased use of plant resources, more long-term occupation at habitation sites, and a greater variety of smaller, use-specific localities. Artifacts common to this era include contracting-stemmed projectile points, a variety of *olivella* shell beads, and *haliotis* ornaments. Bone tools and ornaments are also common, especially in the richer coastal contexts, and circular shell fishhooks come into use. Grooved stone net sinkers are also found in coastal sites. Mortars and pestles become more common than millingstones and handstones at some sites (Jones et al. 2007:139).

Jones et al. (2007) discuss the Middle Period in the context of Rogers' Hunting Culture because it is seen as a continuation of the pattern that begins in the Early Period. This pattern reflects a greater emphasis on labor-intensive technologies that include projectile and plant processing technologies. Additionally, faunal remains highlight a shift toward prey species that are more labor-intensive to capture, which is interpreted as evidence of greater search and processing time or more labor-intensive technologies. These labor-intensive species include small schooling fishes, sea otters, rabbits, and plants such as acorns. Jones and Haney (2005:34) offer that Early and Middle Period sites are difficult to distinguish without shell beads due to the similarity of artifact assemblages.

Middle-Late Transition Period

The Middle-Late Transition marks the end of Rogers' Hunting Culture, which seems to occur sometime during this era. Artifacts associated with the Middle-Late Transition include contracting-stemmed, double side-notched, and small leaf-shaped projectile points. The latter are thought to represent the introduction of bow and arrow technology to the region. A variety of *olivella* shell bead types are found in these deposits, along with notched line-sinkers, hopper mortars, and circular shell fishhooks (Jones et al. 2007).

The Middle-Late Transition is a time that appears to correspond with social reorganization across the region. This era is also a period of rapid climatic change known as the *Medieval Climatic Anomaly*. Jones and colleagues propose the Medieval Climatic Anomaly as an impetus for the cultural change that was a response to fluctuations between cool-wet and warm-dry conditions that characterize the event (Jones et al. 1999). Middle-Late Transition sites in San Luis Obispo County seem to represent population aggregations. Examples include archaeological sites CA-SLO-9, interpreted as a year-round coastal occupation site south of Morro Bay; CA-SLO-239, a large architectural feature located near Morrow Bay; CA-SLO-536, an extensive bedrock mortar complex adjacent to Chorro Creek, slightly inland from Morro Bay; and CA-SLO-1778, a substantial floor feature near Camp Roberts on a terrace above the Nacimiento River.

Late Period

Late Period sites are found in a variety of environmental conditions and include newly occupied task sites and encampments, as well as previously occupied localities. Artifacts associated with this era include cottonwood and desert side-notched arrow points, flaked stone drills, steatite and clamshell disc beads, *haliotis* disc beads, *olivella* bead. Millingstones, handstones, mortars, pestles, and circular shell fishhooks continued to be used (Jones et al. 2007; Stevens et al. 2013).

Coastal sites dating to the Late Period tend to be more resource-acquisition or processing sites, whereas residential occupation is more common inland (Jones et al. 2007:140).

4.4.3.2 Ethnography

The Salinan Tribe historically occupied the portion of the Central Coast in which the project is situated. The Salinan were Hokan speakers and were bordered to the north by the Esselen and Ohlone, to the east by the Yokuts, and to the south by the Chumash (Milliken and Johnson 2003). Descendants of these tribes continue to reside in the area today (see Section 4.5, *Tribal Cultural Resources*).

Information about Salinan lifeways can be gleaned from a variety of records that reference mission records and salvage ethnographies that were conducted and variably reported by Mason (1912) and Kroeber (1925), among others. Diaries from the Gaspar de Portolá expedition record the first documented European contact with the Salinan, and diaries from members of the party describe some early observations (Jones and Haney 2005). Hester (1978) compiled many of the early documents for a brief ethnography of the Salinan.

Social Organization

The Salinan had a tribelet organization comprising individual villages that were autonomous governing units. Villages are thought to have been small, generally less than 100 individuals. Larger villages had hereditary chiefs. There may have been two mutually intelligible dialects of the Salinan language. The northern one was known as Antoniaño and the southern as Migueleño (Hester 1978:500). Mission records also indicate the possibility of a third Salinan language group, Playano, thought to be from the coastal areas. Little is known about Playano speakers, and some anthropologists infer that the Playano dialect may have been a variant of the northern Chumash and not Salinan (Jones and Haney 1997).

Social relations with neighboring groups varied. Mason (1912) reports that the Salinan and Yokuts (to the east) had positive trade relations with one another. Goods traded included shell beads and unworked shells exchanged for salt grass salt, obsidian, seeds, lake fish, and possibly animal skins. Social interaction between their northern and southern neighbors was somewhat more hostile.

Subsistence and Settlement

The Salinan were hunter-gatherers who moved seasonally according to the weather and timing of food resources. Mason (1912) reports that there were 20 villages within a 20-mile radius of Mission San Antonio, in addition to occupation sites along the coast or near-coastal stream banks. He identified two village sites along the San Antonio River in the vicinity of the proposed project: *na'sil* (*Assil* in Hester 1978) near the town of Pleyto, and *sape-wis*, downstream from Pleyto. Kroeber (1925) listed the village of Tetachoya upstream from Pleyto.

Mason (1912) documents that the Salinan ate a variety of plant and animal resources, including six different species of acorn. Oak species may have included coast live oak (*Quercus agrifolia*), valley oak (*Q. lobata*), and blue oak (*Q. douglasii*). Other plant foods included pine nuts, small seeds such as chia, wild oats, sage seeds, sunflower, grasses, berries, and wild fruits. Animal resources likely included deer, rabbits, and various species of fish and shellfish (Hester 1978).

Material Culture

The Salinan made good use of local materials for their daily needs (Hester 1978). Chert was used to create hunting tools, such as projectile points and bifaces, along with utilitarian tools, such as scrapers and choppers. Groundstone implements, such as bowl mortars, hopper mortars, pestles, milling slabs, pigment-grinding mortars, and bedrock mortars, were used to process plant materials, such as acorns and pine nuts. The Salinan used a variety of other material in daily life, including bone awls, C-shaped shell fishhooks, stone and shell bowls, wooden-hafted stone knives, wooden utensils, stone arrow-shaft straighteners, and notched-pebble net sinkers. Basketry from local plants (i.e., tule, white willow, fern, and bunchgrasses) was used for hopper mortar baskets, storage, cooking, and leaching. Willow twig was used to make acorn granaries to store the nuts before processing. The Migueleño were reported to have employed nets to hunt rabbits.

Trade with the Chumash to the south brought steatite vessels to Salinan territories, although some steatite and serpentine ornaments were created locally (Hester 1978). Shell beads made from mussel or abalone from the coast formed the basis of trade currency.

Housing for Salinan family units included dome-shaped structures approximately 10 feet in diameter that were made from a pole framework covered by tule or rye grass. A hole in the top of the structure was left for the smoke of a small fire to escape.

The Salinan made clothing from tule or skins from rabbit or otter. Hats were made from basketry, and nasal and ear ornaments were made of abalone shell (Hester 1978). Leisure activities include a bone game, ball races, and musical instruments made from cocoon rattles, wooden rasps, rattles and flutes, whistles made of bone, and drums (Hester 1978).

Ethnohistory

The Portolá Expeditions of 1769 and 1770 led the first Europeans into Salinan territory, when the coastal exploration turned inland along the San Carpoforo Creek through the Santa Lucia Range. The diaries of the explorers included descriptions of friendly and hospitable interactions with the Salinan people, who moved around regularly to take advantage of seasonal resources (Jones and Haney 2005).

Milliken and Johnson (2003) reviewed these diaries and noted that Pedro Fages, a Spanish Lieutenant who accompanied Portolá in the expeditions, described some aspects of the Salinan in his 1775 report. Fages mentions the hostility felt between the Salinan and their adversaries, stating that "They are continually at war with their neighbors" (in Milliken and Johnson 2003). Fages also observed that the sociopolitical organization was distinct from their neighbors to the south, where each village had a single leader. Within Salinan territory, Fages commented that "besides their chiefs of villages, they have in every district another one who commands four or five villages together, the village chiefs being his subordinates" (in Milliken and Johnson 2003).

Mission records provided a great deal of knowledge about Salinan village and tribelet locations. Milliken and Johnson (2003) did an exhaustive study on the registers of baptisms, marriages, and deaths from the missions at San Antonio, San Luis Obispo, and San Miguel. Although there was great variation in the way each priest recorded the place of origin of the neophytes, many villages were identified of the 205 place names mentioned in mission records. Early converts at the San Antonio mission included those from the Salinan villages of Lamaca, Lima, and Quinau, which were located within 10 miles of the mission. Salinan locations identified in the study area are the districts of Lima and Janulo and the villages of Tetachoya and Azzil (Milliken and Johnson 2003).

Mission San Antonio's inhabitants grew quickly from 313 in 1776 to 1,176 in 1797, occupied largely by natives from the above locations, as well as a multi-village district called Papuco that stretched from the San Antonio Valley to the Salinas River. Mission San Miguel, located about 40 miles southeast of Mission San Antonio along the Salinas River, was founded in 1795 to accommodate more neophytes.

4.4.3.3 Historic Era

The following discussion of the historic era draws largely upon information presented by Eidsness and Jackson (1994). The Historic Period begins at contact between the Salinan and the Spaniards in 1769, when Spanish explorer Gaspar de Portolá set out to find Monterey Bay. By 1770, Portolá established Spanish rule in the area, securing New Spain's territory of Alta California through Spanish-controlled missions and pueblos. It was at this time that the capital of Alta California was established at the Presidio of Monterey. Mission San Antonio de Padua, the third Spanish Mission in California, was established shortly thereafter, in 1771, by Father Junípero Serra, approximately 12 miles northwest of the study area. The Salinan were conscripted for labor by the mission establishment, and many of their past social customs and lifeways were gradually lost.

After its independence from Spain in 1821, Mexico secularized the California missions. The Mission San Antonio holdings were split into 10 separate land grants. A large portion of the Pleyto land grant is located within the project study area, partially submerged under San Antonio Reservoir. After secularization, many Native Americans remained in the area and worked on established cattle ranches.

Mexico ruled Alta California for 27 years, until the territory was ceded to the United States through the Treaty of Guadalupe Hidalgo in 1848. Two years later, when California became a state, many Mexican land grants fell into the hands of Americans. Also in 1850, people reported finding gold near Jolon, which brought miners and other entrepreneurs to the area. El Camino Real, the road connecting the Missions, became a thoroughfare for the incoming Gold Rush newcomers, and stagecoach stops were set up along the way. Jolon was one stop, and a second was the small town of Pleyto, which was developed along the San Antonio River to the south. By 1870, a post office was established at the town, which operated under the names *Pleito, Pleyto*, or *Playto*. The small village included a store, hotel, blacksmith shop, dance hall, and school. The post office, which was recorded as P-27-000872 (CA-MNT-804H), closed in 1925, and the town slowly depopulated, leaving nothing more than a ghost town. In 1964, when the San Antonio Dam was built, the town of Pleyto was flooded and the remains, including P-27-000872 (CA-MNT-804H), now lie under San Antonio Reservoir.

In the mid-1920s, William Randolph Hearst purchased several land grants and smaller holdings in the area. These were operated as the Piedmont Land and Cattle Company. Hearst and his architect, Julia Morgan, built a hacienda-style complex at the location of the former Rancho Milpitas, near Mission San Antonio, which served as headquarters for Hearst's ranching business and a guest house. This complex is about 30 air miles northeast of what was called La Cuesta Encantada, commonly known today as Hearst Castle.

In 1940, prior to the United States entering World War II, the U.S. Army purchased Hearst's and other neighbors' area holdings to create a 266,950-acre training base known as the Hunter Liggett Military Reservation (FHL). Hearst's hacienda became the lodging for military staff and the grounds were used to train soldiers under the command of nearby Camp Roberts. In 1952, FHL came under the jurisdiction of Fort Ord in Monterey, acting as a sub-installation to train the 7th Light Infantry Division and evaluate new Army and Marine Corps weapons. In 1994, Fort Ord was closed and command of FHL was transferred to the Army Reserves.

4.4.4 Impact Analysis

4.4.4.1 Methods for Evaluating Impacts

To determine whether the proposed project and the Tunnel-Only Alternative would result in any significant impacts on cultural resources, this analysis focuses on reasonably foreseeable effects of construction and operations relative to baseline conditions. The analysis considers reasonably foreseeable potential direct and indirect impacts of the proposed project and the Tunnel-Only Alternative.

This analysis is based on the significance criteria of CEQA Guidelines Appendix G. Cultural resources above the proposed maximum WSE associated with the proposed project of 787 feet and below the current maximum WSE of 780 feet would not be affected by the project. In addition, operations may involve minor maintenance activities that would not result in ground disturbance and would have no impact on cultural resources.

Records Search

Because of the location of the project, two records searches were conducted at information centers maintained as part of the California Historical Resources System (CHRIS). One was undertaken at the Northwest Information Center (NWIC) at Sonoma State University, which covers Monterey County; the other was undertaken at the Central Coast Information Centers (CCIC) at the University of California, Santa Barbara, which covers San Luis Obispo County.

The records search reviewed the CHRIS database for previously conducted cultural resources studies and previously identified cultural resources within the study area. The records search also reviewed a 0.5-mile area surrounding the study area to understand the archaeological sensitivity in the vicinity of the study area. This search included review of the following:

- Local historical inventories
- Historical literature
- USGS topographic maps
- General Land Office maps
- Rancho Plat maps

Previous Cultural Resources Studies within the Study Area

A review of the material listed above found that 25 cultural resources studies have been conducted within 0.5 mile of the study area. The NWIC listed another nine studies within the records search area that lacked sufficient information to enable accurate mapping of their locations. Within San Luis Obispo County, the CCIC identified only one study within 0.5 mile of San Antonio Reservoir and seven studies in proximity to Nacimiento Reservoir; none were within the study area.

Previously Recorded Cultural Resources within the Study Area

In addition to the studies listed above, the records searches identified three previously recorded cultural resources at San Antonio Reservoir. No previously recorded resources were identified at Nacimiento Reservoir.

The three resources identified within the cultural resources study area are described below. Although these resources have not been formally evaluated for NRHP-listing, it is assumed that one of them, the Camino Real/Caretta Trail, would meet the eligibility criteria for listing on the NRHP/CRHR.

- **P-27-000063 (CA-MNT-1776)**. This resource consists of a sparse surface concentration of lithic debitage on an open terrace on the southern side of San Antonio Reservoir. This resource has not been formally evaluated for NRHP-listing.
- **P-27-000872 (CA-MNT-804H)**. This resource consists of the approximate location of Pleyto Post Office, a 2-acre stage stop. This resource has already been inundated and exists below the current level of San Antonio Reservoir. This resource has not been formally evaluated for NRHP-listing. However, the resource would not be affected by project operation because it was submerged during the original filling of San Antonio Reservoir.
- **P-27-001557 (CA-MNT-1563/H)**. This resource consists of a 1.5-mile-long portion of the Camino Real/Caretta Trail where it reaches the edge of San Antonio Reservoir and likely continues beneath the current water level. The Camino Real/Caretta Trail was a primary thoroughfare during the Mission period, connecting Mission San Antonio with San Miguel Mission to the south, to Soledad Mission to the north. Jolon was one settlement along the route, and a second was the small town of Pleyto, which is now submerged under San Antonio Reservoir. Camino Real has been heavily affected by creek erosion, modern road construction, and military activities. However, Camino Real is currently the focus of an effort by the California Missions Foundation (CMF) to designate the road as a UNESCO World Heritage Cultural Corridor. The road served Native Americans, Spanish explorers, Spanish missionaries, and Mexican colonists, stretching from Los Cabos in Baja California north to Sonoma in northern California (CMF 2018). It is assumed that Camino Real would meet the eligibility criteria for listing on the NRHP/CRHR.

Previously Recorded Cultural Resources within 0.5 Mile of the Study Area

Nine resources were identified outside of the study area, but within 0.5 mile of San Antonio Reservoir, and two resources were identified outside of the study area, but within 0.5 mile of Nacimiento Reservoir. Additionally, FHL provided the location of a newly recorded site on their property, within the 0.5-mile search radius. These resources would not be affected by the proposed project or Tunnel-Only Alternative. **Table 4.4-2** lists all previously recorded cultural resources within the records search buffer.

Table 4.4-2. Cultural Resources Previously Recorded within 0.5 Mile of the Study Area

P Number	Trinomial	Site Type	Site Attributes	CRHR/NRHP Eligibility	General Location
P-27-000058	CA-MNT-1771	Prehistoric	Lithic scatter, habitation debris	Has not been subject to formal evaluation	San Antonio Reservoir 0.5-mile search radius
P-27-000961	CA-MNT-903	Prehistoric/ Historic	Lithic scatter	Has not been subject to formal evaluation	San Antonio Reservoir 0.5-mile search radius
P-27-000962	CA-MNT-904	Prehistoric	Lithic scatter	Has not been subject to formal evaluation	San Antonio Reservoir 0.5-mile search radius

P Number	Trinomial	Site Type	Site Attributes	CRHR/NRHP Eligibility	General Location
P-27-001526	CA-MNT-1530H	Historic Roberson Site	Foundations/structure pads, landscaping/ orchard, water conveyance system, machinery	Determined not eligible for CRHR/ NRHP listing	San Antonio Reservoir 0.5-mile search radius
P-27-001664	CA-MNT-1692H	Historic	Foundations/structure pads, privies/dumps/ trash scatters, roads/trails/ railroad grades, excavated pits	Has not been subject to formal evaluation	San Antonio Reservoir 0.5-mile search radius
P-27-001747	CA-MNT-1832	Prehistoric	Lithic scatter, quarry	Has not been subject to formal evaluation	San Antonio Reservoir 0.5-mile search radius
P-27-001748	CA-MNT-1833	Prehistoric	Lithic scatter	Has not been subject to formal evaluation	San Antonio Reservoir 0.5-mile search radius
P-27-002431	CA-MNT-2431H	Historic Laguna Canyon Adobe	Adobe building/ structure	Has not been subject to formal evaluation	San Antonio Reservoir 0.5-mile search radius
P-27-003416	CA-MNT-3416	Prehistoric	Lithic scatter	Has not been subject to formal evaluation	San Antonio Reservoir 0.5-mile search radius
P-40-000134	CA-SLO-134	Prehistoric	Lithic scatter	Has not been subject to formal evaluation	Nacimiento Reservoir 0.5-mile search radius
P-40-000135	CA-SLO-135	Prehistoric	Lithic scatter	Has not been subject to formal evaluation	Nacimiento Reservoir 0.5-mile search radius
FHL-16-01[a]		Prehistoric	Unknown	Has not been subject to formal evaluation	San Antonio Reservoir 0.5-mile search radius

[a.] Site location provided by Fort Hunter Liggett.

Archaeological Field Survey

A pedestrian survey of the cultural resources study area was conducted by qualified staff from Dudek and Horizon Water and Environment, LLC, in October and November 2016, with a supplemental survey occurring in March 2018 (Horizon 2018). A total of 1,637 acres, a large portion of which occurred around San Antonio Reservoir and at Nacimiento Reservoir, was subject to archaeological survey with transects no more than 10 to 15 meters apart. The survey area was inspected for indicators of human activity, such as dark midden soils, dietary shell and bone, stone or bone artifacts, and historic artifacts. The area was also examined for any larger, earthen features, such as mounds or depressions, and historic features, structures, and landscapes.

- **Previously Recorded Cultural Resources**. A record search identified the locations of the three previously recorded cultural resources within the cultural resources study area. These resources were revisited during the field survey and Department of Parks and Recreation (DPR) 523 form updates were completed.

- **Previously Undocumented Cultural Resources**. Eleven previously undocumented cultural resources were identified as a result of the pedestrian survey. These newly recorded resources include three prehistoric resources and eight historic-era resources. DPR 523 forms were created for each resource; however, the resources have not been subject to formal CRHR or NRHP eligibility determinations.
- **Previously Undocumented Cultural Resources Identified within the Cultural Resources Study Area**. Eight of the 11 previously undocumented resources that were identified during the pedestrian survey fall within the cultural resources study area and are listed in **Table 4.4-3**.

  Of the previously undocumented cultural resources identified within the cultural resources study area during the pedestrian survey, only one, IL-SB-S-05 (highlighted in bold in **Table 4.4-3**, is within maximum WSE at San Antonio Reservoir that would occur with the proposed project. The others were either previously submerged or outside of the inundation zone. No previously undocumented cultural resources were identified within the areas of ground disturbance.

Table 4.4-3. Previously Undocumented Archaeological Sites Recorded during Archaeological Field Survey within the Cultural Resources Study Area

ID	Site Type	Description	Elevation (feet)	General Location	Anticipated Project Activity
IL-SB-S-01	Historic era	Circular foundations	795	Northeastern end of San Antonio Reservoir	Outside of the inundation zone
IL-SB-S-02	Historic era	Foundations	778	Northern side of San Antonio Reservoir	Previously submerged
IL-SB-S-03	Historic era	Historic refuse scatter	780	Northern side of San Antonio Reservoir	Previously submerged
IL-SB-S-05	**Historic era**	**Foundations**	**781**	**Northern side of San Antonio Reservoir**	**Inundation within maximum WSE**
IL-SB-S-06	Historic era	Foundation	773	Southern side of San Antonio Reservoir	Previously submerged
IL-SB-S-07	Prehistoric	Lithic scatter	770	Northern side of San Antonio Reservoir	Previously submerged
IL-SB-S-08	Historic era	Foundations	745	Southern end of San Antonio Reservoir	Previously submerged
IL-SB-S-11	Historic era	Circular concrete base	775	Southern side of San Antonio Reservoir	Previously submerged

WSE = water surface elevation

- **Previously Undocumented Cultural Resources Identified outside the Cultural Resources Study Area**. The remaining three previously undocumented resources that were identified during the pedestrian survey are outside the cultural resources study area and are listed in **Table 4.4-4**.

Table 4.4-4. Previously Undocumented Archaeological Sites Recorded during Archaeological Field Survey outside the Cultural Resources Study Area

ID	Site Type	Description	Elevation (feet)	General Location	Anticipated Project Activity
IL-SB-S-04	Prehistoric	Bedrock mortar feature	794	Northern side of San Antonio Reservoir	Outside of the inundation zone
IL-SB-S-09	Prehistoric	Lithic scatter	799	Southwestern side of San Antonio Reservoir	Outside of the inundation zone
IL-SB-S-10	Historic era	Circular concrete container	795	Southwestern side of San Antonio Reservoir	Outside of the inundation zone

Fifteen isolated artifacts were also recorded during the pedestrian survey. These included 11 of prehistoric Native American origin and four artifacts of the historic era. DPR forms were created for each of the isolated artifacts listed below; however, isolated artifacts are not usually considered eligible for NRHP/CRHR-listing because of their limited research potential.

Built-Environment Resources

Through archival research, the record search, and pedestrian survey, one built-environment structure of historic age was identified and recorded, the San Antonio Dam and Spillway (Horizon 2018). Construction of the San Antonio Dam and Spillway was completed in 1967 by the Monterey County Flood Control and Water Conservation District.[2] On November 21, 2017, Horizon cultural resources specialists conducted fieldwork to record this structure. Qualified staff members were provided access, a pedestrian survey was conducted, and the structure was thoroughly documented with photographs. Qualified staff members completed a DPR 523 form with a full NRHP/CRHR evaluation, and the structure was assumed not eligible for the NRHP/CRHR. Based on this evaluation, there are no known eligible built-environment resources within the study area.

Summary of Native American Outreach and Consultation

Consistent with AB 52 and the CEQA Guidelines, a Horizon cultural resources specialist, on behalf of the MCWRA, requested that the NAHC provide a list of tribes who are traditionally and culturally related to the study area on March 18, 2016, for the purpose of project notification under Pub. Res. Code Section 21080.3.1(d). However, informal Native American outreach was also conducted by a Horizon cultural resources specialist in order to identify potential archaeologically sensitive areas, as well as TCRs within the study area. A brief summary of the Native American outreach conducted is provided below. Details pertaining to Native American consultation under Pub. Res. Code Section 21080.3.1(d) are provided in Section 4.5, *Tribal Cultural Resources*.

On May 18, 2016, a Horizon cultural resources specialist, on behalf of the MCWRA, contacted the NAHC to request a Sacred Lands File (SLF) search and a list of tribal representatives who may have additional knowledge of potential sensitive areas within the cultural resource study area. The NAHC

[2] The Monterey County Flood Control and Water Conservation District became known as MCWRA in 1991.

returned a negative SLF search result and provided a list of seven tribal representatives, who were contacted by letter on June 9, 2016. The outreach letters were intended to inform the individuals and organizations about the project and request information about potentially sensitive areas within or adjacent to the cultural resources study area. A project location map was included with each letter.

4.4.4.2 Criteria for Determining Significance

Appendix G of the CEQA Guidelines provides guidance on assessing whether a project would have significant impacts on the environment. Consistent with Appendix G and in consideration of project-specific environmental conditions, MCWRA has determined that the project would have significant cultural resources impacts if it would:

a. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5; or

b. Disturb any human remains, including those interred outside of dedicated cemeteries.

The following CEQA criterion has been dismissed from further consideration:

c. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5

The proposed project and Tunnel-Only Alternative have no potential to cause a substantial adverse change in the significance of a built historical resource because none are present in the study area. One historic-age property, the San Antonio Dam and Spillway, was evaluated against the CRHR criteria and found to not meet the criteria for listing in the CRHR. No other resources were identified that meet the definition of CEQA historical resources (CEQA Guidelines Section 15064.5(a)).

4.4.4.3 Applicable Avoidance and Minimization Measures

No AMMs are proposed that pertain to cultural resources.

4.4.4.4 Impacts and Mitigation Measures

Impact CUL-1: Impacts on Archaeological Resources

Construction

During the records search at the NWIC or the CCIC of CHRIS, no previously recorded archaeological resources were identified within the area of proposed ground disturbance. Additionally, no previously undocumented archaeological resources were identified during pedestrian survey within the area of proposed ground disturbance. However, this does not preclude the possibility that project-related ground disturbance could encounter as-yet undocumented archaeological resources during construction of either the proposed project or Tunnel-Only Alternative.

Given the prehistoric and historic-era use of this area there is potential for as-yet undocumented archaeological resource to be present below the current ground surface. Ground disturbance associated with the proposed project and Tunnel-Only Alternative have the potential to encounter these resources.

Operation

Proposed Project

Operation of the proposed project would result in an increase in the maximum WSE at San Antonio Reservoir (from 780 feet to 787 feet). This increase in the inundation zone would affect two previously recorded resources within the proposed maximum inundation area: P-27-000063 (CA-MNT-1776), a sparse concentration of lithic debitage, and P-27-001557 (CA-MNT-1563/H), a portion of the Camino Real Trail, could be periodically subject to inundation as a result of project operation. In addition, as noted above, during a pedestrian survey, one archaeological resource (IL-SB-S-05, a concrete foundation) was identified within the cultural resources study area and between the existing maximum WSE of 780 feet and the proposed maximum WSE of 787 feet (Horizon 2018). Other as-yet undiscovered resources could be exposed during wave-related erosion of the shoreline surrounding San Antonio Reservoir. The inundation of any of these resources could potentially result in erosion and possible destruction of these resources. None of the archaeological resources identified within the inundation zone have been evaluated formally for eligibility for CRHR-listing. If determined to be affected, additional archaeological testing and evaluation should occur at these resource locations to determine CRHR eligibility and the resources' potential to be considered historic properties under CEQA.

Tunnel-Only Alternative

The Tunnel-Only Alternative would not change the maximum WSE at San Antonio reservoir. Therefore, the operation of this alternative would not result in impacts on archaeological resources.

CEQA Conclusion

Construction

Impacts related to cultural resources under the proposed project and Tunnel-Only Alternative would be significant. **MM CUL-1.1** would require all contractors involved in project-related ground disturbance to receive cultural resource sensitivity training prior to conducting work. This would allow early identification should an inadvertent discovery be made during ground disturbance. **MM CUL-1.2** would put a protocol in place to require proper treatment of archaeological resources encountered during project-related ground disturbance. If unanticipated discoveries are made during construction, and the archaeological resources cannot be avoided, **MM CUL-1.5** would require preparation of a Data Recovery Plan prior to construction recommencing in that location.. Implementation of the Data Recovery Plan would provide for adequate treatment, including documentation and preservation, of archaeological resources. Testing would also allow formal evaluation of a resource's eligibility for CRHR listing. The impact would be **less than significant with mitigation**.

Operation

Proposed Project

Impacts related to cultural resources under the proposed project and Tunnel-Only Alternative would be significant. **MM CUL-1.3** would require that MCWRA or the construction contractor retain a qualified archaeologist to conduct archaeological investigations to determine the extent of known significant archaeological resources that could be affected by an increase in the maximum water surface elevation at San Antonio Reservoir. If the extent of significant archaeological resources as mapped per **MM CUL-1.3** indicates such resources would be impacted by an increase in the maximum WSE at San Antonio Reservoir, **MM CUL-1.4** would be required to identify and implement measures to prevent inundation of previously recorded resources within the proposed maximum inundation area. If protection measures as considered in **MM CUL-1.4** are not feasible, **MM CUL-1.5** would require a Data Recovery Plan to be implemented prior to inundation of these resources. Implementation of the Data Recovery Plan would provide for adequate treatment, including documentation and preservation, of archaeological resources. Testing would also allow formal evaluation of a resource's eligibility for CRHR listing. The impact would be **less than significant with mitigation**.

Tunnel-Only Alternative

Operation of the Tunnel-Only Alternative would have **no impact** on cultural resources.

Mitigation Measures

MM CUL-1.1: Preconstruction Archaeological Resources Sensitivity Training

Prior to commencement of the ground disturbance, MCWRA's general contractor and those conducting ground-disturbing activities will be given archaeological sensitivity training regarding archaeological resource protection, resource identification and protection, and the laws and penalties governing such protection. This training will be administered by a qualified archaeologist and will include the following:

- The types of archaeological resources that are likely to be encountered
- The procedures to be taken in the event of an inadvertent archaeological resource discovery
- The penalties for disturbing or destroying archaeological resources

MM CUL-1.2: Unanticipated Discovery Protocol

Should an archaeological resource be encountered during project construction activities, the construction contractor will halt construction within 50 feet of the find and immediately notify MCWRA. Construction activities will be redirected and a qualified archaeologist, in consultation with MCWRA, will 1) evaluate the archaeological resource to determine if it meets the CEQA definition of a historical or unique archaeological resource and 2) make recommendations about the treatment of the resource, as warranted. If the resource does meet the CEQA definition of a historical or unique archaeological resource, then it will be avoided to the extent feasible by project construction activities. If avoidance is not feasible, then adverse effects on the deposit will be mitigated as specified by CEQA Guidelines Section 15126.4(b) (for historic resources) or Section 21083.2 (for unique archaeological resources). This mitigation may include, but is not limited to, a thorough recording of the resource on DPR Form 523 records or archaeological data recovery excavation. If data recovery excavation is warranted, then CEQA Guidelines Section 15126.4 (b)(3)(C), which requires a Data Recovery Plan prior to data recovery excavation, will be followed, as specified in **MM CUL-1.5**. If the identified resources are determined to be significant unique archaeological resources, mitigation of these resources will be subject to the limitations on mitigation measures for archaeological resources identified in CEQA Guidelines Sections 21083.2 (c) through 21083.2 (f).

MM CUL-1.3: Determine Extent of Significant Archaeological Resources

Prior to the start of construction, MCWRA or its construction contractor will retain a qualified archaeologist (QA). The QA will conduct archaeological investigations to determine the extent of known significant archaeological resources that could be affected by construction-related activities, or which could be affected by an increase in the maximum water surface elevation at San Antonio Reservoir.

MM CUL-1.4: Develop and Implement Archaeological Resource Protection Measures

If the qualified archaeologist (QA) determines that significant archaeological resources would be impacted by an increase in the maximum water surface elevation at San Antonio Reservoir, the QA will work with MCWRA prior to the start of operation of the proposed project to assess the feasibility of measures to prevent the inundation and resulting erosion and possible destruction of previously recorded resources within the proposed maximum inundation area. Such measures may include, but are not limited to, construction of an earthen berm, ditch, or wall, around the extent of the known resources to prevent inundation. If these measures are determined to be feasible, they will be implemented prior to operation of the proposed project. If these measures are not feasible, **MM CUL-1.5** would require a Data Recovery Plan to be implemented prior to inundation of these resources.

MM CUL-1.5: Develop and Implement a Data Recovery Plan

MCWRA or its construction contractor will obtain a qualified archaeologist (QA) to prepare and implement a Data Recovery Plan that will provide for the treatment of significant archaeological resources. The Data Recovery Plan will include information regarding how potentially significant archaeological resources will be documented and preserved if construction-related disturbance or operations-related inundation must occur. The results of the Data Recovery Plan will be summarized in a final technical document. At a minimum, the final technical document will include the following:

- Research questions that can be addressed by the collection of data from the defined resource types within the proposed inundation area between 780 feet and 787 feet
- Coordination with local California Native American tribes in accordance with AB 52
- Field methods and procedures for data recovery
- Cataloging and laboratory analysis of materials recovered during data recovery
- Findings and interpretation of data recovery

All technical documents will be submitted to the NWIC at Sonoma State University or the CCIC and at the University of California, Santa Barbara.

Impact CUL-2: Disturb Human Remains

Construction

As discussed in Impact CUL-1, *Impacts on Archaeological Resources*, no previously identified archaeological resources, including resources associated with human remains, were identified within the area of proposed ground disturbance. However, given the prehistoric and historic-era use of this area, there is potential for as-yet undocumented archaeological resources, including those with associated human remains, to be present below the current ground surface. Ground disturbance associated with the proposed project and Tunnel-Only Alternative has the potential to encounter these resources.

Operation

Proposed Project

Operation of the proposed project would result in an increase in the maximum WSE at San Antonio Reservoir (from 780 feet to 787 feet). This increase in the inundation zone would affect two previously recorded resources within the proposed maximum inundation area: P-27-000063 (CA-MNT-1776) and P-27-001557 (CA-MNT-1563/H) would be subject to inundation as a result of project operation. In addition, as noted above, during a pedestrian survey, one archaeological resource (IL-SB-S-05, a foundation), was identified within the cultural resources study area and between the existing maximum WSE of 780 feet and the proposed maximum WSE of 787 feet (Horizon 2018). It is currently unknown whether there are human remains associated with these resources. However, the inundation of these resources could potentially result in erosion and possible destruction of these resources with the potential to encounter human remains.

Tunnel-Only Alternative

The Tunnel-Only Alternative would not change the maximum WSE of San Antonio Reservoir. Therefore, the operation of this alternative would not result in impacts on human remains.

CEQA Conclusion

Construction

For both the proposed project and Tunnel-Only Alternative, impacts related to human remains would be significant. **MM CUL-1.1** would require all contractors involved in project-related ground disturbance to receive cultural resource sensitivity training prior to conducting work. This would allow early identification should an inadvertent discovery be made during ground disturbance. **MM CUL-1.2** would put an unanticipated discovery protocol in place to require proper treatment of archaeological resources encountered during project-related ground disturbance. **MM CUL-1.3** would require a Data Recovery Plan to be implemented at the resource locations listed above. Implementation of the Data Recovery Plan would allow for the identification of human remains associated with any of the previously identified archaeological resources. **MM CUL-2.1** would provide a protocol for the proper treatment of human remains, if encountered. The impact would be **less than significant with mitigation**.

Operation

Proposed Project

The proposed project's impacts related to human remains would be significant. **MM CUL-1.3**, *Develop and Implement a Data Recovery Plan*, would be implemented at the resource locations listed above. Implementation of the Data Recovery Plan would allow for the identification of human remains associated with any of the previously identified archaeological resources. **MM CUL-2.1** would require implementation of a protocol for the proper treatment of human remains, if encountered. The impact would be **less than significant with mitigation.**

Tunnel-Only Alternative

Operation of the Tunnel-Only Alternative would have **no impact** on human remains.

Mitigation Measures

MM CUL-2.1: Proper Treatment of Human Remains

According to the provisions in CEQA, if human remains are encountered at the project site, MCWRA's construction contractor will halt construction within 50 feet of the find and immediately notify the coroner. The coroner will then determine if the human remains are modern and require an investigation into the cause of death. If the remains are historic and the coroner determines them to be Native American, the coroner will notify the NAHC within 24 hours, which will, in turn, notify the person the NAHC identifies as the most likely descendent (MLD) in connection with any human remains. Further actions will be determined, in part, by the desires of the MLD. The MLD will have 48 hours to make recommendations regarding the disposition of the remains following notification from the NAHC of the discovery. If the MLD does not make recommendations within 48 hours, the owner will, with appropriate dignity, re-inter the remains in an area of the property secure from further disturbance. Alternatively, if the owner does not accept the MLD's recommendations, the owner or the descendent may request mediation by the NAHC. According to California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052).

4.4.5 Impact Summary

Table 4.4-5 provides a summary of the significance of potential impacts on cultural resources.

Table 4.4-5. Summary of Impacts on Cultural Resources

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact CUL-1: Impacts on Archaeological Resources			
Proposed Project	Construction: Significant	**MM CUL-1.1** **MM CUL-1.2** **MM CUL-1.3** **MM CUL-1.5**	Less than significant
	Operation: Significant	**MM CUL-1.3** **MM CUL-1.4** **MM CUL-1.5**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM CUL-1.1** **MM CUL-1.2** **MM CUL-1.3**	Less than significant
	Operation: No Impact	N/A	N/A

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact CUL-2: Disturb Human Remains			
Proposed Project	Construction: Significant	**MM CUL-1.1** **MM CUL-1.2** **MM CUL-1.3** **MM CUL-2.1**	Less than significant
	Operation: Significant	**MM CUL-1.3** **MM CUL-2.1**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM CUL-1.1** **MM CUL-1.2** **MM CUL-1.3** **MM CUL-2.1**	Less than significant
	Operation: No Impact	N/A	N/A

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4.5 Tribal Cultural Resources

4.5.1 Overview

This section describes current knowledge about tribal cultural resources (TCRs) within the cultural resources study area and evaluates the potential impacts of the proposed project and the Tunnel-Only Alternative on those resources.

TCRs are features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe. Archaeological sites and burial sites can also be TCRs.

4.5.1.1 Study Area

The study area for TCRs is the same as the cultural resources study area described in Section 4.4, *Cultural Resources*. It includes the following project features:

- The Interlake Tunnel and associated subcomponents and all associated construction work areas, including staging areas, access roads, and the soil disposal area.
- The Spillway Modification and associated subcomponents and all areas within the construction work limits, including the staging area.
- The area around San Antonio Reservoir that would be potentially inundated following project implementation, which is understood to be the land area between:
  - The *existing* maximum WSE (780 feet)
  - The *with-project* maximum WSE (787 feet)

An additional 50-foot buffer was also incorporated into the study area in some locations to ensure adequate survey coverage around the tunnel portals and along access routes to account for design refinements in road alignments, staging areas, tunnel shaft locations, or other project components.

The proposed tunnel alignment is not included in the study area because the tunnel would be located deep below the ground surface in Pleistocene-aged or older deposits, which would preclude the potential for encountering cultural resources (see Section 4.2, *Geology, Soils, and Seismicity, and Paleontological Resources*).

4.5.1.2 Scoping Comments

MCWRA received one scoping comment letter pertaining to cultural resources from the NAHC. This comment letter noted that a records search and archaeological inventory survey should be completed for the project and that consultation with California Native American tribes affiliated with the study area should be conducted as early as possible. MCWRA has complied with this request, as described further in Section 4.5.3.2, *Native American Consultation*. Refer to Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* for a complete list of public comments received during the public scoping period.

4.5.1.3 Definitions

Tribal Cultural Resources

As defined in California Public Resources Code Section 21074 (a, b, and c), TCRs are:

(a.1) Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Native American tribe that are either of the following:

A. Included or determined to be eligible for inclusion in the CRHR; or

B. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

(a.2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

(b) A cultural landscape that meets the criteria of subdivision (a) is a TCR to the extent that the landscape is geographically defined in terms of the size and scope of the landscape; and

(c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms to the criteria of subdivision (a).

4.5.2 Regulatory Setting

4.5.2.1 Federal Laws, Regulations, and Policies

Federal law does not address TCRs because these resources are defined in the California Public Resources Code.

4.5.2.2 State Laws, Regulations, and Policies

AB 52, which was approved in September 2014 and went into effect on July 1, 2015, requires state lead agencies to consult with the California Native American tribe that is traditionally and culturally affiliated with the geographic area of a proposed project, if so requested by the tribe. The bill, Pub. Res. Code Section 21084.2, also specifies that a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment.

Mitigation measures for TCRs must be developed in consultation with the affected California Native American tribe pursuant Pub. Res. Code Section 21080.3.2 or Pub. Res. Code Section 21084.3, which identifies mitigation measures that call for avoidance and preservation of TCRs as well as treating TCRs with culturally appropriate dignity, taking into account the tribal cultural value and meaning of the resource.

Outreach and consultation with California Native American tribes under AB 52 is required for the proposed project.

4.5.2.3 Local County Laws, Regulations, and Policies

Neither the *Monterey County General Plan* nor the *San Luis Obispo County General Plan* contain specific language pertaining to TCRs. However, both County plans establish advisory committees, contain robust language for the protection of sacred sites, and require consultation with tribes during project planning.

Monterey County

The *Monterey County General Plan* (County of Monterey 2010) guides land use and development in the County's unincorporated areas and contains goals and policies directing growth and protecting cultural resources. Goal OS-8, under the Conservation and Open Space element of the general plan, commits to consulting with local Native Californian tribes about significant resources and protecting those resources.

San Luis Obispo County

The *San Luis Obispo County General Plan* (County of San Luis Obispo 2010) does not include specific language about TCRs. Goals and policies in the General Plan related to cultural resources that are pertinent to Native American resources include preserving and protecting the County's historical resources and known and potential Native American and archaeological resources.

4.5.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to TCRs is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.5.3 Environmental Setting

4.5.3.1 Ethnography

An ethnographic overview of the Salinan, the indigenous population who lived in the project region prior to colonization and continue to live in the area, is presented in Section 4.4, *Cultural Resources,* and is not repeated here.

4.5.3.2 Native American Consultation

On March 18, 2016, a Horizon cultural resources specialist, on behalf of the MCWRA, contacted the California NAHC for a list of tribes that are traditionally and culturally related to the study area for the purpose of project notification under Pub. Res. Code Section 21080.3.1(d). The NAHC responded on March 29, 2016, with a list of three tribes with traditional and cultural affiliation to the project location, as depicted in **Table 4.5-1.** Pursuant to Pub. Res. Code Section 21080.3.1(d), the MCWRA sent project notification letters to each of the tribes on April 22, 2016. Informal Native American outreach was also conducted by a Horizon cultural resources specialist to identify potential archaeologically sensitive areas as well as TCRs within the study area. Details pertaining to Native American consultation under Pub. Res. Code Section 21080.3.1(d) are provided in **Table 4.5-1**. A brief summary of the Native American outreach can also be found in Section 4.4, *Cultural Resources*.

Table 4.5-1. Native American Consultation

Organization/ Tribe	Name of Contact	Letter Date	Follow-up Consultation Dates/Comments
Salinan Tribe of Monterey and San Luis Obispo Counties	Ms. Patti Dunton, Tribal Administrator	April 22, 2016	June 22, 2016: Mr. Fred Segobia responded by phone in response to a Horizon request for information letter dated June 9, 2016.[a] June 23, 2016: The MCWRA met with Mr. Fred Segobia, one of the designated points of contact for the tribe, to discuss the project and listen to concerns. August 17, 2016: Follow-up letter from Ms. Dunton, describing concerns and identifying sacred sites. September 11, 2017: The MCWRA sent follow-up letters to Ms. Dunton and Mr. Segobia to provide a project update and the results of the archaeological survey. April 30, 2021: MCWRA sent a follow-up letter to Mr. Segobia to provide an additional update on the project. August 25, 2021: MCWRA sent a follow-up letter to Ms. Dunton to provide an additional update on the project. MCWRA also reached out to Mr. Segobia and Ms. Dunton by phone and left a voicemail message. August 26, 2021: Ms. Dunton returned the call from MCWRA and requested an update on the EIR. Per her request, MCWRA emailed an update later that same day.
Ohlone/Costanoan-Esselen Nation	Ms. Louise Miranda-Ramirez, Chairperson	April 22, 2016	June 14, 2016: The MCWRA met with Chairperson Miranda-Ramirez to discuss the project and listen to concerns. September 11, 2017: The MCWRA sent a follow-up letter to Chairperson Miranda-Ramirez to provide a project update and the results of the archaeological survey. October 19, 2017: Chairperson Miranda-Ramirez responded with a letter requesting a copy of the archaeological report. Chairperson Miranda-Ramirez also requested to be included in mitigation and recovery programs within the tribe's traditional territory; based on a map provided by Chairperson Miranda-Ramirez, this area is outside the study area.

Organization/ Tribe	Name of Contact	Letter Date	Follow-up Consultation Dates/Comments
Xolon Salinan Tribe	Ms. Karen White, Council Chairperson	April 22, 2016	July 12, 2016: A letter was received by a Horizon cultural resources specialist, on behalf of the MCWRA, from Chairperson White, via email, requesting consultation on the project. August 12, 2016: The MCWRA held a teleconference with Chairperson White and other tribal representatives to discuss concerns about the project. September 11, 2017: The MCWRA sent a follow-up letter to Chairperson White to provide a project update and the results of the archaeological survey. Chairperson White acknowledged receipt of the letter via an email response. April 30, 2021: The MCWRA sent a follow-up letter to Ms. White to provide an update on the project. August 25, 2021: The MCWRA reached out to Ms. White by phone and left a voicemail message.

a. Horizon sent request for information letters to knowledgeable tribal members on June 9, 2016.

During the consultation process, no specific TCRs were identified within the study area. However, the tribes that were consulted expressed concern about the potential for project construction to disturb tribal cultural sites, especially burials. During the consultation process, the tribes recommended an archaeological survey be conducted prior to ground-disturbance, and recommended a tribal monitor be on-site during all ground-disturbing activities. Consultation under Pub. Res. Code Section 21080.3.1 is ongoing between MCWRA and each tribe identified by the NAHC.

4.5.3.3 Tribal Cultural Resources

Information about the resource types within and near the study area that are important to Native Americans has been collected through consultation with the tribes that have a traditional and cultural relationship to the area as well as archival research. Ethnographies examined include Hester (1978), Johnson (2002), Kroeber (1925), Mason (1912), Milliken and Johnson (2003), and Rivers and Jones (1993). Milliken and Johnson (2003), and Rivers and Jones (1993:149–152) provide thorough reviews of early twentieth-century ethnographic studies for the Salinan, although most of the information reported in these volumes emphasizes Salinan territory near San Antonio Mission and north, or along the coast, and not directly in the study area.

The San Antonio River appears to have been one of the most heavily populated waterways within Salinan territory prior to colonization, although village locations have not been confirmed. Mason (1912:107) identified a number of villages along the river. One village, *na'sil* (*Assil* in Hester 1978:501; *Azzil* in Milliken and Johnson 2003:112), was located near the historic-era town of Pleyto and is likely now submerged under San Antonio Reservoir at a lower elevation than the study area. Downstream of Pleyto, but nearby, was *sape-wis*. Kroeber (1925:548) also identified *Tetachoya* at Los Ojitos (or Rancho Ojitos), a Mexican land grant located upstream from Pleyto, on land now largely held by Fort Hunter Liggett and under San Antonio Reservoir (Johnston 2002:6). At the dissolution of Mission San Antonio, the lands around the mission, known as the Milpitas Land Grant, were given to Ygnacio Pastor, a Salinan neophyte, by the Catholic Church (Kyle 2002:237), but those lands were lost when California became a state and the property was patented to an Anglo-American. Immediately downstream of the Milpitas Land Grant, along the San Antonio River, were Rancho Ojitos (mentioned above) and Rancho Pleyto, the latter of which occupied most of the study area at San Antonio Reservoir (USGS 1919a, 1919b). Salinan peoples continued to live in settlements along the San Antonio River during the early historic era while they worked on the various ranchos that were in the region.

The Salinan Tribe of Monterey and San Luis Obispo Counties (Dunton pers. comm.) identified other important places that represent the geographical boundaries of ancestral Salinan territory. These include Santa Lucia Peak to the north (Mason 1912) and Dolan Rock and Morro Rock along the coast (Taylor 2016:3). Important aspects of Salinan ethnography are also located southeast of the study area, including Cuesta Grade near Santa Margarita (approximately 30 miles), Painted Rock in the Carrizo Plain (approximately 70 miles), and the Temblor Range (Taylor 2016:3). The Diablo Range to the northeast is another important aspect of Salinan ethnogeography (Taylor 2016:3).

The Xolon Salinan Tribe (Fontanetta pers. comm.) identified a number of places that are important to the Salinan people in the vicinity of the proposed project. These include Bee Rock, Sulphur, and Orofino Canyons, all of which flow into the San Antonio River from the south. Bee Rock Canyon is less than a mile from the proposed location of the Energy Dissipation Structure, whereas Sulphur and Orofino canyons are downstream of San Antonio Dam (less than 1 mile and 2 miles, respectively).

Bee Rock, a prominent outcrop at the head of Bee Canyon, is between the San Antonio and Nacimiento River drainages. The gentle slopes from Bee Rock down to Nacimiento River (now Nacimiento Reservoir) would have provided easily accessible terrain for trails leading from the peak to the river and its abundant resources.

The Xolon Salinan Tribe also made reference to another indigenous trail that was adopted by the Spanish, El Camino Real.[1] This trail ran through the study area along the San Antonio River and connected Mission San Miguel with Mission San Antonio and other mission establishments to the north and south. The trail itself was not identified as a TCR; however, the tribe expressed concern that as-yet undocumented Native American sites could be located along the length of the trail.

Although no specific TCRs within the area of proposed ground disturbance were identified during the consultation process, the potential exists for cultural resources that are important to local California Native American groups to exist within the study area. Project-related ground disturbance may encounter such resources, which could be considered TCRs, during project construction.

4.5.4 Impact Analysis

4.5.4.1 Methods for Evaluating Impacts

To determine whether the proposed project and the Tunnel-Only Alternative would result in any significant impacts on TCRs, this analysis focuses on reasonably foreseeable effects of construction and operation relative to baseline conditions. The analysis considers the potential direct and indirect impacts of the proposed project and Tunnel-Only Alternative. Direct impacts include those

[1] See discussion of P-27-001557 (CA-MNT-1563/H) in Section 4.4.4.1, *Methods for Evaluating Impacts,* for further discussion of this trail as a cultural resource eligible for listing in the NRHP/CRHR.

which are caused by the project and occur at the same time and place as the project. Indirect impacts include those that are caused by the project and are later in time or farther removed in distance but are still reasonably foreseeable. The analysis uses significance criteria based on the CEQA Appendix G Guidelines (see below).

Where a potentially significant environmental effect has been identified, mitigation measures have been identified where feasible to avoid or reduce the significant effect.

4.5.4.2 Criteria for Determining Significance

Appendix G of the CEQA Guidelines (14 CCR 15000 *et seq.*) provides guidance on assessing whether a project would have significant impacts on the environment. Consistent with Appendix G and consideration of project-specific environmental conditions, MCWRA has determined that the project would have significant TCR impacts if it would:

a. Cause a substantial adverse change in the significance of a TCR, defined in Pub. Res. Code Section 21074 as a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe that is:

   i. Listed or eligible for listing in the CRHR or in a local register of historical resources, as defined in Pub. Res. Code Section 5020.1(k) or

   ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Pub. Res. Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Pub. Res. Code Section 5024.1, the lead agency will consider the significance of the resource to a California Native American tribe.

4.5.4.3 Applicable Avoidance and Minimization Measures

No AMMs are proposed that pertain to tribal cultural resources.

4.5.4.4 Impacts and Mitigation Measures

Impact TCR-1: Impacts on Listed or Eligible Tribal Cultural Resources

Construction

Although no TCRs have been formally identified within the area of proposed ground disturbance, there is potential for cultural resources important to local California Native American groups to exist within the study area. Ground disturbance associated with construction of the proposed project or Tunnel-Only Alternative may encounter such resources, which could be considered TCRs. In addition, as discussed in Section 4.4, *Cultural Resources*, given the prehistoric and historic-era use of this area, there is potential for as-yet undocumented archaeological resource to be present below the current ground surface. Archaeological resources also have the potential to be considered TCRs. If project-related ground disturbance encounters such resources during project construction, this impact would be significant.

Operation

Proposed Project

Operation of the proposed project would result in an increase in the maximum WSE at San Antonio Reservoir from 780 feet to 787 feet. This increase in the inundation zone would affect two previously recorded resources within the proposed maximum inundation area: P-27-000063 (CA-MNT-1776) and P-27-001557 (CA-MNT-1563/H) would be submerged as a result of project operation. In addition, during a pedestrian survey, one archaeological resource (IL-SB-S-05, a foundation) was identified within the cultural resources study area, between the existing maximum WSE of 780 feet and the proposed maximum WSE of 787 feet (Horizon 2018). Inundation of these resources could result in erosion and possible destruction. Although these resources have not been identified by local California Native American tribes to be TCRs, their full extent has not been assessed. These resources may have subsurface components that may be considered TCRs. Inundation of the resources could disturb and destroy the resources through erosion over time.

Tunnel-Only Alternative

Operation of the Tunnel-Only Alternative would not result in a change in the maximum WSE at San Antonio Reservoir. Therefore, operation of the Tunnel-Only Alternative would not disturb or destroy TCRs.

CEQA Conclusion

Construction

Impacts on TCRs from construction of the proposed project or Tunnel-Only Alternative would be significant. **MM CUL-1.1** (see Section 4.4, *Cultural Resources*) would require all contractors participating in project-related ground disturbance to receive cultural resource sensitivity training prior to conducting work. This would allow early identification should an inadvertent discovery be made during ground disturbance. **MM CUL-1.2** (see Section 4.4, *Cultural Resources*) would put an unanticipated discovery protocol in place to require proper treatment of potential resources encountered during project-related ground disturbance. **MM CUL-1.3** (see Section 4.4, *Cultural Resources*) would require a Data Recovery Plan to be implemented at the resource locations listed above. Implementation of the Data Recovery Plan would provide for adequate treatment, including documentation and preservation, of the potential resources. **MM CUL-2.1** (see Section 4.4, *Cultural Resources*) would provide a protocol for the proper treatment of human remains, if encountered.

MM TCR-1 would require any TCRs encountered during construction to be protected and treated with culturally appropriate dignity. **MM TCR-1** would also require consultation and coordination with the local California Native American tribes originally identified during outreach to the NAHC for this project. The impact would be **less than significant with mitigation**.

Operation

Proposed Project

Impacts on TCRs from operation of the proposed project would be significant. Implementation of **MM CUL-1.3** (see Section 4.4, *Cultural Resources*) would allow for the identification and assessment of resources in coordination with local California Native American tribes. **MM CUL-2.1** (see Section 4.4, *Cultural Resources*) would provide a protocol for the proper treatment of human remains, if encountered.

MM TCR-1 would require TCRs encountered during identification and assessment to be protected and treated with culturally appropriate dignity. **MM TCR-1** would also require consultation and coordination with the local California Native American tribes originally identified during NAHC outreach for this project. In addition, operation may involve minor maintenance activities that would not result in ground disturbance and would have no impact on TCRs. The impact would be **less than significant with mitigation.**

Tunnel Only Alternative

Operation of the Tunnel-Only Alternative would result in **no impact** on TCRs.

Mitigation Measures

MM TCR-1: Implement Procedures in Case of Inadvertent Discoveries of Tribal Cultural Resources

In the event that an archaeological resource that could be considered a TCR is identified unexpectedly during project construction activities and MCWRA determines that the project may cause a substantial adverse change to such a resource, as outlined in Appendix G of the CEQA Guidelines (14 CCR 15000 *et seq.*), MCWRA and its contractors will employ one or more of the following standard mitigation measures:

- Consulting with the Salinan Tribe of Monterey and San Luis Obispo Counties, the Ohlone/Costanoan-Esselen Nation, and the Xolon Salinan Tribe (the NAHC-identified local tribal groups for this project) to determine if the resource is considered a TCR.
- Contacting local tribal groups immediately and providing 72 hours to respond to requests to consult.
- If no response is received, then treating the resource in consultation with a qualified archaeologist.
- Avoiding and preserving the resource in place, including, but not limited to, planning and construction to avoid the resource and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resource with culturally appropriate protection and management criteria.
- Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, which may include, but is not limited to, the following:
    - Protecting the resource
    - Protecting the cultural character and integrity of the resource
    - Protecting the traditional use of the resource
    - Protecting the confidentiality of the resource
    - Providing permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places

4.5.5 Impact Summary

Table 4.5-2 provides a summary of the significance of potential impacts on TCRs.

Table 4.5-2. Summary of Impacts on Tribal Cultural Resources

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact TCR-1: Impacts on Listed or Eligible Tribal Cultural Resources			
Proposed Project	Construction: Significant	**MM-CUL-1.1** **MM-CUL-1.2** **MM-CUL-2.1** **MM-TCR-1**	Less than Significant
	Operation: Significant	**MM-CUL-1.3** **MM-CUL-2.1** **MM-TCR-1**	Less than Significant
Tunnel-Only Alternative	Construction: Significant	**MM-CUL-1.1** **MM-CUL-1.2** **MM-CUL-2.1** **MM-TCR-1**	Less than Significant
	Operation: No Impact	N/A	N/A

4.6 Transportation

4.6.1 Overview

This section describes the environmental and regulatory setting for transportation and discusses the potential for transportation impacts that could occur from construction and operation of the proposed project or Tunnel-Only Alternative.

4.6.1.1 Study Area

The study area for the transportation analysis includes the local roadways that are frequently used to travel to Nacimiento and San Antonio Reservoirs as well as U.S. 101, the primary transportation route through the region, as shown in **Figure 2-2**. The study area for construction focuses on the roads that lead to the reservoirs from Paso Robles, which is assumed to be the point of embarkation for most construction-related activities. In addition, spoils generated from construction are likely to be transported to the Paso Robles Landfill.

4.6.1.2 Scoping Comments

MCWRA received four scoping comment letters related to potential transportation impacts. Transportation-related scoping comments fell into the following categories:

- Potential impacts on public roadway surfaces and traffic levels resulting from haul truck traffic, particularly for soil disposal, during project construction, including during the dry season when peak recreational traffic levels occur along Nacimiento Lake Drive and Interlake Road.
- Potential impacts from any needed realignment of existing access roads as a result of an increase in the water level at San Antonio Reservoir associated with the Spillway Modification.

These comments are addressed within the impact discussions in Section 4.6.4, *Impact Analysis*. Specifically, please refer to Impact TRA-1, *Conflict with Transportation Program, Plan, Ordinance, or Policy*, and Impact TRA-2, *Increase Transportation Hazards*, respectively, which address these scoping comments. Refer to Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* for a complete list of public comments received during the public scoping period.

4.6.1.3 Definitions

Level of Service

Level of service (LOS), a qualitative measure, is used to relate the quality of traffic service. The *Highway Capacity Manual*, produced by the Transportation Research Board (TRB), defines LOS standards, using letters A through F, to characterize traffic flow for different types of roadways (TRB 2000). LOS is discussed here because the County of Monterey has a goal within its general plan to achieve an acceptable LOS on county roads by 2030.

The LOS standards for two-lane rural highways are used primarily in this analysis because the proposed project would be located in a rural area. Nacimiento Lake Drive, Interlake Road, and Jolon Road are all considered two-lane rural highways.

The *Highway Capacity Manual* identifies two types of two-lane rural highways (TRB 2000). Class 1 highways are major intercity routes on which motorists expect to travel at relatively high speeds. Class 2 highways serve as scenic or recreational routes; they are not primary arterials on which motorists expect to travel at high speeds.

Table 4.6-1 provides the description of LOS standards for two-lane rural highways contained in the *Highway Capacity Manual*.

Table 4.6-1. Level-of-Service Standards for Two-Lane Rural Highways

LOS Standard	Description
A	LOS A describes the highest quality of traffic service, with motorists able to travel at their desired speed.
B	LOS B characterizes a traffic flow with speeds of 50 mph or slightly higher on Class 1 highways. Drivers are delayed up to 50 percent of the time. On Class 2 highways, speeds may fall below 50 mph, but motorists will not be delayed more than 55 percent of their travel time.
C	LOS C average speed exceeds 43.5 mph on level Class 1 highways. Delays may reach 65 percent. On Class 2 highways, speeds may fall below 43.5 mph, but motorists will not be delayed more than 70 percent of the time.
D	LOS D describes an unstable traffic flow. Average speeds of 37 mph still can be maintained under base conditions on Class 1 highways. Drivers are delayed up to 80 percent. On Class 2 highways, speeds may fall below 37 mph, delays of up to 85 percent.
E	At LOS E, traffic flow conditions have a "percent time spent following" greater than 80 percent on Class 1 highways and greater than 85 percent on Class 2 highways. Even under base conditions, speeds may drop below 37 mph. Traffic operations seldom reach capacity on rural highways, primarily because of the lack of demand.
F	LOS F represents a heavily congested flow, with traffic demand exceeding capacity. Volumes are lower than capacity and speeds are highly variable.

Source: TRB 2000

Vehicle Miles Traveled

Senate Bill 743 (Steinberg, 2013), which was codified in Public Resources Code section 21099, required changes to the CEQA Guidelines (Cal. Code Regs., Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (Id., subd. (b)(1); see generally, adopted CEQA Guidelines, § 15064.3, subd. (b) [Criteria for Analyzing Transportation Impacts].) To that end, changes to the CEQA Guidelines have been made that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts. As such, automobile delay, as measured by "level of service" and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA, though they are still presented as a point of reference in this EIR. VMT will be the primary metric to determine the significance of the potential transportation impacts.

4.6.2 Regulatory Setting

4.6.2.1 Federal Laws, Regulations, and Policies

There are no federal laws, regulations, or policies related to transportation that are applicable to the proposed project or Tunnel-Only Alternative.

4.6.2.2 State Laws, Regulations, and Policies

The California Department of Transportation (Caltrans) manages the state highway system. The agency is also responsible for highway, bridge, and rail transportation planning, construction, and maintenance. Work that requires the movement of oversize vehicles or vehicles with excessive loads on state highway facilities requires a transportation permit from Caltrans.

4.6.2.3 Local Laws, Regulations, and Policies

Monterey County General Plan

The Monterey County General Plan (2010) guides land use and development in unincorporated areas of Monterey County. The County of Monterey is responsible for management of the County roadway system. Goals and policies in the general plan related to traffic and transportation include maintaining an acceptable LOS on county roads and locating and designing new public roads so as to minimize disruptions at existing developments. The general plan also states that all public thoroughfares, private roads, and deeded emergency access routes shall be considered potential evacuation routes. The following Monterey County General Plan (2010) goals and policies are applicable to the proposed project:

- **Goal C-1**: Achieve an acceptable level of service by 2030.
  - **Policy C-1.1**: The acceptable level of service for county roads and intersections shall be LOS D, except as follows:
    a. Acceptable level of service for county roads in Community Areas may be reduced below LOS D through the Community Plan process.
    b. County roads operating at LOS D or below at the time of adopting this general plan shall not be allowed to be degraded further, except in Community Areas where a lower LOS may be approved through the Community Plan process.
    c. Area Plans prepared for County Planning Areas may establish an acceptable level of service for county roads other than LOS D. The benefits that justify less than LOS D shall be identified in the Area Plan. Where an Area Plan does not establish a separate LOS, the standard LOS D shall apply.
- **Goal S-5**: Ensure the county is prepared to anticipate, respond, and recover from emergencies.
  - **Policy S-5.14**: All public thoroughfares, private roads, and deeded emergency access routes shall be considered potential evacuation routes. The Monterey County Coordinated Emergency Response Plans shall provide basic information on the evacuation routes for specific areas. The routes listed in Table S-1 (of the Monterey County General Plan [2010] Safety Element), as well as any other route deemed

appropriate to the situation, shall be considered "Predesignated Emergency Evacuation Routes" and may be employed during tactical situations at the discretion of the Monterey County Sheriff and/or the Incident Commander.

- **Goal C-2:** Optimize the use of the County's transportation facilities
  - **Policy C-2.4:** A reduction of the number of vehicle miles traveled per person shall be encouraged
  - **Policy C-2.5:** Overall land use patterns that reduce the need to travel by automobile shall be encouraged.
  - **Policy C-2.7:** New development shall be located and designed with convenient access and efficient transportation for all intended users and, where possible, consider alternative transportation modes.

San Luis Obispo County General Plan

The San Luis Obispo County General Plan (2010) guides land use and development in the unincorporated areas of San Luis Obispo County. The San Luis Obispo County government is responsible for management of the county roadway system. Goals and policies in the general plan related to traffic and transportation include requirements for development projects to reduce vehicle miles traveled (VMT). The following guidelines from the San Luis Obispo County General Plan are applicable to the proposed project:

- **General Design Guideline 7**: All dwellings and structures should be readily accessible to emergency and service vehicles.

4.6.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to agricultural resources is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.6.3 Environmental Setting

4.6.3.1 Existing Roads and Access

The study area is located in a relatively rural area of Monterey and San Luis Obispo Counties. The primary transportation route through the Salinas Valley region is U.S. 101, which generally follows the course of the Salinas River in a southeast to northwest direction (See **Figure 2-2**). U.S. 101 is identified as an emergency access route in the 2010 Monterey County General Plan and 2010 San Luis Obispo County General Plan. It connects Los Angeles to San Francisco and beyond. U.S. 101 also provides local connectivity, linking the Salinas Valley communities of Paso Robles, King City, Soledad, and Salinas as well as the California National Guard post at Camp Roberts.

The most populous community in proximity to the study area is Lake Nacimiento, a census-designated place (CDP) south of Nacimiento Dam, as shown in **Figure 4.6-1**. Other communities in the project area include Heritage Ranch to the southeast of Nacimiento Reservoir, homes in the Oak Shores CDP along the north shore of the Nacimiento reservoir, and clusters of homes in the Bee Rock unincorporated area between the San Antonio and Nacimiento Reservoirs.

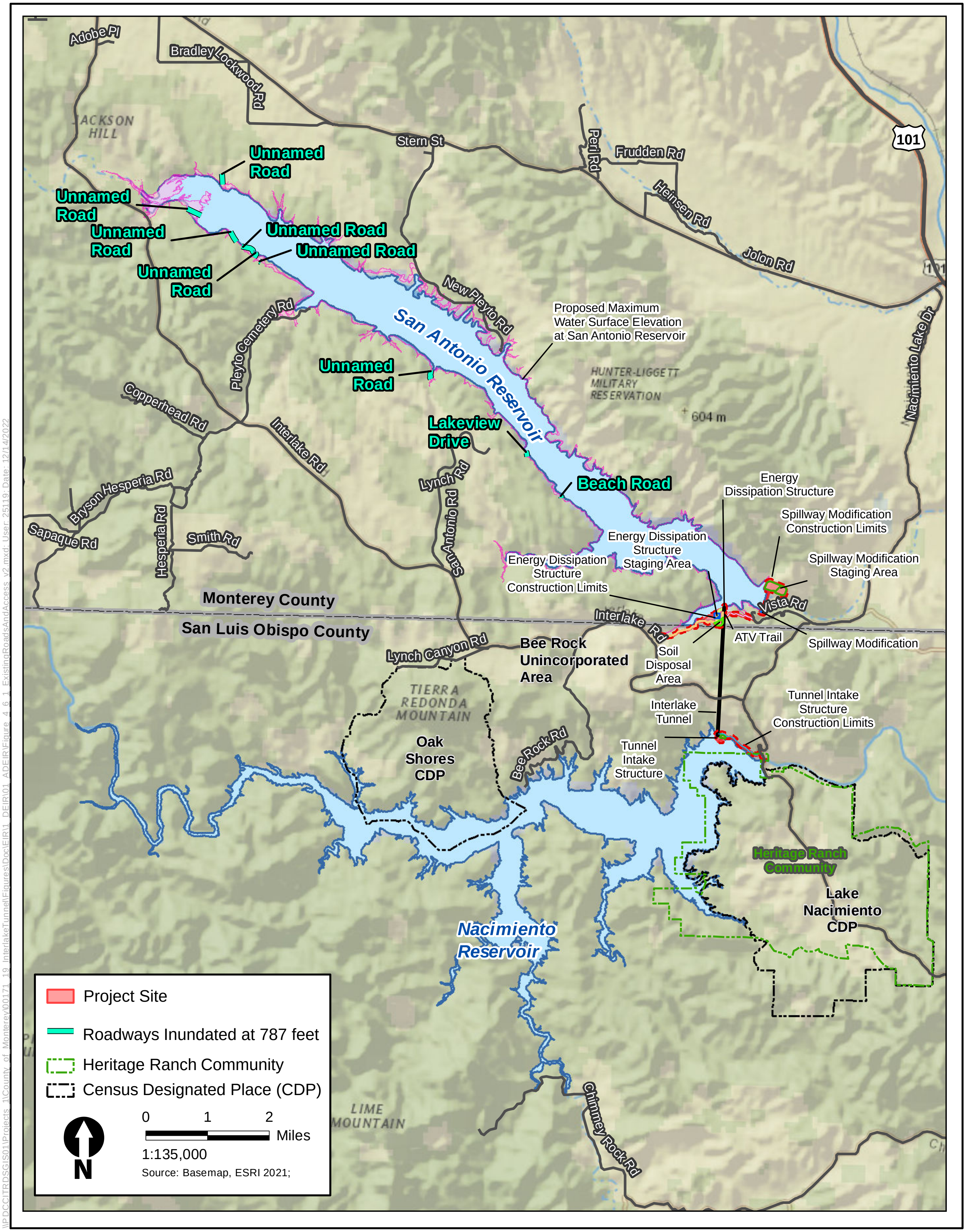

Figure 4.6-1
Existing Roads and Access Roads

Primary access roads in the project vicinity are shown on **Figure 4.6-1**. Nacimiento Lake Drive (also referred to as Road G14) is the primary road that provides access to Nacimiento and San Antonio Reservoirs from Paso Robles to the south and U.S. 101 to the east. This road connects to Interlake Road, which runs roughly east–west and connects to Jolon Road at Lockwood Valley. Nacimiento Lake Drive is primarily within San Luis Obispo jurisdiction; it enters Monterey County jurisdiction 2 miles north of the intersection of Interlake Road and Nacimiento Lake Drive. The northwest side of San Antonio Reservoir can also be accessed from Jolon Road (also referred to as County Road G18 from U.S. 101 to its intersection with Interlake Road), which connects U.S. 101 to Lockwood Valley, a small agricultural community, and the U.S. Army Garrison at Fort Hunter Liggett.

Interlake Road provides access to residential development along the north side of Nacimiento Reservoir, as well as San Antonio Road, and assorted low-density developments along the southwest side of San Antonio Reservoir. Gateway Drive, which intersects with Nacimiento Lake Drive/Road G14 provides access to the Heritage Ranch community and residential development on the southeast side of Nacimiento Reservoir.

San Antonio Road connects with Lynch Road and Lakeview Drive, which traverse the southwest shore of San Antonio Reservoir and provide access to Lynch Playground and a boat launch. Lake Nacimiento Overflow/Day Use Ramp Road leads from Nacimiento Lake Drive to the boat ramp on the northeast side of Nacimiento Reservoir.

Vista Road, an unpaved gated access road, approximately 12 feet wide, is not available for use by the general public. This road would be utilized during construction of both Interlake Tunnel and the San Antonio Dam Spillway Modification to provide access to San Antonio Dam from Nacimiento Lake Drive. Nacimiento Lake Drive and Interlake Road would be the primary access roads during construction. Nacimiento Lake Drive is a fully paved arterial road, approximately 42 feet wide. Interlake Road is also a fully paved arterial road, approximately 24 feet wide.

The Monterey County General Plan (2010) states that all public thoroughfares, private roads, and deeded emergency access routes shall be considered potential evacuation routes. The general plan specifically lists the following roadways, which are in proximity to the proposed project, as potential evacuation routes:

- U.S. 101
- Interlake Road (G14)
- Jolon Road (G14)
- Jolon Road (G18)
- Nacimiento Lake Drive (G19)

4.6.3.2 Existing Traffic Volumes

The Transportation Agency for Monterey County (TAMC) conducts traffic counts on regional roadways within Monterey County. **Table 4.6-2** shows counts for key roadways in the project vicinity. Monterey County utilizes annual average daily traffic (AADT) to measure traffic volumes, and San Luis Obispo County measures traffic volumes using average daily traffic (ADT). AADT averages ADT volumes over an entire year period, and ADT averages daily traffic volumes over a shorter period of time, such as weeks or months.

Table 4.6-2. Existing Conditions on Monterey County Roadways in the Project Vicinity

Road Name	From	To	AADT	Count Date
Nacimiento Lake Drive	Jolon Road	Vista Road	370	6/27/2018
Interlake Road	San Antonio Road	Pleyto Cemetery Road	440	6/27/2018
Interlake Road	Pleyto Cemetery Road	Jolon Road	380	6/27/2018

Source: Transportation Agency of Monterey County, 2020
AADT = annual average daily traffic

As shown in **Table 4.6-2**, all counts were taken during summer (June), a peak time of year for recreational uses in the study area. The closest roadway to the main work area near San Antonio Reservoir is Nacimiento Lake Road, near Vista Road. The arterial roadways leading to the project site experience AADT levels ranging from 370 to 440. In addition, the Monterey County General Plan (2010) Final Environmental Impact Report notes that the movement of agricultural equipment and goods is a major use for Monterey County's highway system. Because of the size of agricultural equipment and haul trucks, this activity can slow traffic flows (Monterey County 2008).

Caltrans maintains traffic volume counts for highways throughout California. Traffic counts from 2018 indicate that the number of annual average daily trips traveling on the mainline of the U.S. 101 in the vicinity of Jolon Road interchange was 16, 519 (Caltrans 2018).

The County of San Luis Obispo Public Works Department collects traffic count data for all roads it maintains. Peak-hour and ADT volumes were identified from a review of the data for Interlake Road and Nacimiento Lake Drive within the study area, as shown in **Table 4.6-3**.

Table 4.6-3. Existing Traffic Volumes on Nearby Roadways

Road Name	Nearest Cross Street	Average Daily Traffic	AM Peak Volume	PM Peak Volume	Count Date
Nacimiento Lake Drive	North of Chimney Rock Road	4,318	392	469	6/19/2018
Nacimiento Lake Drive	East of Chimney Rock Road	4,591	421	458	6/19/2018
Nacimiento Lake Drive	North of Interlake Road	325	39	42	4/11/2018
Nacimiento Lake Drive	North of Adelaida Road	5,976	522	581	4/11/2018
Interlake Road	West of Nacimiento Lake Drive	1,309	123	132	6/29/2018

Source: County of San Luis Obispo 2021

4.6.3.3 Existing Transit Service

Transit service is provided in Monterey County by Monterey-Salinas Transit (MST). MST operates two routes (82, 85) that provide service to Fort Hunter Liggett, which is approximately 23 miles northwest of the project site. As of 2016, the 85 Fort Hunter Liggett-Templeton line provided service between Monterey and Templeton, stopping at Fort Hunter Liggett and Paso Robles. Service on line 85 was suspended as of May 2, 2020 (MST 2021a). As of 2016, the 85 line travelled up Jolon Road from U.S. 101 to its stop at Fort Hunter Liggett. The 82 Fort Hunter Liggett-Salinas Express line provided service between Salinas and Fort Hunter Liggett. Service on line 82 was suspended as of May 2, 2020 (MST 2021b).

Transit service is provided in San Luis Obispo County by the San Luis Obispo Regional Transit Authority (RTA). The RTA does not provide transit service to Nacimiento Lake CDP. The nearest route to the proposed project is Route 9, which provides service between San Luis Obispo and San Miguel, with stops in Paso Robles (Regional Transit Authority 2022).

4.6.3.4 Existing Bicycle and Pedestrian Facilities

A review of the Land Use and Circulation Element of the Monterey County General Plan (2010) and the Inland Area Plans for the County of San Luis Obispo indicates that there are no designated bicycle lanes along Nacimiento Lake Drive. No other bicycle or pedestrian facilities were noted in the study area.

4.6.4 Impact Analysis

4.6.4.1 Methods for Evaluating Impacts

To determine whether the proposed project or the Tunnel-Only Alternative would result in any significant transportation effects, this analysis focuses on reasonably foreseeable direct and indirect effects of construction and operations relative to baseline conditions. The analysis uses project-specific significance criteria, based on the CEQA Guidelines, Appendix G.

Baseline transportation conditions in the study area were evaluated by reviewing the following data sources:

- Monterey County General Plan (Monterey County 2010a)
- Monterey County General Plan Final Environmental Impact Report (Monterey County 2010b)
- San Luis Obispo County General Plan (San Luis Obispo County 2010)
- San Luis Obispo County Area Plan (San Luis Obispo County 2014)

LOS impacts are qualitatively evaluated for Monterey County because the Transportation Element specifically identifies goals to reduce LOS to D or better. San Luis Obispo County does not have policies or plans that pertain to decreasing LOS; therefore, no LOS impact evaluation is provided. Note that this analysis does not include a quantitative LOS analysis; however, baseline LOS information is provided in the setting for informational purposes. VMT is used to analyze construction and operational impacts as required by Senate Bill 743.

Potential impacts related to changes in reservoir levels and fluctuations were evaluated using results from the SVOM. MCWRA provided hydrologic model results of modeled baseline conditions and for the proposed project and Tunnel-Only Alternative scenarios. The model is discussed further in the subsection titled *Hydrologic Modeling* in Section 2.5.1.1, *Operations*.

4.6.4.2 Criteria for Determining Significance

Appendix G of the CEQA Guidelines provides guidance for assessing whether a project would have significant impacts on the environment. Consistent with Appendix G, and in consideration of project-specific environmental conditions, MCWRA has determined that the project would have significant transportation impacts if it would:

a. Conflict with a program, plan, ordinance, or policy concerning the circulation system, including transit, roadway, bicycle, and pedestrian facilities;

b. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment), physical damage, or inundation;

c. Result in inadequate emergency access; or

d. Conflict or be inconsistent with CEQA Guidelines section 15064.3(b).

4.6.4.3 Applicable Avoidance and Minimization Measures

MCWRA has incorporated AMMs into the project design to prevent the occurrence of environmental impacts or to reduce their severity. AMMs applicable to this transportation analysis include the following:

- **AMM GEN-10**, *Fire Safety and Evacuation Plan*.
- **AMM GEN-13**, *Emergency Access Measures*.

A complete description of these measures is provided in Section 2.6, *Avoidance and Minimization Measures.*

4.6.4.4 Impacts and Mitigation Measures

Impact TRA-1: Conflict with Transportation Program, Plan, Ordinance, or Policy

Construction

Traffic generated during construction of the proposed project and Tunnel-Only Alternative would be associated with the daily arrival and departure of construction work crews, trucks hauling equipment and materials to the work sites, trucks hauling excavated debris and spoils from the sites, and trucks importing fill to the sites. Heavy-duty trucks would be needed to haul debris, equipment, and solid waste off-site. Planned lane closures and detours have not been scheduled during construction of the proposed project or the Tunnel-Only Alternative because they are not likely to be necessary.

Spoils would most likely be transported to the Paso Robles Landfill, which is approximately 27 route miles away from the eastern end of the project site. This would involve the use of Vista Road, Nacimiento Lake Drive (Godfrey Road), 24th Street, SR 46, and Union Road.

Table 4.6-4 presents peak-volume traffic trips for construction of each major project feature. These include trips associated with on-site personnel, vendors, and hauling. As shown in **Table 4.6-4**, the peak volumes associated with construction of the project features range from 56 to 238 per day; during peak construction activities up to 604 daily round-trips could occur, after accounting for overlapping construction activities.

Table 4.6-4. Peak Construction Traffic Volumes for Major Features of Proposed Project

Project Feature	Peak-Volume Daily Round Trips
Energy Dissipation Structure	106
Spillway Modification	188
North Portal (tunnel entrance at Energy Dissipation Structure)	78
Tunneling	218
Tunnel Intake Structure	238
South Portal (tunnel exit at Tunnel Intake Structure)	56
All Project Features	604

Source: McMillen Jacobs Associates 2020a, 2020b.

Notes: Peak-volume daily trips includes all overlapping construction phases within each project feature and consist of worker, vendor and haul trips. See Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results*, for more detailed construction trip information.

The construction traffic generated by the aforementioned features would produce construction-related trips along primary access roads, including U.S. 101, Nacimiento Lake Drive, Jolon Road, and Interlake Road. Most daily trips would occur during construction of the Tunnel Intake Structure and Interlake Tunnel, which would overlap with most other phases of construction work. At the peak of construction, up to a maximum of 604 daily round-trips could be required. The additional trips made by construction workers represent a maximum of approximately 3.8 percent of AADT on U.S. 101, and up to 173 percent of AADT on Monterey County roadways within the study area, and up to 186 percent of ADT on San Luis Obispo County roadways within the study area. Note that not all daily trips would occur on any one particular county roadway, and the trips would be distributed throughout each workday.

The *Highway Capacity Manual* (TRB 2000) identifies peak hour traffic volumes on rural highways that allows for vehicles to remain free-flowing and experience delays less than 70 percent of the time. This peak hour volume is 1,190 vehicles per hour. With the addition of 604 daily round-trips generated from construction to the existing AADT on the surrounding roadways, existing peak hour volumes are expected to remain well under 1,190 vehicles per hour and therefore vehicles would remain free-flowing at least 70 percent of the time. Within Monterey County, the addition of construction-period traffic is not anticipated to worsen LOS because vehicles are expected to remain free-flowing less than 70 percent of the time and therefore construction-related traffic would not conflict with Monterey County's goal of achieving acceptable LOS levels for all county roads. Similarly, construction-related traffic is not expected to interfere with Monterey County and San Luis Obispo County's guidelines regarding uninhibited accessibility for all emergency vehicles.

Construction of the Tunnel-Only Alternative differs from the proposed project in that it does not include the Spillway Modification. Accordingly, relative to the proposed project the Tunnel-Only Alternative would omit trips associated with construction of the Spillway Modification consisting of up to 188 peak hours trips.

Operation

Routine maintenance activities required for the proposed project or Tunnel-Only Alternative would require operators, technicians, and laborers to travel to the project site daily. This would result in up to eight daily round-trips. Annual operations and maintenance required at the project site would occur semi-annually or annually; they could also occur less frequently. These annual activities would generate approximately two round-trips per day when they do occur. The limited increase in the number of vehicular trips associated with operation and maintenance of the proposed project or Tunnel-Only Alternative would be approximately 0.1 percent of the existing ADT on Nacimiento Lake Drive, 0.03 percent of U.S. 101 ADT, and 0.2 percent of Interlake Road ADT. The estimated maximum increase in traffic during operation of the proposed project or Tunnel-Only Alternative would remain within the carrying capacity of regional roadways and would not substantially affect traffic flow. Therefore, operation and maintenance would not generate a significant increase in traffic and would not result in LOS degradation over the long term.

CEQA Conclusion

Construction and operation of the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to conflicts with a program, plan, ordinance, or policy concerning the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Impact TRA-2: Increase Transportation Hazards

Construction

Construction activities related to the proposed project or Tunnel-Only Alternative would result in a temporary increase in traffic from trucks traveling to and from the work areas. The movement of trucks could result in slower travel speeds and potential hazards for faster vehicles, either from following too closely or improperly passing the trucks. Construction vehicle movement could increase overall hazards related to transportation if it occurs in a high-traffic corridor. As discussed in Impact TRA-1, *Conflict with Transportation Program, Plan, Ordinance, or Policy*, daily trips generated by construction of the various project features is not anticipated to be enough to significantly affect the free-flow of traffic in the study area.

As discussed under Impact TRA-1, *Conflict with Transportation Program, Plan, Ordinance, or Policy*, at the peak construction period the additional trips made by construction workers represent a maximum of approximately 3.8 percent of AADT on U.S. 101, up to 173 percent of AADT on Monterey County roadways, and up to 186 percent of ADT on San Luis Obispo County roadways within the study area. Not all daily trips would occur on any one particular county roadway, and the trips would be distributed throughout each workday.

Traffic in the study area during the summer months reaches peak volumes as recreational activities take place along the lakeshore. However, even if the peak construction period for the proposed project or Tunnel-Only Alternative were to overlap with the peak recreational season, temporary increases in traffic volumes within the study area would not substantially affect normal use of local roadways and highways because vehicles are expected to remain free-flowing and experience delays less than 70 percent of the time. No other aspect of project construction has the potential to result in a transportation safety hazard along roadways in the study area.

Operation

Proposed Project

The proposed project would involve daily and periodic maintenance activities that would require vehicle trips to and from the Tunnel Intake Structure, Energy Dissipation Structure and San Antonio Dam Spillway. However, the vehicles would generally travel from the currently present MCWRA facilities and combine maintenance tasks with other, already occurring, periodic maintenance tasks pertaining to the San Antonio and Nacimiento Dams. While stand-alone maintenance trips for the proposed project and Tunnel-Only Alternative would occur, the frequency would be low. No significant transportation safety hazard is expected to result from operational traffic.

Because of the Spillway Modification, the proposed project has the potential to result in inundation and impassable roadways. Inundation can also create a safety hazard if drivers attempt to pass through an inundated area and become stuck.

The following roadways have the potential to be inundated during certain periods of the year when the maximum water surface elevation at San Antonio Reservoir rises above its current maximum of 780 feet to the new maximum of 787 feet:

- Pleyto Cemetery Road – Approximately 1,000 feet of this road on the west shore of San Antonio Reservoir could be inundated at a water surface elevation of 787 feet. The portion of Pleyto Cemetery Road that could be inundated is the tail end of the roadway, which experiences very little traffic and does not act as an access route to any private properties within the study area.
- Lakeview Drive/Beach Road – Portions of this road, including a small parking lot, on the west shore of San Antonio Reservoir could be inundated at a water surface elevation of 787 feet. The portions of Lakeview Drive/Beach Road that could be inundated experience very little traffic throughout the year and are not used as access roads to any private properties in the study area.
- Interlake Creek Road – Approximately 1,200 feet of this road, east of the junction with Interlake Road on the west shore of San Antonio Reservoir, could be inundated at a water surface elevation of 787 feet. This portion of Interlake Creek Road is not used as an access road to any private properties in the study area. In addition, this portion of Interlake Creek Road experiences low traffic volumes throughout the year.
- Other Roads around the Reservoir Shoreline – Approximately six permanent and opportunistic access roads at two locations. The majority of these roads terminate at the lakeshore and experience low traffic volumes throughout the year.

It should be noted that MCWRA is the owner of many of these roads and holds floodage easements at private properties around the San Antonio Reservoir with elevations of up to 801 feet. **Figure 4.6-1** provides an overview of the locations. **Figures 2-17a through 2-17k**, in Chapter 2, *Project Description*, depict the roadways in greater detail.

Hydrologic modeling performed for this EIR indicates that the proposed project could result in flooding of the roadways identified above for up to 100 days during wet years, and up to 95 days during normal years; roadways are not anticipated to be inundated during dry years (MCWRA 2021). Although the roadways discussed above have low traffic volumes and do not serve as primary routes, inundation would temporarily limit access and could create safety hazards when the new maximum water surface elevation is reached.

Tunnel-Only Alternative

As with the proposed project, the Tunnel-Only Alternative would involve daily and periodic maintenance activities that would be completed by MCWRA staff at the Tunnel Intake Structure and Energy Dissipation Structure. The number of vehicle trips would be low, and generally paired with other tasks pertaining to the activities which are already occurring. No significant transportation safety hazard is expected to result from operational traffic.

The Tunnel-Only Alternative would not include the Spillway Modification and therefore would not raise the maximum water surface elevation at San Antonio Reservoir. Furthermore, it would not result in any new inundation along roadways at elevations of more than 780 feet.

CEQA Conclusion

Proposed project

The proposed project would have **less-than-significant** impacts related to substantially increasing hazards due to a geometric design feature or incompatible uses, physical damage, or inundation during construction.

Operation of the proposed project would be significant because the Spillway Modification could create additional inundation on roadways during high-water events in San Antonio Reservoir rendering certain roadways impassible. **MM TRA-1** would provide advanced and up-to-date notification about roadway inundation hazards and instruct drivers to follow detours. Since **MM TRA-1** would alert motorists about inundated roadways and provide detours, any impacts that would occur during operation of the proposed project would be reduced to **less than significant with mitigation**.

Tunnel-Only Alternative

The Tunnel-Only Alternative would have **less-than-significant** impacts related to substantially increasing hazards due to a geometric design feature or incompatible uses, physical damage, or inundation during construction and operation.

Mitigation Measure

MM TRA-1, Inundation Safety Notices and Signage

No less than 24 hours prior to any expected inundation, MCRWA will post notices and signage along all affected roadways. The notices and signage will advise drivers of potential inundation occurring along the roadways. Detour signs, directing motorists to alternate routes, will also be posted 24 hours prior to expected inundation. The signs will remain for approximately 1 week (7 days) after the water has receded to a level at which the roadway is no longer inundated and safe to travel.

Impact TRA-3: Result in Inadequate Emergency Access

Construction

U.S. 101 is identified as an emergency access route in the 2010 Monterey County General Plan and the 2010 County of San Luis Obispo General Plan. Construction of the proposed project or Tunnel-Only Alternative would temporarily increase traffic on the existing highway system. However, construction traffic generated by the proposed project would represent only approximately 3.8 percent of the AADT traveling on the nearby segment of U.S. 101.

As previously discussed, the roadways identified within the study area, except U.S. 101, are two-lane rural roads. The temporary increase in passenger vehicles and truck traffic could slow traffic within the study area, causing delays, even for emergency vehicles. However, as discussed in Impact TRA-2, *Increase Transportation Hazards*, construction traffic impacts related to traffic flow would be minimal. In addition, the extra traffic would be temporary. Conditions would return to normal at the completion of construction. Based on the foregoing, both the proposed project and the Tunnel-Only Alternative would result in a less-than-significant impact on emergency access.

The proposed project would be required to comply with **AMM GEN-10**, *Fire Safety and Evacuation Plan*, and **AMM GEN-13**, *Emergency Access Measures*. **AMM GEN-10** would require preparation of a fire safety and evacuation plan. The plan would address topics such as emergency egress routes, evacuation procedures, and inundation emergencies. **AMM GEN-13** states that, during project construction and operation, all access points (gates) will have a Knox key box installed for fire department emergency access.

Operation

Proposed Project

The proposed project would generate a maximum of eight daily round-trips in the study area during routine operations to and from the Tunnel Intake Structure, Energy Dissipation Structure, and San Antonio Dam Spillway. The limited increase in the number of vehicular trips associated with operation and maintenance would be approximately 0.1 percent of existing ADT on Nacimiento Lake Drive, 0.03 percent of U.S. 101 ADT, and 0.2 percent of Interlake Road ADT. With this minimal increase in traffic during operation, the proposed project would not interfere with emergency access or alter existing emergency routes.

Inundation could temporarily limit access and could limit emergency access when the new maximum water surface elevation is reached. Impacts would therefore be potentially significant. However, **MM TRA-1** includes provisions to minimize hazards created by inundation by alerting motorists to alternate routes, including emergency providers.

Tunnel-Only Alternative

The Tunnel-Only Alternative would involve daily and periodic maintenance activities that would require vehicle trips to and from the Tunnel Intake Structure and Energy Dissipation Structure area and is not expected to result in inadequate emergency access. The Tunnel-Only Alternative would not include the Spillway Modification and would not result in any new inundation along roadways and therefore would not have the potential to disrupt emergency access.

CEQA Conclusion

Proposed project

Construction of the proposed project would have **less-than-significant** impacts related to inadequate emergency access.

Operation of the proposed project would be significant because the Spillway Modification could create additional inundation on roadways during high-water events in San Antonio Reservoir rendering certain roadways impassible and potentially resulting in inadequate emergency access. **MM TRA-1** would provide advanced and up-to-date notification about roadway inundation hazards and instruct drivers to follow detours. Since **MM TRA-1** would alert motorists about inundated roadways and provide detours, any impacts that would occur during operation of the proposed project would be reduced to **less than significant with mitigation**.

Tunnel-Only Alternative

Construction and operation of the Tunnel-Only Alternative would have **less-than-significant** impacts related to inadequate emergency access.

Impact TRA-4: Conflict with CEQA Guidelines section 15064.3(b)

Construction

Construction of the proposed project or Tunnel-Only Alternative would temporarily increase traffic in the study area. This increase in traffic volume would lead to a temporary increase in VMT. Because Paso Robles is the nearest city to the study area with a sizeable population, it is assumed that the majority of construction workers and materials would come from Paso Robles. In addition, spoils from construction would be taken to the Paso Robles Landfill. However, the additional construction VMT would be temporary and would cease once construction is finished.

Operation

As discussed in TRA-1, *Conflict with Transportation Program, Plan, Ordinance, or Policy*, the routine maintenance activities associated with the proposed project or Tunnel-Only Alternative would require operators, technicians, and laborers to travel to the project site daily. This would result in up to eight daily round-trips. As shown in Section 4.6.3.2, *Existing Traffic Volumes*, AADT on local roadways in both Monterey and San Luis Obispo Counties exceeds 300. The eight daily trips and VMT generated by operation of the proposed project or Tunnel-Only Alternative would be minimal compared with traffic under existing conditions.

CEQA Conclusion

Construction and operation of the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to a conflict or inconsistency with CEQA Guidelines section 15064.3(b).

4.6.5 Impact Summary

Table 4.6-5 provides a summary of the significance of potential impacts on transportation.

Table 4.6-5. Summary of Impacts on Transportation

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact TRA-1: Conflict with Transportation Program, Plan, Ordinance, or Policy			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact TRA-2: Increase Transportation Hazards			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Significant	**MM TRA-1**	Less than significant
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact TRA-3: Result in Inadequate Emergency Access			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Significant	**MM TRA-1**	Less than significant
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact TRA-4: Conflict with CEQA Guidelines section 15064.3, subdivision (b)			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A

4.7 Hazards and Hazardous Materials

4.7.1 Overview

This section describes the environmental and regulatory settings associated with hazards, hazardous materials, and wastes and discusses the potential for impacts resulting from construction and operation of the proposed project and the Tunnel-Only Alternative. Where significant impacts are identified, this section provides mitigation measures to avoid, minimize, and/or reduce these impacts. Please refer to Section 4.15, *Wildfire*, for a discussion of potential hazards concerning wildland fires and emergency response.

4.7.1.1 Study Area

The hazards and hazardous materials study area consists of the following project features out to a 1-mile radius:

- The areas encompassing the project components, which includes lands above the tunnel (see Figures 2-4, 2-5, 2-9, and 2-13);
- The area around San Antonio Reservoir that could be inundated following project implementation (see Figures 2-16a through 2-16k). This is understood to be the land area between:
  - The existing maximum WSE (780 feet) and
  - The with-project maximum WSE (787 feet); and
- All areas related to construction of the project components (e.g., staging areas, access roads, soil disposal area) (see Figures 2-4, 2-5, 2-9, and 2-13).

4.7.1.2 Scoping Comments

Table 4.7-1 summarizes the scoping comments received regarding hazards and hazardous materials impacts and identifies how and where these comments have been addressed. Refer to Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* for a complete list of public comments received during the public scoping period.

Table 4.7-1. Scoping Comments Related to Hazards and Hazardous Materials Impacts

Summary of Comment	Location Where Comment Is Addressed
Concerns regarding confined space and associated worker safety (CAL FIRE).	Analysis regarding confined space and associated worker safety is located within Impact HAZ-3, *Impair or Interfere with an Emergency Response Plan or Emergency Evacuation Plan*.
Concerns regarding complying with prevention, control, and mitigation measures for storage, dispensing, use, and handling of hazardous materials (CAL FIRE).	Refer to Impact HAZ-1, *Impacts Associated with the Transport, Use, or Disposal of Hazardous Materials*, which includes analysis regarding the transport and use of hazardous materials and preventative features associated with hazardous material releases.
Concerns that lead-based paint or asbestos-containing materials may be discovered and present a hazard during demolition activities (SLO APCD).	Refer to **MM HAZ-1**, *Conduct an Asbestos and Lead-Based Paint Survey prior to Demolition Activities*, which addresses concerns related to potential exposure to asbestos-containing materials or lead-based paint during demolition activities.

4.7.1.3 Definitions

Hazardous Materials

A hazardous material is any substance that, because of its quantity, concentration, or physical or chemical properties, may pose a hazard to human health or the environment. Under California Code of Regulations (CCR) Title 22, the term *hazardous substance* refers to both hazardous materials and hazardous wastes. Both of these are classified according to four properties: (1) toxicity, (2) ignitability, (3) corrosiveness, and (4) reactivity (CCR Title 22, Chapter 11, Article 3). A hazardous material is defined in CCR Title 22 as:

> [a] substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed. (CCR Title 22 Section 66260.10)

Hazardous materials in various forms can result in death, serious injury, long-lasting health effects, or damage to buildings, homes, and other property. Hazards to human health and the environment can occur during the production, storage, transport, use, or disposal of hazardous materials. Hazardous materials are often released as a result of motor vehicle or equipment accidents, underground or aboveground storage tank failure, or chemical accidents during industrial use. Hazardous substances released into the environment have the potential to leach into soils, surface water, and groundwater.

Hazards

Sources for hazards unrelated to hazardous materials use or potential hazardous material releases discussed in this section include the potential impairment of an adopted emergency response plan or emergency evacuation plan due to implementation of the proposed project or Tunnel-Only Alternative.

4.7.2 Regulatory Setting

Hazardous materials are regulated by numerous agencies whose jurisdictions and responsibilities sometimes overlap. Federal agencies that regulate hazardous materials include the EPA, U.S. Department of Transportation (DOT), and the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA). At the state level, agencies such as the California Department of Industrial Relations and the California Occupational Safety and Health Administration (Cal/OSHA) govern the use of hazardous materials. State and local agencies often have either parallel or more stringent rules than federal agencies.

The generation, transport, and disposal of hazardous wastes can be regulated by different agencies. The lead federal agency is EPA. The California Department of Toxic Substances Control (DTSC) has primary State regulatory responsibility but may delegate enforcement authority to local jurisdictions that enter into agreements with the State agency.

The following is a review of federal and State regulations that are potentially pertinent to the proposed project and Tunnel-Only Alternative.

4.7.2.1 Federal Laws, Regulations, and Policies

Clean Water Act/Spill Prevention, Control, and Countermeasure Rule

The CWA (33 USC Section 1251 *et seq*., formerly the Federal Water Pollution Control Act of 1972) was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of waters of the United States. As part of the CWA, EPA oversees and enforces the Oil Pollution Prevention regulation contained in 40 CFR 112, which is often referred to as the Spill Prevention, Control, and Countermeasure (SPCC) rule because it requires facilities to prepare, amend, and implement SPCC plans. A facility is subject to SPCC regulations if a single oil storage tank has a capacity greater than 660 gallons, the total aboveground oil storage capacity exceeds 1,320 gallons, or the underground oil storage capacity exceeds 42,000 gallons and, because of its location, the facility could reasonably be expected to discharge oil into or upon navigable waters of the United States.

Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as "Superfund," was enacted by Congress on December 11, 1980. This law (42 USC Chapter 103) provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA establishes requirements concerning closed and abandoned hazardous waste sites, provides for the liability of persons responsible for releases of hazardous waste at these sites, and establishes a trust fund to provide for cleanup when no responsible party can be identified. CERCLA also enabled revision of the National Contingency Plan (NCP). The NCP (Title 40 of the Code of Federal Regulations [CFR], Part 300) provides the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The NCP also established the National Priorities List. CERCLA was amended by the Superfund Amendments and Reauthorization Act on October 17, 1986.

Occupational Safety and Health Administration

OSHA is responsible at the federal level for ensuring worker safety. OSHA sets federal standards for implementation of workplace training, exposure limits, and safety procedures for the handling of hazardous substances as well as other workplace hazards. OSHA also establishes criteria by which each state can implement its own health and safety program.

Renovation and Demolition of Buildings Containing Asbestos

The National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations (40 CFR, Part 61, Subpart M), established under the federal Clean Air Act, require that specific practices for handling asbestos-containing building materials be followed during demolition and renovation of all structures, installations, and buildings. The regulations require a thorough inspection of the demolition or renovation site and notification to the appropriate state agency before any demolition or renovation of buildings that could contain a certain threshold amount of asbestos or asbestos-containing material. In addition, certain requirements must be followed when removing asbestos-containing waste. EPA is the lead enforcement agency. The Asbestos Hazard Emergency Response Act's Model Accreditation Plan (MAP) (40 CFR, Part 763, Subpart E, Appendix C) requires that professionals working with asbestos-containing building materials be accredited under the EPA MAP or a program at least as stringent as the EPA MAP program.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976 (42 USC Section 6901 *et seq*.), as amended by the Hazardous and Solid Waste Amendments of 1984, is the primary federal law for the regulation of solid waste and hazardous waste in the United States. These laws provide for "cradle-to-grave" regulation of hazardous wastes, including generation, transport, treatment, storage, and disposal. Any business, institution, or other entity that generates hazardous waste is required to identify and track its hazardous waste from the point of generation until it is recycled, reused, or disposed of.

EPA has primary responsibility for implementing the RCRA, but individual states are encouraged to seek authorization to implement some or all RCRA provisions. California received authority to implement the RCRA program in August 1992. DTSC is responsible for implementing the RCRA program in California.

4.7.2.2 State Laws, Regulations, and Policies

California Accidental Release Prevention

The purpose of the California Accidental Release Prevention program is to prevent accidental releases of substances that can cause serious harm to the public and the environment, minimize damage if releases do occur, and satisfy community right-to-know laws. In accordance with this program, businesses that handle more than a threshold quantity of regulated substance are required to develop a Risk Management Plan (RMP), which must provide a detailed analysis of potential risk factors and associated mitigation measures that can be implemented to reduce accident potential. Certified Unified Program Agencies (CUPAs) implement the California Accidental Release Prevention program through a review of RMPs, facility inspections, and public access to information that is not confidential or designated as a trade secret.

California Department of Forestry and Fire Protection

CAL FIRE protects the people of California from fires, responds to emergencies, and protects and enhances forest, range, and watershed values providing social, economic, and environmental benefits to rural and urban citizens. CAL FIRE's firefighters, fire engines, and aircraft respond to an average of more than 5,600 wildland fires each year (CAL FIRE 2022). The Office of the State Fire Marshal supports CAL FIRE's mission by focusing on fire prevention. It provides support through a wide variety of fire safety responsibilities including by regulating buildings in which people live, congregate, or are confined; by controlling substances and products which may, in and of themselves, or by their misuse, cause injuries, death, and destruction by fire; by providing statewide direction for fire prevention in wildland areas; by regulating hazardous liquid pipelines; by reviewing regulations and building standards; and by providing training and education in fire protection methods and responsibilities.

Cal/OSHA

The California Division of Occupational Safety and Health, known as Cal/OSHA, assumes primary responsibility for developing and enforcing workplace safety regulations in California. Cal/OSHA regulations pertaining to the use of hazardous materials in the workplace (CCR Title 8) include requirements for safety training, the availability of safety equipment, accident and illness prevention programs, warnings about exposure to hazardous substances, and preparation of emergency action and fire prevention plans. Hazard communication program regulations that are enforced by

Cal/OSHA require workplaces to maintain procedures for identifying and labeling hazardous substances, inform workers about the hazards associated with hazardous substances and their handling, and prepare health and safety plans to protect workers at hazardous waste sites. Employers also must make material safety data sheets available to employees and document employee information and training programs.

Hazardous Materials Business Plans

Hazardous materials business plans are required for businesses that handle hazardous materials in quantities equal to or greater than 55 gallons for a liquid, 500 pounds for a solid, or 200 cubic feet for compressed gas or extremely hazardous substances above the threshold planning quantity (40 CFR, Part 355, Appendix A). Business plans are required to include an inventory of the hazardous materials used/stored by the business, a site map, an emergency plan, and a training program for employees. In addition, business plan information is provided electronically to a statewide information management system, verified by the applicable CUPA, and transmitted to the agencies responsible for the protection of public health and safety (i.e., local fire department, hazardous material response team, and local environmental regulatory groups).

Safe Drinking Water and Toxic Enforcement Act of 1986 – Proposition 65

The Safe Drinking Water and Toxic Enforcement Act of 1986, commonly known as Proposition 65, protects the state's drinking water sources from contamination with chemicals known to cause cancer, birth defects, or other reproductive harm. Proposition 65 also requires businesses to inform the public about exposure to such chemicals that may be present in the products they purchase, present in their homes or workplaces, or released into the environment. In accordance with Proposition 65, the California Governor's Office publishes, at least annually, a list of such chemicals. The Office of Environmental Health Hazard Assessment (OEHHA), an agency under the California Environmental Protection Agency (CalEPA), is the lead agency for implementation of the Proposition 65 program. Proposition 65 is enforced through the California Attorney General's Office; however, district and city attorneys, as well as any individual acting in the public interest, may also file a lawsuit against a business alleged to be in violation of Proposition 65 regulations.

The Unified Program

The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs. Statewide, DTSC has primary regulatory responsibility for management of hazardous materials. It works with other state agencies and delegates its authority to local jurisdictions that enter into agreements with the state. Local agencies, including the County of San Luis Obispo and County of Monterey, administer these laws and regulations. DTSC, CalEPA, and other state agencies set the standards for their programs while local governments implement the standards. These local implementing agencies (Certified Unified Program Agencies, or CUPAs) regulate/oversee the following for each county:

a. Hazardous materials business plans;

b. California accidental release prevention plans or federal risk management plans (RMPs);

c. The operation of underground storage tanks and aboveground storage tanks;

d. Universal waste and hazardous waste generators and handlers;

e. On-site hazardous waste treatment;

f. Inspections, permitting, and enforcement;

g. Proposition 65 reporting; and

h. Emergency response.

4.7.2.3 Local Laws and Regulations

Monterey County

The Monterey County General Plan (2010) guides land use and development in unincorporated Monterey County. It contains the following goal, policies, standards, and programs related to emergency preparedness that may apply to the project:

- **GOAL S-5:** Assure the County is prepared to anticipate, respond, and recover from emergencies.
  - **Policy S-5.14:** All public thoroughfares, private roads, and deeded emergency accesses shall be considered potential evacuation routes. The Monterey County Coordinated Emergency Response Plans shall provide basic information on the evacuation routes for specific areas. The routes listed in Table S-1 of the Monterey County General Plan [**Table 4.7-2**], which includes both Interlake Road and Nacimiento Lake Drive, as well as any other route deemed appropriate to the situation, shall be considered "Predesignated Emergency Evacuation Routes" and may be employed during tactical situations at the discretion of the Monterey County Sheriff and/or the Incident Commander.

Monterey County Code of Ordinances

Chapter 10.65, Hazardous Materials Registration

To protect the general health and safety of the public and enable emergency personnel to respond safely and rapidly to emergency situations that may arise, Chapter 10.65 provides a continuing source of current information concerning hazardous substances and chemicals being utilized in Monterey County.

Chapter 10.67, Hazardous Materials Response

Chapter 10.67 provides the means to fund and maintain hazardous materials emergency response capability within the unincorporated area of Monterey County and incorporated cities of Monterey County.

Monterey County Operational Area Emergency Operations Plan

In an emergency or disaster, the Monterey County Office of Emergency Services (OES) organizes, manages, and executes the emergency actions necessary to protect lives, property, and the environment (County of Monterey 2020). To respond effectively to all types of emergencies, OES maintains the Monterey County Emergency Operations Plan (EOP) on behalf of the operational area (County of Monterey 2016). The EOP describes the operational area's emergency organization; its roles, responsibilities, and authorities; and the actions taken during an emergency. The EOP addresses both response and recovery efforts and discusses the principles, concepts, and procedures that OES and its partners use during an emergency or disaster.

Table 4.7-2. Evacuation Routes

U.S. Highways	U.S. 101	
State Highways	Highway 1 Highway 25 Highway 68 Highway 129 Highway 146	Highway 156 Highway 183 Highway 198 Highway 218
Numbered County Roads	Arroyo Seco Road (G17) Bitterwater Road (G13) Carmel Valley Road (G16) Fort Romie Road (G17) Hall Road (G12) Interlake Road (G14) Jolon Road (G14) Jolon Road (G18)	Nacimiento Lake Drive (G19) Laureles Grade (G20) Metz Road (G15) Reservation Road (G17) River Road (G17) San Juan Road (G11) San Miguel Canyon Road (G12)
Other County Roads	Alisal Road Aromas Road Blackie Road Blanco Road Bradley Road Bryson-Hesperia Road Cachagua Road Calera Canyon Road Camphora Gloria Road Carpenteria Road Castroville Boulevard Cattlemen Road Cholame Road Chualar Canyon Road Cooper Road Corral de Tierra Road Crazy Horse Canyon Road Davis Road Dolan Road Echo Valley Road Elkhorn Road Elm Avenue Espinosa Road (Salinas) Gloria Road Gonzales River Road Harkins Road Indian Canyon Road Indians Road	Lockwood-San Lucas Road Lone Oak Road Milpitas Road Mission Road Molera Road Nacimiento-Fergusson Road Nashua Road Oasis Road Old Stage Road Palo Colorado Canyon Road Paris Valley Road Parkfield-Coalinga Road Peach Tree Road Pesante Road Pine Canyon Road Priest Valley Road Reliz Canyon Road Robinson Canyon Road Salinas Road San Benancio Road San Juan Grade Road San Lucas Road 17 Mile Drive Spreckels Road Strawberry Road Tassajara Road Vineyard Canyon Road

Source: Monterey County General Plan (2010b), Safety Element, Table S-1

Monterey County Fire Protection

According to Chapter II, Environmental Constraints, of the Monterey County General Plan, Monterey County elects to provide fire protection through the formation of local fire districts (e.g., South Monterey County Fire Protection District). Service areas and local communities can develop their own fire protection delivery systems.

San Luis Obispo County

The San Luis Obispo County General Plan (2013) guides land use and development in the unincorporated areas of San Luis Obispo County. It contains the following goal, policies, standards, and programs related to hazards and hazardous materials that may apply to the proposed project:

- **GOAL S-6:** Reduce the potential for harm to individuals and damage to the environment from aircraft hazards, radiation hazards, hazardous materials, electromagnetic fields, radon, and hazardous trees.
    - **Policy S-26, Hazardous Materials**: Reduce the potential for exposure to humans and the environment by hazardous substances.

      Implementation Measures:

        - **Program S-68:** Review commercial projects which use, store, or transport hazardous materials to ensure necessary measures are taken to protect public health and safety.
        - **Standard S-69:** Work with Caltrans to require all transport of hazardous materials to follow Caltrans-approved routes.
        - **Program S-70:** Inform residents along approved haul routes of the potential for hazard release.
    - **Policy S-27, Pesticide Hazards:** Reduce the potential for pesticide exposure to humans and the environment.

      Implementation Measure

        - **Program S-72:** Work with pesticide applicators (including commercial applicators and other users such as homeowners) to ensure necessary measures are taken to protect public health and safety.

San Luis Obispo County Code

Chapter 8.14, Underground Storage of Hazardous Substances

Chapter 8.14 establishes local standards for underground storage tank facilities to protect public drinking water supplies and limited groundwater resources; it also establishes procedures for issuance of permits for the installation and use of these facilities.

San Luis Obispo County Emergency Operations Plan

The San Luis Obispo County EOP addresses planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies within or affecting San Luis Obispo County. The purpose of the EOP is to provide an overview on how emergency management is coordinated countywide.

4.7.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to hazards and hazardous materials is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.7.3 Environmental Setting

4.7.3.1 Existing Hazardous Materials and Wastes

Relative to the potential for hazardous materials or hazardous wastes to be present at the site of a proposed project, the CEQA Guidelines Appendix G checklist poses the question, "Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?" Although California Government Code Section 65962.5 makes reference to the preparation of a "list" (often referred to as the "Cortese List"), many changes have occurred related to web-based information access since the regulation was codified, and this information is now largely available on the Internet sites of the responsible organizations (CalEPA 2021a).

GeoTracker, EnviroStor, and CalEPA's Cortese List Data Resources

A spatial query was performed on both the DTSC EnviroStor and the SWRCB GeoTracker databases to identify any cleanup sites or leaking underground storage tank (LUST) locations in the vicinity of the proposed project alignment. In addition to the aforementioned databases, other data resources[1] with information regarding the facilities or sites identified as meeting the Cortese List requirements were also consulted (CalEPA 2021b).

The standard search radius employed for the evaluation of potential risks associated with the presence of hazardous materials or wastes is 1 mile, similar to requirements set forth in ASTM Standard E1527 – 13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM International 2021). Properties with identified hazardous materials releases located more than 1 mile from the project site (specifically, where media is to be disturbed as part of construction) would not be anticipated to represent a substantial risk of contamination or exposure of site occupants to harmful substances.

A database search conducted using the SWRCB's GeoTracker identified two LUST Cleanup Sites, approximately 3,000 and 3,300 feet (0.57 and 0.63 mile) south and southwest, respectively, of the Tunnel Intake Structure site at Nacimiento Reservoir, on the opposite (south) reservoir shore (SWRCB 2021). The two sites are identified as the Lake Nacimiento Resort Pipeline Leak (T10000003219) and Lake Nacimiento Resort UST Release (SL0607963934), both involving releases of gasoline to groundwater. Both cases, the Lake Nacimiento Resort Pipeline Leak (March

[1] CalEPA data resources include:

- Solid waste disposal sites identified by the Regional Water Quality Control Board with waste constituents above hazardous waste levels;
- Active cease-and-desist orders and cleanup-and-abatement orders from the Regional Water Quality Control Board; and
- Hazardous waste facilities subject to corrective action identified by DTSC (CalEPA 2021b).

2016) and Lake Nacimiento Resort UST Release (March 2019), received closure by the Central Coast Regional Water Quality Control Board (Central Coast RWQCB). As such, both sites are considered remediated to the satisfaction of the Central Coast RWQCB.

The Canteen Corporation site (T0605300307), identified as being in the San Antonio Reservoir area, was listed as a LUST Cleanup Site and mapped in GeoTracker as located approximately 450 feet northwest of project construction features and approximately 4,370 feet west-southwest of the Energy Dissipation Structure (at San Antonio Reservoir). The site was identified as having a gasoline release to soil only. The site received closure by the Central Coast RWQCB in August 1989 and is considered remediated.

Military remediation sites (including Military Cleanup Sites and Military UST Sites) are located east (associated with Camp Roberts) and west (associated with Fort Hunter Liggett) of the project site. However, both are well beyond the 1-mile radius of any of the project site.

Camp Roberts Polyfluoroalkyl Substances

The Camp Roberts polyflouroalkyl substances site (T10000016364), which was listed as a Cleanup Program Site with an "Open – Site Assessment as of 10/30/2020" status, is under the purview of the Central Coast RWQCB. According to the November 2019 AECOM Preliminary Assessment (PA) prepared for the site, the Army National Guard is currently assessing the potential for human exposure and effects on the environment associated with the historical use of perflouroalkyl and polyfluoroalkyl substances in the form of on-site aqueous film-forming foam, which was used during firefighting and training activities. The PA determined that potential impacts exist within on-site soils, groundwater, surface water, and sediments. According to the PA, surface water and groundwater flow in the area is to the north-northeast. Because of the distance from the project site and groundwater flow direction away from the project site, it is unlikely that contaminated media from the Camp Roberts perflouroalkyl and polyfluoroalkyl substances site would affect the project site.

Fort Hunter Liggett

Fort Hunter Liggett (T0605307712), which was listed as a Military Cleanup Site with an "Open – Remediation as of 5/3/2010" status, is under the purview of the Central Coast RWQCB. According to GeoTracker, the Central Coast RWQCB is currently overseeing remediation of a landfill and two underground storage tanks on-site. The landfill has been closed for the past 10 years; it has been undergoing groundwater monitoring since its closure. Laboratory results of groundwater monitoring continue to indicate improving groundwater conditions at the site. Furthermore, remediation efforts are complete for two underground storage tank cases. Because remediation activities have been conducted since 2010, including the removal of portions of the contaminant source, and groundwater conditions are stable, it is unlikely that contaminated media associated with this listing from the Fort Hunter Liggett site would affect the project site.

Cortese List

Applicable Cortese List data resources were reviewed, and no sites were identified within the project site or within a 1-mile radius of the project site.

Mercury from Sites beyond Study Area

The Buena Vista/Klau Mercury Mines (60000405) are listed as State Response or National Priorities List (NPL) sites. The mines are approximately 9 miles south of the Tunnel Intake Structure at Nacimiento Reservoir and 12 miles northwest of the city of Paso Robles in San Luis Obispo County. The sites are classified as *Active* under a EPA Multi-Site Cooperative Agreement, with oversight by the DTSC, the Central Coast RWQCB, and EPA (as the lead agency). Although the mines are located well beyond the study area, they have been a source of mercury discharges that have affected waterways and aquatic life within Las Tablas Creek and Nacimiento Reservoir. The mines covered about 175 acres and operated from 1868 until 1970. The RWQCB has overseen the mines since the 1960s and issued several enforcement orders. EPA's emergency response group has conducted two removal events on-site. In 2000, EPA removed 120,000 cubic yards of contaminated soil and placed it in an on-site disposal cell. In 2006, EPA removed a mercury processing building as well as mercury containing soil from the area. The site was listed on the NPL in 2006 (DTSC 2021). According to the California Department of Fish and Wildlife, the extent of contamination emanating from the mines includes the 320-acre mercury mine site, 7 miles of Las Tablas Creek downstream from the mine, and Nacimiento Reservoir.

Mercury in affected sediment can be absorbed by small aquatic organisms that, in turn, are consumed by larger aquatic wildlife, resulting in the accumulation of mercury in predatory fish. Potential impacts on aquatic wildlife associated with mercury contamination are discussed in Section 4.3, *Biological Resources*. Water quality impacts are discussed in Section 4.1, *Hydrology and Water Quality*. Potential impacts associated with human exposure to mercury during dewatering activities are described in Impact HAZ-2, *Impacts Associated with a Release of Hazardous Materials into the Environment*.

4.7.4 Impact Analysis

4.7.4.1 Approach to Data Collection

Existing hazards and hazardous materials conditions at the project site were evaluated by reviewing the following data sources regarding land use, hazard safety guidelines, and hazardous site inventories:

- Monterey County General Plan Final Environmental Impact Report (Monterey County 2010a)
- Monterey County General Plan, Safety Element (Monterey County 2010b)
- San Luis Obispo County General Plan, Safety Element (San Luis Obispo County 1999; amended December 3, 2013)
- EnviroStor, Department of Toxics Substances Control (2021)
- GeoTracker, State Water Resources Control Board (2021)
- CalEPA Cortese List Data Resources

4.7.4.2 Methods for Evaluating Impacts

To determine whether the proposed project or the Tunnel-Only Alternative would result in any significant impacts associated with hazards and hazardous materials, this analysis focuses on the reasonably foreseeable direct and indirect effects of construction and operations relative to existing conditions. The analysis uses project-specific significance criteria, based on the CEQA Guidelines Appendix G, with modifications where deemed appropriate, based on the nature of the project and environmental conditions.

4.7.4.3 Criteria for Determining Significance

Appendix G of the CEQA Guidelines provides guidance on assessing whether a project would have significant impacts on the environment. Consistent with Appendix G, and in consideration of project-specific environmental conditions, MCWRA has determined that the project would have significant impacts related to hazards and hazardous materials if it would:

a. Create a significant hazard for the public or the environment through the routine transport, use, or disposal of hazardous materials

b. Create a significant hazard for the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment or

g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

The following CEQA criteria have been dismissed from further consideration for the reasons described following each:

c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school

- This criterion has been dismissed because no schools are within 0.25 mile of the project site.

d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to USC Section 65962.5 and, as a result, create a significant hazard for the public or the environment.

- This criterion has been dismissed because the project site is not located within a Cortese List site.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project vicinity.

- This criterion has been dismissed because there are no airports in the vicinity of the proposed project. The closest airport is Paso Robles Municipal Airport, approximately 15 miles to the southeast.

f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

- This criterion has been dismissed because there are no airports in the vicinity of the proposed project. The closest airport is Paso Robles Municipal Airport, approximately 15 miles to the southeast.

h. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

- Potential hazards concerning wildland fires and emergency response are discussed in Section 4.15, *Wildfire*.

4.7.4.4 Applicable Avoidance and Minimization Measures

MCWRA has incorporated AMMs into the project design to prevent the occurrence of environmental impacts or reduce their severity. AMMs applicable to this hazards and hazardous materials analysis include the following:

- **AMM GEN-1**, *Spill Prevention and Control*
- **AMM GEN-2**, *Equipment Maintenance and Fueling*
- **AMM GEN-3**, *Hazardous Materials Containment*
- **AMM GEN-4**, *Waste Management*
- **AMM GEN-5**, *Maintenance and Parking of Construction Vehicles*
- **AMM GEN-9**, *Confined Space/Trench Rescue Plan*
- **AMM GEN-10**, *Fire Safety and Evacuation Plan*
- **AMM GEN-13**, *Emergency Access Measures*

A complete description of these measures is provided in Section 2.6, *Avoidance and Minimization Measures*.

4.7.4.5 Impacts and Mitigation Measures

Impact HAZ-1: Impacts Associated with the Transport, Use, or Disposal of Hazardous Materials

Construction

For the duration of construction of the proposed project or the Tunnel-Only Alternative, routine use of gasoline and diesel fuel would occur. Use of such hazardous materials must comply with applicable regulations, such as RCRA regulations, OSHA regulations, and other regulations identified in Section 4.7.2, *Regulatory Setting*.

To prevent a discharge into the environment or explosion, fuels would be stored away from drainage areas and ignition hazards, such as electrical outlets or overhead electrical lines. In addition, fuels would be transported on mobile 500-gallon refuelers that would travel to individual staging yards for equipment refueling at the end of each workday, minimizing the potential for a significant fuel leak to occur. After refueling, the empty refueling tanks would be stored on-site overnight. Secondary containment devices, such as spill trays, lined basins, double-walled tanks, or other containment devices, would be provided for storage tanks with 55 gallons of fuel or more. Although gasoline and diesel fuel would be transported and handled, their use is common during construction projects and does not represent the handling of acutely hazardous materials.

To prevent potential discharges into the surrounding environment, MCWRA would develop and implement a SWPPP that complies with Construction General Permit requirements (Order 2009-0009-DWQ, NPDES No. CAR000002, as amended by 2010-0014-DWQ and 2012-0006-DWQ). The Construction General Permit, which applies to projects that disturb 1 acre of soil or more, requires the applicant to prepare and implement the SWPPP. As described in Section 4.1, *Hydrology and Water Quality,* the SWPPP must include a site map and a description of proposed construction activities, demonstrate compliance with relevant local ordinances and regulations, and present an overview of the BMPs that would be implemented to prevent soil erosion and any discharge of construction-related pollutants, including hazardous materials, that could contaminate nearby water resources. Furthermore, the following project's AMMs would minimize the potential for releases associated with the handling of hazardous materials:

- **AMM GEN-1**, *Spill Prevention and Control*
- **AMM GEN-2**, *Equipment Maintenance and Fueling*
- **AMM GEN-3**, *Hazardous Materials Containment*
- A**MM GEN-4**, *Waste Management*
- **AMM GEN-5**, *Maintenance and Parking of Construction Vehicles*

Operation

As described in Chapter 2, *Project Description*, regular maintenance inspections for the proposed project or the Tunnel-Only Alternative would be performed by the MCWRA engineering staff, or a qualified engineering consultant, with at least one periodic inspection per year of all project components as well as more frequent inspections of specific components, as dictated by operating use and need. MCWRA's inspection frequency would depend on the frequency of use at the Interlake Tunnel and the need for preventative maintenance (e.g., clearing debris). Consequently, hazardous materials, in the form of fuel for maintenance equipment or pesticides and herbicides, are expected to be used intermittently during some of these maintenance activities but in small quantities. Any accidental releases would be contained and cleaned up immediately after their occurrence. Moreover, the project's AMMs (as stated in the preceding construction analysis) would minimize the potential for releases associated with the handling of hazardous materials during operational activities.

CEQA Conclusion

Construction-period and operational impacts associated with the transport, use, or disposal of hazardous materials for the proposed project or Tunnel-Only Alternative would be **less than significant**.

Impact HAZ-2: Impacts Associated with a Release of Hazardous Materials into the Environment

Construction

Proposed Project

As described in Impact HAZ-1*, Impacts Associated with the Transport, Use, or Disposal of Hazardous Materials*, the use of hazardous materials during construction would be required to comply with all applicable laws and regulations, as detailed in Section 4.7.2, *Regulatory Setting*. Fuels used during construction would be transported on mobile 500-gallon refuelers that would travel to individual staging yards for equipment refueling at the end of each workday, thereby minimizing the potential for a significant release. In addition, secondary containment would be provided for storage tanks with 55 gallons of fuel or more. Furthermore, the project's AMMs (**AMM GEN-1** through **AMM GEN-5**, as specified in Impact HAZ-1*, Impacts Associated with the Transport, Use, or Disposal of Hazardous Materials*) would minimize the potential for releases associated with the handling of hazardous materials.

A database search conducted using GeoTracker identified two LUST Cleanup Sites approximately 0.57 and 0.63 mile south and southwest of the Tunnel Intake Structure (SWRCB 2021). The sites are identified as the Lake Nacimiento Resort Pipeline Leak (T10000003219) and Lake Nacimiento Resort UST Release (SL0607963934); both involve releases of gasoline to groundwater. Both cases have received closure by the Central Coast RWQCB (Lake Nacimiento Resort Pipeline Leak in March 2016 and Lake Nacimiento Resort UST Release in March 2019). The Canteen Corporation site (T0605300307), approximately 450 feet northwest of a portion of the underground utility footprint and 4,370 feet west-southwest of the outlet at San Antonio Reservoir, was identified as having a gasoline release to soil only. The Canteen Corporation site received closure from the Central Coast RWQCB in August 1989. In addition to SWRCB's GeoTracker and DTSC's EnviroStor online databases, other applicable Cortese List data resources were reviewed. However, no additional sites were identified within the project footprint or within a 1-mile radius of the proposed project. Thus, potential impacts associated with off-site properties are considered low.

Mercury Impacts

The Buena Vista/Klau Mercury Mines (60000405), which are listed as State Response or NPL sites, are approximately 9.4 miles south of the site proposed for the Tunnel Intake Structure. Although the mines are located well beyond the hazardous materials study area, they have been a historical source of mercury discharges and have affected both Las Tablas Creek and Nacimiento Reservoir.

As described in Section 4.1, *Hydrology and Water Quality,* Nacimiento Reservoir is designated as impaired for mercury, with a fish consumption advisory in place due to the elevated levels of mercury found in fish. In addition to historical mining activities, other sources of mercury include atmospheric deposition and resuspension of historic deposits of mercury-laden sediment already in the reservoir. Moreover, the natural geology of the Central Coast region includes areas with high levels of naturally occurring mercury. Similarly, San Antonio Reservoir is designated as impaired for mercury, with a fish consumption advisory. Like the Nacimiento River watershed, the natural geology of the region has been a source of mercury, as have the historic mining activities conducted on the Fort Hunter-Liggett Military Reservation, as discussed in Section 4.7.3.1, *Existing Hazardous Materials and Wastes.*

Dewatering could occur as part of construction activities (i.e., during installation of a cofferdam) at the Tunnel Intake Structure and Energy Dissipation Structure. However, as noted in Section 4.1, *Hydrology and Water Quality*, Construction General Permit requirements include dewatering; therefore, treatment may be required to ensure compliance with applicable construction dewatering discharge permitting. Dewatering would also be required to comply with the discharge sampling, monitoring, and reporting requirements of the Central Coast RWQCB as well as waste discharge requirements for dewatering (Order No. 2003-0003-DWQ).

The proposed project's Spillway Modification would include demolition of the ogee crest control structure at San Antonio Dam. Because the infrastructure at San Antonio Dam dates back to 1967, the potential exists for asbestos-containing building materials or lead-based paint to be present in some of the features that would be demolished.

Tunnel-Only Alternative

The Tunnel-Only Alternative would omit the Spillway Modification but would otherwise be similar to the proposed project in terms of the potential for effects concerning waterborne contaminants. Dewatering could occur as part of the Tunnel-Only Alternative, similar to that associated with the proposed project, and would be subject to the same discharge sampling, monitoring, and reporting requirements of the Central Coast RWQCB as well as waste discharge requirements for dewatering (Order No. 2003-0003-DWQ).

Operation

During operations and maintenance, both the proposed project or Tunnel-Only Alternative would entail intermittent fuel use, but given the nature of proposed improvements, fuel use is not expected to be substantial; moreover, fuels are widely used and not generally considered acutely hazardous materials. Any releases would be contained and cleaned up soon after the occurrence. The handling of hazardous materials would be subject to the regulations for construction and implementation of the applicable AMMs (**AMM GEN-1** through **AMM GEN-5**, as specified in Impact HAZ-1*, Impacts Associated with the Transport, Use, or Disposal of Hazardous Materials*). These project design features would further minimize the potential for a release associated with the handling of hazardous materials during operational activities. In addition, both Nacimiento and San Antonio Reservoir have been designated as impaired for mercury; therfore, the transfer of mercury-affected water from one reservoir to another during operations is not considered a risk.

CEQA Conclusion

Construction impacts associated with a release of hazardous materials into the environment as a result of the proposed project would be significant. Mitigation Measure HAZ-1, *Conduct an Asbestos and Lead-Based Paint Survey prior to Demolition Activities*, would require implementation of a hazardous building materials survey prior to demolition and provide for abatement activities in the event that hazardous materials are found. The impact would be **less than significant with mitigation**.

Construction impacts associated with a release of hazardous materials into the environment as a result of the Tunnel-Only Alternative would be **less than significant**.

Operational impacts associated with a release of hazardous materials into the environment as a result of the proposed project or Tunnel-Only Alternative would be **less than significant**.

Mitigation Measure

Mitigation Measure HAZ-1: Conduct an Asbestos and Lead-Based Paint Survey prior to Demolition Activities

Prior to the issuance of the demolition permit, MCWRA will ensure that asbestos and lead-based paint surveys are conducted by a licensed contractor prior to demolition activities associated with the proposed project. Should this survey determine that asbestos and/or lead-based paint is present, the following actions will be implemented:

- A health and safety plan will be developed by a certified industrial hygienist for potential lead-based paint or asbestos risks present during demolition. The health and safety plan will then be implemented by a licensed contractor.
  - Both the federal OSHA and Cal/OSHA regulate worker exposure during construction activities that involve lead-based paint. The Interim Final Rule found in 29 CFR, Part 1926.62, covers construction work in which employees may be exposed to lead during such activities as demolition, removal, surface preparation for repainting, renovation, cleanup, and routine maintenance.

- Abatement activities will be conducted by a licensed contractor.
- Prior to demolition of construction debris containing asbestos, the Monterey Bay Air Resources District will be notified 10 days prior to initiating construction and demolition activities.
  - Asbestos will be disposed of at a licensed disposal facility. Section 19827.5 of the California Health and Safety Code, requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos.
  - The local office of Cal/OSHA will be notified of asbestos abatement activities.
  - Asbestos abatement contractors will follow state regulations contained in 8 CCR Section 1529 and 8 CCR Sections 341.6 through 341.14 where there is asbestos-related work involving 100 square feet or more of asbestos-containing material.
  - Asbestos removal contractors will be certified as such by the Contractors Licensing Board of the State of California.

Impact HAZ-3: Impair or Interfere with an Emergency Response Plan or Emergency Evacuation Plan

Construction

According to the Monterey County General Plan, Safety Element Policy S-5.14, all public thoroughfares, private roads, and deeded emergency access routes are to be considered potential evacuation routes. Implementation of the proposed project or Tunnel-Only Alternative would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, such as the Monterey County EOP or the San Luis Obispo County EOP (both plans are described in more detail in Section 4.7.2, *Regulatory Setting*). Although a temporary increase in the number of vehicles as a result of project construction could slow traffic in the study area, construction traffic impacts related to traffic flow would be minimal (as described in Section 4.6, *Transportation*). This is due to daily truck trips occurring during off-peak seasons. Thus, construction traffic as a result of the proposed project or Tunnel-Only Alternative would be a relatively minor part of overall daily traffic and would not substantially affect normal use of local roadways and highways. In addition, neither the proposed project nor the Tunnel-Only Alternative would allow any construction vehicles or equipment to park or remain stationary for extensive periods of time within any of the main local roadways (e.g., Nacimiento Lake Drive [Road G14], Vista Road, Interlake Road) leading into the project site.

All large construction vehicles entering and exiting the site would be guided by personnel with signs and flags to direct traffic. Moreover, the project would not have any characteristics (e.g., permanent road closures, long-term blocking of road access) that would physically impair or otherwise interfere with emergency response or evacuation in the project vicinity. As discussed in Section 4.15, *Wildfire,* all access routes would meet California Department of Forestry and Fire Protection grade requirements to support fire suppression equipment, further ensuring proper access to and from the project site (for emergency personnel).

MCWRA and/or its construction contractors would be required to comply with **AMM GEN-10**, *Fire Safety and Evacuation Plan*, and **AMM GEN-13**, *Emergency Access Measures*. **AMM GEN-10** would require preparation of a fire safety and evacuation plan. The plan would address topics such as emergency egress routes, evacuation procedures, and inundation emergencies. **AMM GEN-13** states that more than one access road should be established if project construction requires temporary lane closures or detours on main local arterials. The alternate route would be provided in case a road is blocked as a result of traffic congestion, terrain-related conditions, climatic conditions, or other factors that could limit access.

Project construction would also require trenching and work within confined spaces, both of which are subject to Cal/OSHA CCR Title 8 requirements regarding emergency access. All tunnel construction, trenching, or work within confined spaces by MCWRA staff members or the construction contractor would adhere to the MCWRA Confined Space/Trench Rescue Plan (per **AMM GEN-9**, *Confined Space/Trench Rescue Plan*). Adherence to this plan would minimize risks to construction personnel from work within confined spaces by establishing protocols that identify safety risks, requiring notification of emergency service providers in advance of activities within confined spaces, and preparing both construction personnel and emergency service providers for rescue operations should they be required.

Project features such as not allowing construction vehicles and equipment to park or stop for extended lengths of time along main arterial roadways, the use of personnel with signs and flags to ensure the continued flow of traffic (as necessary), and compliance with the aforementioned plans, requirements would avoid potential impacts on emergency response or emergency evacuation procedures.

Operation

Proposed Project

Access roads surrounding the project site would be improved as part of proposed project. The roads include Nacimiento Reservoir Overflow/Day Use Ramp Road, an existing access road, a construction access road, and an all-terrain vehicle trail. Improvements would include clearing and trimming overgrown vegetation and improving on-site fill material by transferring, adding, or compacting the material as necessary. Initially, the access roads would serve as improved access routes for construction vehicles; however, they would later serve as permanent access routes for project operations and maintenance after construction and improve access to the project site and its surroundings. Improved access to the area would allow more efficient emergency response and evacuation operations. As described in Impact TRA-2, *Increase Transportation Hazards*, in Section 4.6, *Transportation*, portions of some roadways in the area surrounding San Antonio Reservoir could be inundated during certain periods of the year when the maximum WSE rises above its current maximum of 780 feet to the new maximum of 787 feet. Although area roadways that would be subject to this temporary and periodic inundation are not high-traffic roads, emergency access could be affected for the duration of inundation.

Tunnel-Only Alternative

As with the proposed project, access roads surrounding the project site would be improved, thereby allowing more efficient emergency response and evacuation operations. In addition, because the Tunnel-Only Alternative would not include the Spillway Modification, the WSE at San Antonio Reservoir would not increase. As such, the Tunnel-Only Alternative would not result in any new inundation along roadways at elevations of more than 780 feet.

CEQA Conclusion

Impacts associated with impairment of or interference with an emergency response plan or emergency evacuation plan resulting from construction of the proposed project or Tunnel-Only Alternative would be **less than significant**.

Impacts associated with impairment of or interference with an emergency response plan or emergency evacuation plan resulting from operation of the proposed project would be significant. **MM TRA-1** includes provisions to minimize inundation-related hazards by alerting motorists, including emergency providers, to alternate routes. The impact would be **less than significant with mitigation**.

Impacts associated with impairment of or interference with an emergency response plan or emergency evacuation plan resulting from operation of the Tunnel-Only Alternative would be **less than significant**.

4.7.5 Impact Summary

Table 4.7-3 provides a summary of the significance of potential impacts related to hazards and hazardous materials.

Table 4.7-3. Summary of Impacts Related to Hazards and Hazardous Materials

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact HAZ-1: Impacts Associated with the Transport, Use, or Disposal of Hazardous Materials			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact HAZ-2: Impacts Associated with a Release of Hazardous Materials into the Environment			
Proposed Project	Construction: Significant	**MM HAZ-1**	Less than significant
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact HAZ-3: Impair or Interfere with an Emergency Response Plan or Emergency Evacuation Plan			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Significant	**MM TRA-1**	Less than significant
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A

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4.8 Noise

4.8.1 Overview

This section describes the existing noise environment in the vicinity of the project site, presents relevant noise and vibration regulations, identifies sensitive noise and vibration receptors that could be affected by the proposed project and Tunnel-Only Alternative, and evaluates the potential noise- and vibration-related impacts of the proposed project and Tunnel-Only Alternative. The section also identifies mitigation measures to reduce significant impacts, where appropriate.

4.8.1.1 Study Area

For the purposes of this EIR, the noise and vibration study area includes areas close to project construction, as well as areas that would be very close to proposed sources of noise during project operations. Specific estimated distances are included below. Operational noise sources would not be expected to result in substantial effects at distances as great as those associated with construction. Because of the nature of the noise ordinance in unincorporated Monterey County, an area where equipment noise within 2,500 feet of occupied dwelling units is regulated, the study area includes properties within 2,500 feet of proposed construction areas. Although the ordinance in San Luis Obispo County provides a daytime exemption for construction noise, construction may occur outside of daytime hours. Therefore, the study area within San Luis Obispo County also includes properties within 2,500 feet of proposed construction areas.

4.8.1.2 Scoping Comments

No comments pertaining to noise or vibration were submitted during public scoping for this DEIR.

4.8.1.3 Noise and Vibration Concepts and Terminology

Noise

In the context of CEQA, *noise* can be defined as unwanted sound that interferes with speech and hearing, sleep, or other normal activities or causes adverse health effects. Sound is characterized by various parameters, including the rate of oscillation of sound waves (*frequency*), the speed of propagation, and the pressure level or energy content (*amplitude*). *Sound pressure level* is the most common descriptor used to characterize the loudness of an ambient sound level, or sound intensity. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary enormously within the range of human hearing, a logarithmic scale is used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all frequencies in the spectrum; therefore, noise measurements are weighted more heavily for frequencies to which humans are sensitive, creating the A-weighted decibel (dBA) scale.

Different types of measurements are used to characterize the time-varying nature of sound. Brief definitions of these measurements and other terminology used in this section follow.

- **Decibel** (dB) is a unit used to measure the intensity of sound. It is represented on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude.

- **A-weighted decibel** (dBA) represents the relative loudness of sounds in air as perceived by the human ear. It is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Maximum sound level** (L_{max}) is the maximum sound level measured during a given measurement period.
- **Minimum sound level** (L_{min}) is the minimum sound level measured during a given measurement period.
- **Equivalent sound level** (L_{eq}) is the average sound level over time. It is the equivalent steady-state sound level that, in a given period, would contain the same acoustical energy as a time-varying sound level during that same period.
- **Day-night sound level** (L_{dn}) is the average sound level over a 24-hour period of time, with a penalty added for the nighttime time period when ambient noise levels are generally quieter. Specifically, it is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels during the period from 10:00 p.m. to 7:00 a.m. (typical sleeping hours). This weighting adjustment reflects the elevated sensitivity of individuals to ambient sound during nighttime hours.
- **Community noise equivalent level** (CNEL) is a weighted average sound level over time. It is the energy average of the A-weighted sound levels during a 24-hour period, with 5 dB added to the A-weighted sound levels between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A-weighted sound levels between 10:00 p.m. and 7:00 a.m.

In general, human sound perception is such that a change in sound level of 3 dB is generally considered to be barely perceptible, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as either doubling or halving the sound level. **Table 4.8-1** presents approximate noise levels for common noise sources, measured adjacent to the source.

Noise from Multiple Sources

Because the measurement of sound pressure levels in decibels is based on a logarithmic scale, decibels cannot be added or subtracted in the usual arithmetical way. Adding a new noise source to an existing noise source, with both producing noise at the same level, will not double the noise level. For example, if two identical noise sources each produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. **Table 4.8-2** demonstrates the result of adding noise from multiple sources.

Attenuation of Noise

Noise attenuates (i.e., decreases) with distance. Because roadway noise sources are linear, noise from roadway vehicular traffic attenuates at a rate of approximately 3.0 to 4.5 dB per doubling of distance from the source, depending on the intervening surface (paved or vegetated, respectively) (FTA 2018). Point sources of noise, such as stationary equipment or construction equipment, typically attenuate at a rate of approximately 6.0 to 7.5 dB per doubling of distance from the source.[1] For example, a sound level of 80 dBA at 50 feet from the noise source will be reduced to 74 dBA at 100 feet, 68 dBA at 200 feet, and so on. In addition, noise levels can also be attenuated by shielding the noise source or providing a barrier between the source and the receptor.

[1] The 1.5 dB variation in attenuation rate (6 dB versus 7.5 dB) can result from ground-absorption effects, which occur as sound travels over soft surfaces, such as earth or vegetation (7.5 dB attenuation rate), versus hard surfaces, such as pavement or hard-packed earth (6 dB rate).

Table 4.8-1. Typical A-weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock band
Jet flyover at 1,000 feet		
	—100—	
Gas lawnmower at 3 feet		
	—90—	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	—80—	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower at 100 feet	—70—	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	—60—	
		Large business office
Quiet urban daytime	—50—	Dishwasher in next room
Quiet urban nighttime	—40—	Theater, large conference room (background)
Quiet suburban nighttime		
	—30—	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	—20—	
		Broadcast/recording studio
	—10—	
	—0—	

Source: Caltrans 2013.

Table 4.8-2. Rules for Combining Sound Levels by Decibel Addition

When two decibel values differ by…	…add the following amount to the higher decibel value	Example
0 to 1 dB	3 dB	60 dB + 61 dB = 64 dB
2 to 3 dB	2 dB	60 dB + 63 dB = 65 dB
4 to 9 dB	1 dB	60 dB + 69 dB = 70 dB
10 dB or more	0 dB	60 dB + 75 dB = 75 dB

Source: Caltrans 2013.

Vibration

Vibration is an oscillatory motion through a solid medium, with the motion's amplitude described in terms of displacement, velocity, or acceleration. Construction-related vibration results primarily from the use of impact equipment, such as pile drivers (both impact and vibratory), hoe rams, vibratory compactors, and jack hammers. Operations-related vibration results primarily from the passing of trains, buses, and heavy trucks.

Vibration is often measured by peak particle velocity (PPV), defined as the maximum instantaneous peak in the vibration signal, expressed in inches per second. PPV is the metric typically used to describe vibration from sources that may result in stresses in structures.

Vibration can also be quantified by the root-mean-square velocity amplitude, which can be useful for assessing human annoyance (although the PPV metric can also be used for this). The root-mean-square amplitude is expressed in terms of vibration decibels (VdB).

The operation of heavy construction equipment, particularly pile drivers and other heavy-duty impact devices (e.g., pavement breakers), creates seismic waves that radiate along the surface of the ground and downward. These surface waves can be felt as ground vibration and result in effects that range from annoyance for people to damage for structures. Groundborne vibration generally attenuates rapidly with distance from the source of the vibration. This attenuation is a complex function of how energy is imparted into the ground, as well as the subsurface soil and/or rock conditions through which the vibration is traveling. Variations in geology can result in different vibration levels, with denser soils generally resulting in more rapid attenuation over a given distance. The effects of groundborne vibration on buildings include rumbling sounds and floor movement, window rattling, and items on shelves or hanging on walls shaking. Groundborne noise is the rumbling sound generated by the vibration of building surfaces, such as floors, walls, and ceilings, which radiate noise from the motion of a room's surfaces (FTA 2018). Groundborne noise can also occur because of the low-frequency components of a specific source of vibration, such as a rail line.

Vibration under typical soil conditions may be estimated at a given distance with use of the following formula, with PPV_{ref} being the reference PPV at 25 feet (FTA 2018):

$$PPV = PPV_{ref} \times (25/distance)^{1.5}$$

Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible groundborne vibration are heavy construction equipment, steel-wheeled trains, and vehicular traffic on rough roads. Groundborne noise is generated when vibration in the ground causes sound energy to radiate into the air.

Groundborne vibration generally is limited to areas within a few hundred feet of certain types of industrial operations and construction/demolition activities, such as pile driving. Road vehicles rarely create enough groundborne vibration amplitude to be perceptible to humans, unless the receiver is in immediate proximity to the source, or the road surface is poorly maintained and has potholes or bumps. Human sensitivity to vibration varies by frequency and receiver. Generally, people are more sensitive to low-frequency vibration. Human annoyance also is related to the number and duration of events; the more events or the greater the duration, the more annoying it becomes.

4.8.2 Regulatory Setting

4.8.2.1 Federal Laws, Regulations, and Policies

Federal Transit Administration

No federal laws, regulations, or policies for construction-related noise and vibration directly apply to the proposed project. However, the Federal Transit Administration (FTA) has developed general assessment criteria for analyzing construction noise. Although FTA standards are intended for federally funded mass-transit projects, the impact assessment procedures and criteria included in the FTA's *Transit Noise and Vibration Impact Assessment Manual* routinely are used to evaluate a variety of projects proposed by local jurisdictions, not merely transit projects (FTA 2018). Accordingly, the MCWRA finds the procedures and criteria suitable for use in the evaluation of the proposed project and the Tunnel-Only Alternative.

FTA's *Transit Noise and Vibration Impact Assessment Manual* contains noise and vibration criteria that can provide guidance for noise- and vibration-related impact assessments in California (FTA 2018). The discussion that follows describes the FTA guidelines and criteria related to noise considered in this analysis.

Noise

FTA's general assessment criteria for analyzing construction noise considers simultaneous operation of the two pieces of equipment that produce the most noise that may be operational at the same time and at approximately the same location. The estimated combined noise levels are then compared to the levels in FTA's General Assessment Criteria for Construction Noise, as summarized in **Table 4.8-3.**

Table 4.8-3. FTA General Assessment Criteria for Construction Noise

	One-hour L_{eq} (dBA)	
Land Use	**Day**	**Night**
Residential	90	80
Commercial	100	100
Industrial	100	100

Source: FTA 2018.
dBA = A-weighted decibel; L_{eq} = Equivalent sound level

Vibration

FTA also developed guidelines for the assessment of vibration effects related to annoyance. As indicated in **Table 4.8-4**, FTA's general assessment criteria for evaluating potential construction-generated vibration effects parses annoyance related to interference with interior operations, sleep, and institutional daytime use as a function of the frequency of the vibration event, according to three land use categories.

Except for long-term occupational exposure, vibration levels rarely affect human health. Instead, most people consider vibration to be an annoyance that can affect concentration or disturb sleep. People may tolerate infrequent, short-duration vibration levels, but human annoyance to vibration becomes more pronounced if the vibration is continuous or occurs frequently. MCWRA finds the FTA guidelines and criteria suitable for use in the evaluation of vibration-related annoyance impacts associated with the proposed project and Tunnel-Only Alternative.

Table 4.8-4. FTA Groundborne Vibration Impact Criteria

Land Use Category	GVB Impact Levels (VdB re 1 micro-inch per second) Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1: Buildings where vibration would interfere with interior operations	65 VdB[d]	65 VdB	65 VdB
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use	75 VdB	78 VdB	80 VdB

Source: FTA 2018.
[a.] Frequent events are defined as more than 70 vibration events from the same source per day. Most rapid transit projects fall into this category.
[b.] *Occasional events* are defined as between 30 and 70 vibration events from the same source per day. Most commuter trunk lines have operations in this range.
[c.] Infrequent events are defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.
[d.] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. For equipment that is more sensitive, a detailed vibration analysis must be performed.
GVB = groundborne vibration; VdB = vibration decibels

4.8.2.2 State Laws, Regulations, and Policies

California Department of Transportation

With respect to groundborne vibration from construction activities, the California Department of Transportation (Caltrans) has adopted vibration-related damage guidelines/criteria that are routinely used for projects proposed by local jurisdictions throughout California. Caltrans' vibration guidelines for potential damage to different types of structures are provided in **Table 4.8-5**. MCWRA finds the Caltrans guidelines and criteria suitable for use in the evaluation of vibration-related damage impacts associated with the proposed project and Tunnel-Only Alternative.

Table 4.8-5. Caltrans Vibration Guidelines for Potential Damage to Structures

Structure Type and Condition	Maximum Peak Particle Velocity (PPV, in/sec) Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: Caltrans 2020.
Note: Transient sources create a single, isolated vibration event (e.g., blasting or the use of drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
in/sec = inch per second; PPV = peak particle velocity

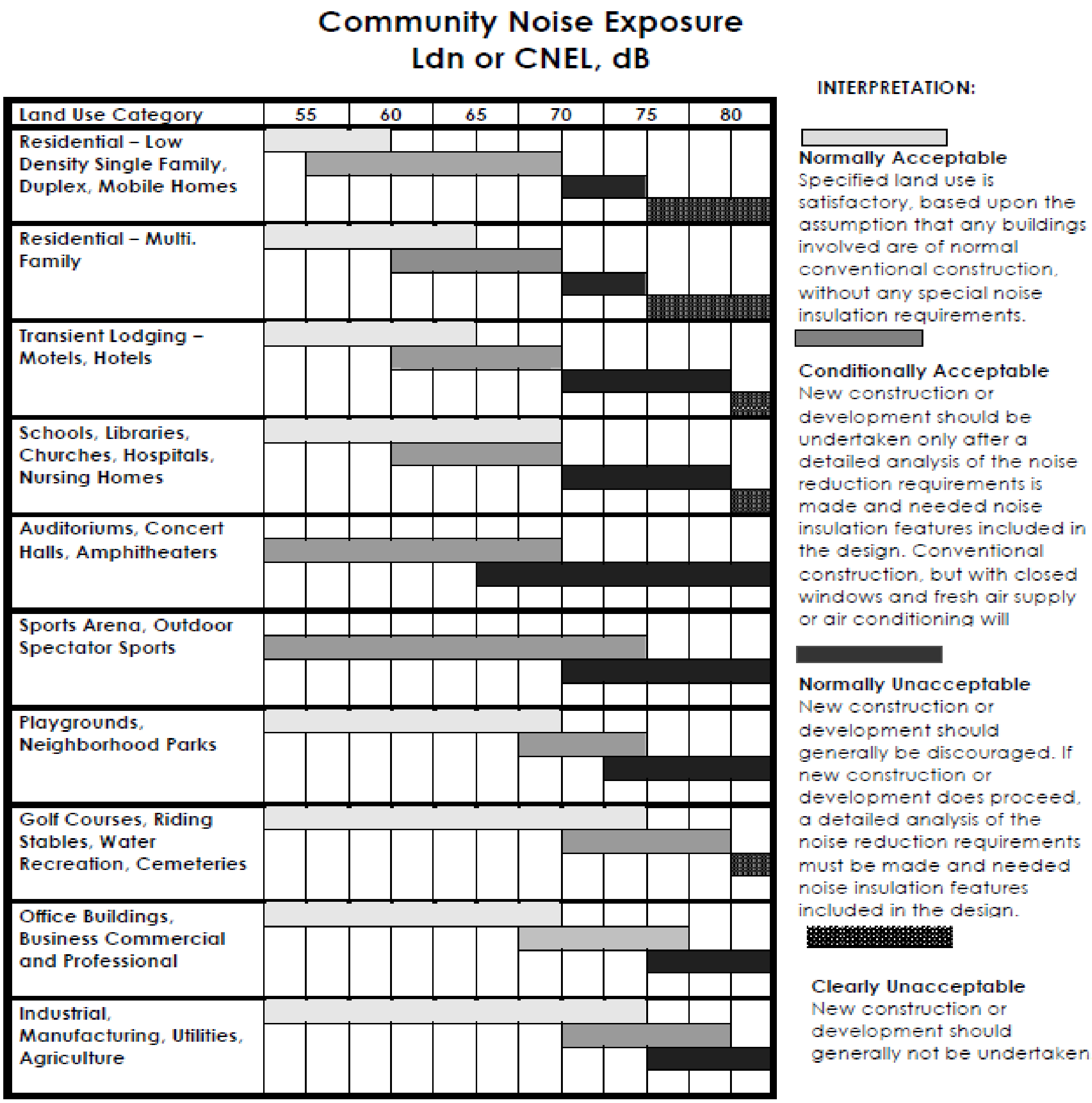
4.8.2.3 Local Laws, Regulations, and Policies

Monterey County

General Plan

Policies from the *Monterey County General Plan – Safety Element* (County of Monterey 2010) are intended to protect local citizens from noise hazards. In Monterey County, residential land uses are considered "normally acceptable" in noise environments of up to 60 dBA CNEL, and "conditionally acceptable" in noise environments of up to 70 dBA CNEL. The Safety Element guidelines state that interior noise levels in all residences must be maintained at or below 45 dBA CNEL. For active recreational areas, including areas for water recreation, 75 dBA is considered "normally acceptable" noise. **Figure 4.8-1** provides the land use compatibility guidelines for Monterey County. The following Monterey County General Plan (2010) goals and policies are applicable to the proposed project:

- **Policy S-7.4**: New noise generators may be allowed in areas where projected noise levels (Figure 10) are "conditionally acceptable" only after a detailed analysis of the noise reduction requirements is made and needed noise mitigation features are included in the project design.
- **Policy S-7.5**: New noise generators shall be discouraged in areas identified as "normally unacceptable." Where such new noise generators are permitted, mitigation to reduce both the indoor and outdoor noise levels will be required.
- **Policy S-7.6**: Acoustical analysis shall be part of the environmental review process for projects when:
    a. Noise-sensitive receptors are proposed in areas exposed to existing or projected noise levels (Figures 9 and 10) that are "normally unacceptable" or higher according to General Plan Table S-2 ("Land Use Compatibility for Community Noise").
    b. Proposed noise generators are likely to produce noise levels exceeding the levels shown in the adopted Community Noise Ordinance when received at existing or planned noise-sensitive receptors.
- **Policy S-7.8**: All discretionary projects that propose to use heavy construction equipment that has the potential to create vibrations that could cause structural damage to adjacent structures within 100 feet shall be required to submit a pre-construction vibration study prior to the approval of a building permit. Projects shall be required to incorporate specified measures and monitoring identified to reduce impacts. Pile-driving or blasting equipment is illustrative of the type of equipment that could be subject to this policy.
- **Policy S-7.9**: No construction activities pursuant to a County permit that exceed "acceptable" levels listed in Policy S-7.1 shall be allowed within 500 feet of a noise-sensitive land use during the evening hours of Monday through Saturday, or anytime on Sunday or holidays, prior to completion of a noise mitigation study. Noise protection measures, in the event of any identified impact, may include, but not be limited to:
    - Constructing temporary barriers, or
    - Using quieter equipment than normal.



Source: County of Monterey 2010

Figure 4.8-1. Noise Compatibility Guidelines for Monterey County

- **Policy S-7.10**: Construction projects shall include the following standard noise protection measures:
  - o Construction shall occur only during times allowed by ordinance/code, unless such limits are waived for public convenience;
  - o All equipment shall have properly operating mufflers; and
  - o Lay-down yards and semi-stationary equipment such as pumps or generators shall be located as far from noise-sensitive land uses as practical.

Noise Ordinance

Chapter 10.60 of the Monterey County Code contains noise regulations for the unincorporated area of Monterey County (Monterey County, California – Code of Ordinances, Chapter 10.60, Noise Control), providing guidance and criteria for assessing the severity of noise generated by various sources in the county. Equipment in Monterey County is generally limited to a noise level of 85 dBA at a distance of 50 feet. If the equipment is operated more than 2,500 feet from the nearest home, the quantitative limit does not apply. In addition, nighttime noise between the hours of 9:00 p.m. and 7:00 a.m. is generally limited to 65 dBA L_{max} and 45 dBA L_{eq}.

The following sections of the Monterey County Code, Chapter 10.60, Noise Control, are applicable to those portions of the proposed project and Tunnel-Only Alternative located within Monterey County (i.e., San Antonio Reservoir and the northern portion of the tunnel).

10.60.030: Operation of Noise-producing Devices Restricted

At any time of the day, it is prohibited within the unincorporated area of Monterey County to operate, assist in operating, or allow or cause to be operated any machine, mechanism, device, or contrivance that produces a noise level that exceeds 85 dBA measured 50 feet therefrom. The prohibition in this section shall not apply to aircraft or to any such machine, mechanism, device, or contrivance that is operated in excess of 2,500 feet from any occupied dwelling unit.

10.60.040: Regulation of Nighttime Noise.

The following regulations shall apply to nighttime noise:

A. It is prohibited within the unincorporated area of the County of Monterey to make, assist in making, allow, continue, create, or cause to be made any loud and unreasonable sound any day of the week from 9:00 p.m. to 7:00 a.m. the following morning.

B. Within the time period 9:00 p.m. to 7:00 a.m. the following morning, and for the purposes of this section, a loud and unreasonable sound shall include any sound that exceeds the exterior noise level standards set forth below [refer to **Table 4.8-6**].

Note that some exceptions apply. However, the proposed project and Tunnel-Only Alternative would not qualify for any of the exceptions listed in this section of the Monterey County code.

Table 4.8-6. Maximum Allowable Exterior Noise Levels, Monterey County

Monterey County Code Section 10.60.040	Standard
Nighttime hourly equivalent sound level (L_{eq} dBA)	45
Maximum level, dBA	65

Source: County of Monterey 2010.
dBA = A-weighted decibel; L_{eq} = Equivalent sound level

San Luis Obispo County

General Plan Noise Element

According to the *San Luis Obispo County General Plan – Noise Element* (County of San Luis Obispo 1992), residential land uses are considered "normally acceptable" in noise environments of up to 60 dBA CNEL and "conditionally acceptable" in noise environments of up to 70 dBA CNEL. Also, according to the Noise Element, interior noise levels in all residences must be maintained at or below 45 dBA CNEL. For active recreational areas, including areas for water recreation, 70 dBA is considered "normally acceptable" noise. Refer to **Figure 4.8-2** for the noise compatibility guidelines for San Luis Obispo County. The following guidelines from the San Luis Obispo County General Plan are applicable to the proposed project:

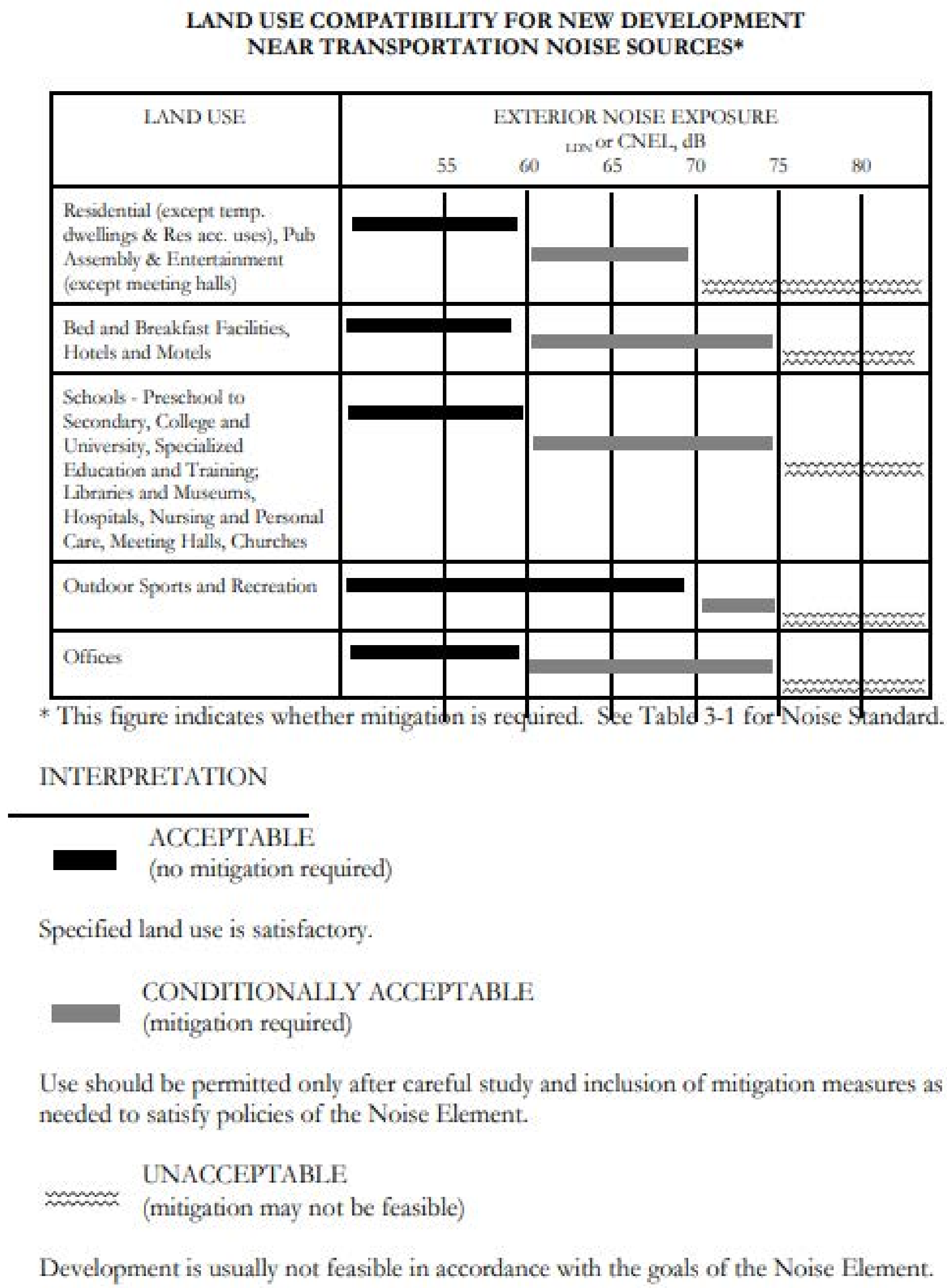
- **Policy 3.3.1**: The noise standards in this chapter represent maximum acceptable noise levels. New development should minimize noise exposure and noise generation.
- **Policy 3.3.5**: Noise created by new proposed stationary noise sources or existing stationary noise sources that undergo modifications that may increase noise levels shall be mitigated as follows and shall be the responsibility of the developer of the stationary noise source:
    b. Noise levels shall be reduced to or below the noise level standards in Table 3-2 from the General Plan where the stationary noise source will expose an existing noise-sensitive land use (which is listed in the Land Use element as an allowable use within its existing land use category) to noise levels that exceed the standards in General Plan Table 3-2.

    c. Noise levels shall be reduced to or below the noise level standards in General Plan Table 3-2 where the stationary noise source will expose vacant land in the Agriculture, Rural Lands, Residential rural, Residential Suburban, Residential Single-Family, Residential Multi-Family, Recreation, Office and Professional, and Commercial Retail land use categories to noise levels that exceed the standards in General Plan Table 3-2.

Noise Ordinance

Section 22.10.120 of the San Luis Obispo County Code contains county noise regulations, which state that noise levels generally should not exceed 50 dBA L_{eq} and 70 dBA L_{max} during the daytime hours of 7:00 a.m. to 10:00 p.m. at a receiving sensitive property line (San Luis Obispo County, California – County Code, Title 22.10.120, Noise Standards). During the nighttime hours of 10:00 p.m. to 7:00 a.m., noise levels generally should not exceed 45 dBA L_{eq} and 65 dBA L_{max} at a receiving sensitive property line. The code defines *noise-sensitive uses* as residential uses, except for residential accessory uses and temporary dwellings, health care services, hotels and motels, bed and breakfast facilities, schools, churches, libraries and museums, public assembly and entertainment venues, offices, and facilities for outdoor sports and recreation. The primary sensitive receptors in the vicinity of the project site are residences.

The noise ordinance includes an exemption to the standards for noise generated by temporary construction activities, provided such activities take place between 7:00 a.m. and 9:00 p.m. weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays and Sundays. The discussion below outlines the sub-sections of the ordinance that are directly applicable to the portions of the proposed project within San Luis Obispo County (i.e., Nacimiento Reservoir, Tunnel Intake Structure facilities, and the southern portion of the tunnel alignment).



Source: County of San Luis Obispo 1992.

Figure 4.8-2. Noise Compatibility Guidelines for San Luis Obispo County

22.10.120: Noise Standards

A. *Exceptions to noise standards.* The standards of this section are not applicable to *noise* from the following sources.

4. Noise sources associated with construction, provided such activities do not take place before 7:00 a.m. or after 9:00 p.m. on any day except Saturday or Sunday, or before 8:00 a.m. or after 5:00 p.m. on Saturday or Sunday;

B. *Exterior noise level standards.* The exterior noise level standards of this section are applicable when a land use affected by noise is one of the following noise-sensitive uses: residential uses listed in Section 22.06.030 (Allowable Land Uses and Permit Requirements), except for residential accessory uses and temporary dwellings; health care services (hospitals and similar establishments only); hotels and motels; bed and breakfast facilities; schools (pre-school to secondary, college and university, specialized education and training); churches; libraries and museums; public assembly and entertainment; offices, and outdoor sports and recreation.

1. No person shall create any noise or allow the creation of any noise at any location within the unincorporated areas of the county on property owned, leased, occupied or otherwise controlled by the person which causes the exterior noise level when measured at any of the preceding noise-sensitive land uses situated in either the incorporated or unincorporated areas to exceed the noise level standards in the following table [refer to **Table 4.8-7**]. When the receiving noise-sensitive land use is outdoor sports and recreation, the following noise level standards shall be increased by 10 dB.

When the receiving noise-sensitive land use involves outdoor sports and recreation, the following noise level standards shall be increased by 10 dB.

- In the event the measured ambient noise level exceeds the applicable exterior noise level standard in Subsection B.1, the applicable standard shall be adjusted so as to equal the ambient noise level plus 1 dB.
- Each of the exterior noise level standards specified in Subsection B.1 shall be reduced by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.
- If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the exterior noise level standards.

Table 4.8-7. Maximum Allowable Exterior Noise Levels, San Luis Obispo County

Sound Levels	Daytime 7:00 a.m. to 10:00 p.m.	Nighttime[a] 10:00 p.m. to 7:00 a.m.
Hourly equivalent sound level (L_{eq}, dB)	50	45
Maximum level, dB	70	65

Notes:
a. Applies only to uses that operate or are occupied during nighttime hours.
dB = decibel; L_{eq} = equivalent sound level

4.8.3 Environmental Setting

Nacimiento Reservoir and San Antonio Reservoir are located in rural areas that are removed from main population centers and extensive urban development. As such, the area surrounding the reservoirs, and therefore surrounding the project site, has relatively low ambient noise levels, consistent with the typical ambient noise levels in a rural area. The main sources of ambient noise in the vicinity of the project site include local traffic, agricultural equipment, and activities at Nacimiento Reservoir and San Antonio Reservoir. Specifically, recreational activities, such as boating, can generate elevated noise in the area (particularly during the summer months or on holidays and weekends). Ongoing maintenance and operation of the reservoirs can also generate noise.

The two reservoirs are surrounded by hilly topography. The predominant land use in proximity to the ends of the proposed Interlake Tunnel, the areas where most of the aboveground construction would occur, is undeveloped open space. In general, lands surrounding the Nacimiento and San Antonio Reservoirs are lightly developed and include extensive areas for cattle grazing, recreational, and residential uses. Specifically, two low-density residential communities are adjacent to Nacimiento Reservoir, with larger-scale residential/grazing properties scattered around and near both reservoirs. The Monterey County and San Luis Obispo County General Plans consider homes, lodging facilities, and recreational areas to be noise-sensitive receptors. **Figure 4.8-3** depicts noise-sensitive receptors in the project area. In San Luis Obispo County, residential land uses are located north of the construction area for the Tunnel Intake Structure, with the closest homes more than 1,500 feet away. At San Antonio Reservoir, which is within Monterey County, noise-sensitive land uses are both northwest and southeast of the construction area for the Spillway Modification. The closest residences in Monterey County are more than 1,500 feet from the nearest construction areas. Residences in San Luis Obispo County are closer to the Monterey County construction areas (e.g., approximately 500 feet from the ATV trail work).

Existing noise levels in the project area are consistent with typical noise levels in a rural area. In general, urban areas typically have higher noise levels than rural, less developed areas. Areas near highways, rail lines, and airports experience some of the highest sound levels. Conversely, national and state parks, national forests, nature preserves, and grazing lands have some of the lowest sound levels. In general, ambient noise levels in rural areas typically are lower than those in metropolitan areas because rural areas generally have fewer noise sources. As shown in **Table 4.8-8**, estimated ambient noise levels in areas such as the project area are generally in the range of 40 to 50 dBA L_{dn}, with lower noise levels possible at locations farther from roadways.

Estimated existing traffic noise in the area can be modeled to approximate ambient noise near analyzed roadway segments, noting that noise levels near major thoroughfares may be higher than the general noise levels expected in rural areas. Traffic noise modeling was conducted using a spreadsheet model that was based on the Federal Highway Administration (FHWA) Traffic Noise Model, version 2.5. The spreadsheet calculates the vehicular traffic noise level at fixed distances and considers the vehicular traffic volume, roadway speed, and vehicle mix that is predicted to occur under each condition.

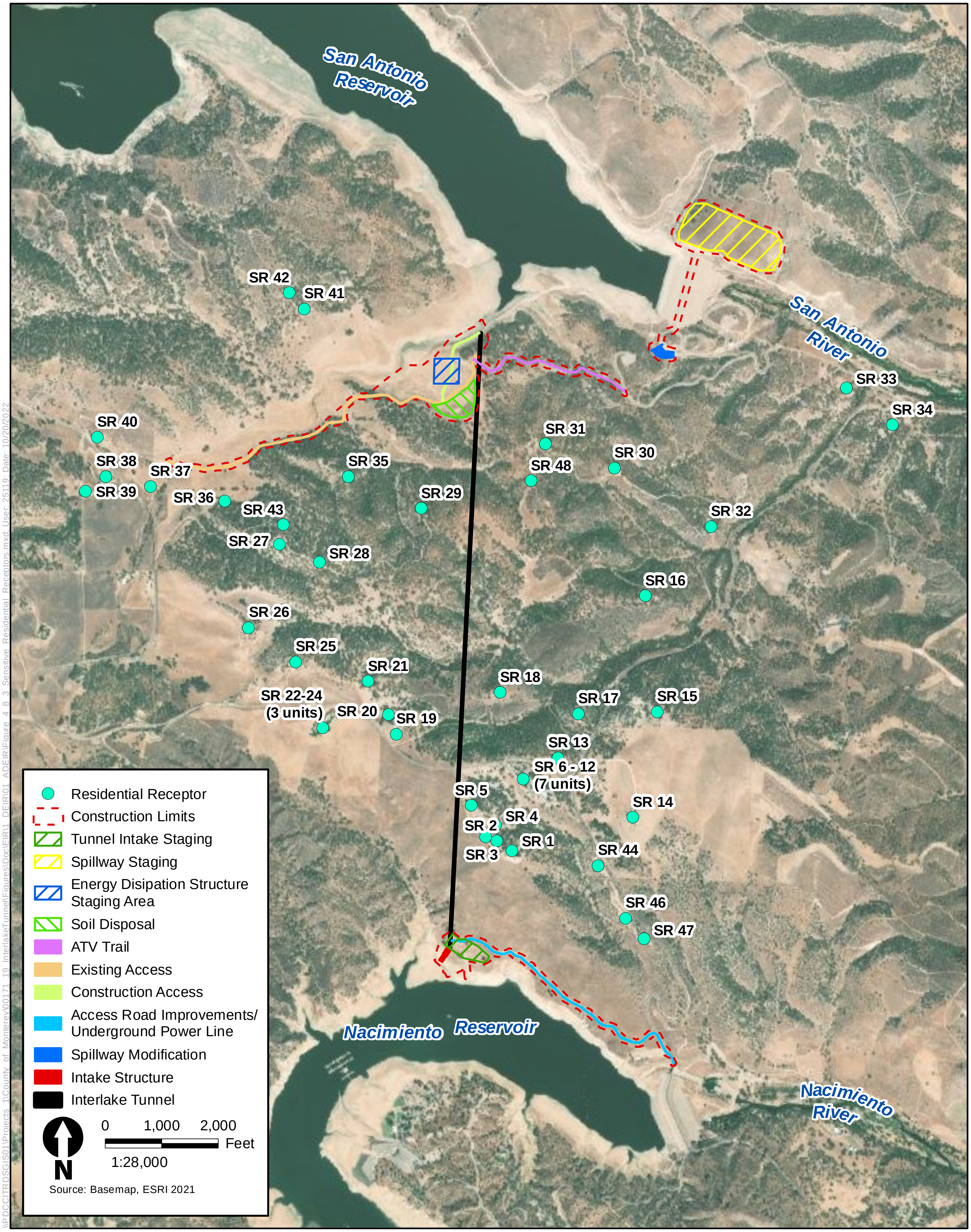


Figure 4.8-3
Sensitive Residential Receptors

Table 4.8-8. Approximate Average L_{dn} Noise Levels for Various Location Types

Qualitative Description of Location	Average L_{dn} in dBA
Rural	40–50
Small town or quiet suburban residential	50
Typical suburban residential	55
Urban residential	60
Noisy urban residential	65
Very noisy urban residential	70
Downtown, major metropolis	75–80
Adjoining freeway or near major airport	80–90

Source: Hoover and Keith 2000.
dBA = A-weighted decibels; L_{dn} = day-night average level noise

Existing (2018) traffic counts for some roadways in the project area were included in the traffic count data from the County of San Luis Obispo Public Works Department (County of San Luis Obispo 2021). Specifically, average daily traffic (ADT) volumes were available for Nacimiento Lake Drive, north of Interlake Road, and Interlake Road west of Nacimiento Lake Drive (Road G14). Traffic noise modeling, using the provided ADT volumes and a default vehicle mix (up to 4 percent trucks), was conducted to estimate traffic noise levels along the two roadway segments. **Table 4.8-9** provides the modeled traffic noise levels along roadway segments near the project site. Note that estimated noise levels near main thoroughfares are somewhat higher than the general estimates for rural noise presented above. However, noise levels drop off substantially as the distance from the roadway increases, and most homes in rural areas are located away from main thoroughfares. Modeled ambient noise levels in the project area are generally in the range of 40 to 57 dBA L_{dn}, with lower noise levels expected farther from roadways.

Table 4.8-9. Modeled Existing Traffic Noise Levels near the Project Site

Roadway Segment	Volume	Estimated Traffic Noise Level (dBA L_{dn})[a]
Nacimiento Lake Drive (Road G14) north of Interlake Road	325 ADT	51.0
Nacimiento Lake Drive (Road G14) from Jolon Road to Vista Road	370 AADT	51.5
Interlake Road west of Nacimiento Lake Drive (Road G14)	1,309 ADT	56.5
Interlake Road from San Antonio Road to Pleyto Cemetery Road	440 AADT	52.1
Interlake Road from Pleyto Cemetery Road to Jolon Road	380 AADT	51.6
Jolon Road from U.S. 101 to Interlake Road	1,200 ADT[b]	56.1

Source: Transportation Agency of Monterey County 2020; County of San Luis Obispo 2021
[a.] Traffic noise levels estimated at a distance of 150 feet from roadway centerline. A speed of 55 mph (as identified on Google Earth for Nacimiento Lake Drive) was used for all roadway segments.
[b.] AADT for Jolon Road is from 2020; traffic data for the other road segments are from 2018.
ADT = average daily traffic; AADT = annual average daily traffic; dBA = A-weighted decibels; L_{dn} = average equivalent sound level over a 24-hour period

4.8.4 Impact Analysis

4.8.4.1 Methods for Evaluating Impacts

This impact analysis considers whether construction and operation of the proposed project or Tunnel-Only Alternative would result in any reasonably foreseeable direct or indirect noise- and vibration-related impacts. The analysis uses significance criteria that are based on the CEQA Guidelines, Appendix G.

Construction Noise

Construction noise varies, depending on the type of equipment in use, how many pieces of equipment are operating at any one time, the proximity of the equipment to a noise receptor, and the duration of equipment use. Construction-related noise effects associated with the proposed project and Tunnel-Only Alternative were analyzed by using the FTA methodology for the assessment of transit noise- and vibration-related impacts (FTA 2018). The methodology assumes that the two loudest pieces of construction equipment expected to be used during the same subphase of construction would operate simultaneously and at approximately the same location. Therefore, the analysis considers the estimated worst-case (i.e., closest) distance between construction activities and existing sensitive receptors, even though equipment would not normally be operating simultaneously at the edge of the project site closest to homes. This provides a conservative estimate of actual noise during construction. In addition, noise typically drops off at a rate of 6 dB per doubling of distance, without accounting for additional reductions from shielding and/or ground absorption. Furthermore, the overall combined noise level from multiple noise sources that are within 10 dB of each other is equal to the loudest individual noise source (e.g., 60 dBA + 75 dBA = 75 dBA). Therefore, even if more equipment is operational, overall noise levels would be dominated by the loudest and closest noise sources.

Reference noise levels from the FHWA's *Roadway Construction Noise Model User's Guide* (FHWA 2006), which provides reference noise levels for most construction equipment, were used to assess noise from project construction equipment. Estimated construction noise levels from the modeling were then compared to applicable local construction noise thresholds to determine if sensitive uses would experience significant construction noise impacts as a result of the proposed project or Tunnel-Only Alternative.

Operational Noise

The proposed project and Tunnel-Only Alternative would include a gravity-fed water conveyance tunnel (i.e., pumping equipment would not be required). Noise from project operations, including the tunnel, is assessed in the analysis. Specifically, maintenance inspections for the tunnel systems, infrequent daytime operations and maintenance at Nacimiento and San Antonio Reservoirs, and the relatively small increase in operations and maintenance at Nacimiento Reservoir with project implementation are evaluated qualitatively, based on the potential for increases in noise to occur compared with existing conditions. In addition, noise from testing the proposed emergency generator was estimated using standard noise calculations as well as noise levels from a specification sheet for an example generator with a size similar to that of the unit for the proposed project or Tunnel-Only Alternative (i.e., a Cummins Model C125D6C 125 kW generator), even though the exact make and model have not yet been determined.

Construction Vibration

The evaluation of damage- and annoyance-related vibration impacts associated with project construction was based on construction vibration modeling methods recommended by the FTA and Caltrans, as well as the construction equipment data provided by MCWRA. Estimated PPV vibration levels were compared to the appropriate Caltrans vibration-related damage criteria for various building types to determine if vibration impacts would occur (refer to **Table 4.8-5**). Estimated VdB levels were also calculated, with the results compared to the appropriate FTA groundborne vibration impact criteria for annoyance to determine if annoyance-related vibration impacts would occur (refer to **Table 4.8-4**).

4.8.4.2 Criteria for Determining Significance

Appendix G of the CEQA Guidelines (14 CCR 15000 *et seq*.) provides guidance for assessing whether a project would have significant impacts on the environment. Consistent with Appendix G, with consideration of project-specific environmental conditions, MCWRA determined that the proposed project would have significant noise and vibration impacts if it would:

a. Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the proposed project in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies (including FTA and Caltrans, as appropriate).

b. Generate excessive groundborne vibration or groundborne noise levels.

The following CEQA criterion has been dismissed from consideration because the project site is not within an airport land use plan for any public use airport or within 2 miles of a public airport or private airstrip. Moreover, the proposed project would not include uses for human occupation. Therefore, the proposed project would not have the potential to result in impacts related to airport noise.

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

4.8.4.3 Avoidance and Minimization Measures

MCWRA has incorporated AMMs into the project design to prevent the occurrence of environmental impacts or reduce their severity. The AMM that applies most directly to noise is **AMM GEN-7**, *Vehicle Idling and Maintenance*. A complete description of this AMM is provided in Section 2.6, *Avoidance and Minimization Measures.*

4.8.4.4 Impacts and Mitigation Measures

Impact NV-1a: Expose Sensitive Receptors to Increased Noise Levels during Project Construction

The proposed project and Tunnel-Only Alternative would involve construction activities on both Nacimiento and San Antonio Reservoirs, as well as construction of the Interlake Tunnel. Construction of the Interlake Tunnel between the Tunnel Intake Structure at Nacimiento Reservoir and the Energy Dissipation Structure at San Antonio Reservoir would occur primarily underground, with no surface construction equipment operating along the Interlake Tunnel alignment. Noise from construction activities occurring at depth would be below audible levels because of the intervening ground. Therefore, the focus of the construction noise analysis is on areas where surface-level construction would occur near existing noise-sensitive land uses as well as activities at or near the tunnel portals that would be audible outside the tunnel. For non-tunneling construction activities, **AMM GEN-7**, *Vehicle Idling and Maintenance,* would help reduce noise from idling vehicles.

Monterey County

The noise analysis for construction activities occurring in Monterey County focuses on activities proposed near San Antonio Reservoir; surface construction would not take place along the alignment for the Interlake Tunnel. Such activities would include work for the Spillway Modification, including site preparation, staging, demolition, and excavation at the top of the spillway; construction of a new passive weir structure; and concrete work to raise the walls of the spillway and join the modification to the existing spillway. Construction of the ATV trail near San Antonio Reservoir, as well as roadway modification work, would also occur, as would construction of the proposed Energy Dissipation Structure. Because the water level at this reservoir may be higher under with-project conditions, it is possible that a few small restroom or utility facilities near San Antonio Reservoir would either be moved or would have a low berm constructed around the facilities in question to avoid inundation during high-water periods. Work would also occur at the staging area near San Antonio Reservoir because the equipment required for tunnel construction would enter the tunnel at this location.

In Monterey County, noise from individual pieces of equipment used for construction is limited to 85 dBA at 50 feet if construction takes place within 2,500 feet of homes. Although no homes are directly adjacent to proposed construction areas in Monterey County, some are within 2,500 feet of the construction areas. The nearest homes in San Luis Obispo County are south of the proposed ATV trail. At that location, the evaluated homes are as close as approximately 500 feet to more than 2,500 feet from the construction areas in Monterey County. The nearest homes in Monterey County are approximately 1,700 feet northwest of the project construction limits.

Noise levels from the individual pieces of equipment proposed for project construction are compared to the 85 dBA criterion to determine if potentially significant impacts would occur. **Table 4.8-10** provides the noise levels of the individual pieces of equipment proposed for use in Monterey County at a distance of 50 feet.

Most equipment proposed for use during construction would have a noise level below 85 dBA L_{eq} at a distance of 50 feet. The only exception to this is the impact pile driver, which is estimated to produce approximately 94 dBA at 50 feet. However, it would be used for only a brief time during construction, thereby limiting its noise impact.

Pile drivers would be used to shore up the entrances to the tunnel at the northern and southern ends, as needed, with use limited to daytime hours. Pile driving occurring within Monterey County would be more than 2,300 feet from the nearest home; at that distance, noise would be reduced to approximately 61 dBA L_{eq}. Noise from construction equipment would comply with noise ordinance limits.

In addition to the threshold for individual pieces of equipment, described above, estimated combined construction noise is considered. This is because construction in support of tunneling operations could occur outside daytime hours. Between the hours of 9:00 p.m. and 7:00 a.m., combined noise from construction activity is limited by the exterior noise-level standards from the Monterey County Code. Specifically, nighttime noise is limited to 45 dBA L_{eq} and 65 dBA L_{max} at the nearest receptor.

Table 4.8-10. Noise from Equipment Proposed for Project Construction

Equipment Type	Noise at 50 Feet (L_{eq})
Impact pile driver	94
Concrete saw	83
Tractor	80
Scraper	80
Gradall (hydraulic excavator)	79
Ventilation fan	79
Dozer	78
Generator	78
Auger drill rig	77
Excavator	77
Compactor (ground)	76
Concrete mixer truck	75
Front-end loader	75
Compressor (air)	74
Backhoe	74
Concrete pump truck	74
Crane	73
Roller	73
Vacuum street sweeper	72
Water truck or mine truck	72
Welder	70
Man lift	68

Source: FHWA 2006.
Note: Based on standard utilization rates from FHWA

Construction activities that could occur at night would be limited to only those activities needed to support tunneling operations, if they are needed at all. Nighttime construction would include underground operation of the TBM to construct the tunnel as well as other supporting equipment such as generators and ventilation fans. There may also be a conveyor belt and/or heavy equipment (trucks, loaders, etc.) in use outside the tunnel to remove spoils. The nighttime work area would include the subterranean tunnel, the tunnel portal at the Energy Dissipation Structure, and the Spoils Disposal Area, which extends approximately 1,700 feet southwest of the tunnel portal.

To provide a quantitative noise assessment, the analysis of nighttime construction noise generally follows the FTA methodology, which recommends generating a reasonable worst-case scenario by assuming simultaneous operation of the two loudest pieces of construction equipment at the same location (FTA 2018). A minor methodology modification (i.e., inclusion of the three loudest pieces of equipment instead of two) was made to provide a more conservative estimate. The analysis assumed simultaneous operation of a generator, a ventilation fan, and a dump truck.

Construction noise modeling was conducted in a spreadsheet model that included standard acoustical calculations and reference construction equipment noise levels from FHWA's *Roadway Construction Noise Model User's Guide* (FHWA 2006). Note that the spreadsheet calculations at various distances are based on the standard 6 dB reduction in noise per doubling of distance, without accounting for additional reductions from shielding and/or ground absorption (there is limited shielding in the project vicinity). This ensures a conservative assessment.

Table 4.8-11 provides the reasonable worst-case noise modeling results for nighttime construction in Monterey County. Noise levels are predicted at various distances; the specific distances at which noise levels would fall below applicable thresholds are highlighted with bold and underlined text in the table. The results indicate that noise from construction during nighttime hours (i.e., 9:00 p.m. to 7:00 a.m. in Monterey County) would be reduced to the allowable levels of 65 dBA L_{max} and 45 dBA L_{eq} at distances of 420 feet and 3,340 feet, respectively. Although there are no sensitive receptors within 420 feet of the nighttime work area, there are several sensitive receptors within 3,340 feet, including homes to the northwest in Monterey County and to the southeast, south, and southwest in San Luis Obispo County.

Table 4.8-11. Modeled Nighttime Construction Noise Levels, Monterey County

Source Data	Maximum Sound Level (dBA)	Utilization Factor[a]	L_{eq} Sound Level (dBA)
Construction Condition: San Antonio Portal Excavation and Support Subphase			
Ventilation Fan – sound level (dBA) at 50 feet =	79	100%	79
Generator – sound level (dBA) at 50 feet =	81	50%	78
Dump Truck – sound level (dBA) at 50 feet =	76	40%	76
Calculated Data			
Sources combined – L_{max} sound level (dBA) at 50 feet = 84 dBA L_{max}			
Sources combined – L_{eq} sound level (dBA) at 50 feet = 82 dBA L_{eq}			

Distance between Source and Receiver (feet)	*Geometric Attenuation (dB)[b]*	*Calculated L_{max} Sound Level (dBA)*	*Calculated L_{eq} Sound Level (dBA)[c]*
50	0	84	82
100	-6	78	76
<u>420</u>	-18	**<u>65</u>**	64
500	-20	64	62
1,000	-26	58	56
1,500	-30	54	52
2,000	-32	52	50
2,500	-34	50	48
3,000	-36	48	46
<u>3,340</u>	-36	47	**<u>45</u>**
3,500	-37	47	45
4,000	-38	46	44

[a] The utilization factor, or *acoustical use factor*, is the percentage of time each piece of construction equipment is assumed to be operating at full power (i.e., its noisiest condition) during construction; it is used to estimate L_{eq} values from L_{max} values.
[b] Geometric attenuation based on 6 dB per doubling of distance.
[c] This calculation does not include the effects, if any, of local shielding from walls, topography, or other barriers, which may reduce sound levels further.
<u>Bold underlined</u> values indicate the distances at which construction noise levels would comply with applicable noise limits.
dB = decibel; dBA = A-weighted decibel; L_{eq} = equivalent continuous sound level; L_{max} = maximum sound level

San Luis Obispo County

In San Luis Obispo County, construction that takes place during daytime hours is considered exempt from local noise standards, per section 22.10.120 of the San Luis Obispo County Code. Specifically, between 7:00 a.m. and 9:00 p.m. on weekdays and between 8:00 a.m. and 5:00 p.m. on Saturdays and Sundays, construction noise is considered exempt; there are no numerical limits with which construction noise must comply.

The following noise analysis for construction activities occurring in San Luis Obispo County focuses on activities proposed near Nacimiento Reservoir; surface construction would not take place along most of the tunnel alignment. Construction activities near Nacimiento Reservoir would include access road improvements, the installation of underground power lines, excavation for the Tunnel Intake Structure, construction of the concrete approach channel and side walls, and construction of the control building and parking area.

Evening and nighttime construction noise would result only from underground tunnelling using the TBM and supporting equipment. Pile driving and roadway improvements near Nacimiento Reservoir would take place during daytime hours. Construction that takes place during daytime hours is exempt from the local ordinance. However, outside of daytime hours, construction noise in San Luis Obispo County is limited to the maximum allowed exterior noise standards shown in **Table 4.8-7** and summarized below.

The San Luis Obispo County noise regulations for construction outside the exempt daytime hours that would be applicable to the proposed project and Tunnel-Only Alternative include the following maximum noise levels for nondaytime construction:

- During the nighttime hours of 10:00 p.m. to 7:00 a.m., construction noise in San Luis Obispo County carries the same limits as in Monterey County; such noise is limited to 65 dBA L_{max} and 45 dBA L_{eq} at all residential receptors.
- During the single nighttime hour of 9:00 p.m. to 10:00 p.m. weekdays and during the hours of 5:00 p.m. to 10:00 p.m. on Saturday and Sunday, noise is limited to 50 dBA L_{eq} and 70 dBA L_{max} at all residential receptors.

To provide a quantitative noise assessment, the analysis of evening and nighttime construction noise followed the FTA methodology, which recommends generating a reasonable worst-case scenario by assuming simultaneous operation of the two loudest pieces of construction equipment at the same location (FTA 2018). A minor methodology modification (i.e., inclusion of the three loudest pieces of equipment instead of two) was made to provide a more conservative estimate. The analysis assumed simultaneous operation of a generator, a ventilation fan, and a dump truck.

Construction noise modeling was conducted in a spreadsheet model that included standard acoustical calculations and reference construction equipment noise levels from FHWA's *Roadway Construction Noise Model User's Guide* (FHWA 2006). Note that the spreadsheet calculations at various distances are based on the standard 6 dB reduction in noise per doubling of distance, without accounting for additional reductions from shielding and/or ground absorption (there is limited shielding in the project vicinity). This ensures a conservative assessment.

Table 4.8-12 provides the reasonable worst-case modeling results for evening and nighttime construction in San Luis Obispo County. Noise levels are predicted at various distances; the distances at which noise levels would fall below applicable thresholds are highlighted with bold and underlined text in the table. The results indicate that noise from construction during evening hours (i.e., 9:00 p.m. to 10:00 p.m. on weekdays and 5:00 p.m. to 10:00 p.m. on Saturday and Sunday) would be reduced to the allowable levels of 70 dBA L_{max} and 50 dBA L_{eq} at distances of 220 feet and 1,790 feet, respectively. Noise from construction during nighttime hours (i.e., 10:00 p.m. to 7:00 a.m.) would be reduced to the allowable levels of 65 dBA L_{max} and 45 dBA L_{eq} at distances of 390 feet and 3,170 feet, respectively. There are no sensitive receptors within 1,790 feet of the construction area; therefore, there would be no construction noise impacts during evening hours in San Luis Obispo County. There are several sensitive receptors within 3,170 feet of the tunnel portal in San Luis Obispo County (to the north and northeast).

Construction Truck Activity

Potential noise effects from trucks that access the project site are considered in this assessment. Haul truck trips and vendor truck trips both would take place during project construction. Project-related truck noise on the local roadway network is assessed to determine if noise levels at nearby residences would exceed the compatibility standards for residential uses in Monterey and San Luis Obispo Counties.

Although the haul routes have not been finalized at this time, it is expected that trucks would be traveling to and from the Paso Robles area in San Luis Obispo County, the nearest urbanized area to the project site and a regional center of commerce. Therefore, the analysis of haul truck noise assumes that all haul trucks would reach the project site from U.S. 101 and Nacimiento Lake Drive. Haul truck assumptions are intended to capture the most intensive period of activity, which, in this case, would be during construction of the Tunnel Intake Structure. During this period, an estimated 94 haul truck trips and 28 vendor truck trips would occur on the peak activity day. This would result in a worst-case total of 122 truck trips per day.

As stated in Section 4.8.4.1, *Methods for Evaluating Impacts*, traffic noise modeling was conducted using a spreadsheet model that was based on the FHWA Traffic Noise Model, version 2.5. The spreadsheet calculates the vehicular traffic noise level at fixed distances and considers the vehicular traffic volume, roadway speed, and vehicle mix that is predicted to occur under each condition. Modeling was conducted to estimate existing-plus-haul-truck noise levels. Traffic volumes from 2018 were modeled in a spreadsheet model for Nacimiento Lake Drive north of the Interlake Tunnel, with the estimated 122 haul truck trips per day included. Along this segment, the nearest residential receptor is approximately 150 feet from the roadway centerline. Modeling of ADT, including the roadway's existing 325 vehicles per day plus up to 122 truck trips, resulted in an estimated 24-hour average noise level of 56 dBA L_{dn} at a distance of 150 feet from the centerline. Residential land uses in both San Luis Obispo County and Monterey County are considered compatible with noise levels of up to 60 dBA L_{dn}. Therefore, the temporary addition of project haul trucks on the local roadway network would not result in noise levels in excess of the applicable compatibility standard.

Table 4.8-12. Estimated Nighttime Construction Noise Levels, San Luis Obispo County

Source Data	Maximum Sound Level (dBA)	Utilization Factor[a]	L_{eq} Sound Level (dBA)
Construction Condition: Nacimiento Reservoir – Remove TBM			
Ventilation Fan – sound level (dBA) at 50 feet =	79	100%	79
Generator – sound level (dBA) at 50 feet =	81	50%	78
Calculated Data			
Sources combined – L_{max} sound level (dBA) at 50 feet = 83 dBA L_{max}			
Sources combined – L_{eq} sound level (dBA) at 50 feet = 82 dBA L_{eq}			

Distance between Source and Receiver (feet)	*Geometric Attenuation (dB)[b]*	*Calculated L_{max} Sound Level (dBA)*	*Calculated L_{eq} Sound Level (dBA)[c]*
50	0	83	82
100	-6	77	76
<u>220</u>	-13	**<u>70</u>**	69
<u>390</u>	-18	**<u>65</u>**	64
500	-20	63	62
1,000	-26	57	56
1,500	-30	54	52
<u>1,790</u>	-31	52	**<u>50</u>**
2,000	-32	51	49
2,500	-34	49	48
3,000	-36	48	46
<u>3,170</u>	-36	47	**<u>45</u>**
3,500	-37	46	45
4,000	-38	45	43

[a] The utilization factor, or acoustical use factor, is the percentage of time each piece of construction equipment is assumed to be operating at full power (i.e., its noisiest condition) during construction; it is used to estimate L_{eq} values from L_{max} values.
[b] Geometric attenuation based on 6 dB per doubling of distance.
[c] This calculation does not include the effects, if any, of local shielding from walls, topography, or other barriers, which may reduce sound levels further.
<u>Bold underlined</u> values indicate the distances at which construction noise levels would comply with applicable noise limits.
dB = decibel; dBA = A-weighted decibel; L_{eq} = equivalent continuous sound level; L_{max} = maximum sound level

CEQA Conclusion

Construction noise impacts associated with the proposed project and Tunnel-Only Alternative during daytime hours in Monterey and San Luis Obispo Counties would be **less than significant**.

Construction noise impacts associated with the proposed project and Tunnel-Only Alternative during nighttime hours in Monterey and San Luis Obispo Counties would be significant. **MM NV-1a** would require development and implementation of a construction noise control plan for nighttime and weekend evening construction periods. The noise control plan would include measures to limit noise propagation at off-site receptors and require monitoring to ensure compliance. The impact would be **less than significant with mitigation**.

Mitigation Measure

MM NV-1a: Construction Noise Control Plan for Nighttime and Weekend Evening Construction

Prior to issuance of any demolition or construction permit, MCWRA or its construction contractor will submit a project-specific construction noise control plan to Monterey and San Luis Obispo Counties for approval. A qualified acoustical engineer will prepare the construction noise control plan, with input from the construction contractor, and include feasible measures to reduce construction noise. The noise control plan will demonstrate that project noise from all construction activities during the regulated evening and nighttime hours would be reduced to a level below the local limits in Monterey and San Luis Obispo Counties, outlined below:

- Monterey County
  - Nighttime noise from 9:00 p.m. to 7:00 a.m. is limited to 45 dBA L_{eq} and 65 dBA L_{max} at all residential receptors.
- San Luis Obispo County
  - Nighttime noise from 10:00 p.m. to 7:00 a.m. is limited to 45 dBA L_{eq} and 65 dBA L_{max} at all residential receptors.
  - During the evening hours of 9:00 p.m. to 10:00 p.m. weekdays and 5:00 p.m. to 10:00 p.m. on Saturday and Sunday (when the daytime construction noise exemption would not apply), noise is limited to 50 dBA L_{eq} and 70 dBA L_{max} at all residential receptors.

The noise control plan may incorporate relevant details regarding construction, such as the precise construction methods, sequencing, and equipment locations, which will be determined in the future. Noise predictions may consider acoustical variables, such as shielding due to topography or excess noise attenuation due to ground cover, between noise sources and receptors. The noise control measures that may be used to reduce construction noise include, but are not limited to, those listed below.

- Undertake the noisiest activities during daytime hours and limit evening and nighttime construction to the extent feasible.
- Locate construction equipment used during nighttime hours, including stationary noise sources (e.g., temporary generators), as far as feasible from adjacent or nearby noise-sensitive receptors.
- Shield construction equipment from surrounding residential receptors using natural or artificial noise barriers (e.g., noise sources could be located inside the tunnel). Natural barriers could include the terrain. Artificial noise barriers could include screens, barriers, or enclosures made from common construction materials; specific noise-reducing materials include acoustical blankets or acoustical panels.
- Use the quietest available type of construction equipment. This may include the quietest available gasoline- or diesel-powered engines or alternative types of power, such as electric motors instead of gasoline or diesel engines or hydraulic equipment instead of pneumatic equipment. Newer equipment is generally quieter than old equipment for many reasons, including technological advancements and the lack of worn, loose, or damaged components.

- Use an exhaust muffler on the compressed air exhaust of pneumatic equipment.
- Prohibit inactive construction equipment from idling for prolonged periods (i.e., more than 2 minutes).
- Prohibit unmuffled exhaust systems on gasoline or diesel engines.
- Conduct noise monitoring in the project vicinity to confirm that project construction complies with applicable noise limits at residential receptors.

MCWRA will appoint a project noise coordinator who will serve as the point of contact for noise-related complaints during project construction. The project noise coordinator will transmit all construction noise-related complaints to the construction contractor. The construction contractor will enhance or refine the noise control measures discussed herein to address noise complaints to the extent feasible.

The contact information for the project noise coordinator will be sent to residents and other related parties in the vicinity of the project site that could be affected by project construction noise. In addition, a sign will be posted near the project site in both Monterey County and San Luis Obispo Counties that describes the noise complaint procedures and includes a complaint hotline number, which will be available at all times during construction.

Impact NV-1b: Expose Sensitive Receptors to Increased Noise Levels during Project Operations

Once construction is complete, potential noise sources from project operations (i.e., the proposed project or Tunnel-Only Alternative) include the emergency generator, mechanical equipment, maintenance activities, and the San Antonio Dam Spillway Modification.

Emergency Generator

The proposed project and Tunnel-Only Alternative would include a new control building near Nacimiento Reservoir, just north of the Tunnel Intake Structure and adjacent to the existing day-use overflow parking lot. The control building would include two rooms, an electrical/mechanical room and a generator room, each separately accessed from the outside. The electrical/mechanical room would house electrical panels, control panels, the wheel gate hydraulic power unit (HPU), and mechanical heating, ventilation, and air-conditioning (HVAC) equipment. The generator room would house a 125 kW standby generator. This generator would provide power to the Tunnel Intake Structure in the event of a power loss.

Infrequent testing of the proposed 125 kW emergency generator is expected to occur approximately once every 3 months for 15 minutes. During this test, generator noise would be required to comply with local noise ordinances. Modeling was conducted as described in Section 4.8.4.1, *Methods for Evaluating Impacts,* to determine if generator testing would comply with the allowable noise levels from the San Luis Obispo County Code. Although the make and model have not yet been determined, estimated noise levels from a Cummins Model C125D6C 125 kW generator are presented in this analysis.

Combined engine and exhaust noise from a Cummins 125 kW emergency generator can generate an unattenuated noise level of 93 dBA at a distance of 50 feet (Cummins Power Generation 2017). The nearest off-site noise-sensitive land use is more than 1,900 feet from the proposed control building. At a distance of 1,800 feet, generator noise from testing would be reduced to approximately 62 dBA L_{max} without accounting for attenuation from the enclosed generator room. The generator enclosure would further reduce generator testing noise at the nearest receptor. However, because the specifics regarding the enclosure are not known at this time, and because exhaust is typically vented to the outside, which affects noise reduction, the reduction was not considered quantitatively in this assessment. Noise from generator testing would be below the applicable daytime exterior noise limit in San Luis Obispo County of 70 dBA L_{max}, without accounting for additional attenuation from the generator building.

Mechanical Equipment

Within the control building, the electrical/mechanical room would house electrical panels, control panels, the wheel gate HPU, and mechanical HVAC equipment. Although the makes and models of the proposed equipment are not known at this time, this assessment considers example equipment of a similar type and size. The analysis is intended to provide reasonable estimates of noise so that the likelihood of equipment exceeding applicable local criteria can be assessed.

Regarding the HPU, a large pump can generate a noise level of up to 81 dBA at 50 feet (FHWA 2006). The HPU would be located inside the control building, which would reduce noise by at least 10 dB. Typical package HVAC and/or air handling units can generate an estimated noise level of 75 dBA at a distance of 50 feet (Hoover and Keith 2000). Components of the HVAC equipment may be located inside the building or shielded from view, which would reduce noise. However, for purposes of this analysis, it is assumed conservatively that such units would be located on the outside and therefore would not benefit from the noise attenuation the enclosure might provide.

If the control building includes external HVAC units to cool equipment and an HPU inside the solid building, which would reduce noise by 10 dB, the estimated combined noise level at a distance of 50 feet would be approximately 76.5 dBA. The nearest homes are more than 1,800 feet from the building. At that distance, the noise level would be reduced to 45 dBA L_{eq} at the nearest homes because noise typically drops off at a rate of 6 dB per doubling of distance, without accounting for additional reductions from shielding and/or ground absorption.

Estimated noise from project mechanical equipment at the control building would therefore be below the applicable San Luis Obispo County daytime exterior noise limit of 50 dBA L_{eq} and approximately equal to the nighttime noise limit of 45 dBA L_{eq}.

Maintenance Activities

The proposed project and Tunnel-Only Alternative would require various maintenance activities to be performed at various time intervals. Potential noise sources include preventative maintenance activities, automobile trips by maintenance workers, and inspection of the Interlake Tunnel.

Preventative maintenance would be needed to ensure that debris is cleared from the Tunnel Intake Structure. Such maintenance would be needed during wet months, when Nacimiento Reservoir water levels are at or near maximum levels, and the Interlake Tunnel is operative. This is assumed to be approximately 3 weeks per year. Debris clearance is expected to involve the use of a boom truck, a skid steer (i.e., loader), and a dump truck. Operational noise from this activity could be audible at the closest residences, located about 1,900 feet away.

Table 4.8-13 provides an estimate of combined noise levels from simultaneous operation of a boom truck, skid steer, and dump truck. Note that these activities would take place an estimated 1,900 feet or more from the nearest residence. As shown in **Table 4.8-13**, the calculated L_{max} noise level during temporary and intermittent maintenance activities at the Tunnel Intake Structure would be approximately 50 dBA L_{max}, with an estimated L_{eq} noise level of 46 dBA L_{eq}. These levels are below the allowable daytime noise criteria for San Luis Obispo County of 70 dBA L_{max} and 65 dBA L_{eq}. Considering this evaluation, maintenance noise levels would generally be within the acceptable criteria limits.

Table 4.8-13. Estimated Operational Noise Levels during Nacimiento Reservoir Maintenance Activities

Source Data	Maximum Sound Level (dBA)	Utilization Factor[a]	L_{eq} Sound Level (dBA)
Condition: Nacimiento Reservoir Maintenance Activities			
Dump Truck – sound level (dBA) at 50 feet =	76	40%	72.0
Loader – sound level (dBA) at 50 feet =	79	40%	75.0
Boom Truck[b] – sound level (dBA) at 50 feet =	76	40%	72.0
Calculated Data			
Sources combined – L_{max} sound level (dBA) at 50 feet = 82 dBA L_{max}			
Sources combined – L_{eq} sound level (dBA) at 50 feet = 78 dBA L_{eq}			
Distance between Source and Receiver (feet)	*Geometric Attenuation (dB)[c]*	*Calculated L_{max} Sound Level (dBA)*	*Calculated L_{eq} Sound Level (dBA)[d]*
50	0	82	78
100	-6	76	72
500	-20	62	58
1,000	-26	56	52
1,500	-30	52	48
1,900[e]	**-32**	**50**	**46**
2,500	-34	48	44

[a] The utilization factor, or *acoustical use factor*, is the percentage of time each piece of construction equipment is assumed to be operating at full power (i.e., its noisiest condition) during construction; it is used to estimate L_{eq} values from L_{max} values.
[b] Boom truck is represented by a *dump truck* in this assessment.
[c] Geometric attenuation based on 6 dB per doubling of distance.
[d] This calculation does not include the effects, if any, of local shielding from walls, topography, or other barriers, which may reduce sound levels further.
[e] The 1,900-foot distance is bolded because work would take place approximately 1,900 feet from the nearest residence.
dB = decibel; dBA = A-weighted decibel; L_{eq} = equivalent continuous sound level; L_{max} = maximum sound level

Automobile trips by maintenance workers represent another potential source of noise. Although the most intensive maintenance activities would occur during the 3 weeks per year when debris is cleared at Nacimiento Reservoir, the maintenance staff would be present year-round at the control building and other facilities. Routine operations could include up to three additional workers (relative to existing conditions) staffing the new control building at Nacimiento Reservoir, resulting in up to six vehicle trips per day along the local roadway network. During the 3 weeks per year when more intensive maintenance activities occur at Nacimiento Reservoir, there could be up to four additional workers per day at the facility, resulting in up to eight additional vehicle trips per day along local roadways.

Existing traffic volumes along the local roadway network range from 325 to 1,309 trips per day (as shown in **Table 4.8-9**). The addition of six to 14 trips per day would constitute a negligible (2 to 3 percent) increase in traffic along Nacimiento Lake Drive (Road G14), north of Interlake Road, in terms of noise effects. In order for a perceptible increase in noise level to occur (i.e., a 3-dB increase), existing traffic levels would need to double (i.e., at least 325 new trips per day). Therefore, project-related operational vehicle trips would not result in a perceptible increase in noise.

Inspections of the Interlake Tunnel are anticipated every 5 years. Inspection frequency might vary, depending on the frequency of use at the proposed Interlake Tunnel and the ability to complete preventative maintenance, such as clearing debris. This very infrequent activity is not expected to result in substantial ambient noise increases at nearby residences because work would occur inside the belowground tunnel.

Spillway Modification

The dam at San Antonio Reservoir releases water (and produces noise) through the spillway when its levels are at or near the maximum water surface elevation of 780 feet. The Spillway Modification element associated with the proposed project would increase the height of the spillway such that the resultant maximum WSE at San Antonio Reservoir would increase to 787 feet. The proposed project and the Tunnel-Only Alternative would increase the water storage capacity of the two-reservoir system. Without the Spillway Modification, the Tunnel-Only Alternative would increase the amount of water entering San Antonio Reservoir but would not increase the maximum WSE at San Antonio Reservoir.

The existing spillway and Spillway Modification would be accessed from adjacent earthen access roads. Utility power, potable water, and sanitary sewers would not be required at the Spillway Modification site. It is expected that the Spillway Modification could result in slightly more noise relative to noise from the existing spillway when operating because of increased capacity. However, an operational goal is to use the low-level outlet for all releases, as feasible.

The nearest receptors are more than 2,400 feet from the existing spillway/Spillway Modification site. Noise associated with spillover would substantially attenuate with this distance. In the unlikely event that the spillway is used, any potential noise increase would be negligible and would not be discernible at the nearest receptors. Based on the foregoing, the change in operational noise from either the proposed project or the Tunnel-Only Alternative would be minimal compared with existing conditions.

CEQA Conclusion

Impacts associated with operation of the proposed project and Tunnel-Only Alternative would be **less than significant**.

Impact NV-2: Generate Excessive Groundborne Vibration or Groundborne Noise Levels During Construction and Operations

Project-related vibration during construction has the potential to result in building damage and cause human annoyance.

Damage-Related Vibration Impacts during Construction

The operation of heavy-duty construction equipment can generate localized groundborne vibration and noise at buildings near construction areas. Groundborne vibration rarely causes damage to normal buildings, with the occasional exception of nearby blasting or pile-driving. Although blasting would not be required for the proposed project or Tunnel-Only Alternative, construction would include pile driving, the use of heavy equipment, such as vibratory rollers, and tunnel boring with a TBM. Pile driving would be required for both the proposed project and the Tunnel-Only Alternative. Pile driving would occur approximately 2,300 feet from the closest residential property in Monterey County and 1,500 feet from the closest residential property in San Luis Obispo County.

After pile driving, the most vibration-intensive equipment expected to be used for the majority of project construction include a vibratory roller, a bore or auger drill rig, and a larger bulldozer. **Table 4.8-14** summarizes typical vibration velocity levels at a distance of 25 feet, as well as various other distances, for the types of construction equipment that may be used for both the proposed project and the Tunnel-Only Alternative.

Table 4.8-14. Construction Vibration Levels at Nearby Sensitive Uses*

Equipment	PPV at 25 Feet (in/sec)	PPV at 200 Feet (in/sec)	PPV at 500 Feet (in/sec)	PPV at 1,500 Feet (in/sec)	PPV at 2,300 Feet (in/sec)
Pile driver (impact)	1.518	0.067	0.017	0.003	0.002
Pile driver (sonic/vibratory)	0.734	0.032	0.008	0.002	0.001
Vibratory roller	0.210	0.009	0.002	0.000	0.000
Drill rig	0.089	0.004	0.001	0.000	0.000
Large bulldozer	0.089	0.004	0.001	0.000	0.000
Loaded trucks	0.076	0.003	0.001	0.000	0.000
Jackhammer	0.035	0.002	0.000	0.000	0.000
Small bulldozer	0.003	0.000	0.000	0.000	0.000

Source: Caltrans 2020.
Notes: PPV = peak particle velocity; in/sec = inch per second
*Caltrans damage criteria are 0.5 in/sec or 0.3 in/sec for older residential homes

Estimated vibration levels for proposed equipment were compared to the criteria developed by Caltrans and reflected in **Table 4.8-5**. Continuous or frequent intermittent sources of vibration, such as vibration from construction activities, could result in damage to newer residential structures if PPV levels are in excess of 0.5 inch per second or older residential structures if PPV levels are in excess of 0.3 inch per second.

Pile driving would not be expected to occur closer than 1,500 feet from the nearest off-site structures in San Luis Obispo County (e.g., residential land uses north of Nacimiento Reservoir). Pile driving would be no closer than 2,300 feet from residential properties in Monterey County. At a distance of 1,500 feet, estimated PPV vibration levels from a pile driver would be approximately

0.003 inch per second. This is below the damage criterion for older residential homes (i.e., PPV of 0.3 inch per second). Vibration levels at greater distances (e.g., 2,300 feet) would be even lower. Pile driving associated with the proposed project and the Tunnel-Only Alternative would not be expected to result in damage-related effects at the nearest off-site structures.

A vibratory roller would be needed to construct an ATV trail to the Energy Dissipation Structure and improve access roads near both ends of the tunnel alignment. These activities would take place more than 500 feet from the nearest residence in the northern portion of the site (in Monterey County) and more than 1,500 feet from the nearest residence in the southern portion of the site (in San Luis Obispo County). Vibration levels from the use of a vibratory roller would be below the damage criterion for older residential homes (i.e., PPV of 0.3 inch per second) at a distance of 20 feet. At 500 feet, the PPV vibration level would be 0.002 inch per second, which is well below the applicable damage criteria for older residential structures. At greater distances, the vibration level would be even lower.

The shortest horizontal distance between the Interlake Tunnel and the nearest resident is approximately 200 feet. However, the majority of construction along the alignment would occur deep below the ground surface. The estimated slant distance[2] between construction equipment and surface-level homes would vary along the Interlake Tunnel alignment. The distance was calculated to evaluate residence proximity to the tunnel. As shown on **Figure 2-8**, the tunnel would be as much as 680 feet below the ground surface.

TBM use would occur between 150 and 680 feet below the ground surface in areas along the tunnel alignment near residences, with a minimum slant distance of at least 250 feet. However, the slant distance would be more than 250 feet. Measured vibration levels from TBM use on other projects can be used to estimate vibration levels from TBM use on the proposed project and Tunnel-Only Alternative. Measurements of similar TBM use in Los Angeles demonstrate that the vibration level at a slant distance of approximately 220 feet would have a PPV of less than 0.001 inch per second (Sanitation Districts of Los Angeles County 2012). This is well below the damage criterion for older residential structures (i.e., PPV of 0.3 inch per second). Vibration levels at greater distances (e.g., off-site land uses more than 250 diagonal feet from the tunnel alignment) would be even lower. Project vibration levels would be below the damage criterion for structures in general as well as older residential homes.

Annoyance-related Vibration Impacts during Construction

The proposed project and Tunnel-Only Alternative would have potential to generate vibration at nearby residences, which may disturb occupants. Construction-related vibration was analyzed to evaluate this potential impact. Although tunnel boring could be continuous (i.e., up to 24 hours per day during construction), most construction activities at the surface are expected to occur during daytime hours. This analysis conservatively assumes that some surface-level construction activity, except pile driving, could take place during nighttime hours, when people normally sleep and are more sensitive to vibration.

Table 4.8-15 summarizes typical VdB levels at a distance of 25 feet, as well as various other distances, for the types of construction equipment that may be used for the proposed project.

[2] *Slant distance* is the angled distance between the TBM and the nearest home, with consideration given to the depth of the TBM.

Table 4.8-15. Construction Vibration Levels at Nearby Sensitive Uses

Equipment	VdB at 25 Feet	VdB at 150 Feet	VdB at 500 Feet	VdB at 1,500 Feet
Pile driver (impact)	112	89	73	59
Pile driver (sonic/vibratory)	105	82	66	52
Vibratory roller	94	71	55	41
Drill rig	87	64	48	34
Large bulldozer	87	64	48	34
Loaded trucks	87	64	47	33
Jackhammer	86	63	40	26
Small bulldozer	79	56	19	5

Source: Caltrans 2020.
VdB = vibration decibels

Pile driving would occur more than 1,500 feet from the nearest residential receptor (during the day only). At a distance of 1,500 feet, the estimated vibration level from a pile driver would be approximately 59 VdB and therefore below the annoyance criterion of 72 VdB (for Category 2 uses such as residences and buildings where people normally sleep). Vibration from pile driving would not result in sleep disturbance at nearby homes because vibration levels would be below relevant criteria and such activities would only occur during the daytime.

A vibratory roller is proposed for use to construct an ATV trail to the Energy Dissipation Structure and improve access roads. Construction work on the ATV trail would occur more than 500 feet from the nearest residence (during the day only). The vibratory roller vibration level would be approximately 55 VdB. This level would be below the vibration annoyance criterion of 72 VdB for Category 2 uses.

All other activities near Nacimiento and San Antonio Reservoirs would occur at greater distances from homes and involve the use of equipment that would generate less vibration. Construction activity near Nacimiento and San Antonio Reservoirs would not be expected to produce vibration levels in excess of 72 VdB at nearby homes because of the distance between the activity and residences.

The use of the TBM is expected to produce a vibration level of approximately 48 VdB or more, assuming continuous operation (FTA 2018; Sanitation District of Los Angeles County 2012). This vibration level would be below the 72 VdB annoyance criterion for Category 2 uses.

Vibration Impacts during Operations and Maintenance

Once construction is complete, routine operations and maintenance would continue at both reservoirs, similar to existing conditions. Maintenance activities at Nacimiento Reservoir would increase with the proposed project and Tunnel-Only Alternative. Such activities would ensure proper functioning for equipment and clear debris at the Tunnel Intake Structure with use of a boom truck, skid steer, and dump truck. This equipment would not generate perceptible levels of vibration at the nearest residences because they would be more than 1,500 feet away from the equipment. Vibration generated during operation of the proposed project or the Tunnel-Only Alternative would not be expected to be perceptible at the nearest homes.

CEQA Conclusion

The proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to vibration.

4.8.5 Impact Summary

Table 4.8-16 provides a summary of the significance of potential noise and vibration impacts.

Table 4.8-16. Summary of Impacts Related to Noise and Vibration

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact NV-1a: Expose Sensitive Receptors to Increased Noise Levels during Project Construction			
Proposed Project	Construction: Significant	**MM-NV-1a**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM-NV-1a**	Less than significant
Impact NV-1b: Expose Sensitive Receptors to Increased Noise Levels during Project Operations			
Proposed Project	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Operation: Less than significant	N/A	N/A
Impact NV-2: Generate Excessive Groundborne Vibration or Groundborne Noise Levels during Construction and Operations			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A

4.9 Air Quality

4.9.1 Overview

This section describes the environmental setting and impact area for air quality; and analyzes impacts that could result from construction, operation, and maintenance of the proposed project and Tunnel-Only Alternative.

4.9.1.1 Study Area

The air quality study area extends to locations that may be affected by air emissions from project construction equipment and project operations. The study area includes potential access routes to the project site (see **Figure 2-2**). The study area for regional air quality includes locations in both Monterey and San Luis Obispo Counties, which are within the North Central Coast and South Central Coast air basins and the jurisdiction of the Monterey Bay Air Resources District (MBARD) and San Luis Obispo County Air Pollution Control District (SLOCAPCD), respectively. Furthermore, the study area for local air quality impacts includes areas that could be affected by toxic air contaminants (TACs), or "hot spots," areas of potentially higher concentrations of pollutants. These are areas near sensitive receptors (see **Figure 4.9-1**) and adjacent to or within 1,000 feet (0.19 mile) of project construction and operation (see **Figures 2-4, 2-5, 2-9, and 2-13**).

4.9.1.2 Scoping Comments

MCWRA received multiple scoping comments related to air quality. **Table 4.9-1** summarizes the scoping comments received and identifies how and where the comments have been addressed.

Table 4.9-1. Scoping Comments Related to Air Quality Impacts

Summary of Comment	Location Where Comment Is Addressed
Recommends comparing construction air quality impacts against SLOCAPCD thresholds of significance (SLOCAPCD)	Refer to Impact AQ-2, *Result in a Cumulatively Considerable Increase in a Criteria Pollutant*.
Has concerns about operating a 50-horsepower or larger diesel engine, as well as other equipment, near sensitive receptors (SLOCAPCD)	Refer to Impact AQ-3, *Expose Sensitive Receptors to Substantial Pollutant Concentrations*.
Recommends evaluating overall air quality impacts associated with implementation of the proposed project (SLOCAPCD)	Refer to Impact AQ-2, *Result in a Cumulatively Considerable Increase in a Criteria Pollutant*, and Impact AQ-3, *Expose Sensitive Receptors to Substantial Pollutant Concentrations*.
For San Luis Obispo County, the SLOCAPCD recommends not using control requirements for naturally occurring asbestos (SLOCAPCD)	Refer to Impact AQ-3, *Expose Sensitive Receptors to Substantial Pollutant Concentrations*.

SLOCAPCD = San Luis Obispo County Air Pollution Control District

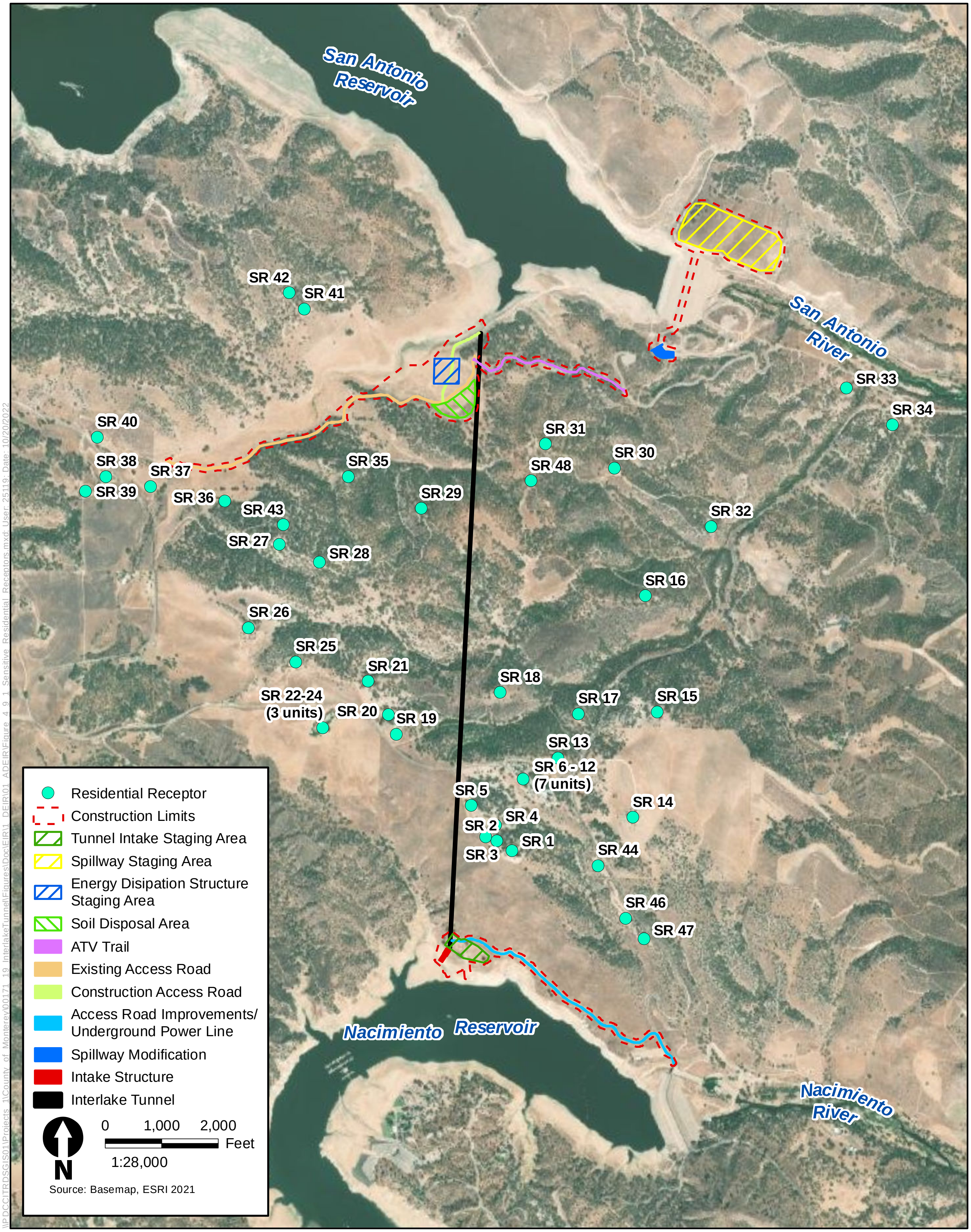


Figure 4.9-1
Sensitive Residential Receptors

4.9.1.3 Definitions

Air Pollutants

Criteria Air Pollutants

Federal and state governments have established ambient air quality standards for six criteria air pollutants. Ozone (O_3) is considered a regional pollutant because its precursors affect air quality on a regional scale. Pollutants such as carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (pb) are considered local pollutants and have the potential to accumulate in the air locally. Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}) and fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$) are both regional and local pollutants. The primary criteria pollutants generated by the proposed project and Tunnel-Only Alternative would be ozone precursors and particulate matter (i.e., nitrogen oxide [NO_X] and reactive organic gas [ROG]), CO, PM_{10}, and $PM_{2.5}$ (Reşitoğlu 2018).[1]

At certain concentrations, all criteria pollutants can cause adverse health effects. The ambient air quality standards for these pollutants were established by the federal Clean Air Act (CAA), 42 U.S.C. Section 7401 *et seq.*, to protect public health and welfare with an adequate margin of safety. Epidemiological, controlled human-exposure, and toxicology studies evaluate the potential health and environmental effects of criteria pollutants and provide the scientific basis for new and revised ambient air quality standards. A discussion of the principal characteristics and possible health and environmental effects from exposure to the primary criteria pollutants generated by the proposed project and Tunnel-Only Alternative follows.

Ozone

O_3, or smog, is a photochemical oxidant that is formed when ROG and NO_X (both byproducts of the internal-combustion engine) react with sunlight. ROG consists of compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle use is the major source of hydrocarbons. Other sources of ROG include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas that forms from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown, irritating gas formed by the combination of NO and oxygen. In addition to serving as an integral participant in ozone formation, NO_X also acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

O_3 poses a higher risk to those who already suffer from respiratory diseases (e.g., asthma), children, older adults, and people who are active outdoors. Exposure to ozone at certain concentrations can make breathing more difficult, cause shortness of breath and coughing, inflame and damage the airways, aggravate lung diseases, increase the frequency of asthma attacks, and cause chronic obstructive pulmonary disease. Studies show associations between short-term ozone exposure and non-accidental mortality, including deaths from respiratory issues. Studies also suggest long-term exposure to ozone may increase the risk of respiratory-related deaths (EPA 2020a). The concentration of ozone that results in adverse health effects depends on an individual's sensitivity,

[1] Most emissions of NO_x are in the form of NO. Conversion to NO_2 occurs in the atmosphere as pollutants disperse downwind. Accordingly, NO_2 is not considered a local pollutant of concern for the project and is not evaluated further.

the level of exertion (i.e., breathing rate), and the duration of exposure. Studies show large differences in the intensity of symptomatic responses in individuals, with one study finding no symptoms in the least responsive individual after a 2-hour exposure to 400 parts per billion of ozone as well as a 50 percent decrease in forced airway volume in the most responsive individual. Although the results vary, evidence suggests that sensitive populations (e.g., asthmatics) may be affected on days when the 8-hour maximum ozone concentration reaches 80 parts per billion (EPA 2020a).

In addition to human health effects, ozone has been tied to crop damage, typically in the form of stunted growth, leaf discoloration, cell damage, and premature death. O_3 can also act as a corrosive and oxidant, resulting in property damage, such as the degradation of rubber products and other materials.

Nitrogen Oxides

NO_X are a family of gaseous nitrogen compounds and precursors to the formation of ozone and particulate matter. NO_2, the major component of NO_X, is a reddish-brown gas that is toxic at high concentrations. NO_2 can be directly emitted from combustion sources, such as boilers, gas turbines, and reciprocating internal-combustion engines, both mobile and stationary. Much of the NO_2 in the ambient air, however, is photochemically formed by the combination of NO and other air pollutants. For this reason, NO_2 levels can vary, depending on direct emissions levels and changes in atmospheric conditions, particularly the amount of sunlight.

A large body of scientific literature suggests that NO_2 exposure can intensify responses to allergens in asthmatics. Epidemiological studies have also demonstrated an association between NO_2 and premature death, cardiopulmonary effects, decreased lung-function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses. As with other pollutants, children and individuals with underlying respiratory conditions (e.g., asthma) are at greater risk of experiencing adverse effects following exposure to NO_2 (CARB 2021a).

In addition to potential human health impacts, NO_2 can reduce visibility. High NO_2 concentrations (greater than 0.2 part per million [ppm]) over prolonged periods (100 hours or more) have also been reported to harm crops (CARB 2021a).

Carbon Monoxide

CO is a colorless, odorless toxic gas produced by incomplete combustion of carbon substances such as gasoline or diesel fuel. In the air quality study area, high CO levels are of greatest concern during the winter, when periods of light winds combine with the formation of ground-level temperature inversions from evening through early morning. These conditions trap pollutants near the ground, reducing the dispersion of vehicle emissions. Moreover, motor vehicles exhibit increased CO emissions rates at low air temperatures. The primary adverse health effect associated with CO is interference in the transfer of normal oxygen to the blood, which may result in tissue oxygen deprivation. Exposure to relatively high concentrations of CO can also cause fatigue, headaches, confusion, dizziness, and chest pain.

Sulfur Dioxide

SO_2 is generated by the burning of fossil fuels, industrial processes, and natural sources, such as volcanoes. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. Controlled human and epidemiological studies show that exposure to SO_2 near the 1-hour National Ambient Air Quality Standards (NAAQS) of 0.075 ppm can result in asthma exacerbation, including bronchoconstriction accompanied by symptoms of respiratory irritation such as wheezing, shortness of breath, and chest tightness. These symptoms can be more pronounced during exercise or physical activity. Exposure at elevated levels of SO_2 (above 1 ppm) may result in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality, especially among the elderly and people with cardiovascular disease or chronic lung disease (CARB 2021b).

In addition to potential human health impacts, SO_2 deposition contributes to soil and surface water acidification and acid rain (CARB 2021b).

Particulate Matter

Particulate matter (PM) consists of finely divided solids or liquids, such as soot, dust, aerosols, fumes, and mists. Generally, two forms of particulates are considered in air quality studies, inhalable coarse particles, or PM_{10}, and inhalable fine particles, or $PM_{2.5}$. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind on arid landscapes also contributes substantially to local particulate loading.

Particulate pollution can be transported over long distances and may adversely affect humans, especially people who are naturally sensitive or susceptible to breathing problems. Numerous studies have linked particulate exposure to premature death in people with preexisting heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms. Studies show that long-term exposure to $PM_{2.5}$ is associated with increased risk of mortality, ranging from a 6 to 13 percent increased risk per 10 micrograms per cubic meter ($\mu g/m^3$) of $PM_{2.5}$ (CARB 2010). Every 1 $\mu g/m^3$ reduction in the $PM_{2.5}$ concentration results in a 1 percent reduction in the mortality rate for individuals over 30 years old (CARB 2010). Studies also show an increase in overall mortality of approximately 0.5 percent for every 10 mg/m^3 increase in PM_{10} measured the day before death (EPA 2005). PM_{10} concentrations have decreased since 1990. Peak concentrations have declined by 60 percent, and annual average values have declined by 50 percent (EPA 2005). Depending on its composition, both PM_{10} and $PM_{2.5}$ can also affect water quality and acidity, deplete soil nutrients, damage sensitive forests and crops, affect ecosystem diversity, and contribute to acid rain (EPA 2020b).

Volatile Organic Compounds

Volatile organic compounds (VOCs) are hydrocarbon compounds that exist in the ambient air. VOCs contribute to the formation of smog and/or might themselves be toxic. VOC emissions are a major precursor to the formation of ozone. VOCs are also commonly referred to as ROGs.

Lead

Pb is a metal. It is found naturally in the environment as well as in manufactured products. Historically, the major sources of lead emissions have been mobile and industrial activities. The health effects of lead poisoning include loss of appetite, weakness, apathy, and miscarriage. Lead poisoning can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract.

In the past, gasoline-powered automobile engines were a major source of airborne lead because of the use of leaded fuels. As leaded fuels were phased out, ambient concentrations of lead decreased dramatically.

Hydrogen Sulfide

Hydrogen sulfide (H_2S) is associated with refining, geothermal activity, sewage treatment plants, oil and gas production, and confined animal feeding operations. H_2S is extremely hazardous in high concentrations and can cause death.

Sulfates

Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds result primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates is comparatively rapid and complete in urban areas of California because of their regional meteorological features.

CARB's sulfate standard is designed to prevent the aggravation of respiratory symptoms. Effects of sulfate exposure at levels that exceed the standard include decreased ventilatory function, aggravation of asthmatic symptoms, and increased risk of cardiopulmonary disease. Sulfates are particularly effective in degrading visibility and, because they are usually acidic, can harm ecosystems and damage materials and property.

Vinyl Chloride

Vinyl chloride is a colorless gas that does not occur naturally; it is formed when substances such as trichloroethane, trichloroethylene, and tetrachloroethylene are broken down. Vinyl chloride is used to make polyvinyl chloride, which is used in plastic products, such as pipes, wire and cable coatings, and packaging materials.

Toxic Air Contaminants

Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, CARB has consistently found that there are no levels or thresholds below which exposure is risk free. Individual TACs vary greatly in the risks they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment. The primary TACs of concern associated with the proposed project and Tunnel-Only Alternative are diesel particulate matter (DPM) and asbestos.

Diesel Particulate Matter

DPM is generated by diesel-fueled equipment and vehicles. CARB estimates that DPM emissions are responsible for about 70 percent of the total ambient air toxics risk (CARB 2000). Short-term exposure to DPM can cause acute irritation (e.g., eye, throat, and bronchial), neurophysiological symptoms (e.g., lightheadedness, nausea), and respiratory symptoms (e.g., coughing, phlegm). The International Agency for Research on Cancer has classified diesel engine exhaust as "carcinogenic to humans, based on sufficient evidence that exposure is associated with an increased risk for lung cancer" (International Agency for Research on Cancer 2012).

Asbestos

Asbestos is the name given to several naturally occurring fibrous silicate minerals. Before the adverse health effects of asbestos were identified, asbestos was widely used for insulation and fireproofing in buildings. Today, it can still be found in some older buildings. It is also found in its natural state in ultramafic rock (i.e., igneous and metamorphic rock with low silica content) that has undergone partial or complete alteration to serpentine rock (or serpentinite), often containing chrysotile asbestos. The inhalation of asbestos fibers into the lungs can result in a variety of adverse health effects, including inflammation of the lungs, respiratory ailments (e.g., asbestosis, which is scarring of lung tissue that results in constricted breathing), and cancer (e.g., lung cancer and mesothelioma, which is cancer of the linings of the lungs and abdomen) (EPA 2018).

Odors

Offensive odors can be unpleasant and lead to citizen complaints to local governments and air districts. According to CARB's *Air Quality and Land Use Handbook* (2005), land uses associated with odor complaints typically include sewage treatment plants, landfills, recycling facilities, manufacturing facilities, and agricultural activities. CARB provides recommended screening distances for siting new receptors near existing odor sources.

Valley Fever

Valley Fever is not an air pollutant but, rather, a disease caused by inhaling *Coccidioides immitis* (*C. immitis*) fungus spores. The spores, which are found in certain types of soil, become airborne when the soil is disturbed. After the fungal spores have settled in the lungs, they change into a multicellular structure called a spherule. Valley Fever symptoms generally occur within 2 to 3 weeks of exposure. Approximately 60 percent of Valley Fever cases are mild, displaying flu-like symptoms or no symptoms at all. Among those who are exposed and seek medical treatment, the most common symptoms are fatigue, cough, chest pain, fever, rash, headache, and joint aches (USGS 2000). Although the fungus spores can be found all over California, some of the highest incidents have been reported in the mid- to southern Central Valley and the Coastal Valley (e.g., Kern, Kings, San Luis Obispo, Fresno, Tulare, Madera, and Monterey Counties) (California Department of Public Health 2019). According to the Centers for Disease Control and Prevention, Monterey County had approximately six to 21 cases of Valley Fever between 2011 and 2017. San Luis Obispo County had approximately 51 to 99 cases during that same time period (Centers for Disease Control and Prevention 2020).

Health Effects of Criteria Air Pollutants

Criteria air pollutants are recognized as having a variety of health effects on humans. Research by CARB shows that exposure to high concentrations of air pollutants can trigger respiratory diseases such as asthma, bronchitis, and respiratory ailments as well as cardiovascular diseases. A healthy person exposed to high concentrations of air pollutants may become nauseated or dizzy, may develop a headache or cough, or may experience eye irritation and/or a burning sensation in the chest. When air pollutant levels are high, children, the elderly, and people with respiratory problems are advised to remain indoors. Outdoor exercise also is discouraged because strenuous activity may cause shortness of breath and chest pains. A brief summary of the criteria pollutants and their effects on human health and the environment is provided in **Table 4.9-2**.

Table 4.9-2. Health Effects Summary of the Major Criteria Air Pollutants

Pollutant	Primary Sources	Potential Effects
Ozone (O_3)	Formed by a chemical reaction between ROG and NO_X in the presence of sunlight. Primary sources of ROG and NO_X are vehicle exhaust, industrial combustion processes, gasoline storage and transport, solvents, paints, and landfills.	Inflammation of the mucous membranes and lung airways, wheezing, coughing and pain when inhaling deeply, decreased lung capacity, aggravation of lung, and heart problems. Reduced crop yield and damage to plants, rubber, some textiles, and dyes.
Particulate matter (PM)	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, and automobiles.	Irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Carbon monoxide (CO)	A component of motor vehicle exhaust that is formed when carbon in fuel is not burned completely.	Reduced ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impaired vision and dizziness that can lead to unconsciousness or death.
Nitrogen dioxide (NO_2)	Motor vehicles, electric utilities, and other sources that burn fuel.	Aggravation of lung and heart problems. Precursor to ozone and acid rain. Contributes to global warming and nutrient overloading, which deteriorates water quality. Brown discoloration of the atmosphere.
Sulfur dioxide (SO_2)	Petroleum refineries, cement manufacturing plants, metal processing facilities, locomotives, large ships, and fuel combustion in diesel engines.	Aggravation of lung and heart problems. Converts to sulfuric acid, which can damage marble, iron, and steel. Damage to crops and natural vegetation. Impaired visibility.
Lead (Pb)	Metal refineries, smelters, battery manufacturers, iron and steel producers, racing and aircraft industries (use of leaded fuels).	Anemia; damage to the kidneys, liver, brain, reproductive, nerves, and other organs; and neurological problems, including learning deficits and lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: California Air Pollution Control Officers Association n.d.
NO_X = nitrous oxides; ROG = reactive organic gases

4.9.2 Regulatory Setting

4.9.2.1 Federal Laws, Regulations, and Policies

Clean Air Act and National Ambient Air Quality Standards

The CAA, first enacted in 1963, has been amended numerous times (1967, 1970, 1977, and 1990). The CAA establishes the NAAQS and specifies future dates for achieving compliance. The CAA also mandates that each state submit and implement a State Implementation Plan (SIP) for local areas that fail to meet the standards. The plans must include pollution control measures that demonstrate how the standards will be met. Because the proposed project is within the North Central Coast and South Central Coast air basins, it is in an area that has been designated as a nonattainment area for certain pollutants that are regulated under the CAA.

The 1990 amendments to the CAA identified specific emission-reduction goals for areas that failed to meet the NAAQS. The amendments require both a demonstration of reasonable progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. The sections of the CAA that are most applicable to the plan are Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Title I provisions were established with the goal of attaining the NAAQS for criteria pollutants. **Table 4.9-3** shows the current attainment status for the NAAQS and California Ambient Air Quality Standards (CAAQS). The NAAQS were amended in July 1997 to include an 8-hour standard for ozone and adopt a standard for $PM_{2.5}$. The 8-hour ozone NAAQS was further amended in October 2015. **Table 4.9-3** shows the current attainment status for the NAAQS and CAAQS. The proposed project is located in two counties and overlaps two air basins; therefore, attainment information for both has been included.

Corporate Average Fuel Economy Standards

The National Highway Traffic Safety Administration (NHTSA) Corporate Average Fuel Economy (CAFE) standards require substantial improvements in fuel economy and reductions in emissions of criteria air pollutants and precursors, as well as greenhouse gases, from all light-duty vehicles sold in the United States.

On August 2, 2018, NHTSA and the EPA proposed an amendment to the fuel efficiency standards for passenger cars and light trucks and established new standards for model years 2021 through 2026 that would maintain the then-current 2020 standards through 2026—this was known as the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule. On September 19, 2019, NHTSA and the EPA issued a final action on the One National Program Rule, which is considered Part One of the SAFE Vehicles Rule and a precursor to the proposed fuel efficiency standards. The One National Program Rule enables NHTSA and the EPA to provide nationwide uniform fuel economy and air pollutant standards by 1) clarifying that federal law preempts state and local tailpipe standards; 2) affirming NHTSA's statutory authority to set nationally applicable fuel economy standards; and 3) withdrawing California's CAA preemption waiver to set state-specific standards.

NHTSA and EPA published final rules on April 30, 2020, to amend and establish national air pollutant and fuel economy standards (Part Two of the SAFE Vehicles Rule) (85 *Federal Register* 24174). The revised rule changed the national fuel economy standards for light-duty vehicles to reach approximately 32 miles per gallon by 2026.

On January 20, 2021, the president issued an executive order directing NHTSA and EPA to review the SAFE Vehicles Rule, Parts One and Two, and propose new rules for suspending, revising, or rescinding them. On December 12, 2021, NHTSA repealed the SAFE Vehicles Rule, Part One. On December 19, 2021, NTSA finalized its vehicle efficiency standards rule to reach a projected industry-wide target of 40 miles per gallon by 2026, an approximately 25 percent increase over the prior SAFE rule.

Table 4.9-3. Attainment Status of the Federal and State Ambient Air Quality Standards

Contaminant	Averaging Time	Concentration	North Central Coast Air Basin (Monterey County)		South Central Coast Air Basin (Western San Luis Obispo County)	
			State Standards Attainment Status[1]	Federal Standards Attainment Status[2]	State Standards Attainment Status[1]	Federal Standards Attainment Status[2]
Ozone (O_3)	1 hour	0.09 ppm	T	See footnote [3]	N	See footnote [3]
	8 hours	0.070 ppm	T	A[3]	N	A
Carbon Monoxide (CO)	1 hour	20 ppm	A	N/A	A	N/A
		35 ppm	N/A	U/A	N/A	U
	8 hours	9.0 ppm	A	U/A	A	U
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	A	N/A	A	N/A
		0.100 ppm[4]	N/A	U/A	N/A	U
	Annual arithmetic mean	0.030 ppm	A	N/A	A	N/A
		0.053 ppm	N/A	U	N/A	U
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	A	N/A	A	N/A
		0.075 ppm	N/A	U	N/A	U
	24 hours	0.04 ppm	A	N/A	A	N/A
		0.14 ppm	N/A	U	N/A	U
	Annual arithmetic mean	0.030 ppm	N/A	U	N/A	U
Particulate Matter (PM_{10})	24 hours	50 µg/m³	N	N/A	N	N/A
		150 µg/m³	N/A	U	N/A	U/A
	Annual arithmetic mean	20 µg/m³	N	N/A	N	N/A
Fine Particulate Matter ($PM_{2.5}$)	24 hours	35 µg/m³	N/A	U/A	N/A	U/A
	Annual arithmetic mean	12 µg/m³	A	U/A	A	U/A
Sulfates	24 hours	25 µg/m³	A	N/A	A	N/A
Lead (Pb)[6]	30-day average	1.5 µg/m³	A	N/A	A	N/A
	Calendar quarter	1.5 µg/m³	N/A	U/A	N/A	U
	Rolling 3-month average	0.15 µg/m³	N/A	U/A	N/A	U

Contaminant	Averaging Time	Concentration	North Central Coast Air Basin (Monterey County) State Standards Attainment Status[1]	North Central Coast Air Basin (Monterey County) Federal Standards Attainment Status[2]	South Central Coast Air Basin (Western San Luis Obispo County) State Standards Attainment Status[1]	South Central Coast Air Basin (Western San Luis Obispo County) Federal Standards Attainment Status[2]
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	U	N/A	A	N/A
Vinyl Chloride (chloroethene)[6]	24 hours	0.010 ppm	U	N/A	U	N/A
Visibility-Reducing Particles	8 hours (10:00 to 18:00 PST)	See footnote [5]	U	N/A	U/A	N/A

Source: CARB 2021c.

1. California standards for O_3, CO, SO_2 (1-hour and 24-hour standards), O_3, suspended particulate matter (PM_{10}), and visibility-reducing particles are not to be exceeded. The standards for sulfates, Pb, H_2S, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour, or 24-hour average (i.e., all standards, except for Pb and the PM_{10} annual standard), then some measurements may be excluded. In particular, measurements that are excluded are those that CARB determines would occur less than once per year on average.
2. The national standards shown are the *primary standards* designed to protect public health. National air quality standards are set by EPA to protect public health, with an adequate margin of safety. National standards, other than for O_3, particulates, and those based on annual averages, are not to be exceeded more than once per year. The 1-hour O_3 standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than 1. The 8-hour O_3 standard is attained when the 3-year average of the fourth-highest daily concentrations is 0.075 ppm or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 $\mu g/m^3$. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 $\mu g/m^3$. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM_{10} is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met by spatially averaging annual averages across officially designated clusters of sites, and then determining if the 3-year average of the annual averages falls below the standard.
3. The national 1-hour O_3 standard was revoked by EPA on June 15, 2005. On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 ppm to 0.070 ppm. An area meets the standard if the fourth-highest maximum daily 8-hour O_3 concentration per year, averaged over 3 years, is equal to or less than 0.070 ppm. This table provides the attainment status for the 2015 standard of 0.070 ppm.
4. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average of NO_2 at each monitoring station within an area must not exceed 0.100 ppm (effective January 22, 2010).
5. Statewide Visibility-Reducing Particle Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.
6. CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure below which there are no adverse health effects.

$\mu g/m^3$ = micrograms per cubic meter; A = attainment; CARB = California Air Resources Board; EPA = U.S. Environmental Protection Agency; km = kilometer; N = nonattainment; N/A = not applicable; PM_{10} = particulate matter with an aerodynamic radius of 10 microns or less; $PM_{2.5}$ = particulate matter with an aerodynamic radius of 2.5 microns or less; ppm = parts per million; PST = Pacific Standard Time; T = nonattainment-transitional; U = unclassified/no attainment information

Emission Standards

Non-Road Emission Regulations

To reduce emissions from non-road diesel equipment, EPA established a series of increasingly strict emissions standards for new non-road diesel engines. Tier 1 standards were phased in for newly manufactured equipment from 1996 through 2000 (year of manufacture), depending on the engine horsepower category. Tier 2 standards were phased in for newly manufactured equipment from 2001 through 2006. Tier 3 standards were phased in for newly manufactured equipment from 2006 through 2008. Tier 4 standards, which required advanced emissions control technology to attain them, were phased in between 2008 and 2015 (69 CFR 38957–39273, June 29, 2004). The Tier 4 standards require emissions of particulate matter and NO_X to be further reduced by about 90 percent. Such emissions reductions can be achieved through the use of control technologies, including advanced exhaust gas after treatment. To enable sulfur-sensitive control technologies in Tier 4 engines, EPA also mandated reductions in the sulfur content in non-road diesel fuels. In most cases, federal non-road regulations apply in California, which has only limited authority to set emission standards for new non-road engines. The CAA preempts California's authority to control emissions from new farm and construction equipment of less than 175 horsepower (CAA Section 209(e)(1)(A)) and requires California to receive authorization from EPA for control over other off-road sources (CAA Section 209(e)(2)(A)).

4.9.2.2 State Laws, Regulations, and Policies

Airborne Toxic Control Measures

CARB regulates TACs by requiring implementation of various airborne toxic control measures (ATCMs), which are intended to reduce emissions associated with toxic substances.

ATCM to Limit Diesel-fueled Commercial Motor Vehicle Idling

On October 20, 2005, CARB approved an ATCM to limit the idling of diesel-fueled commercial vehicles. This regulation, which followed previous ATCMs concerning idling, consists of new engine and in-use truck requirements as well as idling-related emissions performance standards (i.e., 30 grams per hour). It requires 2008 and newer heavy-duty diesel engines to be equipped with a nonprogrammable system that automatically shuts down the engine after 5 minutes of idling. The regulation also requires operators of trucks with sleeper berths and both in-state and out-of-state registration to shut down their engines manually when idling more than 5 minutes at any location within California, beginning in 2008. The regulation applies to diesel-fueled commercial vehicles with a gross vehicle weight rating greater than 10,000 pounds. However, there are exceptions to this regulation: for example, ready-mix concrete trucks, which need the engine to be on in order to operate, are not required to comply. Trucks used for vendor deliveries of materials for construction and/or maintenance of the proposed project would be required to comply with regulatory requirements pertaining to commercial vehicle idling.

Portable Equipment Registration Program

The statewide Portable Equipment Registration Program established a system that uniformly regulates portable engines and portable engine-driven equipment. After being registered in the program, engines and equipment may operate throughout the state without the need to obtain permits from individual air districts. Owners or operators of portable engines and certain types of equipment can voluntarily register their units under this program. However, the operation of registered portable engines may still be subject to certain district requirements regarding reporting and notification. Engines with less than 50 brake horsepower are exempt from the program. Some of the engines used by the proposed project may operate under Portable Equipment Registration Program.

California Clean Air Act

The California Clean Air Act (California CAA), signed into law in 1988 (California Health and Safety Code Division 26), requires all areas of the state to achieve and maintain the CAAQS by the earliest practical date. In general, the California standards are more health protective than the corresponding NAAQS. The CAAQS incorporate additional standards for most criteria pollutants as well as other state-recognized pollutants. California has also set standards for sulfates, H_2S, vinyl chloride, and visibility-reducing particles. **Table 4.9-3** shows the CAAQS currently in effect for each criteria pollutant.

CARB and local air districts bear responsibility for achieving California's air quality standards, which are to be achieved through district-level air quality management plans and incorporated into the SIP. In California, EPA has delegated the authority to prepare SIPs to CARB, which, in turn, has delegated that authority to individual air districts. Traditionally, CARB has established state air quality standards, maintained oversight authority in air quality planning, developed programs for reducing emissions from motor vehicles, developed air emissions inventories, collected air quality and meteorological data, and approved SIPs.

The California CAA substantially adds to the authority and responsibilities of the air districts. The California CAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts the authority to implement transportation control measures. The California CAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The California CAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution.

The proposed project is located in the North Central Coast and South Central Coast air basins and under the jurisdiction of MBARD and SLOCAPCD, which respectively manage air quality in Monterey and San Luis Obispo Counties for attainment and permitting purposes.

TAC Regulations

In addition to ATCMs, TACs are controlled under several regulations in California, including the Tanner Air Toxics Act, Air Toxics Hot-Spots Information Act, and AB 2588, the Air Toxics Hot-Spots Information and Assessment Act. In the early 1980s, CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created a program in California to reduce exposure to air toxics. The Hot-Spots Act supplemented the Tanner Act by requiring a statewide air toxics inventory, notification of people who were exposed to a significant health risk, and facility plans to reduce the risks.

CARB identified DPM as a TAC and approved a comprehensive Diesel Risk Reduction Plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (CARB 2000). The goal of the plan was to reduce DPM emissions and the associated health risk by 75 percent by 2010 and by 85 percent by 2020. The plan identified 14 measures that CARB implemented over several years. The proposed project would be required to comply with the applicable diesel control measures from the plan.

4.9.2.3 Local Laws, Regulations, and Policies

Monterey County

Monterey County General Plan

The Monterey County General Plan contains the following air quality goals and policies that may be relevant to the project:

- **Goal OS-10:** Provide for the Protection and Enhancement of Monterey County's Air Quality without Constraining Routine and Ongoing Agricultural Activities.
  - **OS-10.6:** The Monterey Bay Unified Air Pollution Control District's air pollution control strategies, air quality monitoring, and enforcement activities shall be supported.
  - **OS-10.8:** Air quality shall be protected from naturally occurring asbestos by requiring mitigation measures to control dust and emissions during construction, grading, quarrying, or surface mining operations. This policy shall not apply to routine and ongoing agricultural activities, except as required by state and federal law.
  - **OS-10.9:** The County of Monterey shall require that future development implement applicable Monterey Bay Unified Air Pollution Control District [now known as the Monterey Bay Air Resources District or "MBARD"] control measures. Applicants for discretionary projects shall work with the Monterey Bay Unified Air Pollution Control District to incorporate feasible measures that assure that health-based standards for diesel particulate emissions are met. The County of Monterey will require that future construction operate and implement MBARD PM_{10} control measures to ensure that construction-related PM_{10} emissions do not exceed MBARD's daily threshold for PM_{10}. The County of Monterey shall implement MBARD measures to address off-road mobile-source and heavy-duty equipment emissions as conditions of approval for future development to ensure that construction-related NO_X emissions from non-typical construction equipment do not exceed MBARD's daily threshold for NO_X.

Monterey Bay Air Resources District

MBARD, formerly the Monterey Bay Unified Air Pollution Control District, is responsible for air monitoring, permitting, enforcement, long-range air quality planning, regulatory development, educational, and public information activities related to air pollution in the counties of Monterey, Santa Cruz, and San Benito, which comprise the North Central Coast Air Basin. As shown in **Table 4.9-3**, Monterey County is in nonattainment status for state PM_{10} standards and nonattainment-transitional for the state ozone standard.

Monterey Bay Air Resources District Air Quality Management Plans

MBARD's 2012–2015 Air Quality Management Plan (AQMP) contains MBARD's plan for achieving attainment of the state's ozone standards and serves as an update to the 2008 AQMP and the 2012 Triennial Plan. The 2007 Federal Maintenance Plan for Maintaining the National Ozone Standard in the Monterey Bay Region presents the strategy for maintaining the national O_3 standard in the North Central Coast Air Basin. The 2005 Particulate Matter Plan contains the district's plan for implementing SB 656 and achieving attainment of the state's PM_{10} standards.

Monterey Bay Air Resources District Rules

The project may be subject to the following MBARD rules. The rules have been adopted by MBARD to reduce emissions throughout the North Central Coast Air Basin.

- **Rule 400** – Visible Emissions: Limits visible emissions from sources within the district.
- **Rule 402** – Nuisances: Prohibits sources from creating public nuisances while operating within the district.
- **Rule 403** – Particulate Matter: Provides particulate matter emission limits for sources operating within the district.
- **Rule 404** – Sulfur Compounds and Nitrogen Oxides: Limits emissions of sulfur compounds, nitrogen oxides, and nitrogen dioxide from sources within the district.
- **Rule 1000** – Permit Guidelines and Requirements for Source Emitting Toxic Air Contaminants.

San Luis Obispo County

San Luis Obispo County General Plan

The San Luis Obispo County General Plan Conservation and Open Space Element contains the following air quality goals, policies, and implementation strategies that may be relevant to the project:

- **Goal AQ-3:** State and federal ambient air quality standards will, at a minimum, be attained and maintained.
  - **Policy AQ 3.2:** Attain Air Quality Standards. Attain or exceed federal or state ambient air quality standards (the more stringent if not the same) for measured criteria pollutants.
    - **Implementation Strategy AQ 3.2.1:** Use of APCD's CEQA Guidelines. The County's CEQA process will use the APCD's CEQA Guidelines to determine significance of impacts and to identify minimum project design and mitigation requirements.
  - **Policy AQ 3.4:** Toxic Exposure. Minimize public exposure to toxic air contaminants, ozone, particulate matter, sulfur dioxide, carbon monoxide, nitrogen oxides, and lead.
  - **Policy AQ 3.8:** Reduce Dust Emissions. Reduce PM_{10} and $PM_{2.5}$ emissions from unpaved and paved County roads to the maximum extent feasible.
    - **Implementation Strategy AQ 3.8.1:** Reduce Particulate Matter Emissions from County Roads. Implement all APCD particulate matter emission controls.

San Luis Obispo County Air Pollution Control District

SLOCAPCD implements regulations and programs to reduce air pollution and assist San Luis Obispo County in reaching all outdoor air quality standards. San Luis Obispo County is in the South Central Coast Air Basin, which also includes the counties of Santa Barbara and Ventura. As shown in **Table 4.9-3**, the western portion of the county, where the proposed project is located, is in nonattainment status for state O_3 and PM_{10} standards.

San Luis Obispo County Air Pollution Control District Air Quality Management Plans

SLOCAPCD's *2001 Clean Air Plan* (CAP) details San Luis Obispo County's plan to address ozone precursor emissions and achieve the state's ozone standard. The SLOCAPCD's *2012–2017 Strategic Action Plan* contains strategic air quality-related goals and strategies for implementing the goals (SLOCAPCD 2012). SLOCAPCD's *2005 Particulate Matter Report* describes the district's plan for addressing particulate matter and implementing SB 656 requirements.

San Luis Obispo County Air Pollution Control District Rules

The proposed project may be subject to the following district rules. The rules have been adopted by SLOCAPCD to reduce emissions throughout the South Central Coast Air Basin:

- **Rule 401** – Visible Emissions: Limits the discharge of visible emissions.
- **Rule 402** – Nuisance: Prohibits the discharge of nuisance-causing quantities of air contaminants.
- **Rule 403** – Particulate Matter Emission Standards: Limits particulate matter emissions.
- **Rule 431** – Stationary Internal-Combustion Engines.

4.9.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to air quality is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.9.3 Environmental Setting

4.9.3.1 Regional Setting

CARB has divided California into regional air basins, according to topographic and drainage features. The two air basins relevant to the project are the North Central Coast and South Central Coast air basins. The following section provides climatic and meteorological information associated with these two air basins.

North Central Coast Air Basin

The North Central Coast Air Basin consists of Monterey, Santa Cruz, and San Benito Counties and forms an area of more than 5,100 square miles (MBARD 2017). Vegetation, climate, and topography within the air basin vary. Portions of several mountain ranges extend into the basin, including the Santa Lucia and Gabilan Ranges in Monterey and San Benito Counties, the southern portion of the Santa Cruz Mountains in Santa Cruz County, and the Diablo Range in the eastern half of San Benito County (MBARD 2008). The coastal terraces in the Santa Cruz area; the flat plains surrounding Watsonville, Salinas, and King City; and the southern Santa Clara Valley are sharply defined by the various mountain ranges.

The dominant land use in southern Monterey County is agriculture. Institutional uses also occupy significant portions of the land area within the region. Military uses in Monterey County include Fort Hunter-Liggett, Camp Roberts, the Naval Postgraduate School, and the Presidio of Monterey. Other major institutional uses are the University of California, Santa Cruz and the Soledad Correctional Facility. The region also has a significant amount of land with open space and recreation uses, including several large state parks, the Ventana Wilderness, the Los Padres National Forest, and Pinnacles National Park.

In Monterey and Santa Cruz Counties, urbanized development occupies about 3 percent of the total land area. Approximately 65 percent of the regional urban development in Monterey and Santa Cruz Counties is proximate to Monterey Bay, on the coastal plain that extends from Santa Cruz to Carmel-by-the-Sea.

In the Monterey area, the wind direction is typically from the west between March and October and from the east/southeast during the remaining months of the year (WRCC 2003, 2016). Average monthly temperatures at Nacimiento Reservoir range from approximately 35 to 95 degrees Fahrenheit. Historically, rainfall totals at Nacimiento Reservoir have amounted to less than 14 inches per year (WRCC 2021).

In 2015, the latest year with emissions data, NO_X and ROG emissions in the North Central Coast Air Basin amounted to 39 and 59 tons per day, respectively. The air basin's largest NO_X and ROG emissions sources are mobile sources and area-wide sources, respectively (MBARD 2017). Stationary emissions sources contribute the smallest portion of NO_X and ROG.

South Central Coast Air Basin

San Luis Obispo County constitutes a land area of approximately 3,316 square miles. Vegetation, climate, and topography within the air basin vary. The diversity of environmental conditions found in the county is greater than its size would suggest. It is bordered by Monterey County to the north, Santa Barbara County to the south, and Kern County to the east, with the Pacific Ocean as the western border. From a geographical and meteorological standpoint, the county can be divided into three general regions, the Coastal Plateau, the Upper Salinas River Valley, and the East County Plain. The study area is located in the Upper Salinas River Valley. Although the air quality in each region is different, the physical features that divide them provide only limited barriers to the transport of pollutants (SLOCAPCD 2001).

As discussed in Section 4.11, *Agriculture*, the predominant land use in San Luis Obispo County is agriculture, with wine grapes and strawberries being the top two crops. Much of the county's agricultural land is committed to agricultural use for periods of up to 20 years under the Williamson Act (SLOCAPCD 2001). The climate of the county can be generally characterized as Mediterranean, with warm, dry summers and cool, relatively damp winters. Along the coast, mild temperatures are the rule throughout the year because of the moderating influence of the Pacific Ocean. This effect is diminished inland in proportion to distance from the ocean or by major intervening terrain features, such as the coastal mountain ranges. As a result, inland areas are characterized by a considerably wider range of temperatures. Maximum summer temperatures average about 70 degrees Fahrenheit near the coast, whereas inland valleys are often in the high 90s. However, average maximums can be in the high 70s, and daily summer maximums can exceed 100 degrees Fahrenheit. Minimum winter temperatures average from the low 30s along the coast to the low 20s inland. Rainfall totals in the inland portions of the South Central Coast generally amount to less than 15 inches per year (SLOAPCD 2001).

Regional meteorology is largely dominated by a persistent high-pressure area, which commonly resides over the eastern Pacific Ocean. Seasonal variations in the strength and position of this pressure cell cause seasonal changes in the weather patterns of the area. The Pacific High remains generally fixed several hundred miles offshore from May through September, enhancing onshore winds and opposing offshore winds. During spring and early summer, as onshore breezes pass over the cool water of the ocean, fog and low clouds often form in the marine air layer along the coast. Surface heating in the interior valleys dissipates the marine layer as it moves inland. From November through April, the Pacific High tends to migrate southward, allowing northern storms to move across the county. About 90 percent of the total annual rainfall is received during this period. Winter conditions are usually mild, with intermittent periods of precipitation followed by mostly clear days. Rainfall amounts can vary considerably among different regions in the county. In the Coastal Plain, annual rainfall averages 16 to 28 inches, whereas the Upper Salinas River Valley generally receives about 12 to 20 inches of rain. The Carrizo Plain is the driest area of San Luis Obispo County, with less than 12 inches of rain in a typical year (SLOCAPCD 2001).

4.9.3.2 Existing Air Quality Conditions

Air Monitoring Data

EPA, CARB, and local air districts operate an extensive air monitoring network to measure progress toward attainment of the NAAQS and CAAQS, or maintenance of the standards. The project site is within two separate air basins; therefore, monitoring data for both air basins are provided. The nearest monitoring station to the project site within the North Central Coast Air Basin is the King City – 415 Pearl Street station in Monterey County, approximately 31 miles to the northwest of the proposed project footprint boundary. **Table 4.9-4** shows the 3 most recent years of available data for this monitoring station. In addition, monitoring data from the Salinas #3 monitoring station, approximately 74 miles to the northwest, are included for other criteria pollutants.

The nearest monitoring station in the South Central Coast Air Basin is the Paso Robles-Santa Fe Avenue monitoring station in Paso Robles, approximately 17 miles southeast of the project site. **Table 4.9-5** shows the 3 most recent years of available data for this monitoring station, which is in San Luis Obispo County. Furthermore, monitoring data from the Atascadero – Lift Station #5 monitoring station, approximately 23 miles south of the proposed project footprint boundary, are included for other criteria pollutants. CO data are not available for San Luis Obispo County.

4.9.3.3 Sensitive Receptors

Sensitive receptors are those segments of the population who are most susceptible to the effects of poor air quality (e.g., children, the elderly, and individuals with serious preexisting health problems, such as asthma, that are exacerbated by poor air quality (CARB 2005). Examples of locations that contain sensitive receptors are residences, schools and school yards, parks and playgrounds, day-care centers, nursing homes, and medical facilities. Residences include houses, apartments, and senior living complexes. Playgrounds include areas associated with parks or community centers. Medical facilities can include hospitals, convalescent homes, and health clinics; there are no medical facilities identified as sensitive receptors. **Figure 4.9-1** highlights the sensitive receptors nearest to the different construction areas. As shown on **Figure 4.9-1**, the closest sensitive receptors to an above ground construction feature are located along Interlake Road and near the existing vault site access road.

Table 4.9-4. Ambient Air Quality Data within Monterey County (2017–2019)

Pollutant Standards	2017	2018	2019
Ozone (O_3) (King City)			
Maximum 1-hour concentration (ppm)	0.073	0.079	0.071
Maximum 8-hour concentration (ppm)	0.066	0.061	0.062
Number of Days Standard Exceeded[1]			
CAAQS 1-hour standard (> 0.09 ppm)	*0*	*0*	*0*
CAAQS 8-hour standard (> 0.070 ppm)	*0*	*0*	*0*
NAAQS 8-hour standard (> 0.070 ppm)	*0*	*0*	*0*
Carbon Monoxide (CO) (Salinas)			
Maximum 8-hour concentration (ppm)	0.9	1.2	5.3
Maximum 1-hour concentration (ppm)	2.7	3.5	35.0
Number of Days Standard Exceeded[1]			
NAAQS 8-hour standard (≥ 9 ppm)	*0*	*0*	*0*
CAAQS 8-hour standard (≥ 9.0 ppm)	*0*	*0*	*0*
NAAQS 1-hour standard (≥ 35 ppm)	*0*	*0*	*0*
CAAQS 1-hour standard (≥ 20 ppm)	*0*	*0*	*0*
Nitrogen Dioxide (NO_2) (Salinas)			
State maximum 1-hour concentration (ppb)	34.0	47.0	30.0
State second-highest 1-hour concentration (ppb)	33.0	36.0	29.0
Annual average concentration (ppb)	4.0	5.0	4.0
Number of Days Standard Exceeded[1]			
CAAQS 1-hour standard (180 ppb)	*0*	*0*	*0*
Particulate Matter (PM_{10}) (King City)			
Maximum state 24-hour concentration (μg/m^3)[2]	–	–	–
Maximum national 24-hour concentration (μg/m^3)[3]	95.3	78.9	89.7
National annual average concentration	29.3	28.5	19.7
Measured Number of Days Standard Exceeded			
CAAQS 24-hour standard (50 μg/m^3)	–	–	–
NAAQS 24-hour standard (150 μg/m^3)	*0*	*0*	*0*
Fine Particulate Matter ($PM_{2.5}$) (King City)			
National[e] maximum 24-hour concentration (mg/m^3)	36.0	41.7	20.7
National[e] second-highest 24-hour concentration (mg/m^3)	28.6	41.2	15.0
State[f] maximum 24-hour concentration (mg/m^3)	36.0	41.7	20.7
State[f] second-highest 24-hour concentration (mg/m^3)	28.6	41.2	15.0
National annual average concentration (mg/m^3)	6.4	7.2	5.5
State annual average concentration (mg/m^3)[4]	6.4	7.3	5.5
Measured Number of Days Standard Exceeded[1]			
NAAQS 24-hour standard (> 35 mg/m^3)	*1.0*	*4.1*	*0.0*

Source: CARB 2021d, 2021e; EPA 2021.

1. An exceedance is not necessarily related to a violation of the standard.
2. State statistics are based on approved local samplers and local conditions data.
3. National statistics are based on standard conditions data. In addition, national statistics are based on samplers, using federal reference or equivalent methods.
4. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
5. National statistics are based on samplers, using federal reference or equivalent methods.
6. State statistics are based on local approved samplers.

CAAQS = California Ambient Air Quality Standards; mg/m3 = milligrams per cubic meter; NAAQS = National Ambient Air Quality Standards; ppb = parts per billion; ppm = parts per million; – = no data available; μg/m^3 = micrograms per cubic meter

Table 4.9-5. Ambient Air Quality Data within San Luis Obispo County (2017–2019)

Pollutant Standards	2017	2018	2019
Ozone (O_3) (Paso Robles)			
Maximum 1-hour concentration (ppm)	0.083	0.087	0.077
Maximum 8-hour concentration (ppm)	0.074	0.071	0.064
Number of Days Standard Exceeded[1]			
CAAQS 1-hour standard (> 0.09 ppm)	*0*	*0*	*0*
CAAQS 8-hour standard (> 0.070 ppm)	*1.0*	*2.0*	*0*
NAAQS 8-hour standard (> 0.070 ppm)	*1.0*	*2.0*	*0*
Carbon Monoxide (CO)	–	–	–
Nitrogen Dioxide (NO_2) (Atascadero)			
State maximum 1-hour concentration (ppb)	39.0	38.0	34.0
State second-highest 1-hour concentration (ppb)	38.0	35.0	33.0
Annual average concentration (ppb)	4.0	5.0	4.0
Number of Days Standard Exceeded[1]			
CAAQS 1-hour standard (180 ppb)	*0*	*0*	*0*
Particulate Matter (PM_{10}) (Paso Robles)			
Maximum state 24-hour concentration (μg/m³)[2]	57.0	82.1	138.0
Maximum national 24-hour concentration (μg/m³)[3]	56.2	85.5	134.4
National annual average concentration	18.6	26.7	18.2
Measured Number of Days Standard Exceeded			
CAAQS 24-hour standard (50 μg/m³)	*6*	*26*	*9*
NAAQS 24-hour standard (150 μg/m³)	—	*0.0*	*0.0*
Fine Particulate Matter ($PM_{2.5}$) (Atascadero)			
National[4] maximum 24-hour concentration (mg/m³)	26.7	34.1	17.3
National[4] second-highest 24-hour concentration (mg/m³)	25.2	27.6	15.0
State[5] maximum 24-hour concentration (mg/m³)	26.7	34.1	17.3
State[5] second-highest 24-hour concentration (mg/m³)	25.2	27.6	15.0
National annual average concentration (mg/m³)	5.7	6.4	4.2
State annual average concentration (mg/m³)[6]	5.7	6.5	—
Measured Number of Days Standard Exceeded[a]			
NAAQS 24-hour standard (> 35 mg/m³)	*0.0*	*0.0*	*0.0*

Source: CARB 2021f, 2021g.

1. An exceedance is not necessarily related to a violation of the standard.
2. State statistics are based on approved local samplers and local conditions data.
3. National statistics are based on standard conditions data. In addition, national statistics are based on samplers, using federal reference or equivalent methods.
4. National statistics are based on samplers, using federal reference or equivalent methods.
5. State statistics are based on local approved samplers.
6. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

CAAQS = California Ambient Air Quality Standards; mg/m³ = milligrams per cubic meter; NAAQS = National Ambient Air Quality Standards; ppb = parts per billion; ppm = parts per million; – = no data available; μg/m3 = micrograms per cubic meter

4.9.4 Impact Analysis

4.9.4.1 Methods for Evaluating Impacts

This impact analysis considers whether implementation of the proposed project or Tunnel-Only Alternative would result in significant adverse impacts on air quality in the study area. The analysis focuses on reasonably foreseeable direct and indirect effects of the proposed project and Tunnel-Only Alternative and compares them with baseline conditions. Effects that would result from operation and maintenance of the proposed project and Tunnel-Only Alternative are also considered.

Project Features and Phasing

The study area is within two separate air basins, North Central Coast and South Central Coast, and two different counties, Monterey County and San Luis Obispo County. **Table 4.9-6** highlights the different project features, as well as construction phasing, that would occur within each air basin and county.

1. Within Monterey County, construction of the following would occur: the Energy Dissipation Structure and portal, a portion of the Interlake Tunnel, and the Spillway Modification.
2. Within San Luis Obispo County, construction of the following would occur: the Tunnel Intake Structure and portal and a portion of the Interlake Tunnel.

In addition to the proposed project, construction of a Tunnel-Only Alternative was analyzed. The Tunnel-Only Alternative would include all of the construction features listed in **Table 4.9-6,** except for the Spillway Modification. Therefore, it is assumed that environmental analysis of the proposed project would yield more conservative results because the proposed project would include more construction features and phases.

Construction Emissions

Construction activities would generate emissions of criteria air pollutants (i.e., ROG, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$) that could result in short-term air quality effects during the construction period. Emissions would result from off-road equipment exhaust, employee vehicle and haul truck exhaust, fugitive dust from site grading and earthmoving, re-entrained road dust from vehicle travel, and off-gassing emissions from paving.

Table 4.9-6. Construction Schedule and Features

Feature	Start Date	End Date	Working Days
Monterey County/North Central Coast Air Basin			
Energy Dissipation Structure	10/2/2023	1/24/2025	345
Spillway Modification	4/17/2023	11/1/2024	405
Energy Dissipation Structure Portal	7/10/2023	4/12/2024	200
Tunneling	7/10/2023	11/15/2024	355
San Luis Obispo County/South Central Coast Air Basin			
Tunnel Intake Structure	10/2/2023	2/28/2025	370
Tunnel Intake Structure Portal	4/17/2023	11/15/2024	415

Emissions were estimated using a combination of emission factors and methodologies from the California Emissions Estimator Model (CalEEMod), version 2020.4.0 and version 2022.1.0; CARB's EMission FACtor 2021 (EMFAC2021) model; and EPA's AP-42, Compilation of Air Pollutant Emission Factors. The estimates relied on a combination of CalEEMod default data values as well as project-specific information provided by MCWRA and McMillen Jacobs Associates (MJA). The modeled material import and export amounts are discussed in Chapter 2, *Project Description*. Once quantified, project construction emissions were grouped within their respective air basin, according to the locations of the construction features and staging areas shown in **Table 4.9-6.** Emissions within the North Central Coast Air Basin were analyzed against MBARD thresholds of significance (pounds per day [lbs/day]), and emissions within the South Central Coast Air Basin were compared against SLOCAPCD thresholds of significance (lbs/day and tons per quarter). Detailed descriptions of model input and output parameters as well as assumptions are provided in Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results*.

Operational Emissions

For the purposes of this analysis, operational emissions associated with the proposed project and Tunnel-Only Alternative are assumed to be the same.[2] Similar to construction, operation of the proposed project would generate emissions of ROG, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Criteria pollutant emissions from motor vehicles associated with routine maintenance at the Tunnel Intake Structure were evaluated using the emission factors from EMFAC2021 as well as the daily trip and trip length data provided by MCWRA and MJA. Off-road and stationary-source emissions associated with operation of the project were estimated using the emission factors and methodologies from CalEEMod. Off-road sources of emissions during operation would include a skid-steer loader, which would be used to help with the debris removal process at the Tunnel Intake Structure.

Stationary sources would include the 150-kilowatt, 237-horsepower diesel emergency generator in the control building at the Tunnel Intake Structure. The generator would be operated during maintenance and testing. The remaining project features (i.e., Spillway Modification, Energy Dissipation Structure) would require only one or two annual maintenance trips and therefore would result in negligible emissions.

It is anticipated that the proposed project would be fully operational by 2025. A detailed description of model input and output parameters as well as assumptions is provided in Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results*.

Toxic Air Contaminants

Consistent with MBARD and SLOCAPCD recommendations, the analysis of human health risks from TACs considers the use of mobile equipment that would generate DPM during project construction and operations, a permitted stationary emergency generator during operations, as well as the proximity of the nearest sensitive receptors that could be exposed to such.

[2] The primary difference between the proposed project and Tunnel-Only Alternative is the inclusion of the Spillway Modification, and this project feature would require only one or two additional annual maintenance trips compared to existing conditions. One or two annual trips would result in negligible additional maintenance activities beyond what is currently required for the existing San Antonio Dam.

Odors

Odor impacts were screened out in the initial study and are not discussed further in this EIR.

Consistency with Applicable Air Quality Management Plan

To determine whether the project would be consistent with existing air quality plans, the project' s consistency with the MBARD 2012–2015 AQMP and the SLOCAPCD 2001 CAP is analyzed.

4.9.4.2 Criteria for Determining Significance

Appendix G of the CEQA Guidelines provides guidance for assessing whether a project would have significant impacts on the environment. Consistent with Appendix G, and in consideration of project-specific environmental conditions, MCWRA has determined that the project would have significant air quality impacts if it would:

a. Conflict with or obstruct implementation of the applicable air quality plan
b. Result in a cumulatively considerable net increase in any criteria pollutant for which the project region is in nonattainment status under an applicable federal or state ambient air quality standard
c. Expose sensitive receptors to substantial pollutant concentrations

The following CEQA criteria were screened out in the 2016 Initial Study and are not further discussed in this EIR:

- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

Monterey Bay Air Resources District Significance Threshold

MBARD has adopted thresholds for regional air pollutants to assist lead agencies in determining the significance of environmental effects with respect to local attainment of state and federal ambient air quality standards. **Table 4.9-7** highlights the adopted MBARD regional thresholds. Projects that exceed the established thresholds are expected to have a significant cumulative impact on regional air quality because an exceedance of the threshold is anticipated to contribute to NAAQS and CAAQS violations. The air quality thresholds are inherently cumulative, so an exceedance of the thresholds is considered to be a cumulative impact.

Table 4.9-7. MBARD Emissions Thresholds

Source	ROG	NO_X	DPM	PM_{10}	CO	SO_2
Construction	–[1]		–	82 lbs/day (total)[2]	–	–
Operation	137 lbs/day	137 lbs/day	–	82 lbs/day (total)[3]	550 lbs/day	150 lbs/day

Source: MBARD 2008.

1 Construction projects that use typical construction equipment, such as dump trucks, scrapers, bulldozers, compactors, and front-end loaders that temporarily emit ROG or NO_X, are accommodated in the emissions inventories of required federal and state air plans. Therefore, they would not have a significant impact on attainment and maintenance of the NAAQS or CAAQS for ozone (Monterey Bay Air Resources District 2008).

2 MBARD-approved dispersion modeling can be used to refute (or validate) this determination of significance if direct emissions would not cause an exceedance of the CAAQS for PM_{10}.

3 Threshold applies to on-site emissions.

CO = carbon monoxide; DPM = diesel particulate matter; lbs/day = pounds per day; NO_X = nitrous oxides; PM_{10} = particulate matter less than 10 microns in diameter; ROG = reactive organic gas; SO_2 = sulfur dioxide

Toxic Air Contaminants

MBARD provided guidance for evaluating impacts from TACs in its 2008 *CEQA Air Quality Guidelines*. Construction equipment or processes could result in significant impacts if emissions at a sensitive receptor were to exceed the adopted threshold, as based on the best available data, or result in a cancer risk greater than one incident per 100,000. Operational equipment or processes would not result in significant air quality impacts if they comply with MBARD Rule 1000, which applies to any source that requires a permit to construct or operate, pursuant to MBARD Regulation II, and has the potential to emit carcinogenic or non-carcinogenic TACs. The rule also requires sources of carcinogenic TACs to install best available control technology and reduce the cancer risk to less than one incident per 100,000.

Carbon Monoxide

Local air quality is a major concern along roadways. CO is the primary pollutant. Unlike ozone, CO is emitted directly from a variety of sources. For this reason, CO concentrations are usually indicative of air quality along a roadway network and used as an indicator of impacts. Areas with vehicle congestion have the potential to create “pockets” of CO, called “hot spots.” These pockets have the potential to exceed the 1-hour CAAQS of 20 ppm and/or the 8-hour CAAQS of 9 ppm.

The MBARD *CEQA Air Quality Guidelines* (2008) provide screening guidelines for identifying roadway locations where the potential exists for significant impacts related to operational CO concentrations and where site-specific CO modeling may be warranted, as follows:

- Intersections or road segments that operate at LOS D or better that would operate at LOS E or F with addition of project traffic.
- Intersections or road segments that operate at LOS E or F where the volume-to-capacity (V/C) ratio would increase by 0.05 or more with project traffic.
- Intersections that operate at LOS E or F where delay would increase by 10 seconds or more with project traffic.
- Unsignalized intersections that operate at LOS E or F where reserve capacity would decrease by 50 or more with project traffic—this criterion is based on the turning movement with the worst reserve capacity.

Significant impacts may occur if the project would generate substantial heavy-duty truck traffic or generate substantial traffic along urban street canyons or near a major stationary source of CO.

San Luis Obispo County Air Pollution Control District Significance Thresholds

The SLOCAPCD 2012 *CEQA Air Quality Handbook* defines the criteria used by the district to determine when an air quality analysis is necessary, the type of analysis that should be performed, the significance of the impacts predicted by the analysis, and the mitigation measures to reduce overall air quality impacts. In 2017, SLOCAPCD provided a memorandum that included several clarifications pertaining to the thresholds from its *CEQA Air Quality Handbook*. **Table 4.9-8** highlights the different thresholds for construction and operation of projects within SLOCAPCD jurisdiction. Projects that exceed the emission thresholds are expected to have a significant cumulative impact on regional air quality.

Table 4.9-8. SLOCAPCD Emission Thresholds

Source	ROG+NO_X	DPM	PM_{10}	CO	SO_2
Construction	137 lbs/day[1] 2.5 tons/quarter (T1)[2] 6.3 tons/quarter (T2)[3]	7 lbs lbs/day[1] 0.13 ton/quarter (T1)[2] 0.32 ton/quarter (T2)[3]	2.5 tons/quarter (dust)[4]	–	–
Operation	25 lbs/day 25 tons/year	1.25 lbs/day	25 lbs/day (dust) 25 tons/year (dust)	550 lbs/day	–

Source: SLOAPCD 2012.
1. Daily thresholds are for projects that would be completed in less than one quarter (90 days).
2. For construction projects lasting more than one quarter, exceedance of the T1 quarterly threshold requires standard mitigation measures and best available control technology for construction equipment.
3. For construction projects exceeding the T2 quarterly threshold, standard mitigation measures and best available control technology, a construction activity management plan, and off-site mitigation are required.
4. Exceedance of the threshold requires fugitive PM_{10} mitigation measures and may require implementation of a construction activity management plan.

CO = carbon monoxide; DPM = diesel particulate matter; lbs/day = pounds per day; NO_X = nitrous oxides; PM_{10} = particulate matter less than 10 microns in diameter; ROG = reactive organic gas; SO_2 = sulfur dioxide

Toxic Air Contaminants

To help minimize potential DPM exposure, SLOCAPCD adopted construction-related special conditions. Projects must incorporate the conditions if they are within 1,000 feet (0.19 mile) of sensitive receptors. The requirements are as follows:

1. Staging and queuing areas will not be within 1,000 feet (0.19 mile) of sensitive receptors.
2. Diesel idling within 1,000 feet (0.19 mile) of sensitive receptors will not be permitted.
3. Alternative-fuel equipment is recommended.
4. Signs that specify no idling areas will be posted at the site and enforced.

Furthermore, all diesel-powered construction equipment will be operated in compliance with CCR Section 2485, Title 13 and the 5-minute idling restriction identified in Section 2449(d)(2) of CARB's In-Use Off-Road Diesel Regulation to minimize toxic air pollution impacts from idling diesel engines.

Carbon Monoxide

SLOCAPCD has not established screening guidelines for identifying roadway locations where a potential significant impact related to operational CO concentrations could occur. Instead, according to the SLOCAPCD 2012 *CEQA Air Quality Handbook*, projects that emit more than 550 lbs/day of CO and occur in a confined or semi-confined space (e.g., parking garage or indoor stadium) must be modeled to determine their significance.

Health-based Thresholds for Project-generated Pollutants of Human Health Concern

The California Supreme Court's decision in *Sierra Club v. County of Fresno* (6 Cal. 5th 502), hereafter referred to as the Friant Ranch Decision, reviewed the long-term regional air quality analysis contained in the EIR for the proposed *Community Plan Update and Friant Ranch Specific Plan* (Friant Ranch Project). The Friant Ranch Project proposed a 942-acre master-plan development in unincorporated Fresno County, within the San Joaquin Valley Air Basin, which is currently designated as a nonattainment area with respect to the NAAQS and CAAQS for ozone and $PM_{2.5}$. The court found that the EIR's air quality analysis was inadequate because it failed to provide enough detail "for the public to translate the bare [criteria pollutant emissions] numbers provided into adverse health impacts or to understand why such a translation is not possible at this time." The court's decision notes that environmental documents must attempt to connect a project's air quality impacts to specific health effects or explain why it is not technically feasible to perform such an analysis.

All criteria pollutants generated by the proposed project would be associated with some form of health risk (e.g., asthma, lower respiratory problems). Criteria pollutants can be classified as either regional pollutants or localized pollutants. Regional pollutants can be transported over long distances and affect ambient air quality far from the emissions source. Localized pollutants affect ambient air quality near the emissions source. O_3 is considered a regional criteria pollutant, whereas CO, NO_2, SO_2, and lead are localized pollutants. Particulate matter can be both a local and a regional pollutant, depending on its composition. The primary criteria pollutants of concern generated by the proposed project would be ozone precursors (ROG and NO_X), CO, and particulate matter, including DPM.

Regional Project-generated Criteria Pollutants (Ozone Precursors and Regional Particulate Matter)

Adverse health effects from regional criteria pollutant emissions, such as ozone precursors and particulate matter, are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). Therefore, ozone precursors (ROG and NO_X) contribute to the formation of ground-borne ozone on a regional scale. Emissions of ROG and NO_X generated in an area may not correlate to a specific ozone concentration in that same area. Similarly, some types of particulate pollutant may be transported over long distances or formed through atmospheric reactions. As such, the magnitude and locations of specific health effects from exposure to increased ozone or regional particulate matter concentrations are the product of emissions generated by numerous sources throughout a region, as opposed to a single individual project. Moreover, exposure to regional air pollution does not guarantee that an individual will experience an adverse health effect. There are large individual differences in the intensity of symptomatic responses to air pollutants. These differences are influenced, in part, by the underlying health condition of an individual, which cannot be known.

Models and tools have been developed to correlate regional criteria pollutant emissions to potential community health impacts. Although models are capable of quantifying ozone and any secondary particulate matter formation and associated health effects, these tools were developed to support regional planning and policy analysis and have limited sensitivity to small changes in criteria pollutant concentrations induced by individual projects. Therefore, translating project-generated criteria pollutants to the locations where specific health effects could occur or the resultant number of additional days of nonattainment is not possible with any degree of accuracy.

The technical limitations of existing models (e.g., for correlating project-level regional emissions to specific health consequences) are recognized by air quality management districts throughout the state, including the San Joaquin Valley Air Pollution Control District (SJVAPCD) and the South Coast Air Quality Management District (SCAQMD), which provided amici curiae briefs for the Friant Ranch Project's legal proceedings (SCAQMD 2015). In its brief, the SJVAPCD acknowledged that health risk assessments for localized air toxics, such as DPM, are common; however, "it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task" (SJVAPCD 2015). The SJVAPCD further noted that emissions solely from the Friant Ranch Project, which equate to less than one-tenth of 1 percent of total NO_X and VOCs in the valley, are not likely to yield valid information and that any such information would not be "accurate when applied at the local level." The SCAQMD presented similar information in its brief, stating that "it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels" (SCAQMD 2015).[3]

Air districts develop region-specific CEQA thresholds of significance in consideration of existing air quality concentrations as well as attainment or nonattainment designations under the NAAQS and CAAQS. The NAAQS and CAAQS are informed by a wide range of scientific evidence that demonstrates that there are known safe concentrations of criteria pollutants. Although recognizing that air quality is a cumulative problem, air districts typically consider projects that generate criteria pollutant and ozone precursor emissions that are below the thresholds to be minor in nature. Such projects would not adversely affect air quality or exceed the NAAQS or CAAQS.

Emissions generated by the proposed project could increase photochemical reactions as well as the formation of tropospheric ozone and secondary particulate matter, which, at certain concentrations, could lead to increased incidences of specific health consequences. Although the health effects would be associated with ozone and particulate pollution, the effects would result from cumulative and regional emissions. Therefore, the proposed project's incremental contribution cannot be traced to specific health outcomes on a regional scale, and a quantitative correlation of project-generated regional criteria pollutant emissions to specific human health impacts is not included in this analysis.

It is foreseeable that unmitigated construction-related and operational emissions of ozone precursors and particulate matter, in excess of MBARD and SLOCAPCD thresholds, could contribute to cumulative and regional health impacts. In such cases, all feasible mitigation would be applied, and emissions would be reduced to the extent possible.

Valley Fever

Receptors would be exposed to significant health impacts from *C. immitis* spores if dust emissions during construction are not controlled. The proposed project's potential to increase risks associated with developing Valley Fever is highest in areas that are known to contain *C. immitis* or during earthmoving activities that generate fugitive dust.

4.9.4.3 Avoidance and Minimization Measures

MCWRA has incorporated AMMs into the project design to prevent the occurrence of environmental impacts. AMMs applicable to air quality include the following:

- **AMM GEN-7**, *Vehicle Idling and Maintenance*
- **AMM GEN-8**, *Dust Management Controls*

A complete description of the measures is provided in Section 2.6, *Avoidance and Minimization Measures.*

[3] For example, SCAQMD's analysis of its 2012 Air Quality Attainment Plan showed that the modeled NO_x and ROG reductions of 432 and 187 tons per day, respectively, reduced ozone levels by only 9 parts per billion.

Impact AQ-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan

Proposed Project

Consistency with MBARD AQMP – Construction and Operation

The most recent AQMP adopted by MBARD is the 2012–2015 AQMP, which focused on MBARD's ability to reach attainment of the state 8-hour ozone standard. As shown in **Table 4.9-4**, recorded 8-hour ozone concentrations at the King City – 415 Pearl Street monitoring station did not exceed the NAAQS or CAAQS during the period from 2017 to 2019. According to the MBARD 2008 *CEQA Air Quality Guidelines*, a significant impact on air quality would occur if buildout of the proposed project would conflict with or obstruct implementation of the 2012–2015 AQMP. MBARD uses growth forecasts provided by the Association of Monterey Bay Area Governments to project population-related emissions, which were used in developing the AQMP for the North Central Coast Air Basin. Because the proposed project is best characterized as an infrastructure project intended to the meet the needs of the current and forecast population, MBARD states that consistency with the AQMP should be determined by comparing the estimated current population of the county in which the project would be located (i.e., Monterey County) with the applicable population forecast for the appropriate 5-year increment used in the 2012–2015 AQMP (MBARD 2008). If the estimated population with the proposed project does not exceed forecasts, emissions are deemed to be consistent with the AQMP.

The proposed project is an infrastructure project. It would not be growth inducing (see discussion in Section 5.1.3, *Growth Inducement*) and would not require additional long-term workers. Construction workers are assumed to come from surrounding areas or temporarily relocate within San Luis Obispo County, not Monterey County, because the Paso Robles area of San Luis Obispo County is the closest regional center to the study area. As such, the proposed project would not change current growth assumptions, which are in line with the population growth forecast for Monterey County. Furthermore, as described in Impact AQ-2, *Result in a Cumulatively Considerable Increase in a Criteria Pollutant*, the proposed project would generate negligible operational emissions within MBARD jurisdiction because the Energy Dissipation Structure and Spillway Modification area would require only one or two annual maintenance trips. These operational emissions would not exceed operational thresholds and therefore would not delay Monterey County's criteria pollutant attainment goals. As such, the project would be consistent with the MBARD 2012–2015 AQMP.

Consistency with SLOCAPCD CAP – Construction and Operation

SLOCAPCD requires projects to complete a consistency analysis with respect to its 2001 CAP. Specifically, the consistency analysis should consider the following questions:

- Are the population projections used in the plan or project equal to or less than those used in the CAP (i.e., 2050 regional growth forecast population data) for the same area?
- Is the rate of increase in the number of trips and vehicle miles traveled less than or equal to the rate of population growth for the same area?
- Have all applicable land use and Transportation Control Measures (TCMs) from the CAP been included in the plan or project to the maximum extent feasible?

The proposed project is an infrastructure project. It would not expressly induce long-term population growth or include housing development. Construction workers would come from the surrounding areas or temporarily relocate, most likely within San Luis Obispo County. (The Paso Robles area is the closest regional center to the study area.) Therefore, the population with the proposed project would be equal to or less than the 2050 regional growth projections within the 2001 CAP. Routine maintenance activities associated with the proposed project and Tunnel-Only Alternative would require up to three workers to travel to the project site daily. This would result in up to six daily round trips. Maintenance at the project site would occur every three weeks, semi-annually or annually. It could also occur less frequently. Such activities would generate a worst-case scenario of 24 round trips per day. The minimal number of daily trips is not anticipated to exceed the rate of population growth for the area or generate a significant increase in traffic relative to existing conditions.

The SLOCAPCD CAP lists a variety of TCMs to reduce the number of vehicle miles traveled associated with new growth-inducing developments, such as mixed-use and residential projects. Such TCMs include employer commute options, transit improvements, infrastructure improvements (e.g., bike lanes), and park-and-ride lots. Because the proposed project does not include such features, none of the TCMs are applicable to the project.

Although not a TCM, the project would improve the existing Nacimiento Reservoir Overflow/Day Use Ramp Road. Paving this roadway would help reduce fugitive particulate matter emissions and incentivize bicyclists to use it. Furthermore, as shown in Impact AQ-2, *Result in a Cumulatively Considerable Increase in a Criteria Pollutant*, the proposed project's operational emissions would be well below SLOCAPCD thresholds. Therefore, the proposed project would not contribute to a NAAQS or CAAQS violation, consistent with the goals of the 2001 CAP. As such, the project would be consistent with the 2001 CAP.

Tunnel-Only Alternative

Because the Tunnel-Only Alternative is the same as the proposed project, except that it excludes the Spillway Modification, the discussion for the proposed project is applicable here as well. As discussed in Impact AQ-2, *Result in a Cumulatively Considerable Increase in a Criteria Pollutant*, the Tunnel-Only Alternative would result in lower construction emissions compared with the proposed project. Therefore, because the proposed project would also be consistent with the MBARD 2012–2015 AQMP and the SLOCAPCD 2001 CAP, the Tunnel-Only Alternative would be consistent with the plans as well.

CEQA Conclusion

Construction and operation of the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to a conflict with or obstruction to implementation of the applicable air quality plan.

Impact AQ-2: Result in a Cumulatively Considerable Increase in a Criteria Pollutant

Proposed Project

Construction within the North Central Coast Air Basin

As shown in **Table 4.9-6,** construction of the Energy Dissipation Structure, its portal, other tunneling, and the Spillway Modification would occur in the North Central Coast Air Basin of Monterey County. The portal for the Energy Dissipation Structure would include the staging area for construction equipment and the main soil disposal area. Access to this area would be provided by Interlake Road and the vault site access road, which is currently unpaved. The road will eventually be covered in gravel. Although tunneling would occur underground and span areas between the two air basins, the staging area for construction equipment and the main soil disposal area would be within the North Central Coast Air Basin.

The Spillway Modification construction area would be accessed from Vista Road, which is paved. This part of the project would have its own staging area. It was conservatively assumed that soil from the Spillway Modification area would be transported to the soil disposal area near the Energy Dissipation Structure via an unpaved all-terrain vehicle (ATV) trail.

Construction activities would generate criteria pollutant emissions in the form of exhaust from off-road equipment, construction workers' vehicles, and heavy-duty trucks traveling to and from the project site. Tunneling equipment, such as the tunnel boring machine, would be electric and therefore would not emit exhaust. Fugitive PM_{10} and $PM_{2.5}$ dust would be generated during soil movement and on-site vehicle movement. The amount of emissions generated on a daily basis would vary, depending on the intensity and types of construction activities occurring simultaneously.

To provide the most conservative (worst-case) analysis, maximum daily emissions estimates were calculated to assess construction impacts. These unmitigated maximum daily emission estimates include incorporation of **AMM GEN-7,** *Vehicle Idling and Maintenance*, and **AMM GEN-8,** *Dust Management Controls*. Maximum daily emissions typically occur during phases with the greatest intensity of construction activity as well as periods when multiple construction phases take place on the same day. The unmitigated maximum daily criteria air pollutant emissions that would be generated during project construction are shown in **Table 4.9-9**. These emissions were analyzed against MBARD thresholds because they would occur within the Monterey County portion of the North Central Coast Air Basin. Please refer to Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results*, for air quality modeling input and output parameters, detailed assumptions, and daily construction-related emissions estimates.

Table 4.9-9. Estimated Unmitigated Criteria Pollutant Emissions from Construction of the Proposed Project (pounds/day) within the North Central Coast Air Basin

Construction Year	ROG	NO_X	CO	PM_{10} Dust	PM_{10} Exhaust	PM_{10} Total[3]	$PM_{2.5}$ Dust	$PM_{2.5}$ Exhaust	$PM_{2.5}$ Total[3]
2023[1]	15.1	148.0	173.0	73.7	6.5	74.9	10.0	6.0	14.2
2024[1]	15.7	148.0	191.5	306.8	6.5	**312.4**	52.8	6.0	58.0
2025[1]	0.1	2.2	1.1	23.1	< 0.1	23.1	3.1	< 0.1	3.1
MBARD Threshold	–[2]	–[3]	–	–	–	***83***	–	–	–
Exceed Threshold?	–	–	–	–	–	***Yes***	–	–	–

Source: See Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for modeling inputs and outputs.

Exceedances of MBARD thresholds are bolded and underlined.

1. Maximum daily emissions include incorporation of **AMM GEN-7**, *Vehicle Idling and Maintenance*, and **AMM GEN-8**, *Dust Management Controls*.
2. According to MBARD, construction projects that use typical construction equipment, such as dump trucks, scrappers, bulldozers, compactors, and front-end loaders that temporarily emit ROG or NO_X, are accommodated in the emission inventories of required federal and state air plans and would not have a significant impact on attainment or maintenance of the NAAQS or CAAQS for ozone.
3. Maximum daily dust and exhaust particulate matter emissions may not match total particulate matter emissions if the maximums occurred on separate days during the year. Total PM_{10} and $PM_{2.5}$ represents the highest level of combined dust and exhaust particulate matter emissions occurring on the same day.

CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; NO_X = nitrous oxides; $PM_{2.5}$ = particulate matter no more than 2.5 microns in diameter; PM_{10} = particulate matter no more than 10 microns in diameter; ROG = reactive organic gas

According to MBARD, construction projects that use typical construction equipment, such as dump trucks, scrappers, bulldozers, compactors, and front-end loaders that temporarily emit ROG or NO_X, are accommodated in the emission inventories of required federal and state air plans and would not have a significant impact on attainment or maintenance of the NAAQS or CAAQS for ozone (MBARD 2008). However, as seen in **Table 4.9-10**, the proposed project would emit PM_{10} emissions at a level that would exceed MBARD thresholds. This exceedance would be due to fugitive dust emissions from the movement of on-site workers' vehicles, vendors' vehicles, and haul trucks on the vault site access road, the ATV trail, and other unpaved roadways. As previously discussed, the magnitude and location of any potential change in ambient air quality, and therefore health consequences, from additional emissions cannot be quantified with a high level of certainty because of the dynamic and complex nature of pollutant formation and distribution.

To reduce fugitive PM_{10} emissions, the project would implement **MM AQ-1**, which would help reduce fugitive PM_{10} emissions by requiring disturbed areas to be watered or covered with tarps, all unpaved roads (i.e., the vault site access road or ATV trail) to be paved or treated with a chemical soil binder, on-site vehicle speeds to be limited to 15 mph, and other dust reduction measures to be implemented. In addition, the proposed project would implement **MM AQ-2** to help reduce exhaust emissions, including particulate matter. Implementation of **MM AQ-2** would require the use of EPA Tier 4 Final equipment to reduce construction exhaust emissions. The use of Tier 4 engines would result in lower exhaust emissions because this level of certification requires adherence to the standards for lower-emitting engines.

Table 4.9-10. Estimated Mitigated Criteria Pollutant Emissions from Construction of the Proposed Project (pounds/day) within the North Central Coast Air Basin

Construction Year	ROG	NO_x	CO	PM_{10} Dust	PM_{10} Exhaust	PM_{10} Total[1]	$PM_{2.5}$ Dust	$PM_{2.5}$ Exhaust	$PM_{2.5}$ Total[1]
2023[2]	3.3	23.0	196.0	18.2	0.6	18.4	4.9	0.6	5.3
2024[2]	5.4	33.4	223.1	70.1	0.7	70.8	27.2	0.7	27.9
2025[2,3]	0.1	2.4	1.2	5.2	< 0.1	5.2	1.3	< 0.1	1.3
MBARD Threshold	–[4]	–[4]	–	–	–	***83.0***	–	–	–
Exceed Threshold?	–	–	–	–	–	***No***	–	–	–

Source: See Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for modeling inputs and outputs.

1. Maximum daily dust and exhaust particulate matter emissions may not match total particulate matter emissions if the maximums occurred on separate days during the year. Total PM_{10} and $PM_{2.5}$ represents the highest level of combined dust and exhaust particulate matter emissions occurring on the same day.
2. Emission reductions are from the incorporation of **MM AQ-1** and **MM AQ-2**. **MM AQ-1** would help reduce fugitive particulate matter emissions, whereas **MM AQ-2** would help reduce exhaust emissions.
3. Mitigated NO_X emissions would be up slightly in 2025 because of the on-site vehicle speed limit of 15 mph. On-road vehicles emit higher levels of exhaust-based NO_X emissions at lower operating speeds.
4. According to MBARD, construction projects that use typical construction equipment, such as dump trucks, scrappers, bulldozers, compactors, and front-end loaders that temporarily emit ROG or NO_X, are accommodated in the emission inventories of required federal and state air plans and would not have a significant impact on attainment or maintenance of the NAAQS or CAAQS for ozone.

CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; NO_X = nitrogen oxide; PM_{10} = particulate matter no more than 10 microns in diameter; $PM_{2.5}$ = particulate matter no more than 2.5 microns in diameter; ROG = reactive organic gas

Table 4.9-10 highlights the project's mitigated construction emissions. As seen in **Table 4.9-10**, mitigated construction emissions would not exceed MBARD thresholds. Consequently, the impact from construction-generated criteria pollutant emissions within the North Central Coast Air Basin and Monterey County would be less than significant with mitigation.

Construction within the South Central Coast Air Basin

Construction of the Tunnel Intake Structure and its portal would occur within the South Central Coast Air Basin of San Luis Obispo County. The Tunnel Intake Structure portal would include the staging area and the Nacimiento Reservoir Overflow/Day Use Ramp. The Nacimiento Reservoir Overflow/Day Use Ramp would be graded and paved prior to the start of construction of the Tunnel Intake Structure, which would require substantial earthwork and grading.

It was conservatively assumed that soil would be transported to the soil disposal area near the Energy Dissipation Structure. Construction of the Tunnel Intake Structure would also include a control building to house an emergency generator.

Construction activities would generate criteria pollutant emissions in the form of exhaust from off-road equipment, construction workers' vehicles, and heavy-duty trucks traveling to and from the project site. Fugitive PM_{10} and $PM_{2.5}$ dust would also be generated during soil movement and on-site vehicle movement. The amount of emissions generated on a daily basis would vary, depending on the intensity and types of construction activities occurring simultaneously.

To provide the most conservative (worst-case) analysis, maximum daily and quarterly emissions estimates were calculated to assess construction impacts. These unmitigated maximum daily and quarterly emission estimates include incorporation of **AMM GEN-7,** *Vehicle Idling and Maintenance*, and **AMM GEN-8,** *Dust Management Controls*. The unmitigated maximum daily and quarterly criteria air pollutant emissions generated during project construction are shown in **Table 4.9-11**. These emissions were analyzed against the SLOCAPCD daily and Tier 1 quarterly thresholds because they would occur within the South Central Coast Air Basin of San Luis Obispo County. Please refer to Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for air quality modeling input and output parameters, detailed assumptions, and daily construction-related emissions estimates.

Table 4.9-11. Estimated Unmitigated Criteria Pollutant Emissions from Construction of the Proposed Project within the South Central Coast Air Basin

Construction Year	ROG + NO_X	CO	PM_{10}			$PM_{2.5}$		
			Dust	Exhaust	Total[1]	Dust	Exhaust	Total[1]
Daily Emissions (lbs/day)								
2023	68.0	74.3	306.2	2.8	308.5	32.6	2.6	34.7
2024	103.2	68.5	10.9	4.0	12.2	7.0	3.7	10.7
2025	0.7	0.8	2.4	< 0.1	2.4	1.6	< 0.1	1.6
SLOCAPCD Daily Thresholds	***137 lbs/day***	–	–	–	–	–	***7 lbs/day***	–
Exceed Threshold?	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*
Quarterly Emissions (tpq)								
2023[2]	1.6	1.5	**7.0**	0.1	7.1	0.8	0.1	0.9
2024[3]	1.6	1.0	0.2	0.1	0.3	0.1	0.1	0.2
2025[4]	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SLOCAPCD Tier 1 Thresholds	***2.5 tpq***	–	***2.5 tpq***	–	–	–	***0.13 tpq***	–
Exceed Threshold?	*No*	–	***Yes***	–	–	–	*No*	–

Source: See Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for modeling inputs and outputs.

Exceedances of SLOCAPCD thresholds are bolded and underlined.

1. Maximum daily dust and exhaust particulate matter emissions may not match total particulate matter emissions if the maximums occurred on separate days during the year. Total PM_{10} and $PM_{2.5}$ represents the highest level of combined dust and exhaust particulate matter emissions occurring on the same day.
2. The quarter with the highest emissions in 2023 would be the fourth quarter (i.e., October, November, December).
3. The fourth quarter in 2024 would have the highest emissions, except for ROG + NO_X and PM_{10} emissions. The highest ROG + NO_X and PM_{10} emissions would be experienced in the first or second quarter.
4. The quarter with the highest emissions in 2025 would be the first quarter (i.e., January, February, March).

CO = carbon monoxide; lbs/day = pounds per day; NO_X = nitrogen oxide; PM_{10} = particulate matter no more than 10 microns in diameter; $PM_{2.5}$ = particulate matter no more than 2.5 microns in diameter; ROG = reactive organic gas; SLOCAPCD = San Luis Obispo County Air Pollution Control District; tpq = tons per quarter

As shown in **Table 4.9-11**, construction of the proposed project would not generate ROG+NO_X or exhaust $PM_{2.5}$ emissions in excess of SLOCAPCD numeric thresholds. However, the proposed project would emit fugitive PM_{10} emissions that would exceed the SLOCAPCD Tier 1 thresholds. This exceedance would be due to fugitive dust emissions from on-site workers' vehicles, vendors' vehicles, and haul trucks as well as required soil disposal near the Energy Dissipation Structure. As previously discussed, the magnitude and location of any potential change in ambient air quality, and therefore health consequences, from additional emissions cannot be quantified with a high level of certainty because of the dynamic and complex nature of pollutant formation and distribution.

To reduce fugitive PM_{10} emissions, the project would implement **MM AQ-1**. Furthermore, construction within the South Central Coast Air Basin would benefit from implementation of **MM AQ-2** to help reduce exhaust emissions, including particulate matter.

Table 4.9-12 highlights the project's mitigated construction emissions. As seen in **Table 4.9-12**, mitigated construction emissions would not exceed SLOCAPCD thresholds. Consequently, the impact from construction-generated criteria pollutant emissions within the South Central Coast Air Basin would be less than significant with mitigation.

Table 4.9-12. Estimated Mitigated Criteria Pollutant Emissions from Construction of the Proposed Project within the South Central Coast Air Basin

Construction Year	ROG + NO_X	CO	PM_{10}			$PM_{2.5}$		
			Dust	Exhaust	Total[1]	Dust	Exhaust	Total[1]
Daily Emissions (lbs/day)								
2023	25.4	87.8	72.6	0.3	72.9	21.0	0.3	21.3
2024	11.2	99.6	4.9	0.3	5.0	10.1	0.3	10.4
2025	1.1	0.9	1.4	< 0.1	1.4	2.2	< 0.1	2.2
SLOCAPCD Daily Thresholds	***137 lbs/day***	–	–	–	–	–	***7 lbs/day***	–
Exceed Threshold?	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*
Quarterly Emissions (tpq)								
2023[2]	0.7	1.7	1.8	< 0.1	1.7	0.4	< 0.1	0.4
2024[3]	0.3	1.5	0.2	< 0.1	0.2	0.2	< 0.1	0.2
2025[4]	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SLOCAPCD Tier 1 Thresholds	***2.5 tpq***	–	***2.5 tpq***	–	–	–	***0.13 tpq***	–
Exceed Threshold?	*No*	–	*No*	–	–	–	*No*	–

Source: See Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for modeling inputs and outputs.
Emission reductions include incorporation of **MM AQ-1** and **MM AQ-2**.
1. Maximum daily dust and exhaust particulate matter emissions may not match total particulate matter emissions if the maximums occurred on separate days during the year. Total PM_{10} and $PM_{2.5}$ represents the highest level of combined dust and exhaust particulate matter emissions occurring on the same day.
2. The quarter with the highest emissions in 2023 would be the fourth quarter (i.e., October, November, December).
3. The fourth quarter in 2024 would have the highest emissions, except for ROG + NO_X and PM_{10} emissions. The highest ROG + NO_X and PM_{10} emissions would be experienced in the first or second quarter.
4. The quarter with the highest emissions in 2025 would be the first quarter (i.e., January, February, March).

CO = carbon monoxide; lbs/day = pounds per day; MM = mitigation measure; NO_X = nitrogen oxide; PM_{10} = particulate matter no more than 10 microns in diameter; $PM_{2.5}$ = particulate matter no more than 2.5 microns in diameter; ROG = reactive organic gas; SLOCAPCD = San Luis Obispo County Air Pollution Control District; tpq = tons per quarter

Tunnel-Only Alternative

Construction within the North Central Coast Air Basin

The Tunnel-Only Alternative would be similar to the proposed project, except it would not include the Spillway Modification. Therefore, the Tunnel-Only Alternative would result in fewer construction activities and fewer air emissions compared with the proposed project. Unmitigated maximum daily criteria air pollutant emissions generated by the Tunnel-Only Alternative are shown in **Table 4.9-13**. The emissions were analyzed against MBARD thresholds because they would occur within the North Central Coast Air Basin and Monterey County. Please refer to Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for air quality modeling input and output parameters, detailed assumptions, and daily construction-related emissions estimates.

Table 4.9-13. Estimated Unmitigated Criteria Pollutant Emissions from Construction of the Tunnel-Only Alternative (pounds/day) within the North Central Coast Air Basin

Construction Year	ROG	NO_X	CO	PM_{10} Dust	PM_{10} Exhaust	PM_{10} Total[1]	$PM_{2.5}$ Dust	$PM_{2.5}$ Exhaust	$PM_{2.5}$ Total[1]
2023[2]	9.5	94.8	98.8	73.8	4.0	75.0	10.0	3.7	11.1
2024[2]	11.5	95.3	145.4	230.5	4.4	**<u>214.5</u>**	42.5	4.1	45.4
2025[2]	0.1	2.2	1.1	23.1	< 0.1	23.1	3.1	< 0.1	3.1
MBARD Threshold	–[3]	–[3]	–	–	–	**83.0**	–	–	–
Exceed Threshold?	–	–	–	–	–	**Yes**	–	–	–

Source: See Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for modeling inputs and outputs.
Exceedances of MBARD thresholds are bolded and underlined.
1. Maximum daily dust and exhaust particulate matter emissions may not match total particulate matter emissions if the maximums occurred on separate days during the year. Total PM_{10} and $PM_{2.5}$ represents the highest level of combined dust and exhaust particulate matter emissions occurring on the same day.
2. The maximum daily emissions include incorporation of **AMM GEN-7,** *Vehicle Idling and Maintenance*, and **AMM GEN-8,** *Dust Management Controls*.
3. According to MBARD, construction projects that use typical construction equipment, such as dump trucks, scrappers, bulldozers, compactors, and front-end loaders that temporarily emit ROG or NO_X, are accommodated in the emission inventories of required federal and state air plans and would not have a significant impact on attainment or maintenance of the NAAQS or CAAQS for ozone.

AMM = Avoidance and Minimization Measures; CAAQS = California Ambient Air Quality Standards; CO = carbon monoxide; lbs/day = pounds per day; MBARD = Monterey Bay Air Resources District; NAAQS = National Ambient Air Quality Standards; NO_X = nitrogen oxide; PM_{10} = particulate matter no more than 10 microns in diameter; $PM_{2.5}$ = particulate matter no more than 2.5 microns in diameter; ROG = reactive organic gas; tpq = tons per quarter

As seen in **Table 4.9-13**, the Tunnel-Only Alternative would have lower emissions than the proposed project, but its PM_{10} emissions would exceed MBARD thresholds. This exceedance would be due to fugitive dust emissions from on-site workers' vehicles, vendors' vehicles, and haul trucks along the vault site access road and other unpaved roadways. To reduce fugitive PM_{10} emissions, the Tunnel-Only Alternative would implement **MM AQ-1**. In addition, the Tunnel-Only Alternative would implement **MM AQ-2** to help reduce exhaust emissions, including particulate matter.

Table 4.9-14 highlights the mitigated construction emissions of the Tunnel-Only Alternative. As seen in **Table 4.9-14**, mitigated construction emissions would not exceed MBARD thresholds. Consequently, the impact from construction-generated criteria pollutant emissions within the North Central Coast Air Basin would be less than significant with mitigation.

Table 4.9-14. Estimated Mitigated Criteria Pollutant Emissions from Construction of the Tunnel-Only Alternative (pounds/day) within the North Central Coast Air Basin

Construction Year	ROG	NO_x	CO	PM_{10} Dust	PM_{10} Exhaust	PM_{10} Total[1]	$PM_{2.5}$ Dust	$PM_{2.5}$ Exhaust	$PM_{2.5}$ Total[1,2]
2023[2]	1.9	15.7	111.0	18.3	0.4	18.5	4.0	0.4	4.2
2024[2]	3.6	20.1	163.3	50.6	0.4	51.0	24.5	0.4	24.9
2025[2]	0.1	2.4	1.2	5.2	< 0.1	5.2	1.3	< 0.1	1.3
MBARD Threshold	–[3]	–[3]	–	–	–	***83.0***	–	–	–
Exceed Threshold?	–	–	–	–	–	*No*	–	–	–

Source: See Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for modeling inputs and outputs.

Emission reductions include incorporation of **MM AQ-1** and **MM AQ-2**.

1. Maximum daily dust and exhaust particulate matter emissions may not match total particulate matter emissions if the maximums occurred on separate days during the year. Total PM_{10} and $PM_{2.5}$ represents the highest level of combined dust and exhaust particulate matter emissions occurring on the same day.
2. Emissions reductions are from incorporation of **MM AQ-1** and **MM AQ-2**. **MM AQ-1** would help reduce fugitive particulate matter emissions, whereas **MM AQ-2** would help reduce exhaust particulate matter emissions.
3. According to MBARD, construction projects that use typical construction equipment, such as dump trucks, scrappers, bulldozers, compactors, and front-end loaders that temporarily emit ROG or NO_X, are accommodated in the emission inventories of required federal and state air plans and would not have a significant impact on attainment or maintenance of the NAAQS or CAAQS for ozone.

CAAQS = California Ambient Air Quality Standards; CO = carbon monoxide; lbs/day = pounds per day; MBARD = Monterey Bay Air Resources District; MM = mitigation measure; NAAQS = National Ambient Air Quality Standards; NO_X = nitrogen oxide; PM_{10} = particulate matter no more than 10 microns in diameter; $PM_{2.5}$ = particulate matter no more than 2.5 microns in diameter; ROG = reactive organic gas

Construction within South Central Coast Air Basin

The Tunnel-Only Alternative would not change any of the proposed project's construction features within the South Central Coast Air Basin and San Luis Obispo County. This alternative would include construction of the Tunnel Intake Structure and portal. As shown in **Table 4.9-13**, construction of the proposed project within the South Central Coast Air Basin would not exceed SLOCAPCD thresholds with incorporation of **MM AQ-1** and **MM AQ-2.** Therefore, because the proposed project would not exceed the thresholds and the Tunnel-Only Alternative would have the same construction schedule and features, the Tunnel-Only Alternative would also not exceed SLOCAPCD thresholds.

Project Operations

Proposed Project

Criteria pollutant emissions generated during project operations were quantified using EMFAC2021 and emission factors and methodologies from CalEEMod. Long-term emissions would be caused primarily by vehicles (i.e., workers' trips associated with maintenance), an emergency generator, and a skid-steer loader, which would be used to remove debris at the Tunnel Intake Structure. Routine maintenance activities required for the proposed project and Tunnel-Only Alternative would require up to three workers to travel to the Tunnel Intake Structure daily. This would result in up to six daily round trips. Required maintenance at the project site would occur semi-annually or annually. It could also occur less frequently. These activities would generate approximately two round trips per day when they do occur and would most likely be absorbed within existing maintenance trips. The Energy Dissipation Structure and Spillway Modification would require only a couple of maintenance trips per year, which would be captured in existing maintenance trips or in the operator trips to the proposed Tunnel Intake Structure. These trips would result in negligible emissions. Therefore, it was assumed that all operational emissions would occur within the South Central Coast Air Basin and be under SLOCAPCD jurisdiction. Stationary-source emissions would be associated with intermittent use of a 237-horsepower, diesel-powered emergency generator at the Tunnel Intake Structure. According to SLOCAPCD Rule 431, this emergency generator would be allowed 50 hours of testing per year; therefore, it was assumed that this testing would occur approximately 1 hour per day over 50 days. Lastly, it was assumed that the skid-steer loader would operate 8 hours a day for 15 days a year when in use.

Table 4.9-15 summarizes daily operational emissions generated by the proposed project. For existing conditions, it was assumed that there are no active land uses on the project site that generate activity (i.e., vehicle trips, energy use, etc.); as such, no emissions would be generated on the project site under existing conditions. The total emissions presented in **Table 4.9-15** under each condition represent the net change in emissions with the proposed project.

Table 4.9-15. Estimated Unmitigated Criteria Pollutant Emissions from Operation of the Proposed Project (pounds/day)

Condition/Source	ROG	NO_X	ROG + NO_X	CO	Fugitive PM_{10}	Diesel $PM_{2.5}$
Mobile Emissions	0.3	1.9	2.2	1.5	4.4	0.1
Off-road Equipment	0.1	0.8	0.9	1.4	0.0	0.0
Energy Usage[1,2]	–	–	–	–	–	–
Stationary Source	0.4	1.2	1.6	1.1	0.1	0.1
Project Total[3]	**0.8**	**3.9**	**4.7**	**3.9**	**4.4**	**0.1**
SLOCAPCD Threshold	–	–	***25.0***	***550.0***	***25.0***	***1.25***
Exceed Threshold?	–	–	*No*	*No*	*No*	*No*

Source: See Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for inputs and outputs.

1. The project would not include any natural gas infrastructure; therefore, energy emissions are zero.
2. Although the proposed project would generate electricity demand, the associated emissions would occur off-site, at the power plant, and therefore were not included in the analysis.
3. Values may not total up because of rounding.

CO = carbon monoxide; lbs/day = pounds per day; NO_X = nitrogen oxide; PM_{10} = particulate matter no more than 10 microns in diameter; $PM_{2.5}$ = particulate matter no more than 2.5 microns in diameter; ROG = reactive organic gas; SLOCAPCD = San Luis Obispo County Air Pollution Control District

As shown in **Table 4.9-15**, operation of the proposed project would not generate levels of ROG, NO_X, fugitive PM_{10}, or $PM_{2.5}$ that would exceed SLOCAPCD operational emissions thresholds. Mobile sources and the emergency generator would be the primary sources of emissions but would not exceed any thresholds. Therefore, operations of the proposed project would not result in a cumulatively considerable net increase in any criteria air pollutant for which the South Central Coast Air Basin is designated as a nonattainment area with respect to the federal or state ambient air quality standards.

Tunnel-Only Alternative

The Spillway Modification would result in negligible operational emissions compared to existing conditions. Therefore, the Tunnel-Only Alternative would have the same operational emissions as the proposed project. As shown in **Table 4.9-15,** the proposed project would not produce operational air emissions that would exceed SLOCAPCD thresholds. Therefore, the Tunnel-Only Alternative would also not exceed applicable SLOCAPCD thresholds. Furthermore, operation of the Tunnel-Only Alternative would not result in a cumulatively considerable net increase in any criteria air pollutant.

CEQA Conclusion

Construction of both the proposed project and Tunnel-Only Alternative would have significant impacts as a result of PM^{10} emissions within the North Central Coast Air Basin and South Central Coast Air Basin. To reduce fugitive PM_{10} emissions, the project would implement **MM AQ-1**, which would help reduce fugitive PM_{10} emissions by requiring disturbed areas to be watered or covered with tarps, all unpaved roads (i.e., the vault site access road or ATV trail) to be paved or treated with a chemical soil binder, on-site vehicle speeds to be limited to 15 mph, and other dust reduction measures to be implemented. In addition, the proposed project would implement **MM AQ-2** to help reduce exhaust emissions, including particulate matter. Implementation of **MM AQ-2** would require the use of USEPA Tier 4 Final equipment to reduce construction exhaust emissions. Impacts from construction of the proposed project and Tunnel-Only Alternative would be **less-than-significant with mitigation**.

Operation of both the proposed project and Tunnel-Only Alternative would result in **less-than-significant** impacts.

Mitigation Measures

MM AQ-1. Mitigate Fugitive Dust.

MCWRA will require all construction contractors to implement dust control measures, as well as the basic and additional construction mitigation measures recommended by SLOCAPCD, for construction work occurring in both San Luis Obispo County and Monterey County. The emissions reduction measures will include, at a minimum, all of the following (prior to permit issuance, MCWRA will provide documentation to SLOCAPCD to confirm that these basic construction measures are reflected in all construction contracts):

- The amount of disturbed area will be reduced where possible.
- Use water trucks or sprinkler systems to prevent airborne dust from leaving the site and exceeding SLOCAPCD's limit of 20 percent opacity for greater than 3 minutes in any 60-minute period. The frequency of watering will increase whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water will be used whenever possible. At the very least, disturbed soil areas and unpaved roads will be watered every 3 hours during hours of construction. When drought conditions exist and water use is a concern, the contractor or builder will consider use of a dust suppressant that is effective for the specific site conditions to reduce the amount of water used for dust control.
- All dirt stockpile areas will be sprayed daily and covered with tarps or other dust barriers as needed.

- All roadways, driveways, and sidewalks to be paved will be completed as soon as possible, and building pads will be laid as soon as possible after grading, unless seeding, chemical soil binders, or other dust controls are used.
- All trucks hauling dirt, sand, soil, or other loose materials will be covered or maintain at least 2 feet of freeboard (i.e., the minimum vertical distance between the top of the load and the top of the trailer) or otherwise comply with California Vehicle Code Section 23114.
- *Track-out* is defined as sand or soil that adheres to and/or agglomerates on the exterior surfaces of motor vehicles and/or equipment (including tires) that may fall onto a highway or street, as described in California Vehicle Code Section 23113 and California Water Code Section 13304. To prevent track out, access points will be designated, and employees, subcontractors, and others will be required to use them. A track-out prevention device will be installed where vehicles exit unpaved roads. The device can be any device or combination of devices that is effective at preventing track-out at the point of intersection between an unpaved and a paved road. Rumble strips or steel plates need periodic cleaning to be effective. If paved roadways accumulate tracked-out soil, the track-out prevention device may need to be modified.
- All fugitive dust mitigation measures will be shown on grading and building plans.
- The contractor or builder will designate a person, or persons, whose responsibilities will be to ensure that fugitive dust emissions will not result in a nuisance and enhance implementation of the mitigation measures as necessary to minimize dust complaints and reduce visible emissions to a level below SLOCAPCD's limit of 20 percent opacity for greater than 3 minutes in any 60-minute period. Duties will include holidays as well as weekends, when work may not be in progress. The name and telephone number of the person will be provided to the SLOCAPCD Compliance Division prior to the start of any grading, earthwork, or demolition (SLOCAPCD Compliance Division: 805-781-5912).
- Permanent dust control measures identified in the approved project revegetation and landscape plans will be implemented as soon as possible after completion of soil-disturbing activities.
- Exposed ground areas that are to be reworked more than 1 month after initial grading will be sown with a fast-germinating, noninvasive grass seed and watered until vegetation is established.
- All disturbed soil areas not subject to revegetation will be stabilized using approved chemical soil binders, jute netting, or other methods SLOCAPCD approves in advance.
- Vehicle speeds for construction vehicles will not exceed 15 mph on any unpaved surface at the construction site.
- Streets will be swept at the end of each day if visible soil is carried onto adjacent paved roads. Water sweepers will use reclaimed water where feasible. Roads will be wetted prior to sweeping when feasible.
- Additional measures will be taken as needed to ensure that dust from the project site will not affect areas outside the project boundary.

MM AQ-2: Use Clean, Diesel-Powered Equipment during Construction to Control Construction-Related Emissions.

MCWRA will ensure that all off-road diesel-powered equipment used during construction is equipped with EPA-approved Tier 4 Final engines. If Tier 4 Final engines for certain types of off-road diesel-powered equipment are not available within a 150-mile radius of the project site, the applicant will use the next-highest engine tier for that specific equipment type and provide documentation to MCWRA from at least two different vendors, showing that the equipment is not available. Prior to permit issuance, the applicant, in coordination with the construction contractor, will maintain evidence of the use of EPA-approved Tier 4 Final engines for project construction.

Impact AQ-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations

Proposed Project and Tunnel-Only Alternative Construction and Operations

Regional Criteria Pollutants

The California Supreme Court concluded in the Friant Ranch Decision that environmental documents must attempt to connect a project's regional air quality impacts to specific health effects or explain why it is not technically feasible to perform such an analysis.

Models and tools have been developed to correlate regional criteria pollutant emissions to potential community health impacts. Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* summarizes many of the tools, identifies the analyzed pollutants, describes their intended application and resolution, and analyzes whether they could be used to reasonably correlate project-level emissions to specific health consequences. As described in Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results*, although models are capable of quantifying ozone and secondary particulate matter formation and associated health effects, the tools were developed to support regional planning and policy analysis and have limited sensitivity to small changes in criteria pollutant concentrations induced by individual projects.

The MBARD and SLOCAPCD regional thresholds presented in **Table 4.9-7** and **Table 4.9-8** consider existing air quality concentrations and the attainment or nonattainment designations under the NAAQS and CAAQS. MBARD and SLOCAPCD considers projects that generate levels of criteria pollutant and ozone precursor emissions that are below the thresholds to be minor in nature. Therefore, they would not adversely affect air quality to an extent that would exceed the health-protective NAAQS or CAAQS. Regional emissions generated by a project could increase photochemical reactions and the formation of tropospheric ozone and secondary particulate matter, which, at certain concentrations, could lead to an increase in incidences of specific health consequences. Although these health effects are associated with ozone and particulate pollution, the effects are a result of cumulative and regional emissions.

As discussed under Impact AQ-2, *Result in a Cumulatively Considerable Increase in a Criteria Pollutant*, the following mitigation would be applied to reduce construction-related emissions of ozone precursors and particulate matter:

- **MM AQ-1**, Mitigate Fugitive Dust
- **MM AQ-2**, Use Clean, Diesel-Powered Equipment during Construction to Control Construction-Related Emissions.

Operational emissions of the proposed project and Tunnel-Only Alternative (with mitigation) would not exceed applicable SLOCAPCD thresholds. For construction, implementation of **MM AQ-1** and **MM AQ-2** would ensure that the proposed project and Tunnel-Only Alternative would not contribute a significant level of air pollution such that regional air quality within the North Central Coast Air Basin or South Central Coast Air Basin would be degraded.

Localized Criteria Pollutants

Localized criteria pollutants (e.g., fugitive dust, CO) generated by the proposed project and the Tunnel-Only Alternative could be deposited near the emissions source and have the potential to affect the population near that source. Although these pollutants dissipate with distance, emissions from individual projects can result in direct and material health impacts on adjacent sensitive receptors. The NAAQS and CAAQS are health-protective standards. They have been set at levels that are considered safe to protect public health, including the health of sensitive populations, such as asthmatics, children, and the elderly.

During grading and excavation activities associated with construction, localized fugitive dust would be generated. The amount of dust generated by a project is highly variable and dependent on the size of the disturbed area at any given time, the amount of activity, soil conditions, and meteorological conditions. MBARD and SLOCAPCD considers dust impacts to be less than significant if fugitive emissions are below the adopted construction CEQA thresholds. As discussed in Impact AQ-2, *Result in a Cumulatively Considerable Increase in a Criteria Pollutant*, the proposed project and Tunnel-Only Alternative would not exceed MBARD and SLOCAPCD particulate matter thresholds with incorporation of **MM AQ-1**. Therefore, construction-related fugitive dust emissions would not expose sensitive receptors to substantial pollutant concentrations or risks.

Carbon Monoxide Hot Spot

North Central Coast Air Basin and South Central Coast Air Basin

Continuous engine exhaust may elevate localized CO concentrations, resulting in hot spots. Receptors who are exposed to these CO hot spots may have a greater likelihood of developing adverse health effects. CO hot spots are typically observed at heavily congested intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations.

MBARD has established screening guidelines to identify roadway locations where a potential significant impact related to operational CO concentrations exists. Routine maintenance activities required by the proposed project and Tunnel-Only Alternative would require up to three workers to travel to the Tunnel Intake Structure daily. This would result in up to six daily round trips. Maintenance required at the project site would occur semi-annually or annually. It could also occur less frequently. These annual activities would generate approximately two round trips per day when they do occur. Furthermore, according to Section 4.6, *Transportation*, the limited increase in the number of vehicular trips associated with operation and maintenance of the proposed project and the Tunnel-Only Alternative would be approximately 0.1 percent of existing average daily traffic on Nacimiento Lake Drive (Road G14), 0.03 percent of average daily traffic on U.S. 101, and 0.2 percent of average daily traffic on Interlake Road. Therefore, operations and maintenance would not generate a significant increase in traffic on the existing circulation system and would not result in LOS degradation over the long term. Therefore, the proposed project and Tunnel-Only Alternative would not cause a CO hot spot in the North Central Coast Air Basin.

According to the SLOCAPCD 2012 *CEQA Air Quality Handbook*, projects that emit more than 550 lbs/day of CO and occur in a confined or semi-confined space (e.g., parking garage or enclosed indoor stadium) must be modeled to determine their significance. As shown in **Table 4.9-15**, the proposed project and Tunnel-Only Alternative would emit approximately 3.3 lbs/day of CO during operations, which is well below the threshold of 550 lbs/day. In addition, the proposed project and Tunnel-Only Alternative would not involve vehicle trips in a confined or semi-confined space. Therefore, the proposed project and Tunnel-Only Alternative would not cause a CO hot spot in the South Central Coast Air Basin.

Toxic Air Contaminants

The primary TACs of concern associated with the proposed project and Tunnel-Only Alternative are asbestos and DPM.

Asbestos

According to SLOCAPCD's screening buffer tool for naturally occurring asbestos (NOA), the proposed project and Tunnel-Only Alternative would not be located in an area where NOA is found (SLOCAPCD 2021). Furthermore, the portion of the project site within the North Central Coast Air Basin and Monterey County would not be in an area where NOA is found (USGS 2011). Lastly, the proposed project and Tunnel-Only Alternative would not demolish any structures that may contain asbestos. Therefore, the proposed project and Tunnel-Only Alternative would not expose sensitive receptors to asbestos.

Construction Diesel Particulate Matter

Construction within the North Central Coast Air Basin and South Central Coast Air Basin

DPM is a carcinogen in the exhaust emissions of diesel internal-combustion engines. Project-related construction activities would generate DPM ($PM_{2.5}$ exhaust) from off-road equipment and heavy-duty trucks.

As shown on **Figure 4.9-1**, the sensitive receptors closest to a project construction feature are sensitive receptors 36 and 37, located approximately 550 feet and 580 feet, respectively, from the vault access road in the North Central Coast Air Basin. Construction along the vault access road would last approximately 15 days. All construction in both San Luis Obispo County and Monterey County would be required to follow SLOCAPCD special construction conditions, which include the following.

- Staging and queuing areas are not allowed within 1,000 feet (0.19 mile) of sensitive receptors.
- Diesel-engine idling is not permitted within 1,000 feet (0.19 mile) of sensitive receptors.
- Alternative-fuel equipment is recommended.
- Signs that specify no idling areas must be posted and enforced at the site.

All diesel-powered construction activity would be required to comply with Section 2485 of Title 13 of the California Code of Regulations and the 5-minute idling restriction identified in Section 2449(d)(2) of CARB's In-Use Off-Road Diesel Regulation to minimize toxic air pollution impacts from idling diesel engines. The proposed project and Tunnel-Only Alternative would also incorporate **MM AQ-2**, which requires the use of Tier 4 Final engines. Incorporation of **MM AQ-2** would reduce exhaust $PM_{2.5}$ emissions by approximately 90 percent, which would greatly reduce the potential DPM ($PM_{2.5}$ exhaust) concentration at sensitive receptors.

The vault access road would be used by vendors as well as trucks that would be used to haul materials to the construction staging area for the Energy Dissipation Structure or export dirt to the disposal area. These vendor and haul truck trips would be sporadic during the day and would cease once construction is done. All other sensitive receptors would be more than 1,000 feet (0.19 mile) away from the nearest staging or construction area. Sensitive receptors located more than 1,000 feet (0.19 mile) away would not be expected to be exposed to substantial DPM concentrations because of meteorological dispersion and pollutant drop-off rates. According to CARB, sensitive receptors located more than 1,000 feet (0.19 mile) away would experience a 70 to 80 percent drop-off rate in pollutant concentrations (CARB 2005). Therefore, because the proposed project and Tunnel-Only Alternative would follow the SLOCAPCD special construction conditions, incorporate **MM AQ-2**, and conduct the majority of construction work more than 1,000 feet (0.19 mile) away from sensitive receptors, sensitive receptors would not be exposed to substantial DPM concentrations during construction.

Construction Valley Fever

Propagation of *C. immitis* is dependent on climatic conditions, with the potential for growth and surface exposure highest following early seasonal rains and long dry spells. Although *C. immitis* spores can be released when areas are disturbed by earthmoving activities, receptors must be exposed to and inhale the spores to be at increased risk of contracting Valley Fever. Moreover, exposure to *C. immitis* does not guarantee that an individual will become ill—approximately 60 percent of people who are exposed to the fungal spores are asymptomatic and show no signs of an infection (USGS 2000).

Although several factors influence receptor exposure and development of Valley Fever, earthmoving activities during construction could release *C. immitis* spores if filaments are present and soil chemistry and climatic conditions are conducive to spore development. Receptors near the construction area could be exposed to an increased risk of inhaling *C. immitis* and subsequent development of Valley Fever; however, the presence of *C. immitis* in Monterey and San Luis Obispo Counties does not guarantee that construction activities would result in an increased incidence of Valley Fever. Dust control measures are the primary defense against infection (USGS 2000). **AMM GEN-8,** *Dust Management Controls*, would be incorporated into the project, and **MM AQ-1** would be required, both of which would greatly reduce fugitive dust emissions and would help reduce the risk associated with people contracting Valley Fever. Therefore, the proposed project would not expose sensitive receptors to significant levels of *C. immitis* during construction.

Proposed Project and Tunnel Only Alternative Operations

Operational activities would generate DPM from the use of a 237-horsepower, Tier 3 emergency generator as well as a skid-steer loader. Workers' maintenance trips would also generate DPM. These activities could expose off-site receptors to incremental increases in health risks. The proposed emergency generator would need to comply with SLOCAPCD Rule 219 and be permitted by SLOCAPCD prior to installation and operation. SLOCAPCD's Engineering and Compliance Division would evaluate the diesel risk as part of the permitting process and may require permit conditions to reduce DPM risks. The DPM emissions of the mobile sources, emergency generator, and skid-steer loader were quantified and compared to SLOCAPCD operational thresholds. As seen in **Table 4.9-15**, the project's operational emissions would be well below the SLOCAPD diesel $PM_{2.5}$ threshold. Furthermore, the nearest sensitive receptor to the Tunnel Intake Structure and control room where project operations would occur is approximately 1,900 feet (0.36 mile) to the north. At that distance, any potential DPM emissions would experience substantial pollutant dispersion. Therefore, operation of the proposed project would not expose sensitive receptors to significant DPM concentrations.

CEQA Conclusion

During construction, the proposed project and Tunnel-Only Alternative would have significant impacts related to the exposure of sensitive receptors to substantial pollutant concentrations. implementation of **MM AQ-1** and **MM AQ-2** would ensure that the proposed project and Tunnel-Only Alternative would not contribute a significant level of air pollution such that regional air quality within the North Central Coast Air Basin or South Central Coast Air Basin would be degraded. Construction impacts for the proposed project and Tunnel-Only Alternative would be **less than significant with mitigation**.

During operation, both the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts.

4.9.5 Impact Summary

Table 4.9-16 provides a summary of the significance of potential impacts on air quality.

Table 4.9-16. Summary of Impacts on Air Quality

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact AQ-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact AQ-2: Result in a Cumulatively Considerable Increase in a Criteria Pollutant			
Proposed Project	Construction: Significant	**MM AQ-1** **MM AQ-2**	Less than significant
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Significant	**MM AQ-1** **MM AQ-2**	Less than significant
	Operation: Less than significant	N/A	N/A
Impact AQ-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations			
Proposed Project	Construction: Significant	**MM AQ-1** **MM AQ-2**	Less than significant
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Significant	**MM AQ-1** **MM AQ-2**	Less than significant
	Operation: Less than significant	N/A	N/A

4.10 Greenhouse Gas Emissions

4.10.1 Overview

This section describes the regulatory and environmental setting related to greenhouse gases (GHGs) and evaluates the impacts related to the forecast GHG emissions for the proposed project and Tunnel-Only Alternative. The impact evaluation begins by describing the methodology used to evaluate significance and the GHG significance criteria, then presents the impact evaluation. Mitigation measures are identified for impacts that are determined to be significant. For setting and impact discussions related to energy resources, refer to Section 4.16, *Energy*, of this document.

4.10.1.1 Study Area

The study area for GHG emissions associated with the construction and operation of the project comprises the Counties of Monterey and San Luis Obispo and the State of California. GHG emissions, typically carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), once emitted, are circulated into the atmosphere on a global scale, resulting in global climate change impacts. However, California, through Assembly Bill 32, the California Global Warming Solutions Act of 2006 (AB 32)[1] and Senate Bill 32, the California Global Warming Solutions Act of 2016 (SB) 32,[2] as well as other legislation, has chosen to reduce its statewide GHG emissions. Therefore, the project's GHG emissions, from all construction and operational activities, could affect statewide GHG emissions and climate change.

4.10.1.2 Scoping Comments

MCWRA received comments regarding impacts from GHG emissions during public scoping for this EIR. **Table 4.10-1** summarizes the scoping comments received regarding GHG emissions and identifies how and where the comments were addressed. Refer to Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* for a complete list of public comments received during the public scoping period.

Table 4.10-1. Scoping Comments Related to GHG Emissions Impacts

Summary of Comment	Location Where Comment Is Addressed
Amortize short-term GHG impacts from project construction over the life of the project and add to the impacts for the operational phase (SLOCAPCD)	Refer to Impact GHG-1, *Generate a Substantial Amount of GHG Emissions*.
Consider, quantify, and mitigate, if necessary, the potential loss of sequestration and resulting GHG emissions from the loss or conversion of vegetated land (SLOCAPCD)	Refer to Impact GHG-1, *Generate a Substantial Amount of GHG Emissions*.
Evaluate all GHG emissions from project construction and operation for each construction phase in the impact analysis (SLOCAPCD)	Refer to Impact GHG-1, *Generate a Substantial Amount of GHG Emissions*.

GHG = greenhouse gas; SLOCAPCD = San Luis Obispo County Air Pollution Control District

[1] The State of California achieved its AB 32 goal of reducing GHG emissions to 15 percent below 1990 levels by 2020.

[2] SB 32 requires the State of California to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030.

4.10.2 Regulatory Setting

4.10.2.1 Federal Laws, Regulations, and Policies

There is currently no federal comprehensive law specifically related to climate change or reductions in GHG emissions. During the Obama administration, EPA attempted to develop regulations under the CAA. There have also been settlement agreements between EPA, several states, and nongovernmental organizations to address GHG emissions from electricity-generating plants and refineries. In addition, EPA issued an Endangerment Finding and a Cause or Contribute Finding. The Endangerment Finding states that current and projected concentrations of the six key, well-mixed GHGs in the atmosphere—CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)—threaten the health and welfare of current and future generations. The Endangerment Finding further states that combined emissions of these well-mixed GHGs from new motor vehicles contribute to GHG pollution that threatens the public health and welfare.

EPA adopted a Clean Power Plan, along with a Mandatory Reporting Rule. Under the Clean Power Plan, and the EPA issued regulations to control CO_2 emissions from new and existing coal-fired power plants. However, on February 9, 2016, the U.S. Supreme Court issued a stay regarding these regulations, pending the outcome of ongoing litigation. In addition, former EPA Administrator Scott Pruitt signed a measure to repeal the Clean Power Plan. The fate of the proposed regulations is uncertain, given the change in federal administrations and the pending proceedings in federal courts.

Corporate Average Fuel Economy Standards

The National Highway Traffic Safety Administration's (NHTSA's) Corporate Average Fuel Economy (CAFE) standards require substantial improvements in fuel economy and reductions in GHG emissions generated by passenger cars and light-duty trucks sold in the United States. On August 2, 2018, NHTSA and EPA proposed amendments to the current fuel efficiency standards for passenger cars and light-duty trucks, and new standards for model years 2021 through 2026. Under the SAFE Vehicles Rule, current 2020 standards would be maintained through 2026. On September 19, 2019, NHTSA and EPA issued a final action on the One National Program Rule, which is considered Part One of the SAFE Vehicles Rule and a precursor to the proposed fuel efficiency standards. The One National Program Rule enables NHTSA and EPA to provide nationwide uniform fuel economy and GHG vehicle standards by 1) clarifying that federal law preempts state and local tailpipe GHG standards; 2) affirming NHTSA's statutory authority to set nationally applicable fuel economy standards; and 3) withdrawing California's CAA preemption waiver to set state-specific standards.

NHTSA and EPA published final rules to amend and/or establish national CO_2 and fuel economy standards on April 30, 2020 (Part Two of the SAFE Vehicles Rule) (85 *Federal Register* 24174). The revised rule changes the national fuel economy standards for light-duty vehicles to reach approximately 32 miles per gallon in 2026.

On January 20, 2021, President Biden issued an Executive Order (EO), directing NHTSA and EPA to review the SAFE Vehicles Rule, Parts One and Two, and propose new rules for suspending, revising, or rescinding them. On December 12, 2021, NHTSA repealed the SAFE Vehicles Rule, Part One. On December 19, 2021, NTSA finalized its vehicle efficiency standards rule to reach a projected industry-wide target of 40 per gallon by 2026, an approximately 25 percent increase over the prior SAFE rule (NHTSA 2021).

4.10.2.2 State Laws, Regulations, and Policies

Statewide GHG Reduction Goals

California has adopted legislation to address various aspects of climate change and provide GHG mitigation. This legislation establishes a broad framework for the state's long-term GHG-reduction goals, as well as a climate change adaptation program. Governors of California, both former and current, have also issued EOs related to the state's evolving climate change policy. Summaries of the key policies, EOs, regulations, and state legislation relevant to the project are provided in chronological order.

EO S-03-05 (2005)

On June 1, 2005, Governor Arnold Schwarzenegger signed EO S-3-05. The goal of EO S-03-05 was to reduce California's GHG emissions to (1) 2000 levels by 2010; (2) 1990 levels by 2020; and (3) 80 percent below 1990 levels by 2050.

Assembly Bill 32 – California Global Warming Solutions Act (2006)

AB 32 codified the state's GHG emissions target by requiring California's global warming emissions to be reduced to 1990 levels by 2020. Since being adopted, CARB, the California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the California Building Standards Commission have been developing regulations that will help the state meet the goals of AB 32 and EO S-03-05. The AB 32 scoping plan, first adopted in 2008, is the state's roadmap for meeting AB 32's reduction target. This initial scoping plan for AB 32 identifies specific measures for reducing GHG emissions to 1990 levels by 2020 and requires CARB and other state agencies to develop and enforce regulations and other initiatives to reduce GHG emissions. Specifically, the scoping plan articulates a key role for local governments by recommending that they establish GHG emissions reduction goals for both municipal operations and the community that are consistent with those of the state (i.e., approximately 15 percent below current levels) (CARB 2008). CARB approved the first update to the scoping plan on May 22, 2014 (CARB 2014), which includes both a 2020 element and a post-2020 element. The 2020 element focuses on the state, regional, and local initiatives that were implemented to help the state meet the 2020 goal. The 2017 climate change scoping plan update, adopted in December 2017, proposes strategies to achieve California's 2030 GHG emissions target (CARB 2017a). This plan is discussed in further detail under the subsection that follows, titled *SB 32, California Global Warming Solutions Act of 2006, and AB 197*.

Low-Carbon Fuel Standard (2007)

With EO S-01-07, Governor Schwarzenegger set forth the low-carbon fuel standard (LCFS) for California in 2007. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020. In September 2018, the LCFS regulation was amended to increase the statewide goal to a 20-percent reduction in the carbon intensity of California's transportation fuels by 2030.

SBs 1078, 107, and 2 (2011)

SBs 1078 (2002), 107 (2006), and 2 (2011), California's Renewables Portfolio Standard (RPS), obligates investor-owned utilities, publicly owned utilities, energy service providers, and Community Choice Aggregators to procure electricity for retail sales from eligible renewable sources, with the long-range target of procuring 33 percent from renewable sources by 2020. The California Public Utilities Commission and CEC are jointly responsible for implementing the program.

Cap-and-Trade Program (2011, 2017)

CARB adopted the Cap-and-Trade Program, a market-based system with an overall emissions limit for affected emissions sources, in October 2011. Affected sources include in-state electricity generators, hydrogen production facilities, petroleum refining operations, and other large-scale fuel suppliers and distributors. The original Cap-and-Trade Program set a compliance schedule that ran through 2020. AB 398 extends the program through 2030 and requires CARB to make refinements, including establishment of a price ceiling. Revenue generated from the Cap-and-Trade Program is used to fund various programs. AB 398 (2017) established post-2020 funding priorities that involved (1) air toxics and criteria pollutants; (2) low- and zero-carbon transportation; (3) sustainable agricultural practices; (4) healthy forests and urban greening; (5) short-lived climate pollutants; (6) climate adaptation and resiliency; and (7) climate and clean energy research.

Short-Lived Climate Pollutant Strategy (2013)

SB 605 directed CARB, in coordination with other state agencies and local air districts, to develop the Short-Lived Climate Pollutants (SLCP) Reduction Strategy. SB 1383 directed CARB to approve and implement the SLCP Reduction Strategy to achieve the following:

- Forty-percent reduction in CH_4 (below 2013 levels by 2030)
- Forty-percent reduction in HFCs (below 2013 levels by 2030)
- Fifty-percent reduction in anthropogenic black carbon (below 2013 levels by 2030)
- The bill also established the following targets for reducing organic waste in landfills, as well as CH_4 emissions from dairy and livestock operations:
- Fifty-percent reduction in organic waste disposal (below 2014 level by 2020)
- Seventy-five-percent reduction in organic waste disposal (below 2014 level by 2025)
- Forty-percent reduction in CH_4 emissions from livestock and dairy manure management operations (below the dairy and livestock sectors' 2013 levels by 2030)

CARB adopted the SLCP Reduction Strategy in March 2017 as a framework for achieving the CH_4, HFC, and anthropogenic black carbon reduction targets set by SB 1383. The SLCP Reduction Strategy includes 10 measures to reduce SLCPs that fit within a wide range of ongoing planning efforts throughout the state. CARB and the California Department of Resources Recycling and Recovery (CalRecycle) are currently developing regulations to achieve the goals.

SB 350 (2015)

SB 350 (De León, also known as the Clean Energy and Pollution Reduction Act of 2015) was approved by the California Legislature in September 2015 and signed by Governor Brown in October 2015. Its key provisions call for the following by 2030: (1) achieving an RPS of 50 percent by 2030; and (2) doubling the efficiency of existing buildings.

SB 32, California Global Warming Solutions Act of 2006, and AB 197

SB 32 (Pavley) requires CARB to ensure that statewide GHG emissions will be reduced to at least 40 percent below the 1990 level by 2030, consistent with the target set forth in EO B-30-15. AB 197 requires formation of a Joint Legislative Committee on Climate Change Policies; requires CARB to prioritize direct emissions reductions from stationary sources, mobile sources, and other sources and consider social costs when adopting regulations to reduce GHG emissions beyond the 2020 statewide limit; requires CARB to prepare reports on sources of GHGs, criteria air pollutants, and toxic air contaminants; establishes 6-year terms for voting members of CARB; and adds two legislators as nonvoting members of CARB. Governor Brown signed both bills in September 2016.

CARB Climate Change Scoping Plan

CARB approved the 2017 Climate Change Scoping Plan update (2017 Scoping Plan) in December 2017 to build on the programs set in place as part of the previous scoping plan, which was drafted to meet the 2020 reduction targets of AB 32. The 2017 Scoping Plan proposes meeting the 2030 goal by accelerating the focus on zero and near-zero technologies for moving freight; continuing investment in renewables; relying on greater use of low-carbon fuels, including hydrogen; implementing stronger efforts to reduce emissions of SLCPs (e.g., CH_4, black carbon, fluorinated gases); overseeing further efforts to create walkable communities with expanded mass transit and other alternatives to traveling by car; continuing the Cap-and-Trade Program; and ensuring that natural lands become carbon sinks to provide additional emissions reductions and flexibility in meeting the target.

The 2017 Scoping Plan recommends that local governments achieve community-wide efficiency through the use of targets that call for 6 metric tons of carbon dioxide equivalent ($MTCO_2e$) per capita by 2030 and 2 $MTCO_2e$ per capita by 2050, along with a no-net increase threshold, targets that can be used in local climate action planning. These efficiency targets would replace the approach recommended in the initial scoping plan (i.e., 15 percent below 2008 levels by 2020)

In May 2022, CARB released its *Draft 2022 Scoping Plan Update* (Draft 2022 Scoping Plan), which builds on the 2017 Scoping Plan goal of achieving GHG reductions of 40 percent below 1990 levels by 2030 and the goal of statewide carbon neutrality by 2045 or earlier (CARB 2022). Specifically, the Draft 2022 Scoping Plan Update does the following:

- Identifies a path to keep California on track to meet its SB 32 GHG-reduction target of at least 40 percent below 1990 emissions by 2030
- Identifies a technologically feasible, cost-effective path to achieve carbon neutrality by 2045 or earlier
- Focuses on strategies for reducing California’s dependency on petroleum to provide consumers with clean energy options that address climate change, improve air quality, and support economic growth and clean sector jobs
- Integrates equity and protecting California’s most affected communities as a driving principle throughout the document
- Incorporates the contribution of natural and working lands to the state’s GHG emissions, as well as its role in achieving carbon neutrality
- Relies on the most up to date science, including the need to deploy all viable tools to address the existential threat that climate change presents, including carbon capture and sequestration. as well a direct-air capture
- Evaluates multiple options for achieving our GHG and carbon neutrality targets, as well as the public health benefits and economic impacts associated with each.

The Draft 2022 Scoping Plan is expected to be fully approved in late 2022.

SB 100 (2018)

SB 100 (De León), also known as the California Renewables Portfolio Standard Program, Emissions of Greenhouse Gases, was approved by the California Legislature and signed by Governor Brown in September 2018. The bill increases the RPS in 2030 from 50 to 60 percent and establishes an RPS goal of 100 percent by 2045.

EO B-55-18 (2018)

Signed by Governor Brown in September 2018, EO B-55-18 acknowledges the environmental, community, and public health risks posed by future climate change. It further recognizes the climate stabilization goal adopted by 194 states and the European Union under the Paris Agreement. Although the United States was not party to the agreement, California is committed to meeting the Paris Agreement goals and exceeding them wherever possible. Based on the worldwide scientific agreement that carbon neutrality must be achieved by the mid-twenty-first century, EO B-55-18 establishes a new state goal to achieve carbon neutrality as soon as possible, and no later than 2045, and to achieve and maintain net negative emissions thereafter. The EO charges CARB with developing a framework for implementing and tracking progress toward these goals. This EO extends EO S-3-05 but is only binding on state agencies.

The Draft 2022 Scoping Plan identifies a technologically feasible, cost-effective path to achieve carbon neutrality by 2045 or earlier, consistent with the goals of EO B-55-19. In addition, AB 1279 codifies the State's requirement of achieving net negative GHG emissions by 2045.

AB 1279 (2022)

AB 1279 (Muratsuchi, also known as the California Climate Crisis Act) was approved by California Legislature and signed by Governor Newsom in September 2022. AB 1279 requires the State to both achieve net zero GHG emissions as soon as possible, but no later than 2045, and achieve and maintain net negative GHG emissions thereafter, and to ensure that by 2045, statewide anthropogenic GHG emissions are reduced to at least 85% below the 1990 levels. AB 1279 requires the State board to work with relevant State agencies to ensure that updates to the CARB scoping plan identify and recommend measures to achieve these policy goals and to identify and implement a variety of policies and strategies that enable carbon dioxide removal solutions and carbon capture, utilization, and storage technologies in California. Additionally, this bill would require the State board to submit an annual report.

Climate Change Adaptation Policies

In 2009, California adopted a statewide climate adaptation strategy that summarizes climate change impacts and recommends adaptation strategies across seven sectors (i.e., public health, biodiversity and habitat, oceans and coastal resources, water, agriculture, forestry, and transportation). In 2014, the California Natural Resources Agency, in coordination with other state agencies, updated the 2009 climate adaptation strategy through preparation of *Safeguarding California: Reducing Climate Risk.* The 2014 plan augments previously identified strategies in light of advances in climate science and risk management options (CNRA 2014).

Safeguarding California: Reducing Climate Risk highlights risks in nine sectors, adding emergency management and energy to the original seven; discusses progress to date; and makes realistic sector-specific recommendations. The *oceans and coastal resources* sector was revised to *ocean and coastal ecosystems and resources*. For the project, measures related to emergency management, transportation, biodiversity and habitat, and ocean and coastal ecosystems and resources are relevant. The California Natural Resources Agency developed an additional plan, *Safeguarding California: Implementation Action Plans*, which provides a blueprint for execution of the actions recommended in the 2014 plan (CNRA 2016). *Safeguarding California Plan: 2018 Update* illustrates how the state is taking action to respond to climate change (CNRA 2018).

4.10.2.3 Local Laws, Regulations, and Policies

The project is located in unincorporated Monterey and San Luis Obispo Counties and within the jurisdiction of MBARD and SLOCAPCD. A summary of regulations and policies from the counties and SLOCAPCD follow. MBARD does not have any plans or rules related to regulating GHG emissions. The district recommends use of SLOCAPCD's significance thresholds for the purpose of CEQA analyses (D. Frisbey, personal communication, October 19, 2016).

Monterey Bay Air Resources District

MBARD currently has no laws, regulations, or policies pertaining to GHG regulation within its jurisdiction.

San Luis Obispo County Air Quality Management District

SLOCAPCD originally established GHG thresholds and guidance in its 2012 *CEQA Handbook*. Bright-line and service-population GHG thresholds were adopted to help projects within SLOCAPCD's jurisdiction meet the state's AB 32 goals (SLOAPCD 2012). In 2015, the California Supreme Court issued an opinion in *Center for Biological Diversity vs. California Department of Fish and Wildlife* that determined that AB 32-based thresholds derived from a gap analysis are invalid for projects with a planning horizon beyond 2020. Because the bright-line and service-population GHG thresholds in the SLOCAPCD 2012 *CEQA Handbook* are AB 32-based, and the project horizons are now beyond 2020, SLOCAPCD does not recommend use of those thresholds in CEQA evaluations. These thresholds are discussed in greater detail in Section 4.10.4.2, *Criteria for Determining Significance*.

San Luis Obispo County Plans

San Luis Obispo County and SLOCAPCD use San Luis Obispo County's EnergyWise Plan (EWP) as their guidance document for identifying and reducing GHG emissions in the county and preparing for necessary climate change adaptation strategies.

San Luis Obispo County EWP

In 2011, the San Luis Obispo County Board of Supervisors adopted the EWP to implement the energy use and GHG-reduction goals established in the San Luis Obispo County General Plan. These GHG-reduction goals, which were developed to support statewide AB 32-related GHG emissions-reduction goals, include 1) reducing GHG emissions from government and community operations by 15 percent; and 2) reducing energy use at County of San Luis Obispo government operations by 20 percent compared with baseline levels (2006) by 2020.

The EWP identifies strategies that the County of San Luis Obispo would implement to achieve its energy use and GHG emissions-reduction goals, in addition to water conservation and air quality goals. Furthermore, the EWP identifies potential climate change-related impacts in San Luis Obispo County and identifies climate change adaptation strategies. In 2016, the EWP was updated to summarize progress toward implementing measures in the EWP and outline overall trends in energy use and emissions since the baseline year of the EWP inventory (2006). The EWP 2016 update provides 12 more specific reduction goals, equally divided between government operations and community-wide activities, to further advance the County of San Luis Obispo's goal of reducing GHG emissions from 2006 baseline conditions by 2020 (County of San Luis Obispo 2011a, 2016).

Climate Change Adaptation Planning in San Luis Obispo County

Chapter 7, *Adaptation*, of the EWP identifies adaptation measures to reduce the county's vulnerability to the impacts of climate change. Local vulnerabilities, impacts, and recommended adaptation strategies discussed in the document are related to the following topic areas: public health, water supply, flooding and unpredictable weather, sea-level rise, wildfire risks, agriculture, natural systems, and economy and tourism (County of San Luis Obispo 2011b).

4.10.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to GHG emissions is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.10.3 Environmental Setting

Global Climate Change

The process known as the *greenhouse effect* keeps the atmosphere near Earth's surface warm enough for the successful habitation of humans and other life forms. The greenhouse effect is created by sunlight that passes through the atmosphere. Some of the sunlight striking Earth is absorbed and converted to heat, which warms the surface. The surface emits a portion of this heat as infrared radiation, some of which is re-emitted back toward the surface by GHGs in the atmosphere and some of which results in warming of the atmosphere. Human activities that generate GHGs increase the amount of infrared radiation absorbed by the atmosphere, thereby enhancing the greenhouse effect and amplifying the warming of the Earth.

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the Industrial Revolution (IPCC 2018a). Rising atmospheric concentrations of GHGs, in excess of natural levels, result in increasing global surface temperatures—a process commonly referred to as *global warming*. Higher global surface temperatures, in turn, result in changes to Earth's climate system, including increased ocean temperatures and acidity, reduced sea ice, variable precipitation, and increased frequencies and intensities for extreme weather events (IPCC 2018a). Large-scale changes to Earth's climate system are collectively referred to as *climate change.*

The IPCC was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC estimates that human-induced warming reached approximately 1 degree Celsius (°C) above pre-industrial levels in 2017 and is increasing at a rate of 0.2°C per decade. Under the current nationally determined contributions of mitigation from each country until 2030, global warming is expected to increase the temperature by 3°C by 2100, with warming to continue afterward (IPCC 2018a). Large increases in global temperatures could have substantial adverse effects on natural and human environments in California and the rest of the world.

GHGs of Concern

The primary GHGs of concern associated with the project are CO_2, CH_4, and N_2O. The principal characteristics of these pollutants are discussed in the following sections. Note that PFCs are not discussed because such gases are generated primarily by industrial and manufacturing processes, which are not part of the proposed project or Tunnel-Only Alternative. **Table 4.10-2** shows the six GHGs of concern and their respective global warming potentials (GWPs).

All GWPs used in CARB's GHG inventory and for assessing attainment of the state's GHG reduction targets are considered over a 100-year timeframe (as shown in **Table 4.10-2**). However, CARB recognizes the importance of SLCPs and reducing emissions to achieve the state's overall climate change goals. SLCPs have atmospheric lifetimes on the order of a few days to a few decades, and their relative climate-forcing impacts, when measured in terms of how they heat the atmosphere, can be tens, hundreds, or even thousands of times greater than that of CO_2 (CARB 2017b). In recognition of their short-term lifespan and warming impact, SLCPs are measured in terms of $MTCO_2e$, using a 20-year time period.

The use of GWPs with a time horizon of 20 years captures the importance of SLCPs and gives a better perspective on the speed at which SLCP emissions controls affect the atmosphere relative to CO_2 emissions controls. The SLCP Reduction Strategy addresses the three primary SLCPs—CH_4, HFC gases, and anthropogenic black carbon (CARB 2017b). CH_4 has a lifetime of 12 years and a 20-year GWP of 72. HFC gases have lifetimes of 1.4 to 52 years and a 20-year GWP of 437 to 6,350. Anthropogenic black carbon has a lifetime of a few days to weeks and a 20-year GWP of 3,200 (CARB 2017b).

Carbon Dioxide

CO_2 accounts for more than 80 percent of all GHG emissions emitted in California (CARB 2020e). CO_2 enters the atmosphere through fossil fuel (i.e., oil, natural gas, and coal) combustion, solid waste decomposition, plant and animal respiration, and chemical reactions (e.g., chemical reactions associated with cement manufacturing). CO_2 is also removed from the atmosphere (or sequestered) when it is absorbed by plants as part of the biological carbon cycle.

Methane

CH_4, the main component of natural gas, is the second most abundant GHG and has a GWP of 25 (CARB 2020a). Sources of anthropogenic emissions of CH_4 include rice farms, cattle ranches, operations that use natural gas, landfills with outgassing, and coal mines. Certain land uses function as both a source and sink for CH_4. For example, wetlands are a terrestrial source of CH_4, whereas undisturbed aerobic soils act as a CH_4 sink (i.e., they remove CH_4 from the atmosphere).

Nitrous Oxide

Anthropogenic sources of N_2O include agricultural processes (e.g., the application of fertilizer), nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions. N_2O also is used in rocket engines, race cars, and aerosol sprays. Natural processes, such as nitrification and denitrification, can also produce N_2O, which can be released to the atmosphere by diffusion.

Table 4.10-2. Greenhouse Gas Overview and Global Warming Potential

GHG	GWP over 100 years (IPCC SAR/AR4)[1]	Description
Carbon Dioxide (CO_2)	1/1	Released into the atmosphere through the burning of fossil fuels (i.e., coal, natural gas, and oil), solid waste, trees; and wood products; also released through certain chemical reactions. Removed from the atmosphere when it is absorbed by plants and oceans; remains in the atmosphere from 50,000 to more than 100,000 years.
Methane (CH_4)	21/25	Emitted during the production and transport of coal, natural gas, and oil. CH_4 emissions result from livestock and agricultural operations and the decay of organic waste, notably in municipal solid waste landfills; remains in the atmosphere for about 10 years.
Nitrous Oxide (N_2O)	310/298	Emitted during agricultural and industrial activities, as well as the combustion of fossil fuels and solid waste; remains in the atmosphere for about 100 years.
Hydrofluorocarbons (HFCs)	140–11,700/ 124–14,800	Typically used in refrigeration and air-conditioning equipment, as well as in solvents; emissions are generated primarily from air-conditioning systems in buildings and vehicles; remains in the atmosphere from 10 to 270 years.
Perfluorocarbons (PFCs)	6,630–11,100/ 6,500–9,200	Emitted as byproducts of industrial and manufacturing operations; remains in the atmosphere from 800 to 50,000 years.
Sulfur Hexafluoride (SF_6)	23,500/23,900	Used in electrical transmission and distribution applications; remains in the atmosphere approximately 3,200 years.

Source: EPA 2019; IPCC 2013.

[1] As scientific understanding of the GWP of various GHGs improves over time, GWP values are updated in IPCC scientific assessment reports. For regulatory consistency, however, the reporting guidelines of the United Nations Framework Convention on Climate Change (and international treaties) for national inventories continue to the use of GWP values published in the IPCC's 1996 SAR. CARB uses the GWP values from the SAR as well as the AR4.

AR4 = IPPC Fourth Assessment Report; CARB = California Air Resources Board; EPA = U.S. Environmental Protection Agency; GHG = greenhouse gas; GWP = global warming potential; IPCC = Intergovernmental Panel on Climate Change; SAR = Second Assessment Report

Sulfur Hexafluoride

SF_6, a human-made chemical, is used in power distribution equipment, in the magnesium industry, in semiconductor manufacturing, and in the study of oceanic and atmospheric processes (e.g., as a tracer chemical). SF_6 is a powerful GHG with a GWP of 22,800 (CARB 2020b). Because SF_6 is a human-made chemical, it did not exist in the atmosphere before the twentieth century.

Hydrofluorocarbons

HFCs, which have high GWPs, are human-made chemicals used in commercial, industrial, and consumer products. HFCs are generally used as substitutes for O_3-depleting substances in automobile air conditioners and refrigerants (CARB 2021a).

Greenhouse Gas Inventories

As shown in **Table 4.10-3,** in 2019, California GHG emissions totaled 418 million metric tons of CO_2e ($MMTCO_2e$) (CARB 2021b), which is 13 $MMTCO_2e$ below the 2020 GHG limit of 431 $MMTCO_2e$. In 2019, the transportation sector of the California economy was the largest source of emissions, accounting for approximately 40 percent of the total (CARB 2021b). On-road vehicles accounted for most emissions in the transportation sector. The industrial sector accounted for approximately 21 percent of total emissions. Emissions from electricity generation were about 14 percent of the total. The rest of the emissions were from various sources (CARB 2021b). In 2005, the most recent GHG inventory, Monterey County emitted 1,304,309 $MTCO_2e$. In 2013, San Luis Obispo County emitted 1,776,511 $MTCO_2e$.

Table 4.10-3. Global, National, State, and Local Greenhouse Gas Emissions Inventories

Year and Area	$MTCO_2e$
2017 Global	53,500,000,000
2019 United States	6,558,300,000
2019 California	418,200,000
2013 San Luis Obispo County	1,776,511
2005 Unincorporated Monterey County	1,304,309

Source: IPCC 2018b; EPA 2021a; CARB 2021a; County of San Luis Obispo 2016; County of Monterey 2012.
$MTCO_2e$ = metric tons of carbon dioxide equivalent

4.10.4 Impact Analysis

4.10.4.1 Methods for Evaluating Impacts

This impact analysis considers whether implementation of the proposed project or Tunnel-Only Alternative would result in significant adverse impacts with respect to GHG emissions. The analysis focuses on reasonably foreseeable direct and indirect effects from construction and operation of the proposed project and Tunnel-Only Alternative compared with existing conditions.

The primary GHGs that would be generated by the proposed project are CO_2, CH_4, and N_2O. Such emissions would result directly from the combustion of fossil fuels (e.g., gasoline, diesel). In addition to direct emissions that would occur on-site during construction, indirect emissions would result from the use of electricity as part of project construction, as well as the one-time change in carbon sequestration associated with land use changes at the project site. Operational emissions would include direct emissions from employee vehicles, off-road sources, and an emergency generator associated with operations and maintenance. Indirect GHG emissions would come from the project's electricity demand at the Tunnel Intake Structure.

Project Features and Phasing

The project is within two counties, Monterey and San Luis Obispo. **Table 4.10-4** highlights the different project features and construction phasing that would occur within both counties. Construction of the Energy Dissipation Structure and portal, Spillway Modification, and Interlake Tunnel would occur within Monterey County, whereas construction of the Tunnel Intake Structure and portal would occur in San Luis Obispo County. GHG emissions are a global issue and not confined to a project site or county boundaries. Therefore, emissions occurring in Monterey County and San Luis Obispo County are evaluated as a combined total.

In addition to the proposed project, construction of a Tunnel-Only Alternative was analyzed. The Tunnel-Only Alternative would include the same construction features listed in **Table 4.10-4,** except for the proposed Spillway Modification. Therefore, it is assumed that analysis of the proposed project would be more conservative because it would include more construction features and more phases.

Table 4.10-4. Construction Schedule and Features

Feature	Start Date	End Date	Working Days
Monterey County			
Energy Dissipation Structure	10/2/2023	1/24/2025	345
Spillway Modification	4/17/2023	11/1/2024	405
Energy Dissipation Structure Portal	7/10/2023	4/12/2024	200
Tunneling	7/10/2023	11/15/2024	355
San Luis Obispo County			
Tunnel Intake Structure	10/2/2023	2/28/2025	370
Tunnel Intake Structure Portal	4/17/2023	11/15/2024	415

Construction Emissions

Construction GHG emissions were estimated using a combination of emission factors and methodologies from the California Emissions Estimator Model (CalEEMod), version 2020.4.0 and Version 2022.1.0; CARB's EMission FACtor 2021 (EMFAC2021) model; and the third-party-verified 2019 emission factors from the Pacific Gas & Electric (PG&E) 2021 Corporate Sustainability Report (PG&E 2022). The estimates relied on a combination of CalEEMod default data values, as well as project-specific information MCWRA and MJA provided. Project-specific information provided includes a list of construction equipment, the construction schedule, and the number of daily employee trips, vendor trips, and haul trips. Once quantified, the project's construction emissions from the different project features were summed and amortized over the expected lifetime of the project, which is 50 years, consistent with SLOCAPCD guidance. All modeling assumptions, inputs, and results can be viewed in Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results.*

Land Use Change

The analysis of construction-related GHG emissions also considered the one-time change in carbon sequestration associated with the project's construction activities. As described in Chapter 2, *Project Description*, the proposed project would permanently disturb approximately 13.57 acres of land, with 1.07 acres of this land located within the Spillway Modification area. A carbon loss analysis was conducted that considered the predominant habitat type[3] within the study area, as well as the emission factors and methodologies from CalEEMod.

[3] It was conservatively assumed that the vegetation type within the study area would mainly be grasslands. Although some of the study area may fall within the wetlands category, CalEEMod does not have a CO_2-per-acre accumulation rate for this vegetation type.

Operational Emissions

For the purposes of this analysis, operational emissions associated with the proposed project and Tunnel-Only Alternative are assumed to be the same.[4] GHG emissions from motor vehicles associated with routine maintenance at the Tunnel Intake Structure were evaluated using emission factors from EMFAC2021 as well as data regarding the anticipated number of daily trips and trip lengths. Off-road and stationary-source GHG emissions associated with operation of the proposed project were estimated using emission factors and methodologies from CalEEMod. Off-road sources of GHG emissions during operation would include a skid-steer loader, which would be used to help with debris removal at the Tunnel Intake Structure. Stationary sources of GHG emissions would include a 150-kW, 237-horsepower diesel emergency generator in the control building of the Tunnel Intake Structure; the generator would require occasional maintenance and testing. The remaining project features (i.e., Spillway Modification and Energy Dissipation Structure) would require only one or two additional maintenance trips each year and therefore would produce negligible emissions. It is anticipated that the proposed project would be fully operational by 2025. Operational energy-related GHG emissions were calculated using the third-party-verified 2019 emission factors from the PG&E 2021 Corporate Sustainability Report. A detailed description of model input and output parameters and assumptions is provided in Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results*.

Hydroelectric Plant

The proposed project and Tunnel-Only Alternative could affect energy generation at the 4-megawatt (MW) hydroelectric power plant at Nacimiento Dam as they would generally reduce the amount of water available at Nacimiento Reservoir for the production of hydroelectricity compared to existing conditions. The amount of electricity generated by the Nacimiento Reservoir hydropower facility fluctuates depending on levels of precipitation and the corresponding amount of water flowing into Nacimiento Reservoir, and the flow rate through Nacimiento Dam. In dry years, when less water is released, less electricity is generated. Furthermore, when water levels at Nacimiento Reservoir drop below 728 feet, the Nacimiento Reservoir hydropower facility is not able to generate any hydroelectricity. The proposed project and Tunnel-Only Alternative would transfer water from Nacimiento Reservoir to San Antonio Reservoir, thus potentially reducing the amount of water in Nacimiento Reservoir, and therefore could result in a reduction in the amount of electrical energy generated by the existing Nacimiento Reservoir hydropower facility. The transfer of water between reservoirs would also result in lower average water levels at Nacimiento Reservoir compared to existing conditions. Currently, average water levels at Nacimiento Reservoir drop below 728 feet during July, August and September of dry water years, but are generally expected to remain above that level during all other months of dry water years as well as during all months of normal and wet water years.

According to historical data[5] provided by the Nacimiento Reservoir hydropower facility operator, the Nacimiento Reservoir hydropower facility produces, on average, approximately 10,431 MWh of hydroelectric power per year when accounting for normal, wet, and dry years. Based on the hydrologic modeling conducted for the proposed project and Tunnel-Only Alternative, it is anticipated that releases at Nacimiento Reservoir could, at a maximum, decrease by approximately

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[4] The primary difference between the proposed project and Tunnel-Only Alternative is the inclusion of the Spillway Modification, and this project feature would require only one or two additional annual maintenance trips compared to existing conditions. One or two annual trips would result in negligible additional maintenance activities beyond what is currently required for the existing San Antonio Dam.

[5] Historical yearly hydroelectric generation data were provided for 1987 through 2021.

15 percent compared to the modeled baseline when accounting for normal, wet, and dry years. Thus, assuming a conservative linear relationship between all Nacimiento Reservoir water releases and hydroelectric production, it is estimated that hydroelectric production would also decrease by approximately 15 percent with the proposed project or Tunnel-Only Alternative.[6] Applying this 15 percent reduction to historical yearly average hydroelectric production (10,431 MWh) results in a loss of approximately 1,578 MWh per year.

Consistency with Plans and Policies

The analysis examined whether the proposed project and Tunnel-Only Alternative would be consistent with the applicable GHG-reduction plans. Monterey County and MCWRA do not have a qualified GHG-reduction plan. Although San Luis Obispo County has adopted the EWP, it looked at an emission build-out year of 2020. Because the project would be operational post-2020, the EWP would not be applicable. In addition, San Luis Obispo County has not adopted a qualified CAP, and the project is a not growth-inducing project. Therefore, the project's consistency with the 2017 Scoping Plan and Draft 2022 Scoping Plan was evaluated, as recommended by SLOCAPCD, in Impact GHG-2, *Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs*.

Baseline

The project construction area is mostly undeveloped rural land between Nacimiento and San Antonio Reservoirs. There are no existing uses within the study area that are potentially quantifiable sources of GHG emissions. Therefore, for this analysis it is assumed conservatively that the project baseline does not include any existing GHG emissions that would be displaced by construction of the project.

4.10.4.2 Criteria for Determining Significance

Appendix G of the CEQA Guidelines provides guidance for assessing whether a project would have significant impacts on the environment. Consistent with Appendix G, and in consideration of project-specific environmental conditions, MCWRA has determined that the project would have significant GHG emissions and energy resources impacts if it would:

- Generate a substantial amount of GHG emissions
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs

MBARD GHG Significance Thresholds

The CEQA guidance document for CEQA lead agencies other than MBARD is the 2008 *CEQA Air Quality Guidelines* (MBARD 2008). However, that document does not contain GHG significance thresholds. Therefore, for projects located in Monterey County for which MBARD is not CEQA lead agency, MBARD recommends use of SLOCAPCD's established significance thresholds for GHG emissions analysis (D. Frisbey, personal communication, October 19, 2016).

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[6] This is considered a worst-case estimation; it is unlikely that a 15 percent drop in total releases would result in a 15 percent drop in hydroelectric production because not all releases result in hydroelectric production. Even with the drop in total releases due to the proposed project or Tunnel-Only Alternative, it is possible that hydroelectric production would stay the same.

SLOCAPCD GHG Significance Thresholds

As the SLOAPCD 2012 *CEQA Handbook* GHG thresholds are no longer valid post 2020, SLOCAPCD has released an updated 2021 interim CEQA GHG guidance document to help projects analyze GHG impacts (SLOAPCD 2021). This updated guidance recommends the following GHG thresholds:

- **Consistency with a Qualified CAP**: CAPs conforming to CEQA Guidelines Sections 15183 and 15183.5 would be qualified and eligible for project streamlining under CEQA.
- **No Net Increase**: The 2017 scoping plan states, on page 101, that no-net increase in GHG emissions relative to baseline conditions "is an appropriate overall objective for new development." The Newhall Ranch project demonstrated that no net GHG increase was feasible and defensible.
- **Lead Agency-Adopted Defensible CEQA GHG Thresholds**:
  - Meeting Local GHG Emission Targets with BMPs.
  - GHG Bright-line and Efficiency Thresholds. SB 32-based local bright-line and operational efficiency thresholds can be established by evaluating local emission sectors in a jurisdiction's GHG inventory relative to statewide sector inventories and the state's GHG reduction target of 40 percent below 1990 levels.

CEQA Guidelines Section 15064.4(b)(3) requires an analysis of whether a project would be in compliance with an existing applicable plan, policy, or regulation that has been legally adopted for the purpose of reducing GHG emissions. SLOCAPCD recommends the following to satisfy this requirement:

- Consistency with CAPs, sustainability plans, adaption plans, general plans, or other plans, policies, and regulations designed to reduced GHG emissions;
- Consistency with applicable regional transportation plans (RTPs)/sustainable community strategies (SCSs); and
- Demonstrated project consistency with the CARB 2017 scoping plan.

Monterey and San Luis Obispo Counties do not have a post-2020 qualified CAP. In addition, the lead agency has not adopted GHG-specific CEQA thresholds. Therefore, this project will analyze its GHG emissions relative to a no-net-increase threshold, which, as noted in the 2017 Scoping Plan and Draft 2022 Scoping Plan, is an appropriate objective for new development. Furthermore, because the proposed project is a water infrastructure project in an area with no qualified CAP, analysis of consistency was conducted with the San Luis Obispo Council of Governments (SLOCOG) RTP, the Transportation Agency for Monterey County (TAMC) RTP, the 2017 Scoping Plan and 2022 Draft Scoping Plan.

4.10.4.3 Avoidance and Minimization Measures

MCWRA has incorporated AMMs into the project design to prevent the occurrence of environmental impacts. AMMs applicable to GHG emissions include the following:

- **AMM GEN-7**, *Vehicle Idling and Maintenance*

A complete description of the measure is provided in Section 2.6, *Avoidance and Minimization Measures.*

4.10.4.4 Impacts and Mitigation Measures

Impact GHG-1: Generate a Substantial Amount of GHG Emissions

Construction Emissions

Construction activities for the proposed project would result in the temporary generation of GHG emissions. Emissions would originate from the exhaust of mobile and stationary construction equipment, as well as the exhaust of employee vehicles and haul trucks. Additional GHG emissions would occur from carbon loss due to the permanently disturbed on-site vegetation. Construction-related GHG emissions from each specific source would vary substantially, depending on the level of activity, length of the construction period, specific construction operations, types of equipment, and number of personnel. Refer to Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for a detailed list of construction assumptions, as well as modeling results.

The proposed project would construct the following project features: Energy Dissipation Structure, Spillway Modification, Energy Dissipation Structure portal, tunneling, Tunnel Intake Structure, and the Tunnel Intake Structure portal. The Tunnel-Only Alternative would require the same construction activities as the proposed project, except for the Spillway Modification. These activities would require mobile and stationary construction equipment, as well as on-road vehicles for employee trips, soil import and export, and deliveries. Construction emissions have been calculated for both the proposed project and the Tunnel-Only Alternative. Estimated construction-related GHG emissions are presented in **Table 4.10-5.**

Project construction would generate approximately 5,790 $MTCO_2e$. For the Tunnel-Only Alternative, emissions would amount to approximately 4,107 $MTCO_2e$. Relative to the proposed project, construction of the Tunnel-Only Alternative would result in approximately 29 percent fewer GHG emissions when considering all GHGs (not just CO_2).

Project Operations

Operation of the proposed project and Tunnel-Only Alternative would generate direct and indirect GHG emissions. Sources of direct emissions include vehicle trips, emergency generator operations, and off-road equipment. Sources of indirect emissions would include electricity consumption. **Table 4.10-6** presents the results of the operational modeling analysis and the project's total yearly GHG emissions.

Table 4.10-5. Estimated Construction GHG Emissions (metric tons)[a]

Construction Feature	CO_2	CH_4	N_2O	CO_2e	CO_2e Amortized[1]
Proposed Project[2]					
Energy Dissipation Structure	123.8	< 0.1	< 0.1	127.0	2.5
Spillway Modification	1,650.2	0.4	0.1	1,676.5	33.5
Energy Dissipation Structure Tunnel Portal	719.8	0.2	< 0.1	732.3	14.6
Tunneling	1,622.9	0.5	0.1	1,650.3	33.0
Tunnel Intake Structure	790.7	0.1	0.1	818.5	16.4
Tunnel Intake Structure Portal	716.0	0.2	< 0.1	725.8	14.5
Carbon Loss (Permanent Disturbance)	58.5	–	–	58.5	1.2
Tunnel-Only Alternative[2]					
Energy Dissipation Structure	123.8	< 0.1	< 0.1	127.0	2.5
Energy Dissipation Structure Tunnel Portal	719.8	0.2	< 0.1	732.3	14.6
Tunneling	1,622.9	0.5	0.1	1,650.3	33.0
Tunnel Intake Structure	790.7	0.1	0.1	818.5	16.4
Tunnel Intake Structure Portal	716.0	0.2	< 0.1	725.8	14.5
Carbon Loss (Permanent Disturbance)	53.9	–	–	53.9	1.1
Project Total[3]	5,681.9	1.4	0.3	5,788.9	115.8
Tunnel-Only Alternative Total[3]	4,027.1	1.0	0.2	4,107.8	82.2

Source: See Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for all inputs, assumptions, and modeling results.

[1] Total emissions divided by project lifetime (50 years)

[2] GHG emissions shown are from the mitigated construction run as these emissions are higher than the unmitigated construction run. This increase in GHG emission is from the onsite speed restrictions to help reduce mobile dust emissions.

[3] Values may not total because of rounding.

CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalence; CH_4 = methane; GHG = greenhouse gas; N_2O = nitrous oxide

Table 4.10-6. Estimated Operational GHG Emissions in 2025 (metric tons)

Activity	CO_2	CH_4	N_2O	CO_2e
Mobile – On-site/Off-site	36.8	< 0.1	< 0.1	38.0
Off-road Equipment	1.4	< 0.1	0.0	1.4
Energy Usage	0.1	< 0.1	< 0.1	0.2
Energy Loss – Hydropower Facility	1.9	< 0.1	< 0.1	3.0
Stationary Source	4.9	< 0.1	0.0	5.0
Operational Total[a]	45.2	< 0.1	< 0.1	47.6
50-Year Lifetime Total[b]	2,259	1.1	0.3	2,378

Source: See Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for all inputs, assumptions, and modeling results.

[1] Values may not total because of rounding.

[2] The project is anticipated to have a 50 year lifetime.

CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalence; CH_4 = methane; GHG = greenhouse gas; N_2O = nitrous oxide

Mobile Source Emissions

As shown in **Table 4.10-6**, mobile source emissions would total approximately 38 $MTCO_2e$ per year, or approximately 79.9 percent of the project's total yearly GHG emissions. These emissions would result primarily from daily operations, scheduled project maintenance trips, and dump truck trips to remove debris from the Tunnel Intake Structure. It was assumed that trips from the operations manager, operator, and technicians would be light-duty vehicles, whereas trips from the boom truck and dump trucks would be medium- to heavy-duty vehicles. In total, the proposed project would result in six daily round trips, with a maximum of 30 daily round trips during periods of maintenance and trash collecting. Refer to Appendix F, *Air Quality & Greenhouse Gas Model Assumptions and Results,* for all modeling assumptions.

Mobile vehicles used for project maintenance would be subject to the federal CAFE standards, the state LCFS, and potential vehicle electrification, all of which would result in emissions reductions in the future. It was assumed that the vehicles used for maintenance purposes would rely on internal-combustion vehicles; therefore, the analysis is conservative because vehicles in future years may be electrically powered.

Off-Road Emissions

As shown in **Table 4.10-6**, off-road GHG emissions would be generated from the use of a skid-steer loader while removing debris from the Tunnel Intake Structure. In total, this skid-steer loader would be responsible for 1.4 $MTCO_2e$ per year, which is approximately 2.9 percent of the project's total GHG emissions. It is anticipated that cleaner engine technologies or even electric skid-steer loaders will be available in the future, which would help reduce off-road GHG emissions. However, these potential future reductions were not taken into account in the modeling results shown in **Table 4.10-5**.

Energy Emissions

As shown in **Table 4.10-6**, emissions from electricity demand at the Tunnel Intake Structure would result in 0.2 $MTCO_2e$ per year, with an additional 3.0 $MTCO_2e$ per year from the loss of hydroelectric power production at Nacimiento Reservoir. In total, energy-related GHG emissions from the project would result in 3.2 $MTCO_2e$ per year, or about 6.8 percent of the project's total GHG emissions.

The Tunnel Intake Structure would be required to comply with the most current version of CALGreen at the time of permit issuance. Furthermore, the project would not include any natural gas connections or usage. Because the project's energy needs would be met with electricity, the project would be consistent with SB 100, which requires the use of 100-percent renewable energy by 2045. Emissions from energy consumption associated with the project would decrease each year, consistent with the trajectory toward 100-percent renewable sources by 2045.

Stationary-Source Emissions

As shown in **Table 4.10-6**, stationary sources (e.g., emergency diesel generator) would generate approximately 5.0 $MTCO_2e$ per year, which is approximately 10.4 percent of the project's total GHG emissions. It was assumed conservatively that use of this emergency generator would occur for approximately 4.2 hours per month, or 50 hours per year, consistent with the maximum allowable testing hours under SLOCAPCD Rule 431 and CARB regulations.

CEQA Conclusion

Construction and operation of the proposed project and Tunnel-Only Alternative would have significant impacts related to the generation of GHG emissions. Implementation of **MM GHG-1** and **MM GHG-2** would provide for GHG emission reductions through BMPs and other offsite measures, and **MM GHG-3** would offset residual construction and operational emissions through the purchase of GHG credits to net zero. The impact would be **less than significant with mitigation**.

Mitigation Measures

MM GHG-1: Construction BMPs and Other On-site Measures

MCWRA will require all construction contractors, as a condition of their contracts, to reduce construction-related GHG emissions by implementing the following construction BMPs:

- Ensure that alternative-fuel (e.g., biodiesel, electric) construction vehicles/equipment compose at least 10 percent of the fleet
- Use local building materials (sourced from within 100 miles of the planning area) for at least 10 percent of the project
- Minimize idling time by requiring equipment to shut down after 5 minutes when not in use (as required by the Airborne Toxics Control Measure [CCR Title 13 Section 2485]); provide clear signage for workers at the entrances to the site that states this requirement, and provide a plan for enforcement
- Maintain construction equipment in proper working condition and perform preventive maintenance; this includes complying with manufacturers' recommendations, replacing filters and mufflers, and maintaining engines and emissions systems
- Implement a tire inflation program on each jobsite to ensure that tires on equipment are correctly inflated; check tire inflation when equipment arrives on-site and every 2 weeks for equipment that remains on-site; check vehicles used for hauling materials off-site weekly for correct tire inflation
- Reduce electricity usage in temporary construction offices by installing high-efficiency lighting and requiring heating and cooling units to be Energy Star compliant; require contractors to implement procedures that call for turning off computers, lights, air conditioners, heaters, and other equipment each day at the close of business, wherever feasible
- Register diesel-fueled portable equipment with more than 25 horsepower under CARB's Portable Equipment Registration Program

MM GHG-2: Off-site Measures

For GHG emissions that cannot be reduced through **MM GHG-1** or other on-site measures, MCWRA will reduce emissions as much as possible through feasible off-site measures. Such strategies will reduce emissions from sources outside the study area that may or may not be associated with the proposed project. The measures that MCWRA will implement are as follows:

- MCWRA will increase the proportion of renewable energy purchased for project construction and operation. MCWRA will purchase 50 percent of project electricity from renewable, carbon-free sources starting in 2023. To fully reduce emissions from construction and operation, MCWRA will need to purchase 100 percent of its energy from carbon-free sources. If MCWRA determines that the purchase of 100 percent carbon-free energy for construction and/or operation is not feasible, carbon credits will be required to reduce the remaining emissions.

MM GHG-3: Offset Residual Construction GHG Emissions and Operational GHG Emissions through the Purchase of GHG Credits

Measure Performance Standards

For GHG emissions not avoided through **MM GHG-1** or offset through **MM GHG-2**, MCWRA will either:

1. Purchase GHG credits to offset total GHG emissions from construction and operations (50 years) prior to construction or
2. Purchase GHG credits on a rolling basis to always keep the project's net emissions at zero (e.g., offset emissions annually during construction and operations).

Emissions from construction and operation over a 50-year analysis period have been quantified as part of this EIR; such emissions total 8,166.9 $MTCO_2e$. This yields a reduction commitment of up to 8,167 $MTCO_2e$[7] to achieve no net increase in project-related GHG emissions. This performance standard may be achieved based on this conservative estimate through (a) a one-time upfront GHG credit purchase or (b) on an ongoing basis, based on updated emission calculations. The reduction commitment may therefore change over time.

Under approach (a), MCWRA would offset emissions prior to construction, based on the emissions estimate presented in this EIR (8,167 $MTCO_2e$). Although this inventory could be used exclusively to inform the required GHG credit commitment, the methods used to quantify emissions in the EIR were conservative. They also do not fully account for reductions that may be achieved by other required GHG mitigation or from future legislation. Accordingly, this EIR likely overestimates actual GHG emissions that would be generated by the project. MCWRA may therefore reanalyze GHG emissions and the GHG credit commitment.

Under approach (b), MCWRA may offset GHG emissions on a continual basis based on construction and operational activities. Prior to construction, MCWRA will quantify construction GHG emissions as well as operational project GHG emissions over a 50-year project life. Then MCRWA will offset GHG emissions on a rolling basis, always maintaining a no net increase in GHG emissions on an annual basis. Under this approach, MCWRA can re-quantify operational GHG emissions based on project operational data and newer modeling emission models and quantification methods every 5 years. Purchasing credits yearly and re-quantification of operational GHG emissions provides implementation and management flexibility. It also enhances quality and accuracy because each subsequent emissions inventory can better account for the latest regulations and reduction technologies. If MCWRA elects to use a yearly approach, they must identify the expected schedule for purchasing GHG credits, and the quantity of GHG credits remaining after each year needed to attain the performance standard of this measure. GHG credits for each year must be purchased by December 31 of the previous year.

[7] The total metric tons have been rounded up since carbon credits are purchased per ton of CO_2e.

Under either (a) or (b), any updated emissions analysis conducted for the project must be performed using emissions models and quantification methods available at the time of the reanalysis and approved by MBARD, SLOAPCD, CARB, or EPA. The analysis must use the latest available engineering data for the project, inclusive of any required mitigation measures identified in this EIR that will reduce GHG emissions. Any GHG reductions achieved by project-funded criteria pollutant reduction projects may be credited to the project as an offsite GHG reduction strategy and thereby subtracted from the GHG credit commitment total. Consistent with the methodology used in this EIR, emission factors may account for enacted regulations that influence future-year emissions intensities (e.g., fuel efficiency standards for on-road vehicles or electric vehicle requirements). MCWRA will retain a qualified professional firm where the supervising staff has at least 10 years of experience performing air quality and GHG analysis to conduct any revised emissions modeling. MCWRA will submit updates to the project emissions inventory and/or GHG credit commitment to Monterey and San Luis Obispo Counties for review and approval, which will include third-party review by a qualified consultant of the Counties' selection and subject to applicant reimbursement of consultant costs.

Accounting Protocols and Accredited Registration

All GHG credits must be created through a CARB-approved registry. These registries are currently the American Carbon Registry, Climate Action Reserve, and Verra, although CARB may accredit additional registries in the future. These registries use robust accounting protocols for all GHG credits created for their exchange, including the six currently approved CARB protocols. This mitigation measure specifically requires GHG credits created for the project originate from a CARB-approved protocol or a protocol that is equal to or more rigorous than CARB requirements under 17 CCR Section 95972. The selected protocol must demonstrate that the reduction of GHG emissions is real, additional, permanent, quantifiable, verifiable, and enforceable. Definitions of these terms from 17 CCR Section 95802(a) are provided as follows (the original text used the term *offse*t, which has been replaced in the text with the generic term *GHG credit* because this measure allows for use of both offsets and Forecasted Mitigation Units [FMUs]):

- **Real**: GHG reductions or GHG enhancements result from a demonstrable action or set of actions and are quantified using appropriate, accurate, and conservative methodologies that account for all GHG emissions sources, GHG sinks, and GHG reservoirs within the [GHG credit] project boundary and account for uncertainty and the potential for activity-shifting leakage and market-shifting leakage.
- **Additional**: GHG reductions or removals that exceed any GHG reduction or removals otherwise required by law, regulation, or legally binding mandate and would otherwise occur in a conservative business-as-usual scenario.
- **Permanent**: GHG reductions and GHG-removal enhancements are not reversible, or when GHG reductions and GHG removal enhancements may be reversible, that mechanisms are in place to replace any reversed GHG-emission reductions and GHG-removal enhancements to ensure that all credited reductions endure for at least 100 years.
- **Quantifiable**: The ability to accurately measure and calculate GHG reductions or GHG removal enhancements relative to a project baseline in a reliable and replicable manner for all GHG emission sources, GHG sinks, or GHG reservoirs included within the [GHG credit] project boundary, while accounting for uncertainty and activity-shifting leakage and market-shifting leakage.

- **Verifiable**: A [GHG credit] project report assertion is well documented and transparent such that it lends itself to an objective review by an accredited verification body.
- **Enforceable:** GHG reductions must be owned by a single entity and backed by a legal instrument or contract that defines exclusive ownership.

Geographic Prioritization

GHG credits from reduction projects in Monterey or San Luis Obispo County will be prioritized before projects in larger geographies (i.e., central coast of California, California, United States, international). MCWRA will inform brokers of the required geographic prioritization for the procurement of GHG credits. GHG credits from reduction projects identified in Monterey or San Luis Obispo County that are of equal or lesser cost compared to the settlement price of the latest cap-and-trade auction must be included in the transaction. GHG credits from reduction projects outside of the county may be purchased if adequate credits cannot be found in Monterey or San Luis Obispo County or if they exceed the price maximum identified in the latest cap-and-trade auction. The economic and geographic analysis undertaken to inform the selection of GHG credits must be provided by MCWRA to Monterey or San Luis Obispo County as part of the required documentation discussed below under *Implementation and Reporting*.

Types of GHG Credits

GHG credits may be in the form of GHG offsets for prior reductions of GHG emissions verified through protocols or FMUs for future committed GHG emissions meeting protocols. Because emissions reductions from GHG offsets have already occurred, their benefits are immediate and can be used to compensate for an equivalent quantity of project-generated emissions at any time. GHG credits from FMUs must be funded and implemented within 5 years of project GHG emissions to qualify as a GHG credit under this measure (i.e., there can only be a maximum of 5 years of lag time between project emissions and their real-world reductions through funding a FMU in advance and implementing the FMU on the ground). Any use of FMUs that results in a time lag between project emissions and their reduction by GHG credits from FMUs must be compensated through a prorated surcharge of additional FMUs proportional to the effect of the delay. Because emissions of CO_2 in the atmosphere reach their peak radiative forcing within 10 years, a surcharge of 10 percent for every year of lag between project emissions and their reduction through a FMU will be added to the GHG credit requirement (i.e., 1.10 FMUs would be required to mitigate 1 metric ton of project GHG emissions generated in the year prior to funding and implementation of the FMU).

Verification and Independent Review

All GHG credits will be verified by an independent verifier accredited by the American National Standards Institute National Accreditation Board (ANAB) or CARB, or an expert with equivalent qualifications to the extent necessary to assist with the verification. Following the standards and requirements established by the accreditation board (ANAB or CARB), the verifier will certify the following:

- GHG credits conform to a CARB-approved protocol or a protocol that is equal to or more rigorous than CARB requirements under 17 CCR Section 95972. Verification of the latter requires certification that the credits meet or exceed the standards in 17 CCR Section 95972.
- GHG credits are real, permanent, quantifiable, verifiable, enforceable, and additional, as defined in this measure under *Accounting Protocols and Accredited Registration.*

- GHG credits were purchased according to the geographic prioritization standard defined in this measure under *Geographic Prioritization*.

Verification of GHG offsets must occur as part of the certification process for compliance with the accounting protocol. Because FMUs are GHG credits that will result from future projects, additional verification must occur beyond initial certification is required. Verification for FMUs must include initial certification and independent verification every 5 years over the duration of the FMU generating the GHG credits. The verification will examine both the GHG credit realization on the ground and its progress toward delivering future GHG credits. MCWRA will retain an independent verifier meeting the qualifications described above to certify reductions achieved by FMUs are achieved following completion of the future reduction project.

Implementation and Reporting

MCWRA will either (1) purchase all GHG credits required to meet the GHG credit commitment; or (2) submit a phased GHG credit plan prior to construction. Under the phased GHG credit plan (2), GHG credits for each year must be purchased in advance of the subsequent year. MCWRA will retain the independent verifier to certify all GHG credits meet the standard of this measure, as discussed under *Verification and Independent Review*. Once certified, MCWRA will maintain copies of the retirement verification for all GHG credits purchased pursuant to this measure.

Impact GHG -2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs

2019 SLOCOG RTP and 2018 Monterey County RTP

As shown in **Table 4.10-6**, the majority of the project's operational emissions would be generated by mobile sources. These mobile emissions would come from routine maintenance activities required by the proposed project and Tunnel-Only Alternative. For the proposed project, this routine maintenance would require up to three workers to travel to the project site daily, which would result in up to six daily round trips, with fewer trips required for the Tunnel-Only Alternative. Maintenance required at the project site would occur semi-annually or annually; it could also occur less frequently. Such activities would generate a worst-case scenario of 24 round trips per day when they do occur. The minimal number of daily trips would not be anticipated to exceed the rate of population growth for the area or generate a significant increase in traffic compared with existing conditions.

Furthermore, the vehicles used would be required to comply with the federal CAFE standards, as well as the state's LCFS. Such standards would help lower future GHG emissions. The 2019 SLOCOG RTP and 2018 Monterey County RTP are long-term blueprints for the region's transportation system (SLOCOG 2019; TAMC 2018). The RTPs focus on transportation systems, with the goal of enhancing mobility, safety, access, environmental quality, and economic activities. The RTPs also include GHG emissions reduction goals that reflect reductions in VMT, consistent with SB 375. The proposed project would add six daily round trips but would not exceed the rate of population growth for the area or generate a significant increase in traffic compared with existing conditions. Project vehicles would be required to comply with the federal CAFE and state LCFS, which would help reduce GHG emissions. Furthermore, **MM GHG-1** through **MM GHG-3** would provide for no net increase in GHG emissions. Therefore, the proposed project and Tunnel-Only Alternative would not conflict with the 2019 SLOCOG RPT or 2018 Monterey County RTP.

SB 32 and AB 1279

SB 32 outlines the state's GHG emissions reduction target for 2030, and AB 1279 sets a more ambitious state goal of net-zero GHG emissions by 2045. CARB adopted the 2017 climate change scoping plan in November 2017 as a framework for achieving the 2030 GHG emissions reduction goal described in SB 32. The Draft 2022 Scoping addresses viable pathways for the State to achieve carbon neutrality by 2045.

2017 Scoping Plan and Draft 2022 Scoping Plan Consistency

Because of CARB's 2017 Scoping Plan, many of the reductions needed to meet 2030 targets will come from state regulations, including cap-and-trade requirements, the requirement for additional renewable energy sources in California's energy supply, updates to Title 24, and additional emissions reduction requirements for mobile sources. The 2017 Scoping Plan indicates that reductions will need to come in the form of changes pertaining to vehicle emissions and mileage standards, changes related to sources of electricity, increased energy efficiency at existing facilities, and state and local plans, policies, and regulations to lower GHG emissions relative to business-as-usual conditions. The 2017 Scoping Plan carries forward GHG emissions reduction measures from the previous iteration of the plan, as well as new measures to help achieve the state's 2030 targets across all sectors of the California economy, including transportation, energy, and industry.

The Draft 2022 Scoping Plan builds on the 2017 Scoping Plan goal of achieving carbon neutrality by 2045. Specifically, the Draft 2022 scoping Plan identifies a technologically feasible, cost-effective path to achieve carbon neutrality by 2045 or earlier, as well as relies on the most up to date science, including the need to deploy all viable tools to address the existential threat that climate change presents, including carbon capture and sequestration, as well a direct-air capture.

CEQA Conclusion

Operation of the proposed project and Tunnel-Only Alternative would have significant impacts related to a conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs. Implementation of **MM GHG-1, MM GHG-2,** and **MM GHG-3** would achieve no net increase in GHG emissions consistent with the goals of the 2017 Scoping Plan and the Draft 2022 Scoping Plan. The impact would be **less than significant with mitigation**.

4.10.6 Impact Summary

Table 4.10-7 provides a summary of the significance of impacts related to GHG emissions.

Table 4.10-7. Summary of Impacts on Greenhouse Gas Emissions

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact GHG-1: Generate a Substantial Amount of GHG Emissions			
Proposed Project	Construction: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant
	Operation: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant
Tunnel-Only Alternative	Construction: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant
	Operation: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant
Impact GHG-2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs			
Proposed Project	Construction: N/A	N/A	N/A
	Operation: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant
Tunnel-Only Alternative	Construction: N/A	N/A	N/A
	Operation: Significant	**MM GHG-1** **MM GHG-2** **MM GHG-3**	Less than significant

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4.11 Agricultural Resources

4.11.1 Overview

This section describes the environmental and regulatory settings for agricultural resources and discusses the potential for agricultural resources to be affected by construction and operation of the proposed project and the Tunnel-Only Alternative.

4.11.1.1 Study Area

The agricultural resources study area for direct impacts includes the following, plus a 200-foot buffer:

- The areas encompassing the project components, which include lands above the tunnel (see **Figures 2-4, 2-5, 2-9, and 2-13**).
- The area around San Antonio Reservoir that could be inundated following project implementation (see **Figures 2-17a through 2-17k**). This is understood to be the land area between:
  - The existing maximum WSE (780 feet); and
  - The with-project maximum WSE (787 feet).
- All areas related to construction of the project components (e.g., staging areas, access roads, soil disposal area) (see **Figures 2-4**, **2-5**, **2-9**, and **2-13**).

Given that Nacimiento and San Antonio Reservoirs serve as water sources to farmland in other portions of Monterey and San Luis Obispo Counties and provide flood protection to farmlands in the Salinas River Valley, in particular, farmland in these areas is examined for prospective indirect impacts, both adverse and beneficial.

4.11.1.2 Scoping Comment

MCWRA received one scoping comment related to agricultural resources. The comment expressed concern regarding the potential to affect grazing operations with the proposed maximum water surface elevation at San Antonio Reservoir, thereby reducing the acreage of land available for grazing.

MCWRA recognizes the local importance of grazing lands. As shown on **Figures 4.11-1a and 4.11-1b**, grazing land is the predominant land use near Nacimiento and San Antonio Reservoirs. MCWRA owns approximately 24,000 acres of land in and around Nacimiento and San Antonio Reservoirs, with approximately 16,000 acres of that land leased to ranchers for livestock grazing (MCWRA 2012; Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc. 2008). Approximately 10,000 of these acres are above the current high-water line of the reservoirs, and approximately 6,000 are below the high-water line (MCWRA 2012). However, as described further in Section 4.11.1.3, *Definitions*, the definition of *farmlands* under CEQA is established by the CEQA Statute and informed by the California Department of Conservation (DOC). Grazing land is not included in the CEQA definition of farmlands. Refer to Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* for a complete list of public comments received during the public scoping period.

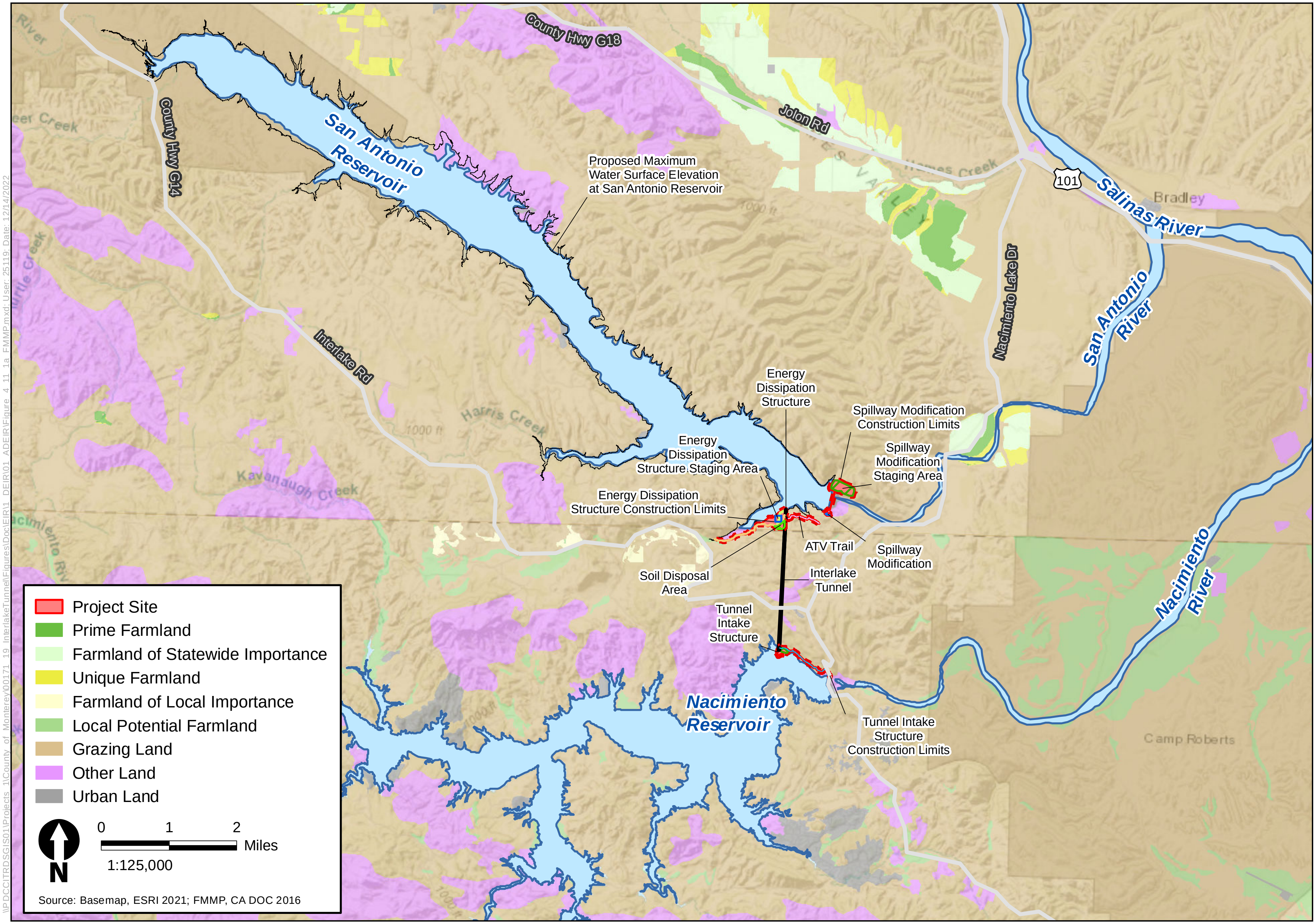

Figure 4.11-1a
Farmland Mapping and Monitoring Program Land Use Designations in the Study Area

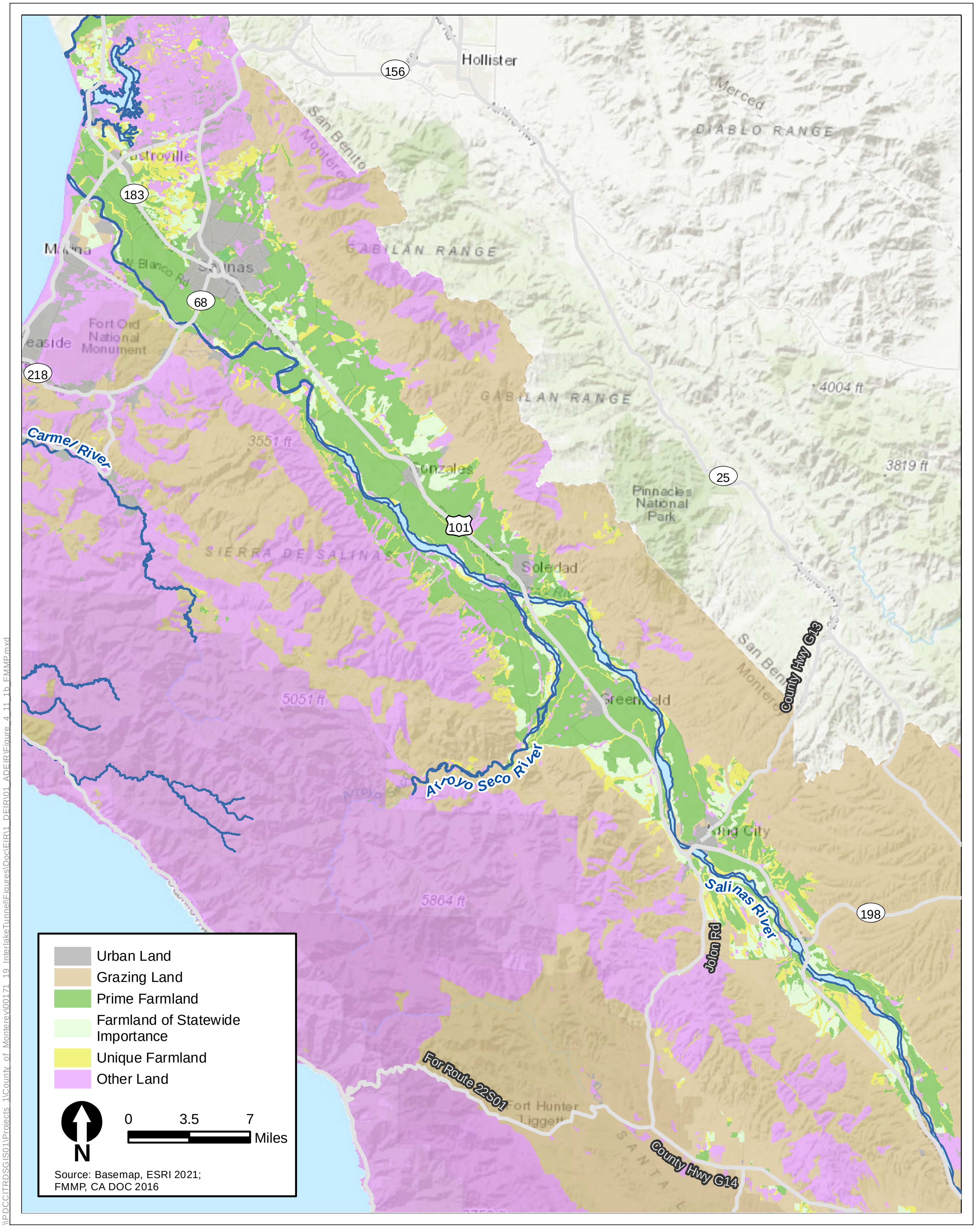

Figure 4.11-1b
Farmland Mapping and Monitoring Program
Land Use Designations in the Study Area

4.11.1.3 Definitions

Farmland

The California DOC Farmland Mapping and Monitoring Program (FMMP) identifies and maps agricultural land throughout much of California, including the entirety of the study area. Section 21060.1 of the CEQA Statute (Pub. Res. Code Sections 21000–21189) defines *agricultural land* as encompassing three FMMP-designated farmland categories, Prime Farmland, Farmland of Statewide Importance, and Unique Farmland.

- **Prime Farmland**: Farmland with the best combination of physical and chemical features for sustaining long-term agricultural production. These lands have the soil quality, growing season, and moisture supply needed to produce sustained high yields. Prime Farmland must have been used for irrigated agricultural production at some time during the 4 years before the FMMP's mapping date.
- **Farmland of Statewide Importance**: Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Farmland of Statewide Importance must have been used for irrigated agricultural production at some time during the 4 years before the FMMP's mapping date.
- **Unique Farmland**: Farmland with lesser-quality soils used for the production of the state's leading agricultural crops. These lands are usually irrigated but might include non-irrigated orchards or vineyards, as found in some climatic zones. Unique Farmland must have been cropped at some time during the 4 years before the FMMP's mapping date.

Land Under Williamson Act Contract

The Williamson Act is described in Section 4.11.2.2, *State Laws, Regulations, and Policies*. Lands that are under Williamson Act contract are protected from the conversion of agricultural land to nonagricultural uses in the short and medium term through lower property tax assessments to encourage landowners to keep the land in agricultural (or open space) use.

4.11.2 Regulatory Setting

4.11.2.1 Federal Laws, Regulations, and Policies

There are no federal laws, regulations, and policies related to agricultural resources that are applicable to the project.

4.11.2.2 State Laws, Regulations, and Policies

California Land Conservation Act of 1965 (Williamson Act)

The California Land Conservation Act of 1965 (commonly referred to as the Williamson Act) allows local governments to enter into contracts with private landowners for the purpose of preventing the conversion of agricultural land to nonagricultural uses. In exchange for restricting their property to agricultural or related open space use, landowners who enroll in Williamson Act contracts receive property tax assessments that are substantially lower than the market rate. **Figures 4.11-2a and 4.11-2b** depict the lands under Williamson Act contracts in the study area.

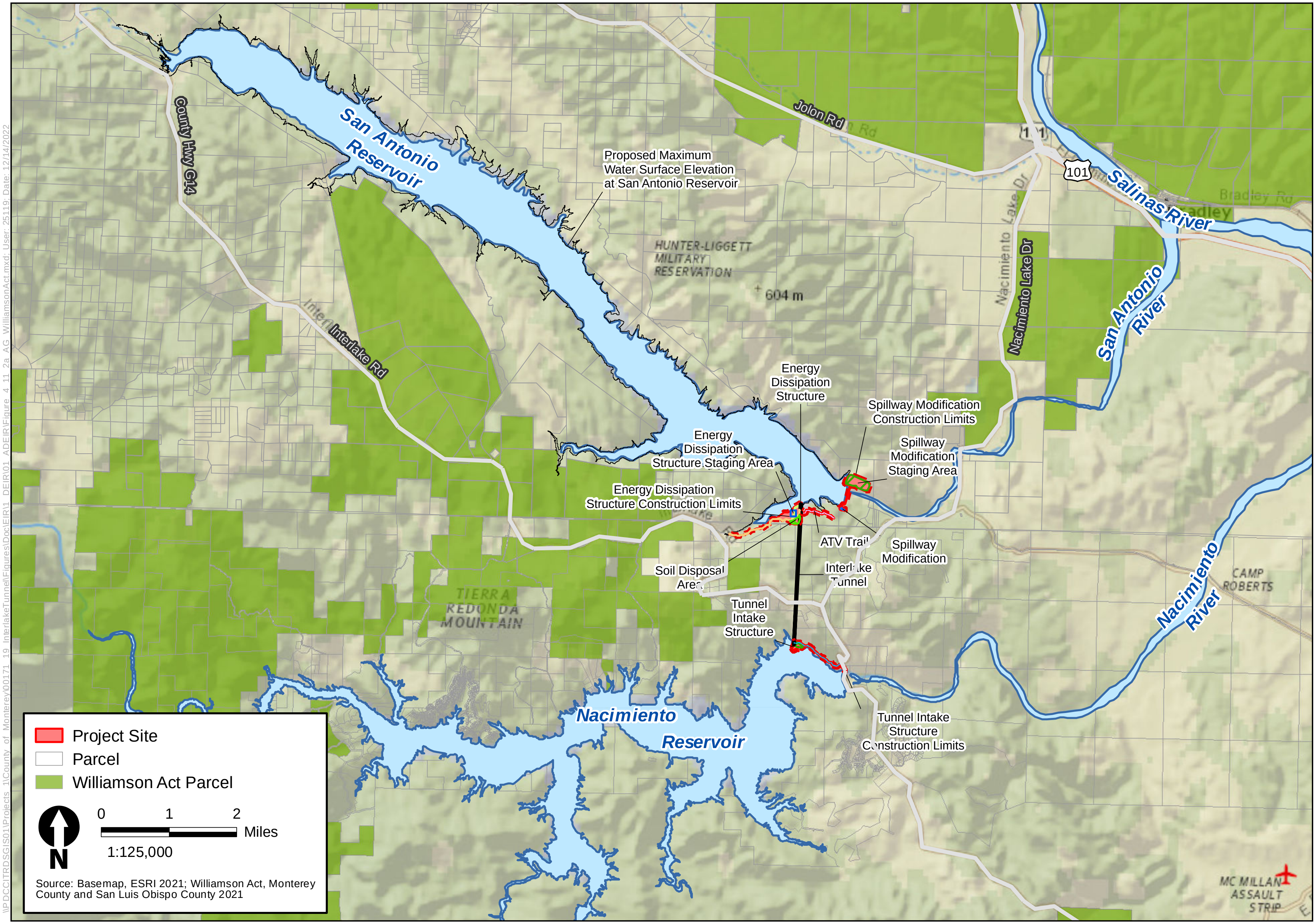

Figure 4.11-2a
Land under Williamson Act Contract in the Study Area

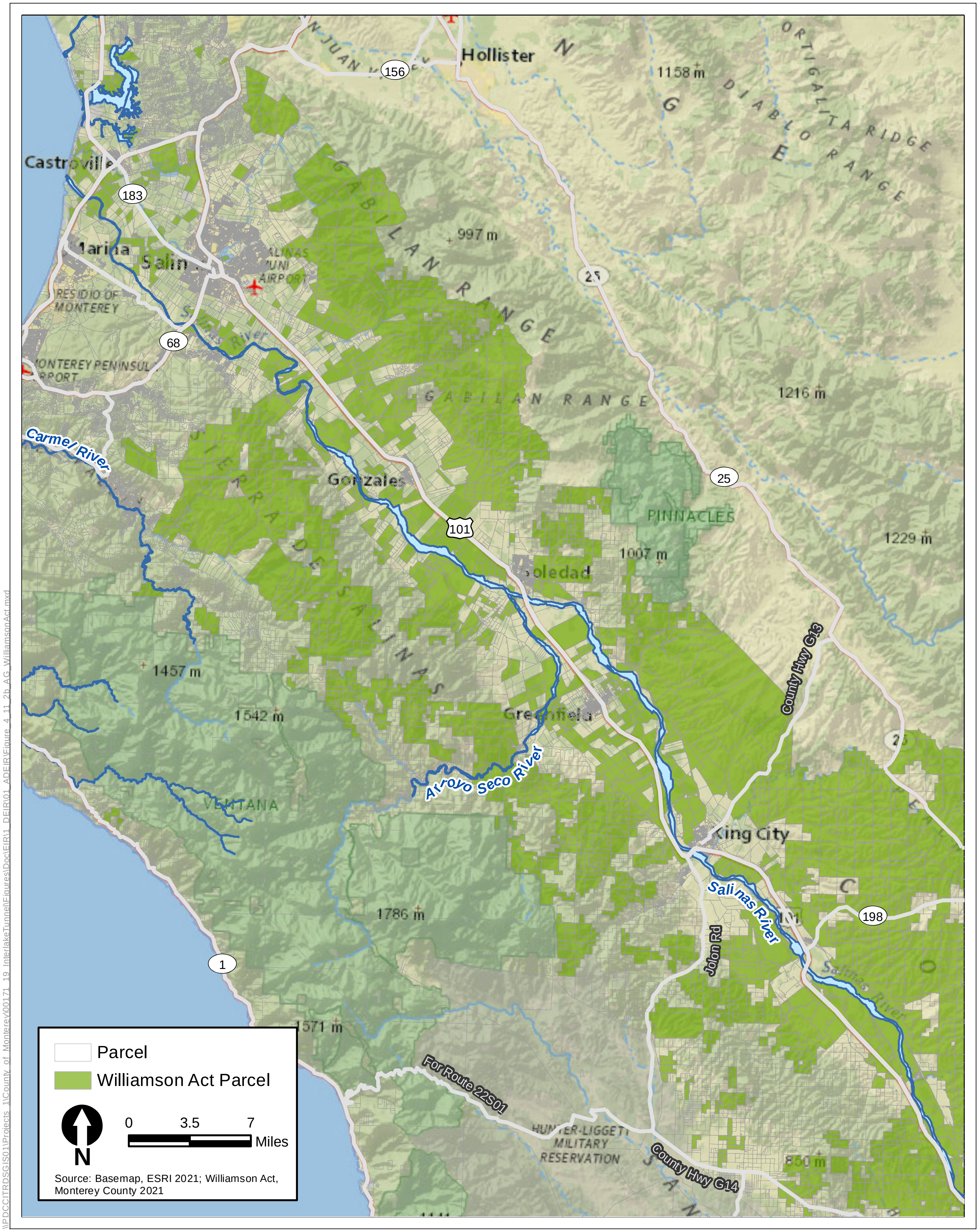

Figure 4.11-2b
Land under Williamson Act Contract in the Study Area

Farmland Mapping and Monitoring Program

The California DOC established the FMMP in 1982 as a non-regulatory program to provide a consistent and impartial analysis of agricultural land use and land use changes throughout California. Creation of the FMMP was supported by the legislature and a broad coalition of building, business, government, and conservation interests. The first Important Farmland Maps, produced in 1984, covered 30.3 million acres in 38 counties. This ongoing data set collects data every 2 years to understand changes in agricultural land in the state. The data set now spans more than 24 years and has expanded to 49.1 million acres as modern soil surveys are completed by the U.S. Department of Agriculture. The FMMP rates and classifies agricultural land according to soil quality, irrigation status, and other criteria. Definitions of the three categories of farmland that are relevant to CEQA are provided in Section 4.11.1.3, *Definitions*. In addition, **Figures 4.11-1a and 4.11-1b** depict FMMP classifications in the study area, as further discussed in Section 4.11.3.1, *Regional Agriculture*.

4.11.2.3 Local Laws, Regulations, and Policies

Monterey County General Plan

The Monterey County General Plan (2010), Agriculture Element (Monterey County 2010a), establishes policies directed at enhancing and supporting the long-term productivity and commercial viability of Monterey County's agricultural industry. The goal and policy that follow are applicable to the project. In addition, the Monterey County General Plan includes a land use plan for southern Monterey County (Monterey County General Plan Land Use Plan, South County) with several agricultural-related land use designations.

- **Goal AG-1**: Promote the long-term protection, conservation, and enhancement of productive and potentially productive agricultural land.
  - **Policy AG-1.1**: Land uses that would interfere with routine and ongoing agricultural operations on viable farmlands designated as Prime, of Statewide Importance, Unique, or of Local Importance shall be prohibited.

Monterey County General Plan Land Use Plan South County

The Monterey County General Plan Land Use Plan, South County (Monterey County 2012) indicates the following primarily agricultural land use designations:

- Farmlands (40–160 acres, minimum)
- Permanent Grazing (10–160 acres, minimum)
- Rural Grazing (10–160 acres, minimum)

Monterey County General Plan South County Area Plan

The Monterey County General Plan South County Area Plan Supplemental Policies (Monterey County 2010b) contain the following related to agriculture:

- **Policy SC-6.1:** Conservation of Irrigated and non-irrigated farmlands in South County Planning Area shall be encouraged.

Monterey County Right-to-Farm Ordinance

The Monterey County Code contains right-to-farm regulations (Title 16, Chapter 16.40) that were established to promote the long-term protection, conservation, and enhancement of both productive and potentially productive agricultural land and minimize potential conflicts between agricultural and nonagricultural land uses within Monterey County. It serves to provide increased protection from nuisance claims for agricultural operations that are conducted in accordance with all applicable laws and regulations and that are consistent with proper and accepted customs and practices.

Monterey County Zoning Ordinance

The Monterey County Code's zoning regulations (Section 21.08.010) establish four zoning districts where uses are primarily agricultural. These are Agricultural Industrial (AI), Farmlands (F), Rural Grazing (RG), and Permanent Grazing (PG). Section 21.08.020 also establishes a "Limited Agricultural" combining district. Agricultural uses (including grazing) are also conditionally allowable in other zoning districts. **Figure 4.11-3a** shows Monterey County zoning districts in the vicinity of the project site. **Figure 4.11-3b** shows zoning downstream of the project site.

San Antonio and Nacimiento Rivers Watershed Management Plan

The San Antonio and Nacimiento Rivers Watershed Management Plan (Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc. 2008) includes goals, objectives, and implementation approaches related to agriculture uses.

- **Goal**: Ensure that agriculture (farming and ranching) remains a vibrant and economically viable part of these watersheds.
    - **Objective 3**: Improve coordination and communication among regulatory entities, private, and public entities to manage land and water resources in an effective and environmentally conscious manner.

San Luis Obispo County

The San Luis Obispo County General Plan (2010) includes an (optional) Agriculture Element, intended to "identify those areas of the county with productive farms, ranches and soils, and establish goals, policies and implementation measures that will enable their long-term stability and productivity" (San Luis Obispo County General Plan 2010). The following goals and policies are applicable to the project:

- **Goal AG2**: Conserve Agricultural Resources. a. Maintain the agricultural land base of the county by clearly defining and identifying productive agricultural lands for long-term protection. b. Conserve the soil and water that are the vital components necessary for a successful agricultural industry in this county.
- **Goal AG3**: Protect Agricultural Lands. b. Maintain and protect agricultural lands from inappropriate conversion to nonagricultural uses. Establish criteria in this element and corresponding changes in the Land Use Element and Land Use Ordinance for when it is appropriate to convert land from agricultural to nonagricultural designations.

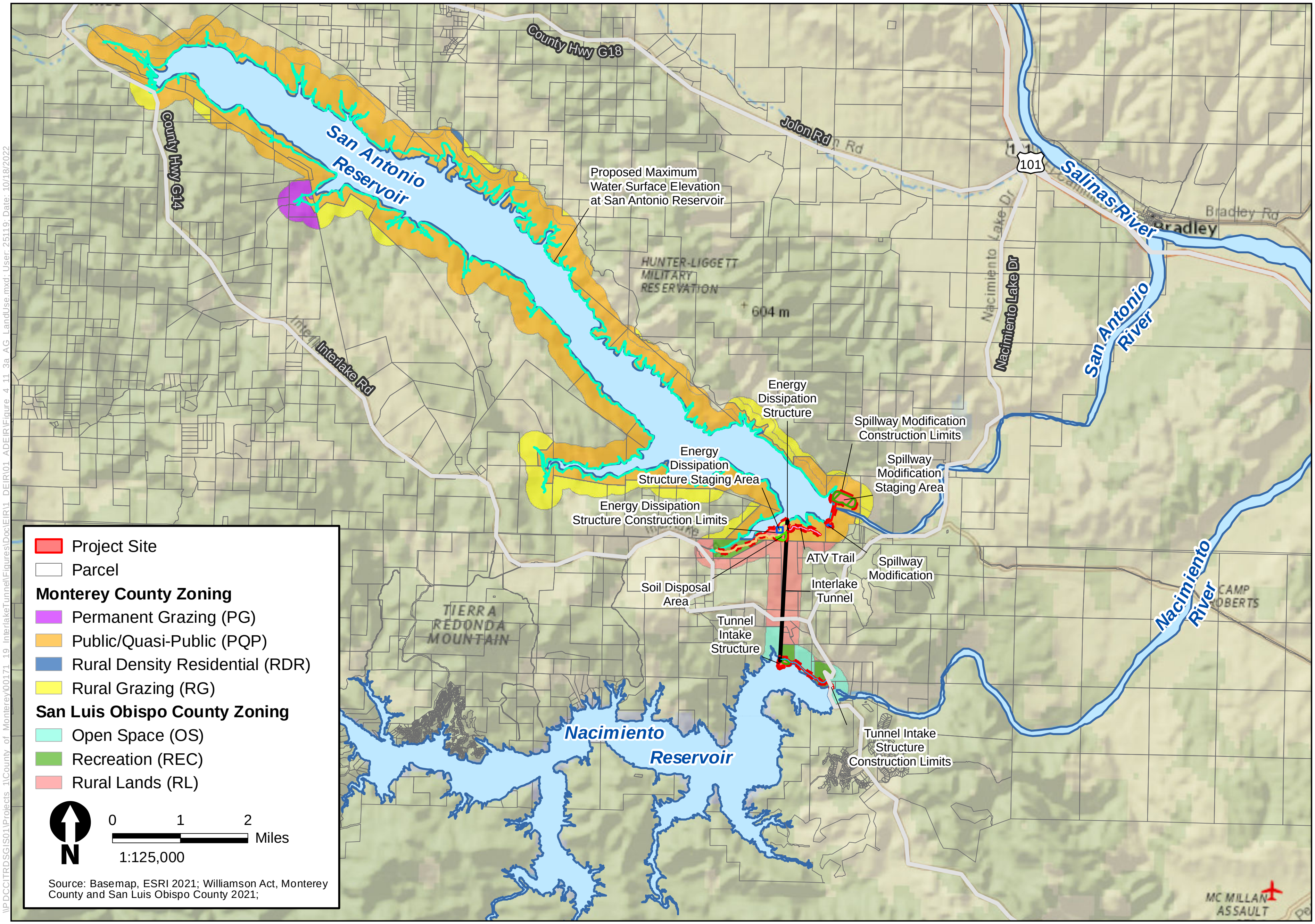

Figure 4.11-3a
Zoning Within 1/4 Mile of Project Area/Newly Inundated Areas

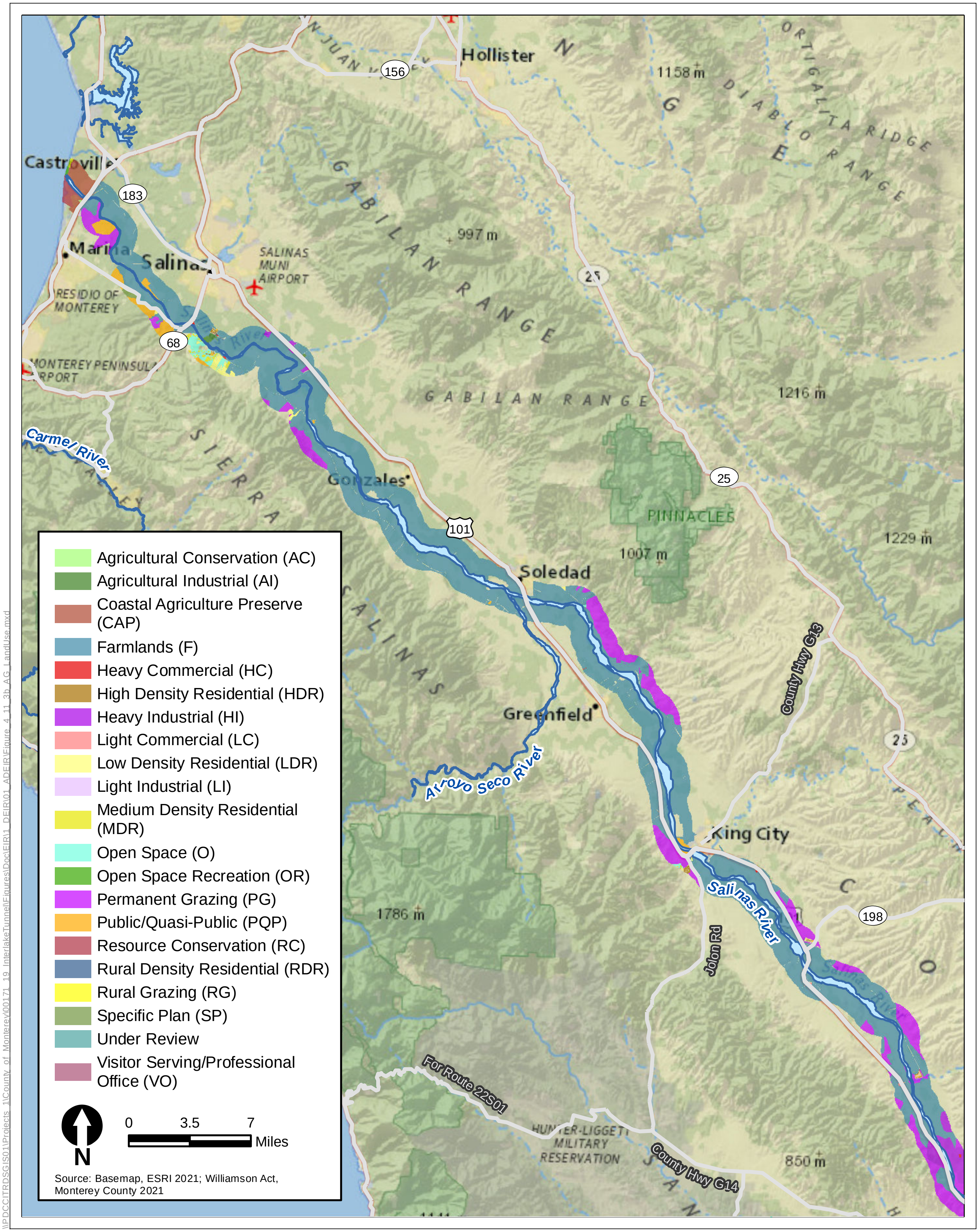

Figure 4.11-3b
Zoning Within 1 Mile of Salinas River

- **Policy AGP11**: Agricultural Water Supplies. Maintain water resources for production agriculture, both in quality and quantity, so as to prevent the loss of agriculture due to competition for water with urban and suburban development.
- **Policy AGP17**: Agricultural Buffers. a. Protect land designated Agriculture and other lands in production agriculture by using natural or man-made buffers where adjacent to nonagricultural land uses in accordance with the agricultural buffer policies adopted by the Board of Supervisor.
- **Policy AGP18**: Location of Improvements. Locate new buildings, access roads, and structures so as to protect agricultural land.
- **Policy AGP24**: Conversion of Agricultural Land.
- **Policy AGP24(a)**: Discourage the conversion of agricultural lands to nonagricultural uses through the following actions:
- **Policy AGP24(a)4**: Avoid locating new public facilities outside urban and village reserve lines unless they serve a rural function or there is no feasible alternative location within the urban and village reserve lines.

San Luis Obispo County General Land Use Plan

The County of San Luis Obispo Land Use Plan provides an "Agriculture" land use designation (San Luis Obispo County n.d.). Agricultural uses are potentially allowable in other county land use designations, including Rural Lands and Residential Rural.

San Luis Obispo County Right-to-Farm Ordinance

The San Luis Obispo County Code contains right-to-farm regulations (Title 5, Chapter 16) that were established to enhance and encourage agricultural operations. The purpose of the right-to-farm regulations is to reduce the loss of agricultural resources by clarifying the circumstances under which agricultural operations could be considered a nuisance and advise purchasers of residential and other property near agricultural operations of potential problems associated with the purchase of the property.

San Luis Obispo County Zoning Ordinance

Section 22.04.020 of the San Luis Obispo County Code establishes one zoning district (Agriculture [AG]) where agricultural uses are allowed. Other county zoning districts also allow agricultural uses with a permit or in certain circumstances. **Figures 4.11-3a and 4.11-3b** show San Luis Obispo County zoning districts in the study area.

4.11.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to agricultural resources is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.11.3 Environmental Setting

4.11.3.1 Regional Agriculture

Because of its fertile soils, the availability of surface water and groundwater for crop irrigation, and moderate climatic conditions, the Salinas River watershed in San Luis Obispo and Monterey Counties contains some of the most highly productive agricultural areas in the state. Soils on the floor of the Salinas River Valley are composed of deep, fertile alluvial deposits (MCWRA 2015).

The Salinas River Valley develops as the alluvial fan of the Salinas River expands from the foothills of the Sierra de Salinas/Santa Lucia Range to the west and the Cholame Hills/Gabilan Range to the east. The valley stretches northwest from the southern border of the county approximately 80 miles until reaching Monterey Bay and the Pacific Ocean. This oceanic interface permits cool, moist air to pass into the valley and cool-season vegetables, strawberries, wine grapes, and nursery crops to grow. In the southern portions of the valley, crops shift to warm-season vegetables (e.g., carrots, peppers, potatoes, tomatoes) as marine conditions begin to dissipate and warm, allowing year-round agricultural production in the Salinas River Valley.

The underlying aquifer of the Salinas River Valley is the main source of water for irrigated agriculture in the region. MCWRA operates Nacimiento and San Antonio Reservoirs for water supply/groundwater recharge purposes as well as flood management and other beneficial uses, including agriculture (MCWRA 2015; Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc. 2008). Therefore, the two reservoirs are central to agricultural productivity in the Salinas River Valley.

In the foothills near the two reservoirs, shallower soils support annual grasslands, widely used for grazing, and open space uses (MCWRA 2015; Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc. 2008). **Figure 4.11-1a** shows that no land surrounding the two reservoirs is designated as any class of Important Farmland. However, downstream, **Figure 4.11-1b** shows Important Farmland adjacent to the waterways.

4.11.3.2 Monterey County Agricultural Activities

Monterey County is home to some of the most valuable and sophisticated farming operations in the United States. According to the latest Census of Agriculture publication (U.S. Department of Agriculture [USDA] 2017), there are approximately 1,100 farms in the county. Per the Census of Agriculture, of Monterey County's total land area (about 3,280 square miles), more than 2,000 square miles (more than 60 percent) is used by farms (inclusive of grazing lands).

A significant portion of the farmland is located along the Salinas River Valley, in the heart of Monterey County. At an average size of approximately 1,200 acres, farming operations in Monterey County are more than two times larger than the national average (USDA 2017, 2020a).

In 2020, Monterey County produced just less than $4 billion in agricultural products, ranking it fourth among California counties (Monterey County Agricultural Commissioner's Office 2020). The Salinas River Valley is one of the top vegetable- and fruit-producing areas in the United States, supplying 70 percent of the nation's lettuce and as many as 150 varieties of fruits and vegetables (Landes 2019). Key crops in the northern Salinas River Valley include cool-season vegetables such as artichokes, broccoli, cauliflower, celery, Asian vegetables, lettuce, and spinach (University of California Agricultural Extension 2020). In the county's southern half, warm-season crops are grown, such as carrots, peppers, potatoes, and tomatoes. Monterey County also has a sizable wine grape industry. In addition, the county is responsible for approximately one-third of California's annual strawberry yield.

Beyond the direct value of agricultural products, agricultural production contributes substantially to the regional economy. This is because a broad cross section of industries in Monterey County serves agricultural interests.

4.11.3.3 San Luis Obispo County Agricultural Activities

San Luis Obispo County's agricultural production was valued at approximately $780 million in 2019, with wine grapes and strawberries its top two crops (San Luis Obispo County 2019). San Luis Obispo County's agricultural resources include its rich irrigated croplands in the Arroyo Grande and Cienega Valleys, vineyards in the Edna Valley and Paso Robles areas that produce award-winning wines, orchards in the Nipomo Valley, extensive dry-land farming operations in the North County, and cattle grazing lands in the coastal hills and interior valleys, including the Salinas Valley (San Luis Obispo County 2010).

According to the latest Census of Agriculture publication (USDA 2017), there are approximately 2,300 farms in San Luis Obispo County. Collectively, these farms cover more than 931,000 acres (about 1,450 square miles). Farmland (inclusive of grazing lands) accounts for about 44 percent of San Luis Obispo County's total land area.

The market value of county farmland, including buildings, averages $3 million per farm, compared with $0.6 million nationwide (USDA 2017, 2020b). The market value of San Luis Obispo County's agricultural operations was $9.8 million in 2019 (San Luis Obispo County 2019).

4.11.3.4 Williamson Act Lands

As shown on **Figure 4.11-2a**, numerous parcels located between Nacimiento and San Antonio Reservoirs are enrolled under the Williamson Act. As shown on **Figure 4.11-2a**, lands enrolled under the Williamson Act are outside the area of all proposed project features. No Williamson Act lands extend to the shore of San Antonio Reservoir. Other than a single parcel located southwest of San Antonio Reservoir, no Williamson Act lands would be affected by the change in maximum WSE associated with the proposed project. The proposed project would not affect Williamson Act lands downstream of the Nacimiento and San Antonio Reservoirs.

Williamson Act lands are also located downstream of the reservoirs (**Figure 4.11-2b**).

4.11.4 Impact Analysis

4.11.4.1 Methods for Evaluating Impacts

To determine whether the proposed project or the Tunnel-Only Alternative would result in any significant effects on agricultural resources, this analysis focuses on reasonably foreseeable effects of construction and operations relative to existing conditions. The analysis was based on FMMP spatial data provided by the California DOC for Monterey and San Luis Obispo Counties. County data were used to identify lands protected under Williamson Act and Farmland Security Zone contracts. Together, this information provided the basis for calculating acreages associated with direct and indirect impacts (e.g., temporary use of Important Farmland, permanent conversion of Important

Farmland, permanent creation of remnant impacts on Important Farmland) using geographic information system (GIS) software. Spatial data were used as the basis for mitigation acreage calculations (areas of direct impact as well as areas of indirect impact). The considered impacts included:

- Direct and adverse effects on Important Farmland would result if Important Farmland were temporarily occupied during construction and/or permanently incorporated into a project (and removed from agricultural use).
- Indirect and adverse effects on Important Farmland would result if a project were to sever parcels of Important Farmland, thereby creating remnant parcels that would be too small for economically viable agricultural production.
- Direct impacts on lands zoned for agricultural use would result if a project were to be built on land zoned for agricultural use and the zoning district does not approve the use associated with the project.
- Direct impacts on Williamson Act land would result if a parcel is converted from Williamson Act use to a project use.
- Indirect impacts on Williamson Act land would result if a project were to incorporate land from a parcel under a Williamson Act contract and result in the acreage of the remaining parcel falling below the county threshold for Williamson Act enrollment, thereby removing the subject parcel from a Williamson Act contract.

As described in Section 4.11.1.1, *Study Area*, farmland in the Salinas River Valley is examined for prospective indirect impacts on Important Farmland, which could occur if operations were to result in a change in the amount of water available for agricultural irrigation in the wider Salinas River Valley as well as other areas directly and indirectly served by the two-reservoir system. As discussed in the subsection titled *Hydrologic Modeling* in Section 2.5.1.1, *Operations,* the SVOM was used to estimate changes in reservoir releases for the proposed project and Tunnel-Only Alternative scenarios. That model output is used in this analysis to assess the indirect effects of such changes in reservoir releases on Important Farmland.

This analysis uses significance criteria that are based on the CEQA Guidelines, Appendix G. As noted in the 2016 Initial Study prepared for the project, there is no forestland in the study area. Therefore, that topic is not addressed in this section.

4.11.4.2 Criteria for Determining Significance

Appendix G of the CEQA Guidelines provides guidance for assessing whether a project would have significant impacts on the environment. Consistent with Appendix G, and in consideration of project-specific environmental conditions, MCWRA has determined that the project would have significant agricultural resources impacts if it would:

1. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.
2. Conflict with existing zoning for agricultural use or a Williamson Act contract.
3. Involve other changes in the existing environment that, because of their location or nature, could result in the conversion of Farmland to nonagricultural use.

4.11.4.3 Applicable Avoidance and Minimization Measures

No avoidance and minimization measures (AMMs) are proposed that pertain to agricultural resources.

4.11.4.4 Impacts and Mitigation Measures

Impact AG-1: Impacts from Direct or Indirect Conversion of Farmland to Nonagricultural Use[1]

Construction

No Important Farmland exists in the agricultural resources study area for direct impacts for either the proposed project or the Tunnel-Only Alternative. Accordingly, the proposed project or the Tunnel-Only Alternative would not directly result in temporary use or permanent conversion of Important Farmland. As noted in the discussion for Impact AG-2, *Impacts from Conflicts with Existing Agricultural Zoning or a Williamson Act Contract*, the proposed project or Tunnel-Only Alternative would occur on land where some grazing uses are allowable. However, no effects would result because grazing land is not considered Farmland for the purposes of this environmental document. Moreover, the duration of construction on parcels immediately adjacent to the two reservoirs would be limited.

Potential indirect impacts on Farmland would involve severing parcels of Important Farmland or creating remnant parcels that are unfarmable, decreasing the water supply to the extent that productivity would be affected over the long term, or causing long-term inundation of Farmland. Construction of the proposed project or Tunnel-Only Alternative would not result in these types of indirect impacts on Farmland.

Operation

No Important Farmland exists in the agricultural resources study area for direct impacts where new facilities would be constructed and operated. Therefore, no direct impacts on Important Farmland would occur during operation of either the proposed project or the Tunnel-Only Alternative.

The resource study area for indirect impacts includes Important Farmland in the Salinas River Valley. This Farmland is irrigated with water from the Salinas Valley Groundwater Basin, which, in turn, is influenced by releases from Nacimiento and San Antonio Reservoirs. MCWRA would continue to meet all minimum-flow requirements during operation of either the proposed project or Tunnel-Only Alternative. These minimum-flow requirements include releases that are needed to effectively manage groundwater recharge in the Salinas River Basin and provide for a sustainable and reliable supply of water of good quality for the region, particularly for agricultural uses. As depicted in **Tables 2-10 and 3-1**, the modeling conducted for the proposed project and Tunnel-Only Alternative indicates that operations are anticipated to reduce flood control releases. This, in effect, would result in the storage of water at San Antonio Reservoir that would otherwise be released during storm events and retaining it for use at other times of the year or in other water years, especially dry water years. Thus, operation of the proposed project and Tunnel-Only Alternative would increase the amount of water available for beneficial uses, including groundwater replenishment, thereby benefitting agricultural lands in the Salinas River Valley (i.e., beneficial indirect impact).

[1] Impact AG-1 addresses criteria 1 and 3 from the Appendix G checklist.

As shown in FMMP data for Monterey County, downstream of the two-reservoir system, extensive areas of Important Farmland extend to the banks of the Salinas River. The hydrologic modeling suggests that, compared to the modeled baseline, both the proposed project and the Tunnel-Only Alternative could decrease peak flows, and thus the area of inundated farmland, associated with small and moderate flood events more frequently on the Salinas River. The hydrologic modeling analysis shows decreases in peak flows on the lower Salinas River for the 1-year through 9.6-year events (see Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity,* and Table D-12 in Appendix D). For the 24-year event, peak flows for both the proposed project and the Tunnel-Only Alternative could be essentially unchanged from the modeled baseline. For an infrequently occurring 48-year event, the peak flow under both the proposed project and the Tunnel-Only Alternative could increase from 13 to 28 percent on the Salinas River downstream of the San Antonio River compared to the modeled baseline. If such increases in peak flows associated with a rare flood event were to occur, additional portions of Important Farmland could be inundated for relatively short periods of time (i.e., days) compared to existing conditions.

As also described in Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or Exceeding the Drainage System Capacity*, the modeled results provide an approximation of potential effects from operating the proposed project and Tunnel-Only Alternative, but they do not simulate historical conditions. The model is unable to capture the real-time operational decision-making that occurs to reduce the downstream effects of reservoir releases. Such real-time operational decision-making is anticipated to reflect a continuation of MCWRA's ongoing operational decision-making process and the ability of the reservoir operations managers to maximize water supply and minimize downstream effects. Although the ability to mitigate downstream flooding through a continuation of MCWRA's operational decision-making process is considerable under the proposed project and Tunnel-Only Alternative, the potential for such effects is, in an abundance of caution, considered to be substantial in light of the SVOM modeling results available for flood releases and the inherent uncertainty of hydrologic conditions in MCWRA's watersheds.

CEQA Conclusion

Construction of both the proposed project and Tunnel-Only Alternative would have **no impact** on the conversion of Farmland (direct or indirect) because none exists in the vicinity of the construction areas.

Operation of the proposed project or Tunnel-Only Alternative would have beneficial effects on Important Farmland in downstream portions of the study area associated with improved water supply conditions. The impact on downstream portions of the study area associated with changed flooding conditions following large storm events would be significant. **MM HYD-1** (see Section 4.1, *Hydrology and Water Resources*) would require MCWRA to actively manage Interlake Tunnel and reservoir operations through development and implementation of a detailed operational plan for controlling the rate and timing of Interlake Tunnel transfers during projected storm events. The operational plan would reduce the potential for downstream floodplain inundation as well as erosion and siltation changes associated with higher river flows. The impact would be **less than significant with mitigation**.

Impact AG-2: Impacts from Conflicts with Existing Agricultural Zoning or a Williamson Act Contract

Construction

As shown on **Figure 4.11-2a**, none of the components of the proposed project or Tunnel-Only Alternative would be located on (or below) lands that are under a Williamson Act contract. As shown on **Figure 4.11-3a**, the proposed project or Tunnel-Only Alternative would be constructed on lands with a variety of zoning designations. In San Luis Obispo County, aboveground construction would occur on lands with designated Open Space and Recreational zoning. Although San Luis Obispo County permits certain agricultural uses on designated Open Space land with permits, the primary allowable land uses within the resource study area for direct impacts are nonagricultural.

In Monterey County, aboveground construction would occur on lands with Public/Quasi Public zoning. Per Section 21.40 of the Monterey County Code, agricultural uses such as crop production and tree farming, cattle grazing, and sheep and goat operations are permitted in areas that are so zoned. However, Section 21.40 also expressly permits water system facilities, such as those proposed as part of the proposed project and Tunnel-Only Alternative.

Construction of either the proposed project or Tunnel-Only Alternative would result in a **less-than-significant impact** relative to conflicts with Williamson Act contracts and existing agricultural zoning.

Operation

Proposed Project

Modifications to the San Antonio Dam spillway would result in a proposed maximum WSE for San Antonio Reservoir that would be approximately 7 feet above the current maximum WSE. This proposed maximum WSE would have the potential to result in inundation on portions of two parcels that are enrolled in Williamson Act contracts. The total land area of the two parcels is approximately 1 acre and is entirely within existing MCWRA floodage easements. Other lands encumbered with such floodage easements are already subject to intermittent inundation by fluctuating reservoir levels. However, the two affected parcels would retain adequate acreage beyond the affected area such that their Williamson Act eligibility would not be affected.

In the regional area, including the Salinas River Valley, lands zoned for agricultural use and/or enrolled under the Williamson Act would realize beneficial effects from operations of both the proposed project and the Tunnel-Only Alternative. Both would increase the reliability of the regional water supply for irrigation, indirectly benefitting agricultural properties in the area that rely on irrigation water, as discussed under Impact AG-1, *Impacts from Direct or Indirect Conversion of Farmland to Nonagricultural Use*.

As also discussed under Impact AG-1, *Impacts from Direct or Indirect Conversion of Farmland to Nonagricultural Use*, the modeled results indicate that the proposed project could increase the risk of flooding during large storm events. Such an outcome could affect land along the Salinas River, which is bordered by extensive areas of land that have been zoned for agricultural use and/or enrolled under Williamson Act contracts. However, as also described in Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or Exceeding the Drainage System Capacity*, the modeled results provide an approximation of potential operational effects from operating the proposed project, but they do not simulate historical conditions. The model is unable to capture the real-time reservoir operational decision-making that occurs to reduce downstream effects of reservoir releases. Such real-time reservoir operational decision-making is anticipated to reflect a continuation of MCWRA's ongoing operational decision-making process and the ability of the reservoir operations managers to maximize water supply and minimize downstream effects. Although the ability to mitigate downstream flooding through a continuation of MCWRA's operational decision-making process is considerable under the proposed project, the potential for such effects is, in an abundance of caution, considered to be substantial in light of the SVOM modeling results available for flood releases and the inherent uncertainty of hydrologic conditions in MCWRA's watersheds.

Figure 4.11-3a shows existing zoning in the project vicinity. Similar to the discussion of Williamson Act properties above, once operational, the proposed project could increase the maximum WSE of San Antonio Reservoir. The areas that could be subject to inundation include areas where the Monterey County Code allows agricultural uses, whether by right or with a permit. Because these areas are within the floodage easements held by MCWRA, and because the expected duration of inundation would be brief, there would be no conflict with agricultural zoning.

Tunnel-Only Alternative

The maximum WSE of San Antonio Reservoir would not change because the Tunnel-Only Alternative would not involve increasing the San Antonio Dam spillway crest height., There would be no inundation at parcels that are enrolled under a Williamson Act contract.

As with the proposed project, operation of the Tunnel-Only Alternative would increase the reliability of the regional water supply for irrigation, indirectly benefitting agricultural properties in the area that rely on irrigation water. Furthermore, as with the proposed project, the modeled results indicate the Tunnel-Only Alternative could result in the potential for increased downstream flooding during large storm events on lands that have been zoned for agricultural use and/or enrolled under Williamson Act contracts.

CEQA Conclusions

Construction of the proposed project or Tunnel-Only Alternative would have **a less-than significant impact** on lands that have been zoned for agricultural use or lands that have been enrolled under Williamson Act contracts.

Operation of the proposed project would have **a less-than-significant impact** on lands that have been enrolled under the Williamson Act or zoned for agricultural use in the immediate vicinity of the two-reservoir system.

Operation of the Tunnel-Only Alternative would have **no impact** on lands that have been enrolled under the Williamson Act or zoned for agricultural use in the immediate vicinity of the two-reservoir system.

Operation of the proposed project and Tunnel-Only Alternative would have a significant impact on lands that have been enrolled under the Williamson Act or zoned for agricultural use in the region along the Salinas River Valley because of the potential for increased flooding during large storm events. **MM HYD-1** (see Section 4.1, *Hydrology and Water Resources*) would require MCWRA to actively manage Interlake Tunnel and reservoir operations through development and implementation of a detailed operational plan for controlling the rate and timing of Interlake Tunnel transfers during projected storm events. The operational plan would reduce the potential for downstream floodplain inundation as well as erosion and siltation changes associated with higher river flows. The impact would be **less than significant with mitigation**.

4.11.5 Impact Summary

Table 4.11-1 provides a summary of the significance of potential impacts on agricultural resources.

Table 4.11-1. Summary of Impacts on Agricultural Resources

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact AG-1: Impacts from Direct or Indirect Conversion of Farmland to Nonagricultural Use			
Proposed Project	Construction: No impact	N/A	N/A
	Operation: Significant	**MM HYD-1**	Less than significant
Tunnel-Only Alternative	Construction: No impact	N/A	N/A
	Operation: Significant	**MM HYD-1**	Less than significant
Impact AG-2: Impacts from Conflicts with Existing Agricultural Zoning or a Williamson Act Contract			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Significant	**MM HYD-1**	Less than significant
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Significant	**MM HYD-1**	Less than significant

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4.12 Recreation

4.12.1 Overview

This section describes the environmental and regulatory setting for recreational activities and facilities and discusses the potential for such activities and facilities to be affected by construction and operation of the proposed project or the Tunnel-Only Alternative.

4.12.1.1 Study Area

The study area for recreational impacts consists of the following:

- All areas related to construction of the project components (e.g., staging areas, access roads, the soil disposal area) (see **Figures 2-4, 2-5, 2-9, and 2-13**)
- The area around San Antonio Reservoir that could be inundated following project implementation (see **Figures 2-17a through 2-17k**); this is understood to be the land area between:
  - The existing maximum WSE) (780 feet)
  - The maximum with-project WSE (787 feet)
- Nacimiento Reservoir up to the existing maximum WSE (800 feet)
- Recreational facilities (e.g., boat ramps, campsites) and facilities that support water-based recreation at Nacimiento Reservoir and San Antonio Reservoir (e.g., restrooms, parking lots)

4.12.1.2 Scoping Comments

Table 4.12-1 summarizes the scoping comments received regarding recreation resource impacts and identifies how and where these comments have been addressed. Refer to Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* for a complete list of comments received during the public scoping period.

4.12.2 Regulatory Setting

4.12.2.1 Federal Laws, Regulations, and Policies

There are no federal laws, regulations, or policies related to recreation that are applicable to the proposed project or Tunnel-Only Alternative.

4.12.2.2 State Laws, Regulations, and Policies

California Department of Fish and Wildlife

CDFW issues fishing licenses. A fishing license is required to take any kind of fish, mollusk, invertebrate, amphibian, or crustacean in California, except when taken from a public pier in ocean or bay waters.

Table 4.12-1. Scoping Comments Related to Recreation Resource Impacts

Summary of Comment	Location Comment is Addressed
Concern over loss of water access from Nacimiento Reservoir communities (Dietz, Gasperson, Norton)	Impact REC-1, *Deterioration of Recreational Facilities Resulting from Project-Related Intensification of Use*, evaluates the potential displacement of recreational uses.
Effects on monetary income due to the proposed project's effects on fishing, boating, and tourism (Norton)	CEQA does not require an analysis of economic effects, and such an analysis has not been included in this EIR. However, an analysis of impacts on recreational activities, including fishing, boating, and related tourism, is provided in both impact discussions in this section to assist the reader in understanding potential effects from construction and operation of the proposed project and the Tunnel-Only Alternative.
Impacts on recreation-related beneficial uses, including fishing, should be addressed in the EIR (Bettuomini, Blois, CDFW, Tri-Counties Club)	Impact REC-1, *Deterioration of Recreational Facilities Resulting from Project-Related Intensification of Use*, evaluates potential impacts related to the demand for recreational facilities and the corresponding potential for deterioration of such facilities. Section 4.3, *Biological Resources*, addresses potential impacts on game-fish species.
Potential conflicts with established recreational opportunities at Nacimiento and San Antonio Reservoirs should be described in the EIR (San Luis Obispo County Public Works)	Impact REC-1, *Deterioration of Recreational Facilities Resulting from Project-Related Intensification of Use*, evaluates potential impacts related to the demand for recreational facilities and the corresponding potential for deterioration of associated facilities.

CDFW = California Department of Fish and Wildlife; CEQA = California Environmental Quality Act; EIR = environmental impact report

4.12.2.3 Local Laws, Regulations, and Policies

Monterey County General Plan

The Public Service Element of the Monterey County General Plan contains policies pertaining to parks and recreation, directed at ensuring access to parks and recreational resources and balancing recreational use with other uses. General plan policies applicable to the proposed project and Tunnel-Only Alternative include:

- **Policy LU-7.1** Priorities for multiple uses of the major water bodies shall be established. Recreation shall be secondary to water supply, flood control and hydroelectric generation.
- **Policy LU-7.2** Compatibility between multiple uses of major water bodies and surrounding land uses shall be considered.
- **Policy PS-11.3** In cooperation with other park and public lands agencies, an equitable geographic distribution of neighborhood, community, and regional park facilities commensurate with the needs of the surrounding residents shall be established.

- **Policy PS-11.4** Park development that includes interpretive and recreational services, including youth camping, shall be encouraged. Maintenance of existing facilities shall be prioritized.
- **Policy PS-11.5** The County shall encourage full utilization of park and recreation facilities owned and/or operated by other agencies.
- **Policy PS-11.7** Accessibility, in terms of affordability, physical access and hours of operation of the County's park and recreation facilities shall be assured to the maximum extent practicable.

The Monterey County General Plan's South County Area Plan contains the following policy relevant to parks and recreation:

- **Policy SC-5.5:** Commercial recreational facilities for boating, water sports, camping, and similar uses at any proposed park site shall be of moderate size, compatible with surrounding uses, and consistent with all resource protection and hazard avoidance policies.

Monterey County Code of Ordinances

Title 14 of the Monterey County Code of Ordinances contains regulations pertaining to parks in Monterey County. The regulations cover park permits, fees, and general rules. Ordinances specifically relevant to Nacimiento Reservoir and San Antonio Reservoir concern permit requirements, boating and watersport requirements and limitations, fishing regulations, and recreational safety requirements.

San Luis Obispo County General Plan

The Recreation Element and Conservation and Open Space Element of the San Luis Obispo County General Plan contain goals and policies pertaining to parks and recreation, including the following:

- **Recreation Element**
    - **Goal 1:** An equitable and quality public park system within San Luis Obispo County.
        - **Policy 2.1**: Provide parks that are aesthetic and consistent with community needs.
    - **Goal 2**: Recreation that serves the county's residents and visitors, various age groups, and varying economic situations and physical abilities.
        - **Policy 3.2**: Provide recreation at the county's parks consistent with community needs.
- **Conservation and Open Space Element**
    - **Goal 1:** Important open space areas will be identified, protected, sustained, and, where necessary, restored and reclaimed.
        - **Policy OS 1.1: Future Open Space Protection**. Continue to identify and protect open space resources with the following characteristics:
            - Recreation areas
            - Ecosystems and environmentally sensitive resources such as natural areas; preserves; streams and riparian vegetation; unique, sensitive habitat; natural communities; and significant marine resources
            - Archaeological, cultural, and historical resources
            - Scenic areas

- Hazard areas
- Areas with rural character

San Luis Obispo County Code of Ordinances

Title 11, Chapter 11, of the San Luis Obispo County Code of Ordinances contains regulations regarding the appropriate use of recreational areas associated with Nacimiento Reservoir. The stated intent is to advance public health, safety, and welfare at the reservoir. Specifically, the code is concerned with the protection and preservation of property and natural resources as well as the general safety and welfare of the public. In addition, the code contains regulations pertaining to recreational access, including requirements regarding recreationalist safety and guidelines for allowable uses involving boats and other vessels.

Nacimiento Dam Operation Policy. The requirements apply to multiple purposes, including recreation. The policy states that the minimum elevation at which most boat ramps around the reservoir are operational is 730 feet. Furthermore, the policy sets a goal that calls for release decisions to consider this elevation during the reservoir's peak recreational season (i.e., between May and September).

4.12.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to recreation is provided in Appendix C, *Consistency with Applicable Plan and Policies for Hydrology and Water Resources*.

4.12.3 Environmental Setting

The following information sources and activities were used to identify recreational resources occurring or potentially occurring in the study area.

- *2002 Salinas Valley Water Project EIR/EIS*
- *2007 San Antonio and Nacimiento Rivers Watershed Management Plan EIR*
- *2019 Draft Monterey County Lakes Operation Plan*

4.12.3.1 Nacimiento Reservoir

Nacimiento Reservoir is located in northern San Luis Obispo County. The annual average water level at Nacimiento Reservoir, per the baseline modeling scenario (not recorded water levels),[1] is 753.5 feet. Across all water-year types, the range in average monthly water elevations is between 740.0 and 768.9 feet throughout the water year (MCWRA 2021).

The reservoir provides waterskiing, wakeboarding, jet skiing, wake-surfing, kayaking, paddle boarding, and other water-related activities. Fishing is also popular at Nacimiento Reservoir. Largemouth bass is one of the primary sport species. White bass is also found in Nacimiento Reservoir. Because white bass compete with striped bass and other fish, strict rules prohibit the

[1] The hydrologic modeling tools employed in this EIR are discussed in Section 2.5.1.1, *Operations*.

transport of live white bass; white bass must be immediately killed or, if caught in Nacimiento Reservoir, returned to the reservoir. The peak recreational season at Nacimiento Reservoir is between Memorial Day and Labor Day.

Although physically within San Luis Obispo County, MCWRA owns and maintains Nacimiento Reservoir. Lake Nacimiento Resort, on the east side of the reservoir, is operated by Urban Park Concessionaires (operating as the Monterey Lakes Recreation Company) (see **Figure 4.12-1**). Lake Nacimiento Resort offers cabins, lodging and camping facilities, and self-contained recreational vehicles (RVs), which can be rented. Camping facilities within the resort include 488 campsites and seven restroom buildings (six of which contain shower facilities). These are spread among the following areas: Pine Knoll Campground, Oak Knoll Campground, Quail's Roost Campground, Eagle's Ridge Campground, Rocky Point Campground, and Sandy Point Campground. In addition, campsites along the shoreline near the Pine Knoll Campground are seasonally available for use when water levels are low. The largest campground is Pine Knoll Campground, with 333 campsites and two restroom and shower facilities. Oak Knoll Campground, with its 40 campsites, is intended primarily for RV use. Quail's Roost Campground has 58 campsites and one restroom and shower facility. Eagle's Ridge has 31 campsites as well as portable restroom facilities. Rocky Canyon Campground has 14 campsites, including seven group sites, and one restroom and shower facility. Sandy Point Campground has 12 single and group sites and one restroom and shower facility. The park's campsites offer water, sewer, and electric service as well as facilities for tent camping (PWFP 2019).

Other facilities operated by Lake Nacimiento Resort at the reservoir include 19 lodge units, which are generally in poor condition and in need of repair; they will most likely be taken out of service in the near future. Visitors to Nacimiento Reservoir can rent RVs as well as boats from the resort's rental fleet. The resort's marina area includes a year-round general store and a seasonal restaurant. A number of administrative facilities serve the resort, including an office building and a ranger station (PWFP 2019).

Some of the campgrounds at Lake Nacimiento Resort also have boat launches. Outside Lake Nacimiento Resort, a boat launch is located at the end of the Nacimiento Reservoir Overflow/Day Use Ramp Road; it has been closed to the public in recent years (see **Figure 4.12-1**).

In addition to publicly available facilities, there are several privately owned recreational facilities along Nacimiento Reservoir's shoreline. For homeowners in the Heritage Ranch development, various recreational facilities are available, including a marina, campsites, swimming pools, a tennis courts, and other amenities. The Oak Shores development also provides campsites and a marina with approximately 100 boat slips. These facilities are privately owned and available only to property owners and their guests. In addition, Tri-Counties Boat and Ski Club, Cal-Shasta Boat and Ski Club, South Shore Village, North Shore Boat and Ski Club, and individual lakeshore owners provide approximately 300 private dock slips.

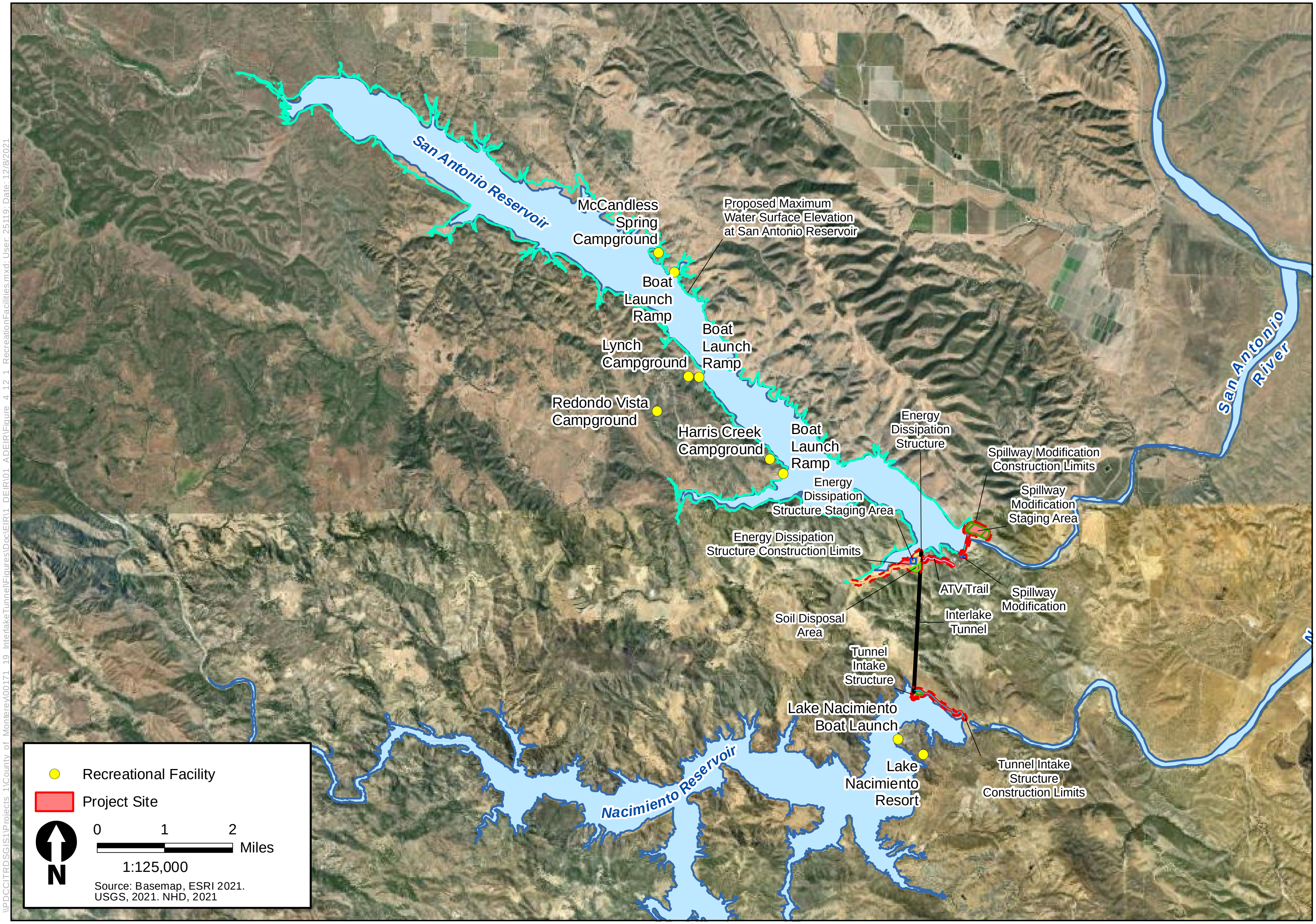

Figure 4.12-1
Recreation Facilities

4.12.3.2 San Antonio Reservoir

San Antonio Reservoir, a freshwater recreation area located in southern Monterey County, is managed by Monterey County Public Works, Facilities & Parks. The annual average water level at San Antonio Reservoir, per the baseline modeling scenario (not recorded water levels),[2] is 704.4 feet. Across all water-year types, the range in average monthly water elevations throughout a water year is between 687.9 and 717.9 feet (MCWRA 2021).

San Antonio Reservoir offers various recreational activities, including picnicking, hiking, swimming, boating, and water-skiing. As of summer 2021, the park was open year-round, but in recent years, portions of the park have been temporarily closed due to accessibility constraints resulting from low water levels (Decker pers. comm.). Fishing is popular at San Antonio Reservoir. A mix of introduced sport fish (e.g., largemouth and smallmouth bass) and native fish (e.g., Monterey hitch) can be found in the reservoir. Recreational facilities at San Antonio Reservoir are generally categorized into south-shore and north-shore facilities.

- The south shore contains three primary camping areas with campsites and restroom and shower facilities. The primary recreational areas on the south shore are the Redonda Vista Campground, the Lynch Creek Campground, and the Harris Creek Campground.
- The Redonda Vista campground includes restroom and shower facilities as well as rental spaces for events.
- The Lynch Creek area includes modular rentable lodges, a campground, restroom buildings, a playground, a general store/café (not currently in operation), offices, a gas station, a small maintenance shop, boat parking, a fish cleaning station, long-term boat storage, and a launch ramp. The Lynch Creek area also includes a beach area that is available for day use and a youth camp with restrooms and a kitchen building.
- Harris Creek Campground includes campsites, restroom buildings, and shower facilities. This campground also includes a day use area, launch ramp, boat parking area, a playground, and RV facilities (PWFP 2019).

The north shore, which is less developed and has fewer recreational facilities than the south shore, has campsites, two launch ramps, boat parking areas, and both shower and restroom facilities. Launch ramps on the north shore are at a higher elevation than the launch ramps on the south shore and therefore more prone to becoming inoperable when water levels are low. Additional recreational facilities in the vicinity of San Antonio Reservoir's north shore include the Los Robles Equestrian Area and the McCandless Day Use Area. The Los Robles Equestrian Area is at the entrance to the park area, set back approximately 0.3 mile from the reservoir's shoreline. The McCandless Day Use Area serves as a family gathering area, with barbecue facilities, picnic tables, and an irrigated lawn space. There are shower and restroom facilities in this day use area (PWFP 2019).

There are also abandoned recreational facilities at San Antonio Reservoir, including a parking lot, fish cleaning station, and restroom, that are no longer available for public use. These facilities are not discussed further in this section.

[2] The hydrologic modeling tools employed in this EIR are discussed in Section 2.5.1.1, *Operations*.

4.12.4 Impact Analysis

4.12.4.1 Methods for Evaluating Impacts

To determine whether the proposed project and the Tunnel-Only Alternative would result in significant effects on recreational resources, this analysis focuses on the reasonably foreseeable direct and indirect effects of construction and operations relative to baseline conditions. The evaluation of impacts is based on the potential to result in deterioration with respect to recreational facilities or a need for the construction or expansion of recreational facilities, which could have significant environmental impacts. Generally, construction activities could result in a short-term loss of recreational access at the project site, causing displacement of this recreational use to other facilities.

A long-term effect could occur if recreational opportunities were eliminated or facilities were physically affected by operation of the proposed project or Tunnel-Only Alternative. The primary impacts of the proposed project and Tunnel-Only Alternative on recreation would result from changes in reservoir water levels. Potential impacts related to changes in reservoir water levels were evaluated using results from the SVOM. The modeling results included projections for monthly and annual average water levels in normal, dry, and wet years at both reservoirs under the proposed project and Tunnel-Only Alternative (MCWRA 2021). The model is discussed further in Section 2.5.1.1, *Operations*.

Impacts related to recreation could also occur if operation of the proposed project or Tunnel-Only Alternative were to affect fish populations to a degree that would substantially increase recreational use and cause accelerated deterioration of recreational facilities or, alternatively, decrease recreational use and shift that use to other facilities, which could experience accelerated deterioration.

The analysis presented in Section 4.3, *Biological Resources*, suggests that Nacimiento Reservoir could see a decrease in fish productivity and spawning success under the proposed project and Tunnel-Only Alternative; San Antonio Reservoir would see an increase in fish productivity but a decrease in spawning success under the proposed project and Tunnel-Only Alternative. However, changes in water levels and reservoir drawdowns are not direct indicators of fish populations; rather, they indicate potential habitat and spawning success. In addition, because the fish production index is based primarily on the water level fluctuations projected in hydrologic modeling results, which are not reflective of actual MCWRA operations, the potential implications of changes in fish productivity and their effects on recreation are captured in the analysis of potential impacts from changed water levels. For these reasons, this analysis does not discuss potential impacts specifically related to changes in fish productivity.

The analysis uses project-specific significance criteria, based on the CEQA Appendix G Guidelines.

4.12.4.2 Criteria for Determining Significance

CEQA Appendix G Guidelines provide guidance on assessing whether a project would have significant impacts on the environment. Consistent with Appendix G and consideration of project-specific environmental conditions, MCWRA has determined that the project would have a significant recreation impact if it would:

a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

4.12.4.3 Avoidance and Minimization Measures

No AMMs related to recreation have been proposed.

4.12.4.4 Impacts and Mitigation Measures

Impact REC-1: Deterioration of Recreational Facilities Resulting from Project-Related Intensification of Use

Construction

Construction of the proposed project and Tunnel-Only Alternative could potentially limit existing recreational uses in active work areas such that demand for recreational uses would be diverted/focused to other facilities. In particular, construction-related noise, vibration, and dust may temporarily displace or otherwise preclude use of certain recreational facilities over the extent of construction. This could in turn increase the frequency or intensity of use at other recreational facilities, resulting in their accelerated deterioration.

Although construction of the proposed project or the Tunnel-Only Alternative could temporarily interrupt certain recreational activities at Nacimiento and San Antonio Reservoirs, such interruptions would be limited in nature and short term in duration. They would not limit recreational opportunities in the area and, as a result, would not increase demand for other recreational facilities, which could hasten deterioration at those facilities.

Operation

Both the proposed project and the Tunnel-Only Alternative are intended to capture and store water that might otherwise be released from Nacimiento Dam by way of the low-level outlet, high-level outlet, and/or the spillway crest; accordingly, operation of either alternative would result in periodic changes to surface water elevations at both reservoirs. However, to minimize the impact of tunnel transfers and reservoir releases on reservoir levels during peak recreational periods, MCWRA would, to the extent possible, adjust transfers and releases to equalize the rate of decline in elevation between the reservoirs during the Memorial Day, Fourth of July, and Labor Day holiday periods. Nonetheless, changed water levels could have the following impacts on recreational facilities at the reservoirs:

- Decreased water levels at Nacimiento Reservoir could occasionally decrease use of some recreational facilities surrounding the reservoir, thereby displacing recreational uses to alternate facilities and resulting in increased potential for physical deterioration.
- Increased water levels at San Antonio Reservoir could result in increased use of recreational facilities surrounding the reservoir that had been underutilized because of low water levels; these facilities could see increased usage with a rise in maximum WSE. Increased water levels could also inundate some existing recreational facilities within the new maximum WSE of 787 feet, thereby discouraging recreational use and increasing the use (and deterioration) of other related facilities. However, as explained in the following sections, the infrequent inundation events projected at San Antonio Reservoir under the proposed project and Tunnel-Only Alternative would not be likely to result in the deterioration of recreational facilities to a degree that would require the construction of new facilities.

Changes in Average Water Level

Nacimiento Reservoir

Table 4.12-2 shows modeled water level changes at Nacimiento Reservoir for the proposed project and Tunnel-Only Alternative. It should be noted that the modeling provides estimates rather than predictions; the actual water elevations at Nacimiento Reservoir would vary from the modeled results, as described further in Section 2.5.1.1, *Operations*.

Table 4.12-2. Modeled Water Level Changes at Nacimiento Reservoir

	All Years	Wet Years	Normal Years	Dry Years
Baseline				
Annual Avg (feet)	753.5	771.4	754.5	732.3
May to September Avg (feet)	754.3	783.8	753.7	723.3
Maximum Monthly Avg (feet)	768.9	795.4	769.5	741.4
Minimum Monthly Avg (feet)	740.0	735.2	741.6	713.8
Proposed Project				
Annual Avg (feet)	736.3	755.9	742.0	704.8
May to September Avg (feet)	738.4	770.3	742.6	696.3
Maximum Monthly Avg (feet)	755.2	785.9	760.3	715.3
Minimum Monthly Avg (feet)	716.4	708.0	726.4	685.4
Tunnel-Only Alternative				
Annual Avg (feet)	735.4	755.5	740.3	704.4
May to September Avg (feet)	737.8	770.2	741.4	696.2
Maximum Monthly Avg (feet)	754.5	785.9	759.2	714.7
Minimum Monthly Avg (feet)	714.8	706.9	724.0	685.1

Source: MCWRA 2021
Note: All numbers rounded to the nearest tenth.

Modeling shows that, under modeled baseline conditions (not actual historical water levels), average monthly water levels at Nacimiento Reservoir would be 753.5 feet across all water-year types, 771.4 feet in wet years, 754.5 feet in normal years, and 732.3 feet in dry years. Modeling shows that, under modeled baseline conditions (not actual historical water levels), average monthly water levels at Nacimiento Reservoir during the peak recreational season (between May and September) would be 754.3 feet across all water-year types, 783.8 feet in wet years, 753.7 feet in normal years, and 723.3 feet in dry years.

Following construction of the proposed project, modeling suggests that average monthly water levels at Nacimiento Reservoir would decrease by 17.2 feet across all water-year types, 15.5 feet in wet years, 12.5 feet in normal years, and 27.5 feet in dry years compared to modeled baseline conditions. From the months of May to September (the peak season for recreational visits to Nacimiento Reservoir), average water levels at Nacimiento Reservoir would decrease by approximately 15.9 feet across all water-year types, 13.5 feet in wet years, 11.1 feet in normal years, and 27 feet in dry years compared to modeled baseline conditions.

With implementation of the Tunnel-Only Alternative, modeling suggests that average monthly water levels at Nacimiento Reservoir would decrease by 18.1 feet across all water-year types, 15.9 feet in wet years, 14.2 feet in normal years, and 27.9 feet in dry years compared to modeled baseline conditions. From the months of May to September (the peak season for recreational visits to Nacimiento Reservoir), average water levels at Nacimiento Reservoir would decrease by approximately 16.5 feet across all water-year types, 13.6 feet in wet years, 12.3 feet in normal years, and 27.1 feet in dry years compared to modeled baseline conditions.

Once the surface water level at Nacimiento Reservoir reaches 760 feet, the height at which the tunnel would begin to operate, water would move into San Antonio Reservoir. Recreational opportunities at Nacimiento Reservoir could be affected if the water level decreases to a point where boat ramps, docks, and other in-water facilities became inaccessible or inoperable. The 2002 *Salinas Valley Water Project EIR/EIS* and 2008 *San Antonio and Nacimiento Rivers Watershed Management Plan* used 730 feet as the elevation at which most boat ramps around Nacimiento Reservoir are considered operational, acknowledging that facilities can operate below this level (MCWRA and USACE 2002; Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement 2008). The documents used 730 feet as general guideline for assessing the level at which recreational use may begin to be affected.

Modeling suggests that, under modeled baseline conditions, water levels at Nacimiento Reservoir are at or below 730 feet an average of 76 days across all water-year types, 31 days in wet years, 58 days in normal years, and 157 days in dry years. Compared to modeled baseline conditions, Nacimiento Reservoir would be at or below 730 feet more frequently under all water-year types with the proposed project, potentially reducing recreational use in periods when water levels are low. Water levels are anticipated to be at or below 730 feet an average of 156 days across all water-year types, 76 days in wet years, 120 days in normal years, and 311 days in dry years. Similarly, compared to modeled baseline conditions, Nacimiento Reservoir would be at or below 730 feet more frequently under all water-year types with the Tunnel-Only Alternative, potentially reducing recreational use in periods when water levels are low. Water levels at Nacimiento Reservoir would be at or below 730 feet an average of 166 days across all water-year types, 82 days in wet years, 133 days in normal years, and 318 days in dry years. However, as shown in **Table 4.12-2**, modeled monthly average water levels during the peak recreational season (May to September) would exceed 730 feet in normal and wet years under the proposed project and Tunnel-Only Alternative.

On average, Nacimiento Reservoir's surface water elevation would not be expected to deviate substantially from modeled baseline conditions. The greatest changes in water levels compared to modeled baseline conditions would occur in wet years. The water level changes in wet years and the smaller water level shifts anticipated in normal and dry years would not substantially limit access to existing recreational opportunities beyond baseline conditions and thus would not be expected to result in increased use/deterioration at other recreational facilities as a consequence. Therefore, recreational facilities at Nacimiento Reservoir would not be expected to experience service interruptions that would shift recreational use from Nacimiento Reservoir to other facilities to the degree that substantial deterioration would occur.

San Antonio Reservoir

Table 4.12-3 shows modeled water-level changes at San Antonio Reservoir. It should be noted that the modeling provides estimates rather than predictions; the actual water elevations at San Antonio Reservoir will vary from the modeled results.

Table 4.12-3. Modeled Water Level Changes at San Antonio Reservoir

	All Years	Wet Years	Normal Years	Dry Years
Baseline				
Annual Average (feet)	704.4	719.5	710.5	676.8
May to September Average (feet)	709.5	743.4	710.8	670.3
Maximum Monthly Average (feet)	717.9	746.7	720.1	683.8
Minimum Monthly Average (feet)	687.9	670.9	695.8	658.8
Proposed Project				
Annual Average (feet)	736.4	750.7	741.9	710.8
May to September Average (feet)	739.4	776.1	740.3	697.9
Maximum Monthly Average (feet)	748.4	778.7	749.2	721.3
Minimum Monthly Average (feet)	724.3	704.8	731.9	674.8
Tunnel-Only Alternative				
Annual Average (feet)	733.6	747.7	738.6	709.0
May to September Average (feet)	736.1	773.4	736.3	695.4
Maximum Monthly Average (feet)	745.7	775.6	745.9	720.0
Minimum Monthly Average (feet)	721.9	701.2	728.8	672.0

Source: MCWRA 2021
Note: All numbers rounded to the nearest tenth.

Modeling shows that, under modeled baseline conditions, average monthly water levels at San Antonio Reservoir would be 704.4 feet across all water-year types, 719.5 feet in wet years, 710.5 feet in normal years, and 676.8 feet in dry years. Modeling shows that, under baseline conditions, average monthly water levels at San Antonio Reservoir during the peak recreational season (between May and September) would be 709.5 feet across all water-year types, 743.4 feet in wet years, 710.8 feet in normal years, and 670.3 feet in dry years.

Modeling suggests that, with the proposed project, average monthly water levels at San Antonio Reservoir would increase by 32 feet across all water-year types, by 31.2 feet in wet years, by 31.4 feet in normal years, and by 34 feet in dry years. From the months of May to September (i.e., the peak season for recreational visits to San Antonio Reservoir), average water levels at San Antonio Reservoir would increase by 29.9 feet across all water-year types, 32.7 feet in wet years, 29.5 feet in normal years, and 27.6 feet in dry years compared to modeled baseline conditions.

Modeled results show that operation of the Tunnel-Only Alternative would increase average monthly water levels at San Antonio Reservoir by 29.2 feet across all water-year types, 28.2 feet in wet years, 28.1 feet in normal years, and 32.2 feet in dry years compared to modeled baseline conditions. For the months of May to September (i.e., the peak season for recreational visits to San Antonio Reservoir), average water levels at San Antonio Reservoir would increase by approximately 26.6 feet across all water-year types, 30 feet in wet years, 25.5 feet in normal years, and 25.1 feet in dry years compared to modeled baseline conditions.

Under modeled baseline conditions, during normal and dry years—particularly during the peak recreational season (May to September)—average baseline water levels at San Antonio Reservoir are too low for some recreational facilities to be fully functional. These include the launch ramps on San Antonio Reservoir's north shore (approximately 700 feet) and south shore (720 feet) (PWFP

2019). Although these ramps could diminish in functionality when water levels fall below the end of the paved ramp, extremely low reservoir levels would not necessarily prohibit all use of such ramps; many boats can still be launched under such scenarios. Because they are accessed by roads and served by parking lots, boat ramps can also be used by non-boaters. The 2002 *Salinas Valley Water Project EIR/EIS* used 730 feet as the elevation at which most boat ramps around San Antonio Reservoir are considered operational, acknowledging that facilities can operate below this level (MCWRA and USACE 2002). The document used 730 feet as general guideline for assessing the level at which recreational use may begin to be affected.

Modeling suggests that, under baseline conditions, water levels at San Antonio Reservoir are at or below 730 feet an average of 249 days across all years, 200 days in wet years, 227 days in normal years, and 341 days in dry years. With the proposed project, water levels at San Antonio Reservoir would be at or below 730 feet an average of 138 days across all years, 83 days in wet years, 124 days in normal years, and 222 days in dry years. Compared to baseline conditions, modeling suggests that the reservoir would be at or below 730 feet less frequently under all water-year types. With the Tunnel-Only Alternative, water levels at San Antonio Reservoir would be at or below 730 feet an average of 140 days across all years, 88 days in wet years, 126 days in normal years, and 223 days in dry years. Compared to modeled baseline conditions, the reservoir would be at or below 730 feet less frequently under all water-year types, and recreational facilities would therefore be less frequently affected by low water levels.

Modeled results show that monthly average water levels during the peak recreational season would exceed 730 feet in normal and wet years under both the proposed project and Tunnel-Only Alternative. In dry years, modeled monthly average water levels during the peak recreational season would be below 730 feet but would increase compared to modeled baseline conditions.

The proposed project and Tunnel-Only Alternative would have the potential to increase the water level at San Antonio Reservoir relative to baseline conditions, particularly during wet years. The increase in water levels that would result from the proposed project would make facilities available for recreational use more frequently than under baseline conditions, thereby theoretically accelerating their deterioration. However, the frequency of accessibility to such facilities would be unlikely to have more than negligible effects on their use. Boat ramps are essentially paved roads into the water that facilitate boat entry. They would not readily deteriorate, unless there was a substantial change in usage.

Inundation of Recreational Facilities

The proposed project would increase the maximum inundation level at San Antonio Reservoir by approximately 7 feet, increasing the reservoir's maximum surface elevation from 780 to 787 feet. At the new maximum inundation level, certain recreational facilities at San Antonio Reservoir could become temporarily inundated during certain periods of wet years and may be temporarily unavailable for their intended recreational uses. Affected facilities would include the launch ramps and related facilities, such as parking areas, on San Antonio Reservoir's north shore (approximately 700 feet) and south shore (720 feet) (PWFP 2019). Some of these facilities are already partially inundated when the reservoir reaches its current maximum elevation of 780 feet. Under modeled baseline conditions, San Antonio Reservoir would not be expected to reach an elevation of 780 feet on any day across all water-year types. One restroom building on the north shore and one on the south shore would be within the new inundation area and partially inundated when water levels exceed the current maximum elevation of 780 feet. Modeling for the proposed project suggests that water levels at San Antonio Reservoir would exceed 780 feet (the baseline maximum) an average of 71 days across all water-year types, 97 days during wet years, 94 days during normal years, and 0 days during dry years. Modeling suggests that the reservoir would reach 787 feet an average of 14 days across all water-year types, 40 during wet years, 60 days during normal years, and 0 days during dry years.

Under the proposed project, the restroom facility on the north shore (serving the boat ramp at the end of New Pleyto Road) and the restroom facility on the south shore (serving the boat ramp at the end of Harris Creek Road) that would be subject to partial inundation at the reservoir's new maximum water surface elevation would need to be removed, relocated, or protected by construction of a berm. At this stage of project development, it is not known which of these approaches would be implemented to protect the facilities from partial inundation. With all options, there would be localized impacts associated with removal, relocation, or protection through construction of a berm. In the context of recreation, if the facilities are removed rather than relocated or protected with a berm, other nearby restrooms would be available to serve recreational users. The changes at these facilities would not drive changes regarding the amount of recreational use at nearby recreational areas. The Tunnel-Only Alternative would not increase the maximum surface elevation at San Antonio Reservoir but would nonetheless increase the frequency at which lands at or below the existing maximum WSE of 780 feet would experience inundation relative to existing conditions, including the launch ramps and related facilities on the north and south shores. Under the Tunnel-Only Alternative, modeling suggests that the reservoir would reach 780 feet on approximately 1 day per year across all water-year types, 2 days in a wet year, 1 day in a normal year, and 0 days in a dry year. Inundation of certain facilities, such as boat ramps, could occur under the Tunnel Only Alternative but would not prevent use of the facilities. The boat ramps could experience partial or complete inundation but still provide access to the reservoir for water-based recreation. Some other facilities, such as the parking lot on Lynch Road, would experience inundation on only a small area; they would still be functional when water levels reach the maximum inundation level.

Under the Tunnel-Only Alternative, inundation of the restroom facility on the north shore (serving the boat ramp at the end of New Pleyto Road) is possible; however, this event would be rare. One time step (during 1998 El Niño event) over the 48-year modeled period yielded a reservoir stage higher than the elevation of the restrooms. Anticipated inundation with the proposed project and Tunnel-Only Alternative is not likely to result in deterioration of the boat ramps or parking lots to a degree that would require the construction of new facilities. In addition, the modeled average water level changes demonstrate that the proposed project and Tunnel Only Alternative would improve access to most recreational facilities at San Antonio Reservoir compared to baseline conditions and provide an overall benefit to recreationalists that surpasses the effect of temporary, intermittent inundation at the recreational facilities.

Introduction of White Bass

Under existing conditions, white bass are present in Nacimiento Reservoir but not San Antonio Reservoir. The proposed project includes mechanisms to avoid the spread of white bass, but it is possible that white bass could be introduced to San Antonio Reservoir (refer to Section 4.3, *Biological Resources*, for further discussion of the proposed project's potential impacts associated with white bass). Nacimiento Reservoir management indicates that the presence of white bass has not affected fishing noticeably in the reservoir (Decker pers. comm.). Therefore, it can be reasonably assumed that fishing at San Antonio Reservoir would not be substantially affected in the event that the proposed project or Tunnel-Only Alternative result in a transfer of white bass from Nacimiento Reservoir to San Antonio Reservoir. Accordingly, the demand for fishing activities at San Antonio Reservoir is not anticipated to be displaced to other recreational facilities because of the potential introduction of white bass at San Antonio Reservoir. There would not be a foreseeable increase in use, accelerated deterioration of existing recreational facilities, or a need for the construction of new facilities at San Antonio Reservoir or elsewhere.

CEQA Conclusion

Both the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to the deterioration of recreational facilities.

Impact REC-2: Include Recreational Facilities or Require the Construction or Expansion of Recreational Facilities that Might Have an Adverse Physical Effect on the Environment

Construction and Operation

The proposed project and Tunnel-Only Alternative would not include new or expanded recreational facilities. As discussed in Impact REC-1, *Deterioration of Recreational Facilities Resulting from Project-Related Intensification of Use*, the recreation-related effects of both the proposed project and Tunnel-Only Alternative would not require modification or expansion of existing recreational facilities.

CEQA Conclusion

Both the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to the construction or expansion of recreational facilities.

4.12.5 Impact Summary

Table 4.12-4 provides a summary of the significance of potential impacts on recreation resources.

Table 4.12-4. Summary of Impacts on Recreation Resources

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact REC-1: Deterioration of Recreational Facilities Resulting from Project-related Intensification of Use			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact REC-2: Include Recreational Facilities or Require the Construction or Expansion of Recreational Facilities that Might Have an Adverse Physical Effect on the Environment			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A

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4.13 Aesthetics and Visual Resources

4.13.1 Overview

This section describes the environmental setting, methods of analysis, and impact analysis for aesthetics and visual resources that potentially would be affected by the construction and operation of the proposed project and Tunnel-Only Alternative. *Visual resources* are defined as all objects (artificial and natural, moving and stationary) and features (e.g., landforms and water bodies) visible on a landscape. These resources add to or detract from the scenic quality of the landscape (i.e., the visual appeal of the landscape). The potential impacts on scenic highways, publicly accessible scenic vistas, visual character and quality of the affected area, and changes in light and glare as a result of construction and operation of the proposed project and Tunnel-Only Alternative are evaluated. Sources of information used to prepare this section include the following:

- *Monterey County General Plan – Circulation, Land Use, and Conservation and Open Space Elements and South County Area Plan* (County of Monterey 2010)
- *Monterey County General Plan DEIR* (County of Monterey 2008)
- Monterey County Municipal Code
- *San Luis Obispo County General Plan – Agriculture Element* (County of San Luis Obispo 2010)
- *San Luis Obispo County General Plan – Conservation and Open Space Elements* (County of San Luis Obispo 2015)
- San Luis Obispo County Municipal Code
- *Salinas Valley Water Project Final EIR* (SCH# 2000034007) (MCWRA and USACE 2001)
- *San Antonio and Nacimiento Rivers Watershed Management Plan* (Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc. 2008)
- Project plans
- Site photographs taken on October 9, 2018
- Google Earth and Google Maps Street View

4.13.1.1 Study Area

The study area for aesthetics and visual resources, consists of *foreground* (i.e., up to 0.5 mile from the viewer) and *middleground* (i.e., from 0.5 mile to 3 miles from the viewer) views of the project viewshed (FHWA 2015:4-5–4-9, 6-3–6-4; Litton 1968:3–5)[1]. A *viewshed* is the area that is visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail). The *project viewshed* includes areas where aboveground project facilities would be visible, existing aboveground features (e.g., trees or structures) would be modified to accommodate aboveground and underground project facilities, and project features or modifications would be visible to sensitive visual receptors. **Figure 4.13-1** depicts sensitive visual receptors within the study area.

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[1] In the background (beyond 3 miles), the scale and color of existing landscape elements and project features blend so that only broad forms, large-scale patterns, and muted colors are evident. Project details would not be discernable at this distance.

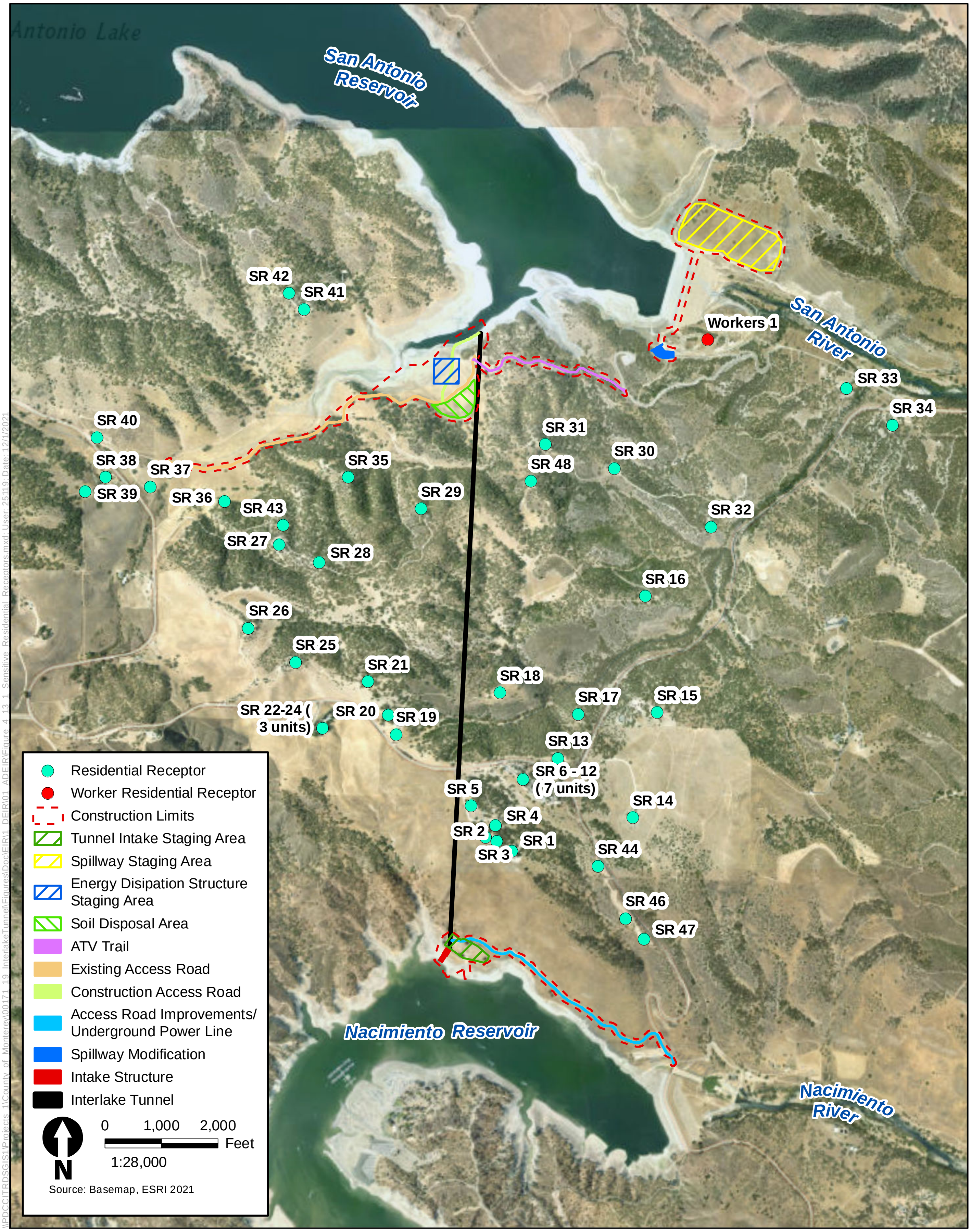

Figure 4.13-1
Sensitive Residential Receptors

4.13.1.2 Scoping Comments

MCWRA received comments regarding aesthetics and visual resources during the scoping period. **Table 4.13-1** summarizes the scoping comments received regarding aesthetics and visual resource impacts and identifies how and where these comments have been addressed.

Table 4.13-1. Scoping Comments Related to Aesthetics and Visual Resource Impacts

Summary of Comment	Location Comment is Addressed
Visibility of the proposed tunnel outlet from private property and from lake traffic (Kauker)	Refer to Impact AES-1, which discusses visual impacts of the Energy Dissipation Structure (i.e., tunnel outlet) to surrounding viewers.
Temporary and permanent impacts on views from Nacimiento Reservoir and surrounding public areas (SLO County Public Works)	Temporary and permanent impacts on views from Nacimiento Reservoir and surrounding public areas are discussed under Impact AES-1, which discusses changes in visual character and quality, Impact AES-2. which discusses impacts on scenic roadways, and Impact AES-3, which discusses changes in light and glare.

4.13.1.3 Definitions

Identifying a study area's aesthetic resources and conditions involves understanding the visual character of the area's visual features and the regulatory context. Once those parameters are understood, a study area's aesthetic resources are further defined by establishing the Area of Visual Effect (AVE) and documenting the visual character of the environmental setting, including the natural and built environments. For the purposes of this analysis, the study area and AVE are synonymous. The affected population, or viewers, are defined by their relationship to the study area, their visual preferences, and their sensitivity to changes associated with the changes. Visual preferences, or what viewers like and dislike about the AVE's visual character, define the AVE's visual quality.

- *Visual character* includes attributes such as form, line, color, and texture and is used to describe, not evaluate, the visual environment; that is, these attributes are neither considered good nor bad. Visual character also includes the unique set of landscape features that combine to make a view, including native landforms, water, and vegetation patterns, as well as built features, such as buildings, roads, and other structures.
- *Visual quality* is used to describe what viewers like and dislike about the visual resources that compose a particular scene and is expressed in terms of *natural harmony* and *built environment*. *Visual quality* is the intrinsic appeal of a landscape or scene due to the combination of natural and built features in the landscape. Natural and built features combine to form unique perspectives with varying degrees of visual quality, which is rated in this analysis as high, moderately high, moderate, moderately low, or low. A *high visual quality* rating is defined as visual resources that are unique or exemplary of the region's natural or cultural scenic amenities. A *moderate visual quality* rating is defined as visual resources typical or characteristic of the region's natural and/or cultural visual amenities. A *low visual quality* rating refers to areas generally lacking in natural or cultural visual resource amenities typical of the region.

- *Visual sensitivity* reflects the level of interest or concern that viewers and responsible land management agencies have for a particular visual resource, with visual quality taken into account. *Visual sensitivity* is a measure of how noticeable proposed changes might be in a particular setting and determined based on the distance from a viewer, the contrast of the proposed changes, and the duration that a particular view would be available to viewers. For example, areas such as scenic vistas, parks, trails, and scenic roadways typically have a high visual quality and visual sensitivity because these locales are publicly protected and appear natural, view durations are typically long, and close-up views more commonly are available.

Visual quality serves as the baseline for determining the degree of visual impacts and whether a project's visual impacts would be negative, beneficial, or neutral (FHWA 2015:5-1–5-5). Although changes to private views are disclosed in the analysis, the threshold for significance is based on changes to public views, as detailed Section 4.13.4.2, *Criteria for Determining Significance*.

4.13.2 Regulatory Setting

4.13.2.1 Federal Laws, Regulations, and Policies

There are no federal laws, regulations, or policies that pertain to visual resources in the project vicinity.

4.13.2.2 State Laws, Regulations, and Policies

California Scenic Highway Program

Although there are no eligible or officially designated State Scenic Highways in the project area, there are two county roadways (i.e., roadways not included in the State Highway System) that have received state recognition and are adopted into the State's Scenic Highway System as officially designated County Scenic Highways.

Within Monterey County, this includes Interlake Road (Road G14) from Jolon Road in Lockwood to the Monterey County border. This designation continues into San Luis Obispo County and includes Interlake Road from the San Luis Obispo County border to its intersection with Nacimiento Lake Drive (Road G14/Road G19).

In addition, in San Luis Obispo County, Nacimiento Lake Drive (Road G19) is an officially designated by the state as a County Scenic Highway from its intersection with Interlake Drive to Chimney Rock Road (Caltrans 2015, 2019).

In 1963, the California Legislature created the Scenic Highway Program to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to the highways. The state regulations and guidelines governing the Scenic Highway Program are found in Sections 260 to 263 *et seq*. of the Streets and Highways Code. As described in the Scenic Highway Guidelines, highways can be nominated to be an eligible State Scenic Highway under Streets and Highways Code Section 263 when they are believed to have outstanding scenic values and when becoming an eligible State Scenic Highway does not require any legislative action.

Officially designated County Scenic Highways follow the same program requirements as State Scenic Highways. The following conditions must be met to nominate a route:

- The state or county highway consists of a scenic corridor that is composed of a memorable landscape that showcases the natural scenic beauty or agriculture of California.
- Existing visual intrusions do not significantly impact the scenic corridor.
- There is demonstration of strong local support for the proposed scenic highway designation.
- The length of the proposed scenic highway is not less than a mile and is not segmented.

Once a state route is identified as eligible under Streets and Highways Code Section 263, it may be nominated for official designation by the local governing body with jurisdiction over the lands adjacent to the proposed scenic highway. Division 1, Chapter 2, Article 2.5, Sections 260–284 of the California State Streets and Highway Code establishes the following:

> The standards for official scenic highways shall also require that local governmental agencies have taken such action as may be necessary to protect the scenic appearance of the scenic corridor, the band of land generally adjacent to the highway right-of-way, including, but not limited to (1) regulation of land use and intensity (density) of development; (2) detailed land and site planning; (3) control of outdoor advertising; (4) careful attention to and control of earthmoving and landscaping; and (5) the design and appearance of structures and equipment.

A route may be removed for consideration as a scenic route or taken out of the State Scenic Highways program when there has been significant degradation of scenic quality due to visual intrusions and changes in visual character. Examples of visual intrusions that would degrade scenic corridors, as stipulated by Caltrans, and which would apply to the proposed project include extensive cut and fill, scarred hillsides and landscape, steep slopes with little or no vegetation, exposed and unvegetated earth, and scale and appearance of roadway that are incompatible with landscape. Unsightly land uses would include actions that result in these conditions (Caltrans 2008:1-9).

4.13.2.3 Local Laws, Regulations, and Policies

Monterey County

Monterey County General Plan

The *2010 Monterey County General Plan – Circulation, Land Use, and Conservation and Open Space Elements* contain the following policies pertaining to visual resources associated with the proposed project (County of Monterey 2010).

Circulation Element

There are no Monterey County-designated scenic routes within the project area. However, the Circulation Element contains the following policies that pertain to the state-designated County Scenic Highway (Interlake Road from Jolon Road in Lockwood to the Monterey County border)

- **Goal C-5:** Maintain and enhance a system of scenic roads and highways through areas of scenic beauty without imposing undue restrictions on private property or constricting the normal flow of traffic.

- **Policy C-5.3**: Guidelines shall be developed to assure that development and land use in the Scenic Highway Corridors are compatible with the surrounding area using techniques that include, but are not limited to:
  a. placement of utilities underground, where feasible;
  b. architectural and landscape controls;
  c. outdoor advertising restrictions;
  d. encouragement of area native plants, especially on public lands and dedicated open spaces; and cooperative landscape programs with adjoining public and private open space lands.
- **Policy C-5.4:** Land use controls shall be applied or retained to protect the Scenic Highway Corridor and to encourage sensitive selection of sites and open space preservation within such areas. Where land is designated for development at a density that would create a substantial adverse visual impact, the landowner shall be encouraged to voluntarily dedicate a scenic easement to protect the Scenic Highway corridor.
- **Policy C-5.6:** Special scenic treatment and design within the rights-of-way of officially designated State Scenic Highways and/or County Scenic Roads shall be implemented and may include highway directional signs, guardrails and fences, lighting and illumination, provision of scenic outlooks, road lanes, frontage roads, vegetation, grading, and highway structures.

Land Use Element

- **Goal LU-1:** Promote appropriate and orderly growth and development while protecting desirable existing land uses.
  - **Policy LU-1.13:** All exterior lighting shall be unobtrusive and constructed or so that only the intended area is illuminated, long range visibility is reduced of the lighting source, and off-site glare is fully controlled. Criteria to guide the review and approval of exterior lighting shall be developed by the County in the form of enforceable design guidelines, which shall include but not be limited to guidelines for the direction of light, such as shields, where lighting is allowed.
- **Goal LU-7:** Encourage the use of the county's major inland water bodies for multiple purposes, such as water supply, flood control, and hydroelectric generation.
  - **Policy LU-7.1:** Priorities for multiple uses of the major water bodies shall be established. Recreation shall be secondary to water supply, flood control, and hydroelectric generation.
  - **Policy LU-7.2:** Compatibility between multiple uses of major water bodies and surrounding land uses shall be considered.

Conservation and Open Space Element

- **Goal OS-1:** Retain the character and natural beauty of Monterey County by preserving, conserving, and maintaining unique physical features, natural resources, and agricultural operations.

- **Policy OS-1.9:** Development that protects and enhances the County's scenic qualities shall be encouraged. All Routine and Ongoing Agricultural Activities are exempt from the viewshed policies of this plan, except as noted in Policy OS-1.12.
- **Policy OS-1.10:** Recognizing the value of trails in Monterey County, policies to establish a trails program, including bike paths (Class 1), and walking and equestrian facilities used by the general public, shall be addressed in each Area Plan within the following parameters:
  a. Public lands shall be used as the primary source for establishing nonmotorized trails. Cooperation between public agencies and the public in the creation of trails is encouraged.
  b. Dedication of public trails or trail easements on private property shall be voluntary, except as may be required by State Law.
  c. Crop protection and food safety of agricultural crops shall be a primary factor in disallowing trails.
  d. Potential new trails on private land or public land are subject to appropriate design including location, screening, safety, reducing potential for trespass onto private property, protection of the public health and safety, and protection of agricultural products.
  e. The location and design of trails on public or private land shall be done in consultation with affected public agencies, landowners, and other interested parties.
  f. New commercial development and residential subdivisions shall mitigate significant adverse disruption of views from common viewing points on public trails through a variety of strategies including but not limited to the use of appropriate materials, scale, lighting, and siting of development.

This policy shall not apply to existing residential development or to any agricultural activity or operation. The design and development of the inland portion of the Monterey Bay Sanctuary/Scenic Trail is exempt from this policy.

- **Policy OS-1.12:** The significant disruption of views from designated scenic routes shall be mitigated through use of appropriate materials, scale, lighting and siting of development. Routine and Ongoing Agricultural Activities shall be exempt from this policy, except:
  1. large-scale agricultural processing facilities, or
  2. facilities governed by the Agricultural and Winery Corridor Plan.
- **Policy OS-5.6:** Native and native compatible species, especially drought resistant species, shall be utilized in fulfilling landscaping requirements.
- **Policy OS-5.11:** Conservation of large, continuous expanses of native trees and vegetation shall be promoted as the most suitable habitat for maintaining abundant and diverse wildlife.

South County Area Plan

The proposed project falls within the *South County Area Plan* boundaries. The County has not designated any visually sensitive areas within this plan area. The area plan contains additional policies pertaining to visual resources associated with the proposed project.

- **Policy SC-2.1:** Additional scenic routes shall not be designated in the South County Planning Area.
- **Policy SC-5.5:** Commercial recreational facilities for boating, water sports, camping, and similar uses at any proposed park site shall be of moderate size, compatible with surrounding uses, and consistent with all resource protection and hazard avoidance policies.

Monterey County Preservation of Oak and Other Protected Trees Ordinance

The Preservation of Oak and Other Protected Trees chapter of the Monterey County Code provides standards for the tree permits required for actions affecting trees as well as standards for agricultural areas, along with exemptions. Section 16.60.030 identifies the following:

A. No oak or madrone tree six inches or more in diameter two feet above ground level shall be removed in the North County Area Plan or Toro Area Plan areas without approval of the permit(s) required in Section 16.60.040.

B. No oak, madrone or redwood tree six inches or more in diameter two feet above ground level shall be removed in the Carmel Valley Master Plan area without approval of the permit(s) required in Section 16.60.040.

C. No native tree six inches or more in diameter two feet above ground level shall be removed in the Cachagua Area Plan area without approval of the permit(s) required in Section 16.60.040. "Native trees," for the purpose of this Section, are Santa Lucia Fir, Black Cottonwood, Fremont Cottonwood, Box Elder, Willows, California Laurel, Sycamores, Oaks, and Madrones.

D. No oak tree may be removed in any other area of the County of Monterey designated in the applicable area plan as Resource Conservation, Residential, Commercial or Industrial (except Industrial, Mineral Extraction) without approval of the permit(s) required in Section 16.60.040.

E. No landmark oak tree shall be removed in any area except as may be approved by the Director of Planning. Landmark oak trees are those trees which are twenty-four (24) inches or more in diameter when measured two feet above the ground, or trees which are visually significant, historically significant, or exemplary of their species.

F. No oak trees may be removed in any area of Monterey County designated in the applicable area plan as an Agricultural, Industrial, or Mineral Extraction area, unless such removal meets the purpose and standards in Section 16.60.050 of this chapter.

G. No oak trees may be removed in any area of Monterey County for commercial harvesting purposes without approval of a use permit by the Planning Commission.

Monterey County Design Guidelines for Exterior Lighting Ordinance

Section 21.63.010 of the Monterey County Code states that the design guidelines are intended to "enhance the preservation of Monterey County's environmental and visual resources such as views of the night sky, sensitive public viewsheds, and natural landscapes" by adopting design guidelines for exterior lighting for new development including criteria for siting and design.

The Monterey County Design Guidelines for Exterior Lighting include design measures and performance criteria to ensure that exterior lighting limits off-site glare and reduces light pollution (County of Monterey 2016). The guidelines serve to implement Policy LU-1.13 of the 2010 Monterey

County General Plan and Section 21.63.020 the Monterey County Code. The guidelines, which are applicable to the inland areas of Monterey County, ensure that lighting is directed downward and fully shielded and that the minimum number of fixtures necessary are used. The guidelines supply unacceptable and acceptable examples of lighting for different applications (e.g., safety lighting, street lighting, landscape lighting).

San Luis Obispo County

San Luis Obispo County General Plan

The *San Luis Obispo County General Plan – Circulation, Land Use, and Conservation and Open Space Elements* (County of San Luis Obispo 2010) contain the policies pertaining to visual resources associated with the proposed project.

Agriculture Element

The Agriculture Element contains the following policies pertaining to visual resources associated with the proposed project (County of San Luis Obispo 2010).

- **Policy AGP 30:** Scenic Resources.
    a. Designation of a scenic corridor through the public hearing process as described in the Visual Resources chapter of the Conservation and Open Space Element, shall not interfere with agricultural uses on private lands.
    b. In designated scenic corridors, new development requiring a discretionary permit and land divisions shall address the protection of scenic vistas as follows:
        1. Balance the protection of the scenic resources with the protection of agricultural resources and facilities.
        2. When selecting locations for structures, access roads, or grading, the preferred locations will minimize visibility from the scenic corridor and be compatible with agricultural operations.
        3. Use natural landforms and vegetation to screen development whenever possible.
        4. In prominent locations, encourage structures that blend with the natural landscape or are traditional for agriculture.

Conservation and Open Space Element

The Biological Resources, Open Space Resources, and Visual Resources sections of the Conservation and Open Space Element contains the following policies pertaining to visual resources associated with the proposed project (County of San Luis Obispo 2015).

Biological Resources

- **Goal BR 2:** Threatened, rare, endangered, and sensitive species will be protected.
    - **Policy BR 2.9: Promote Use of Native Plant Species.** Landscaping for proposed development will use a variety of native or compatible non-native, non-invasive plant species as part of project landscaping to improve wildlife habitat values.

- **Goal BR 3:** Maintain the acreage of native woodlands, forests, and trees at 2008 levels.
  - **Policy BR 3.1: Native Tree Protection.** Protect native and biologically valuable trees, oak woodlands, trees with historical significance, and forest habitats to the maximum extent feasible.
  - **Policy BR 3.3: Oak Woodland Preservation.** Maintain and improve oak woodland habitat to provide for slope stabilization, soil protection, species diversity, and wildlife habitat.

Open Space Resources

The Open Space Resources section of the Conservation and Open Space Element identifies that open space land uses surround Nacimiento Reservoir.

- **Goal OS 1:** Important open space areas will be identified, protected, sustained, and where necessary, restored and reclaimed.
  - **Policy OS 1.1: Future Open Space Protection.** Continue to identify and protect open space resources with the following characteristics: Recreation areas; Ecosystems and environmentally sensitive resources such as natural area preserves, streams and riparian vegetation, unique, sensitive habitat, natural communities; significant marine resources; Archaeological, cultural, and historical resources; Scenic areas; Hazard areas; and Rural character.
- **Goal OS 2:** Open space resources will be protected and sustained on public lands.
  - **Policy OS 2.1: Open space management to protect, sustain and restore.** Manage open space resources on public lands to protect, sustain, and, where necessary, restore the resources. Encourage such management strategies on private lands.

Visual Resources

The Visual Resources section of the Conservation and Open Space Element identifies that there are no Sensitive Resource Areas (SRAs) associated with the project area. As identified under Section 4.13.2.3, *Local Laws, Regulations, and Policies*, Interlake Road (Road G14) and portions of Nacimiento Lake Drive (Road G19) in the project area fall within the State Scenic Highway system. In addition, U.S. 101 is a locally designated County Scenic Route approximately 6 miles east of the project area. Distance and terrain prevent views of the project site from this corridor; therefore, this county-designated route would not be affected by the proposed project, and it is not discussed further. Table VR-2 in the Conservation and Open Space Element identifies that Nacimiento Lake Drive (Road G19)/Interlake Road (Road G14) from Paso Robles to Monterey County is a route that is suggested for local designation. However, it has not been designated. There are no other locally designated scenic routes within proximity to the project site.

The Visual Resources section of the Conservation and Open Space Element contains the following policies pertaining to visual resources associated with the proposed project (County of San Luis Obispo 2010).

- **Goal VR 1:** The natural and agricultural landscape will continue to be the dominant view in rural parts of the county.
  - **Policy VR 1.1: Adopt Scenic Protection Standards.** Protect scenic views and landscapes, especially visual SRAs from incompatible development and land uses.

- **Goal VR 2:** The natural and historic character and identity of rural areas will be preserved.
    - **Policy VR 2.1: Develop in a manner compatible with Historical and Visual Resources.** Through the review of proposed development, encourage designs that are compatible with the natural landscape and with recognized historical character, and discourage designs that are clearly out of place within rural areas.
    - **Policy VR 2.2: Site Development and Landscaping Sensitively.** Through the review of proposed development, encourage designs that emphasize native vegetation and conform grading to existing natural forms. Encourage abundant native and/or drought-tolerant landscaping that screens buildings and parking lots and blends development with the natural landscape. Consider fire safety in the selection and placement of plant material, consistent with Biological Resources Policy BR 2.7 regarding fire suppression and sensitive plants and habitats.
    - **Policy VR 2.3: Revise Countywide Design Guidelines.** New development should follow Countywide Design Guidelines to protect rural visual and historical character. The guidelines should encourage new development that is compatible with public views of scenic areas, the natural landscape, and existing development.
- **Goal VR 4:** Protect visual resource within visual SRAs for scenic corridors.
    - **Policy VR 4.2: Balanced Protection.** Balance the protection of scenic resources with the protection of biological and agricultural resources that may co-exist within the scenic corridor.
- **Goal VR 5:** Views from scenic vistas and vista points will be protected.
    - **Policy VR 5.1: Retain Existing Scenic Access.** Encourage Caltrans to maintain existing scenic vista points. Where vista points and turnouts must be eliminated due to bluff erosion, other hazards, or operational needs, they should be replaced in reasonable proximity if feasible.
- **Goal VR 7:** Views of the night sky and its constellations of stars will be maintained.
    - **Policy VR 7.1: Nighttime Light Pollution.** Protect the clarity and visibility of the night sky within communities and rural areas, by ensuring that exterior lighting, including streetlight projects, is designed to minimize nighttime light pollution.
- **Goal VR 8:** Visual intrusions of signs will be minimized within public view corridors.
    - **Policy VR 8.2: Informational or Interpretive Signs.** Encourage creation of a system of roadside informational signs to meet the legitimate need of motorists for tourist information. These signs should be constructed of materials compatible with the surrounding environment and the county's heritage.
- **Goal VR 9:** The visual effects of utility lines will be minimized.
    - **Policy VR 9.1: Underground Utilities.** Encourage all existing areas with overhead lines, particularly the candidate Scenic Corridors listed in Table VR-2, to be placed underground through special districts, supplementing existing funding through Rule 20A utility fees. The County Undergrounding Coordinating Committee should give high priority to these critical areas, as well as central business districts and urban corridors. Government agencies should

set an example by ensuring that utilities serving public properties are relocated underground as part of the construction or remodeling of public facilities.

- **Policy VR 9.2: Utility Service Lines.** Utility companies should prepare long-range corridor plans for service lines in consultation with local organizations and government agencies. New transmission lines that would be visually damaging should be designed to minimize visual effects. In addition, access roads and right-of-way clearing should be kept to the minimum necessary where new installation or repair of existing installations occurs.
- **Policy VR 9.3: Communications Facilities.** Locate, design and screen communications facilities, including towers, antennas, and associated equipment and buildings in order to avoid views of them in scenic areas, minimize their appearance and visually blend with the surrounding natural and built environments. Locate such facilities to avoid ridge tops where they would silhouette against the sky as viewed from major public view corridors and locations.
- **Policy VR 9.4: Co-location of communication facilities.** Encourage co-location of communications facilities (one or more companies sharing a site, tower or equipment) when feasible and where it would avoid or minimize adverse visual effects.

San Luis Obispo County Oak Woodland Ordinance

The San Luis Obispo County Code establishes criteria to limit the clear cutting of oak woodlands. Section 22.58.050 identifies clear-cutting applies to areas that are 1–3 acres in size and greater than 3 acres in size and also pertains to the removal of heritage oak trees. *Heritage oak trees* are defined in Section 22.58.020 as trees that are 48 inches diameter at breast height and separated from all stands and oak woodlands by at least 500 feet.

San Luis Obispo County Exterior Lighting Ordinance

Section 22.10.060 of the San Luis Obispo County Code is applicable to all outdoor night lighting, except for streetlights within public rights-of-way and all uses established in the Agriculture land use category. The code establishes the following:

A. *Illumination only*. Outdoor lighting shall be used for the purpose of illumination only, and shall not be designed for or used as an advertising display, except as provided by Chapter 22.20 (Signs).

B. *Light directed onto lot.* Light sources shall be designed and adjusted to direct light away from any road or street, and away from any dwelling outside the ownership of the applicant.

C. *Minimization of light intensity*. No light or glare shall be transmitted or reflected in a concentration or intensity that is detrimental or harmful to persons, or that interferes with the use of surrounding properties or streets.

D. *Light sources to be shielded*.

1. *Ground illuminating lights*. Any light source used for ground area illumination except incandescent lamps of 150 watts or less and light produced directly by the combustion of natural gas or other fuels, shall be shielded from above in such a manner that the edge of the shield is level with or below the lowest edge of the light source. Where any light source intended for ground illumination is located at a height greater than eight feet, the

required shielding shall extend below the lowest edge of the light source a distance sufficient to block the light source from the view of any residential use within 1,000 feet of the light fixture.

2. *Elevated feature illumination*. Where lights are used for the purpose of illuminating or accenting building walls, signs, flags, architectural features, or landscaping, the light source shall be shielded so as not to be directly visible from off-site.

E. *Height of light fixtures*. Free-standing outdoor lighting fixtures shall not exceed the height of the tallest building on the site.

F. *Street lighting*. Street lighting shall be designed to minimize light pollution by preventing the light from going beyond the horizontal plane at which the fixture is directed.

San Antonio and Nacimiento Rivers Watershed Management Plan

The *San Antonio and Nacimiento Rivers Watershed Management Plan* contained the following goals and objectives pertaining to visual resources associated with the proposed project (Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc. 2008).

- **Goal:** Ensure the continuation of the economic benefits and attractive and enjoyable recreational experiences available to residents and visitors with a focus on water quality and watershed protection.
  - **Objective 1:** Focus recreational uses in existing public areas where there is supportive infrastructure. Reduce/eliminate trespass on private property within the watersheds.
  - **Objective 2:** Minimize soil disturbance and threats of erosion (campgrounds, parking lots, boat ramp areas, non-system roads etc.) in public areas and on public lands.
  - **Objective 3:** Promote protection of water quality and respect for the watersheds by visitors and residents in recreational areas. Examples include but are not limited to reducing incidents of parking in un-marked areas, littering, camping in non-camping areas, and improperly disposing of waste.

4.13.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to aesthetic and visual resources is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.13.3 Environmental Setting

4.13.3.1 Regional Setting

San Antonio and Nacimiento Reservoirs are situated at the southern end of the Salinas Valley. The watersheds generally are bordered by the Santa Lucia Range to the west and the Gabilan Range to the east. The Santa Lucia Range rises over 4,500 feet above sea level, and the Gabilan Ranges rise approximately 3,000 feet above sea level. San Antonio and Nacimiento Reservoirs are situated in long shallow valleys that runs northwest–southeast. The landscapes surrounding both reservoirs are characterized by low, semi-arid, rolling hills. The aesthetic and visual setting of Nacimiento and San Antonio Reservoirs and the Salinas Valley is described in the following subsections.

U.S. 101 is the only major transportation corridor in close proximity to the project site, lying approximately 6–8 miles east of the eastern ends of each reservoir. Although many dirt roadways travel through the project vicinity, Nacimiento Lake Drive (Road G14/Road G19) is the primary paved roadway that provides access to both San Antonio Reservoir and Nacimiento Reservoir from U.S. 101 (refer to **Figure 2-1**). In addition, Jolon Road (also referred to as County Road G18) provides access to San Antonio Reservoir from U.S. 101. Interlake Road (Road G14) intersects Nacimiento Lake Drive (Road G14/Road G19) and winds between the two reservoirs, connecting to Lockwood. Smaller, paved local roadways provide access to recreational and developed areas around the reservoirs off of Interlake Road (Road G14), Nacimiento Lake Drive (Road G14/Road G19), and Jolon Road.

4.13.3.2 Project Vicinity

San Antonio Reservoir

San Antonio Reservoir is a recreation area in Monterey County. The hills along the reservoir's southwestern shore consist of a mix of oaks and pastureland, whereas the hills along the northwest shore are predominantly pastureland (with fewer trees). According to Exhibit 4.14.4, *Visual Resource Areas*, in the Monterey County General Plan EIR (County of Monterey 2008), the lands surrounding San Antonio Reservoir and downstream of the reservoir (south of San Antonio River) are considered highly sensitive viewsheds. Most of the lands surrounding the reservoir are publicly owned by either the MCWRA or the U.S. Army. There are no private homes along the shoreline of San Antonio Reservoir, but there are a few privately-owned ranches whose lands abut the reservoir.

Public views of the reservoir are mostly available from day-use areas, campgrounds, roadways, and trails surrounding the reservoir within the recreation area. In addition, there are limited views from Nacimiento Lake Drive (Road G19). There are three campgrounds on San Antonio Reservoir's southern shore: Lynch Campground, Redonda Vista Campground, and Harris Creek Campground.

- **The Lynch Campground** is close to the reservoir's southwestern shoreline and accessible from San Antonio Road and Lynch Road. Facilities include a playground, picnic areas, drive-up campsites, parking lot for RVs and hook-ups, boat ramps and trailer parking, a small marina, general store, and restaurant.
- **The Redonda Vista Campground** is south of the Lynch Campground, approximately 0.5 mile inland from the shore of San Antonio Reservoir, and facilities include ground campsites and a meeting room. These sites offer long-range views of the reservoir (MCWRA and USACE 2001).
- **The Harris Campground** is east of the Lynch Campground, along the shoreline, and facilities include campsites and showers. Along the northern shore are the Los Robles Equestrian Camping Area, McCandless Spring Campground, Loop A Campgrounds, and several other first-come-first-served camping areas south of New Pleyto Road.

In addition to campgrounds, several public boat launch areas and day-use areas offer picnic facilities and shoreline access. More information on recreational facilities at the reservoir can be found in Section 4.12, *Recreation*.

San Antonio Dam, at the east end of the reservoir, is an earthen dam that spans a relatively steep and narrow area. Views of the back of the dam are available from the reservoir's waters, surrounding hills, and shoreline. However, the dam is not open to public access. Nacimiento Lake Drive (Road G19) provides a view of the front of the dam and portions of the spillway, which are the only views available from public roadways not within the recreation area. Views of San Antonio Reservoir from Nacimiento Lake Drive (Road G19) are very limited by terrain and vegetation and are only available in proximity to Nacimiento Lake Drive's (Road G19) intersection with Vista Road, where portions of the eastern face of the dam spillway and small areas of the hillsides surrounding the spillway are visible. Vista Road has more-direct views of these features, but public access is restricted by gates up the road, 0.45 mile from the intersection with Nacimiento Lake Drive (Road G19). Average reservoir levels under modeled baseline conditions range from 696 feet at the low point in early fall to 720 feet at the high point in early spring in normal years. In dry years, average modeled baseline reservoir levels are as low as 659 feet; in wet years, levels have been as high as 747 feet under modeled baseline conditions. Elevation changes reflected in the modeled baseline data exceed 75 feet in wet years, but are typically within a range of 20 feet.

Vicinity Character and Quality of the Construction Area

San Antonio Reservoir would have two work areas needed to construct the Interlake Tunnel and Energy Dissipation Structure and the Spillway Modification.

The work area for the Interlake Tunnel and the Energy Dissipation Structure would be in a small, shallow valley off the main reservoir. The valley bottom contains vegetated grasses; oak trees grow on nearby slopes. The area is not publicly accessible. It is accessible to MCWRA personnel from Interlake Road (Road G14). Five residences (Sensitive Receptors 36–40) are found along Interlake Road (Road G14) at this location. In addition, several residences are on hillsides surrounding this site. However, many of these residences do not have views of the work area due to terrain and mature oak trees that prevent views. It is likely that only one residence (Sensitive Receptor 41), directly northwest of the proposed work area, has views toward the proposed work area because the residence is on a slope facing the site, with few trees to block views. The visual quality of this work area is moderately high due to the scenic nature of views associated with the shallow grassy valley framed by hillsides vegetated with oak trees, as well as views of San Antonio Reservoir's water surface.

The Spillway Modification work area would be on both sides of San Antonio Dam and use Vista Road over the dam crest as a construction access road. The setting consists of the existing concrete spillway immediately south of Vista Road, plus the dam and the grassy area just west of the existing spillway. Mature oaks and shrubs border the southern edge of this part of the work area and roadways, and one residence used for reservoir employee housing is immediately to the north. The Spillway Modification work area consists of a grassy hillside area with a small number of oak trees at the northern end of the dam. The work area is characterized by the natural landscapes that surround the dam and the prominent nature of the earthen, geometric dam, the concrete spillway, and ancillary water infrastructure facilities.

Due to the predominance of human-made features on the landscape and contrast with the surrounding natural environment, the visual quality of the spillway work area is moderately low.

Nacimiento Reservoir

Nacimiento Reservoir is south of San Antonio Reservoir, separated by hilly terrain. The landscape is moderately open and offers long-range views of the reservoir from multiple vantage points.

Nacimiento Reservoir has several fingers that extend to secondary valleys. Nacimiento Dam, at the eastern end of the reservoir, is an earthen dam that curves and spans a relatively steep and narrow area. Nacimiento Dam has a height of 215 feet above the streambed and a crest length of approximately 1,650 feet. Like San Antonio Reservoir, the hills around Nacimiento Reservoir are semi-arid and consist of a combination of coast live oak and open grasslands. The reservoir is relatively large and comprises approximately 165 miles of shoreline.

The main public recreation area is Lake Nacimiento Resort, on the reservoir's southern shore, near the dam. The resort has 360 drive-in campsites situated on small terraces along the hillslope, and 21 lodges and cabins overlooking the reservoir. Other amenities at the resort include RV parking and hook-ups, a boat ramp, marina, parking lot for boat trailers, restaurant, convenience store, playgrounds, and picnic areas. The resort is surrounded by oaks and pine woodland.

At the western end of the reservoir are three private residential developments. The Heritage Ranch development is on the southern shore, west of Lake Nacimiento Resort. The majority of these homes are situated at higher elevations above the reservoir, offering views of the reservoir. Heritage Ranch has its own boat ramp and camping facilities along the shoreline in a small inlet of the reservoir. The other two developments are on the north shore of Nacimiento Reservoir, one of which is near Nacimiento Shores Drive and the other off of Oak Shores Drive. The development closest to Oak Shores Drive has its own small marina.

Nacimiento Lake Drive (Road G14) offers more prominent views of Nacimiento Reservoir. When traveling south along the roadway from San Antonio Reservoir, the reservoir's spillway becomes visible upon entering a large S-curve just north of the reservoir. The eastern face of the spillway, Nacimiento Lake Drive (Road G14) crosses the spillway, and the water surface of the reservoir is visible from this vantage. Average water levels at Nacimiento Reservoir under modeled baseline conditions range from 742 feet at the low point in late fall to 770 feet at the high point in early spring in normal years. In dry years, reservoir levels have dropped as low as 714 feet; in wet years, levels have been as high as 795 feet under modeled baseline conditions. Elevation changes reflected in the modeled baseline data exceed 60 feet in wet years, are typically within 25 feet.

Vicinity Character and Quality of the Construction Area

Nacimiento Reservoir would have one construction work area associated with the Tunnel Intake Structure. This area would include an associated access road off of Nacimiento Lake Drive (Road G14). The Tunnel Intake Structure work area would be situated at the eastern end of Nacimiento Reservoir, approximately 1 mile northwest of Nacimiento Dam. The proposed work area is near the water's edge and would be accessible from the Lake Nacimiento Overflow/Day Use Ramp. The work area would primarily be visible from several residences (including Sensitive Receptors 1–5) up the hillside, north of the Tunnel Intake Structure work area, along Lakeshore Lane. The work area may be visible briefly, in passing, from Interlake Road (Road G14) near Lakeshore Lane. The work area would also be visible from across the reservoir from Nacimiento Lake Drive (Road G14) at the southern end of the dam, across the reservoir from Lake Nacimiento Marina, and from the reservoir. The work area is characterized by the reservoir, grassy slopes, oak and pine trees, shrubs, and nearby rolling hills. The visual quality of the Tunnel Intake Structure work area is moderately high due to the scenic nature of views associated with the rolling terrain and the reservoir's water surface, backdropped by nearby hillsides vegetated with oak trees.

Salinas River Valley

Downstream of San Antonio and Nacimiento Reservoirs, the Salinas River supports a large portion of the County's agricultural resources, which contributes to the rural visual character within this area. Historically, large-scale farming operations in the valley substantially have altered the character of the Salinas River Valley, which at one point was dominated by natural riparian floodplain forest and oak grasslands. Today, the valley is characterized by irrigated row crops, irrigated pasture, orchards, vineyards, and grazing lands (County of Monterey 2008). In addition, several natural gas exploration sites are concentrated along Sargents Road, between San Ardo and Bradley, east of U.S. 101 and the Salinas River. This area consists of many cleared pads with derricks, a vast network of dirt access roads and gas pipelines, a notable concentration of wooden utility poles and transmission lines, operations and maintenance buildings, and large- and small-scale storage tanks, all resulting in an industrial-looking landscape that is highly scarred and cluttered. However, although some of the natural gas exploration occurs on hilly terrain, much of the area surrounding the natural gas exploration sites is composed of rolling hillsides that lack development and provide aesthetic relief to the setting.

In general, views from the Salinas River Valley consist of foreground, middle ground, and background views of agricultural lands with the Santa Lucia and Gabilan ranges and foothills in the background. Where the Salinas River is crossed by roadways, motorists have close-up views of the river, riparian vegetation, and surrounding agricultural landscape. Such views are short in duration, due to the speed of travel. As shown in Exhibit 4.14.4, *Visual Resource Areas*, in the Monterey County General Plan EIR, the lands on both sides of San Antonio River are considered highly sensitive viewsheds downstream of San Antonio Reservoir (County of Monterey 2008). As a result, the visual quality of lands along the river downstream of the reservoir generally are considered to have a visual quality that is high. The exception to this is in the area of the natural gas exploration sites, where lands affected by concentrated natural gas exploration have lower visual quality, but are backdropped by scenic hillsides with higher visual quality. The resulting visual quality of this area is moderately low.

Light and Glare

Nighttime lighting is necessary to provide and maintain safe, secure, and attractive environments. Light that falls beyond the intended area of illumination is referred to as *light trespass*. The most common cause of light trespass is spillover light, which occurs when a lighting source illuminates surfaces beyond the intended area, such as when building security lighting or parking lot lights shine onto neighboring properties. Spillover light can affect light-sensitive uses, such as residences, adversely at nighttime. Both light intensity and fixtures can affect the amount of any light spillover. Modern, energy-efficient fixtures that face downward, such as shielded light fixtures, are typically less obtrusive than older, upward-facing light fixtures.

Existing nighttime lighting at Nacimiento and San Antonio Reservoirs is minimal. Nighttime light sources include residences around Nacimiento Reservoir and facilities at the Lake San Antonio and Nacimiento Resorts, including lodges, marinas, convenience stores, conference centers, and security lighting. The wider region immediately surrounding the reservoirs contains very little nighttime lighting. *Glare* is caused by light reflections from pavement, vehicles, and building materials, such as reflective glass, polished surfaces, or metallic architectural features. In addition, glare can be caused by sunlight or nighttime lighting reflecting off of the reservoirs' water surfaces. During daylight hours, the amount of glare depends on the intensity and direction of sunlight.

4.13.3.3 Viewer Groups and Viewer Sensitivity

Publicly accessible views of the proposed project elements are primarily available from: (1) publicly accessible recreation areas and open space areas; (2) residential areas near Nacimiento Reservoir; and (3) publicly accessible roads, such as Nacimiento Lake Drive (Road G14/Road G19) and Interlake Road (Road G14). The following subsections describe the affected viewer groups and their associated viewer sensitivity. Photographs illustrating representative views of the proposed project have been provided and the visual quality and sensitivity of those views is described in the text to aid in establishing baseline visual conditions. **Figure 4.13-1** identifies residential receptors, which are highly sensitive to changes to the visual environment, in the project area. **Figure 4.13-2** provides a map of the key viewpoints in the project area that were photographed on October 9, 2018. These key viewpoints were selected because they are representative of the areas that could be affected by the proposed project and Tunnel-Only Alternative. **Figures 4.13-3** through **4.13-6** , which provide photographs of the key views, are looking toward the project elements from vantage points at Nacimiento and San Antonio Reservoirs.

Recreationists

Recreational viewers participate in active and passive recreational uses in the study area, including land- and water-based activities such as hiking, horseback riding, camping, boating, swimming, fishing, and nature viewing. Recreational services and facilities provided for visitors can be permanent, whereas the visitors are more transitory. Trails surrounding Nacimiento Reservoir include, but are but not limited to, Loop Road Trail, Tennessee Walker Trail, Horse Canyon Trail, and Rim of the Ranch Trail. There are 26 miles of hiking trails surrounding San Antonio Reservoir, including the Lake View Loop Trail, Long Valley Loop Trail, Oak Hill Loop Trail, and Red Tail Trail, in addition to the Long Trail, an 11-mile equestrian trail (HouseBoating.org 2021; Monterey County Convention & Visitors Bureau 2021; Monterey County Parks 2021).

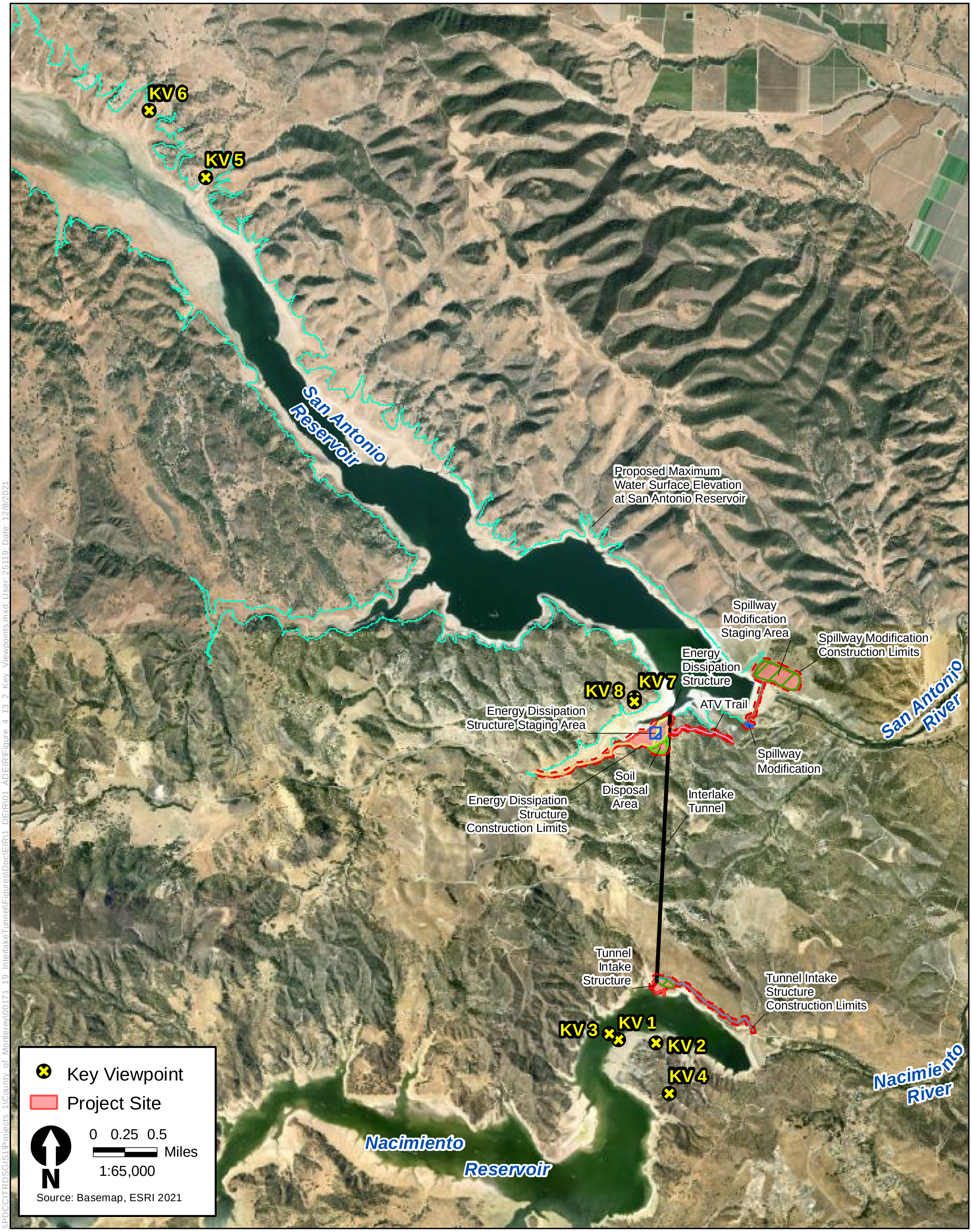

Figure 4.13-2
Key Viewpoints

Key View 1. Looking northeast from Lake Nacimiento Resort, northeast of the marina, toward Nacimiento Reservoir and the Tunnel Intake Structure work area.

Key View 2. Looking northeast from the Pine Knoll Campground and picnic area at Nacimiento Reservoir toward the Nacimiento Reservoir and Tunnel Intake Structure work area.

Figure 4.13-3
Key Views

Key View 3. Looking northeast from the Lake Nacimiento Resort marina docks toward Nacimiento Reservoir and the Tunnel Intake Structure work area.

Key View 4. Looking southwest toward the Nacimiento Reservoir inundation area from an overlook area located off Resort Drive.

Figure 4.13-4
Key Views

Key View 5. Looking south-southwest from the Pleyto Launch Ramp at San Antonio Reservoir toward the reservoir inundation area.

Key View 6. Looking south-southwest from the A Loop Campground toward the San Antonio Reservoir inundation area.

Figure 4.13-5
Key Views

Graphics ... 00171.19 (6-10-2021) JC

Key View 7. Looking east-southeast from a dirt road north of Interlake Road toward the Energy Dissipation Structure work area at San Antonio Reservoir.

Key View 8. Looking southeast toward the Energy Dissipation Structure staging area and Soil Disposal Area at San Antonio Reservoir.

Graphics ... 00171.19 (6-10-2021) JC

Figure 4.13-6
Key Views

Recreational viewers are often focused on their recreational activity and, although they tend to be unsupportive of visual changes that would negatively affect the recreational setting, they tend to be supportive of visual improvements that enhance their recreational experience. A recreational viewer situated at a publicly accessible location is characterized as sensitive when substantial changes to the visual landscape would negatively affect that viewer's experience and/or enjoyment while at that location. Recreationists are thus considered to have high sensitivity to changes in views because they participate in outdoor recreational activities, interact closely with visual resources, and are likely to be in popular recreational areas or to seek out more secluded recreational areas for the beauty and solace they provide. In addition, recreationists are more likely to regard the surrounding landscape as a holistic visual experience; accordingly, the visual environment factors heavily into recreation, travel, and sightseeing activities. However, these viewers are often only in the study area for short durations, ranging from a few hours to a couple of days. The following text describes the representative views from publicly accessible recreation areas looking toward the proposed project as well as the visual sensitivity of those views.

- **Viewpoint 1** (**Figure 4.13-3**): This photo shows an existing view looking northeast from Lake Nacimiento Resort, northeast of the marina, toward Nacimiento Reservoir and the Tunnel Intake Structure work area. This view is representative of views available to visitors and resort guests. Clear and unobstructed views of Nacimiento Reservoir and the Tunnel Intake Structure work area are accessible from this viewpoint with no obstructions. The reservoir is backdropped by the surrounding hillsides that are vegetated with grasses and mature trees. Given that unobstructed views of water and rolling hills are available, the visual quality of the site is considered high. Because recreationists utilizing the resort have longer view durations and an expectation of high-quality views, viewer sensitivity is considered high.
- **Viewpoint 2** (**Figure 4.13-3**): This photo shows an existing view looking northeast from the Pine Knoll Campground and picnic area toward the Nacimiento Reservoir and Tunnel Intake Structure work area. Mature trees partially obscure views of the Tunnel Intake Structure work area. Due to proximity, clear views of the reservoir are accessible from Viewpoint 2, closer to the shoreline. For the same reasons provided for Viewpoint 1, visual quality and viewer sensitivity are both considered high.
- **Viewpoint 3** (**Figure 4.13-4**): This photo shows an existing view looking northeast from the Lake Nacimiento Resort docks toward Nacimiento Reservoir and the Tunnel Intake Structure work area. From this area, recreationists (including boaters and anglers) have clear views of the eastern portion of the reservoir. This area is a popular recreational area used by nearby residents. Open views of water and the Tunnel Intake Structure work area are backdropped by the surrounding hillsides, resulting in visual quality that is high. Because recreationists typically expect high-quality views, viewer sensitivity is also high.
- **Viewpoint 4** (**Figure 4.13-4**): This photo shows an existing view looking southwest toward Nacimiento Reservoir from an overlook area off of Resort Drive. This view shows unobstructed scenic vista views of the reservoir and how the lower water levels in the picture expose more land and create a larger shoreline below the tree line. When water levels are high, the scenic vista view would present views of a larger water surface area that hides large portions of the grassy shoreline and where the water is closer to or at the base of the tree line. Given that unobstructed views of reservoir and rolling hills are available, the visual quality of the site is considered high. Because recreationists utilizing the resort have longer view durations and an expectation of high-quality views, viewer sensitivity is considered high.

- **Viewpoint 5** (**Figure 4.13-5**): This photo shows an existing view looking south–southwest from the Pleyto Launch Ramp at San Antonio Reservoir, along the northwestern shore of the reservoir. Views become more unobstructed as the viewer moves closer to the shoreline, but terrain and vegetation can limit views from the parking lot. The reservoir and rolling hills contribute to a visual quality that is considered high. Because recreationists utilizing the recreation area have longer view durations and an expectation of high-quality views, viewer sensitivity is considered high.
- **Viewpoint 6 (Figure 4.13-5)**: This photo shows an existing view looking south-southwest from the A Loop Campground. Views are slightly obstructed by trees but become more unobstructed as the viewer moves closer to the shoreline. The reservoir and rolling hills contribute to a visual quality that is considered high. Because recreationists utilizing the recreation area have longer view durations and have an expectation of high-quality views, viewer sensitivity is considered high.

Residents

Figure 4.13-1 identifies sensitive residential receptors (viewers) in proximity to the proposed facilities. However, most of these viewers do not have views of the work areas due to intervening terrain and vegetation. Residential viewers can be owners or renters that live within viewing distance of a proposed project or within project boundaries. Residential viewers generally have a desire to maintain the existing landscape as-is because the appearance of their neighborhood is a contributing factor for residents choosing to live there. Therefore, residential viewers tend to be uninterested in change unless they have been able to participate in defining the change. As previously described, there are three residential developments along Nacimiento Reservoir: Heritage Ranch, Oak Shores, and one other private residential development along the reservoir's northern shore. Although there are no residential developments around San Antonio Reservoir, scattered rural residences are along both sides of the reservoir. Residents are considered to have high sensitivity to changes in the viewshed because of their potential exposure to such views, extended viewing times, short distance from the study area, and sense of ownership. The following text describes representative views from these residential areas and the sensitivity of those views.

- **Viewpoint 7** (**Figure 4.13-6**): This photo shows an existing view looking east–southeast from a dirt road north of Interlake Road (Road G14) toward the Energy Dissipation Structure work area at San Antonio Reservoir. This view is representative of views available for a nearby sensitive residential receptor approximately 0.3 mile to the west. The reservoir and rolling, vegetated hills contribute to a visual quality that is considered high. Because the residence has long view durations and an expectation of high-quality views, viewer sensitivity is considered high.
- **Viewpoint 8** (**Figure 4.13-6**): This photo shows an existing view slightly south of Viewpoint 7 but looking southeast toward the Energy Dissipation Structure staging area and spoil disposal area at San Antonio Reservoir. This view is also representative of views available for the nearby sensitive residential receptor that is approximately 0.3 mile to the west. The reservoir and rolling, vegetated hills contribute to a visual quality that is considered high. Because the residence has long view durations and an expectation of high-quality views, viewer sensitivity is considered high.

Roadway Travelers

Roadway travelers can include cyclists and motorists that use various modes of transportation for commuting, touring, and shipping. Cyclists use bicycles at greater speeds than pedestrian travel and may use trails and traffic lanes. Motorists use vehicles with engines (e.g., cars, trucks, buses, motorcycles, mopeds, or any other technology that is not self-propelled, regardless of fuel source). Motorists move at higher speeds than other groups. By necessity, the driver of a motor vehicle focuses less on the view outside the vehicle. Passengers within vehicles move at high rates of speed and may be focused on views outside the vehicle or on activities within the vehicle, such as talking, reading, working, eating, or napping. Commuters travel the same route regularly, have a repeated routine, and are often single drivers, but they may also be passengers, and trips can include commuting to work or to a favorite or frequent destination (e.g., campground, marina, relative's home). Tourists travel individually or in groups through an area for enjoyment, often with a set destination, on trips that are generally more adventurous, cover longer distances, and take more time than commuting trips. Shippers are generally single drivers moving goods on routine routes of varying distances. In general, areas of high visual quality can increase driver and passenger attentiveness toward the passing landscape compared to areas with reduced visual quality.

Travelers on roads within the study area consist of residents, commuters, and travelers going to and from businesses, water access points, and other recreation areas. Major public routes that pass by and provide access to Nacimiento Reservoir and San Antonio Reservoir include Nacimiento Lake Drive (Road G14/Road G19) and Interlake Road (Road G14) (officially designated County Scenic Highways; refer to Section 4.13.2, *Regulatory Setting.)*

In addition, numerous smaller local routes provide access to residential and recreational areas surrounding the reservoirs. Although the smaller local routes are not officially designated, many possess the same scenic qualities for which Nacimiento Lake Drive (Road G19) and Interlake Road (Road G14) were designated and are, therefore, also considered to have high-quality views. As described in Section 4.13.3.2, *Project Vicinity*, rolling terrain, the winding nature of the roadways, and vegetation growing on adjacent slopes limit most views of the reservoirs, including from the state-designated portions of Nacimiento Lake Drive (Road G19) and Interlake Road (Road G14). However, high quality views of the reservoirs are available from certain vantages along these roadways, even though they are brief and in passing. Due to the scenic nature of roadways in the study area, roadway travelers are expected to have moderately high visual sensitivity to visual changes associated with the proposed project and Tunnel-Only Alternative.

4.13.4 Impact Analysis

4.13.4.1 Methods for Evaluating Impacts

This impact analysis considers whether construction and operation of the proposed project or the Tunnel-Only Alternative would result in a substantial effect to aesthetic and visual resources. For the purposes of this analysis, a *substantial effect* on scenic vistas, scenic resources, and the visual character or quality of the site is defined as an activity that would noticeably degrade the quality of an existing view. The analysis focuses on reasonably foreseeable direct and indirect effects compared with baseline conditions. The analysis uses project-specific significance criteria based on the CEQA Appendix G Guidelines, with modifications where deemed appropriate based on the nature of the project and environmental conditions.

This section evaluates potential temporary or short-term impacts on visual resources that would occur during project construction and the long-term effects that would result during operation of the proposed project or Tunnel-Only Alternative. These impacts have the potential to substantially affect scenic resources or degrade the visual character and quality of the project area from the presence of aboveground changes to the visual landscape. The evaluation is based on field observations of the project work areas and surrounding vicinity, site photographs, maps, aerial photographs, and conceptual designs provided by the design team. This analysis focuses on activities that would occur at staging areas, soil disposal area, the Tunnel Intake Structure and Energy Dissipation Structure, and the San Antonio Dam spillway. Because of their short-term nature, construction activities occurring in an area for less than 2 years are typically considered to have a less-than-significant effect on visual quality. However, construction activities occurring in an area for more than 2 years have been evaluated for potentially significant visual impacts.

Long-term visual effects of the proposed project and Tunnel-Only Alternative were assessed based on evaluation of aboveground elements and, for the proposed project only, increased submergence of San Antonio Reservoir. Potential impacts related to changes in reservoir levels and fluctuations were evaluated using results from the SVOM. The model is discussed further in Section 2.5.1.1, *Operations*. The determination of impacts was based on a combination of visual quality, viewer exposure, and visual sensitivity.

4.13.4.2 Criteria for Determining Significance

Appendix G of the CEQA Guidelines provides guidance on assessing whether a project would have significant impacts on the environment. Consistent with CEQA Guidelines Appendix G and consideration of project-specific environmental conditions, MCWRA has determined that the project would have significant aesthetics and visual resources impact if it would:

a. Have a substantial adverse effect on a scenic vista.

b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, within a state scenic highway.

c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings, including scenic vistas (public views are those that are experienced from publicly accessible vantage point).

d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

The following CEQA criteria have been dismissed from further consideration because the project would be entirely within non-urbanized areas:

c. If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

For the purposes of this analysis, impacts on visual character are discussed first because a change in visual character is the primary mechanism that affects scenic vistas and scenic highways. Furthermore, the analysis of scenic vistas has been combined with impacts on visual character to avoid redundancies in the analysis.

4.13.4.3 Applicable Avoidance and Minimization Measures

MCWRA has incorporated AMMs into the project design to prevent the occurrence of environmental impacts. AMMs applicable to aesthetics and visual resources include the following:

- **AMM GEN-4**, *Waste Management*
- **AMM GEN-8**, *Dust Management Controls*

A complete description of the measures is provided in Section 2.6, *Avoidance and Minimization Measures.*

4.13.4.4 Impacts and Mitigation Measures

Impact AES-1: Impacts on Visual Character, including Scenic Vistas

Construction

Construction of the proposed project and Tunnel-Only Alternative would result in temporary changes to the visual environment through the introduction of construction equipment into the viewsheds of all viewer groups. This equipment is not commonly seen in the study area, but is consistent with views of heavy equipment used in roadway projects likely to be seen along roadways in the region, and farming operations in the region. Visible construction activities would occur at the three independent locations that include the Tunnel Intake Structure work area on Nacimiento Reservoir, the Energy Dissipation Structure work area on San Antonio Reservoir, and, for the proposed project, the San Antonio Dam Spillway Modification work area on San Antonio Reservoir. The Interlake Tunnel would be constructed underground using a tunnel boring machine and would not be visible except when the tunnel boring machine is being transferred to and from the project site.

Construction mobilization also would result in temporary changes to the visual environment associated with grading and roadway improvements to access the construction work areas, installation of electrical and communications lines, clearing and grubbing at the work areas, establishment of construction offices and staging areas, and additional preparations for tunnel construction. **AMMs GEN-4,** *Waste Management*, and **GEN-8,** *Dust Management Controls*, serve the dual purpose of minimizing visual impacts during construction by ensuring that the site is kept free of waste and debris and that visible dust clouds are minimized.

Mobilization and construction activities at the Energy Dissipation Structure work area would be most visible to roadway users on and residents along Interlake Road (Road G14) near the site access point, the one isolated residential receptor directly northwest of the construction work area, and water-based recreational viewers using the reservoir (**Figure 4.13-1**). This portion of Interlake Road (Road G14) is not considered to have scenic vista views. These viewers would see temporary grading and construction activities, the movement of heavy equipment, and trucks entering and existing the work area via Interlake Road (Road G14). This area would be accessed via an existing dirt road that would be regraded and surfaced with gravel (as part of the project) to accommodate construction equipment and traffic. Access road improvements would not require tree removals along the access road. Therefore, the minor access road improvements would not result in a noticeable change in permanent views from Interlake Road (Road G14). The placement and grading of the soil-disposal area and the finished landform would be visible to the one isolated residential receptor and water-based recreational viewers. However, the spoil disposal area is not likely to be visible to viewers on and along Interlake Road (Road G14), due to terrain and vegetation that obscure views of this feature. Once construction is complete and the site is restored, the revegetated spoil disposal area would not stand out in views because it would be tucked up next to the tree line and blend with the existing terrain and grassy vegetation.

The primary visible feature would be the Energy Dissipation Structure, which would be a low-profile concrete structure with riprap at the end of the structure. Although this would introduce a permanent, industrial-looking feature into the landscape, it would be in an area that is not readily visible, and the concrete and riprap would weather and blend fairly well with the surrounding landscape. The Energy Dissipation Structure is not large enough to overpower and detract from the surrounding natural views and the structure would not likely detract from the overall visual character and quality of the surrounding landscape.

Temporary mobilization and construction activities at Tunnel Intake Structure work area on Nacimiento Reservoir would be the most-visible feature associated with construction of the proposed project and Tunnel-Only Alternative. These activities would be temporarily visible to roadway users on Nacimiento Lake Drive (Road G14), Interlake Road (Road G14), and smaller local roadways with views of the work area; residents along Interlake Road (Road G14), in proximity to the work area, and Lakeshore Lane; from land-based recreational users near the Lake Nacimiento Marina; and water-based recreational viewers using the reservoir. These viewers would see temporary grading and construction activities, the movement of heavy equipment, and trucks entering and existing the work area via Nacimiento Lake Drive (Road G14). Electrical power for construction activities at the Tunnel Intake Structure would be supplied by underground transmission lines, so these aboveground transmission lines would not be introduced into the landscape. In addition, access road upgrades would not result in a noticeable change to the landscape. Cofferdam(s) would be installed along the water's edge (i.e., the ordinary high-water line) to aid in dewatering the work area, which would be visible temporarily during construction. These activities would occur next to the Lake Nacimiento Overflow/Day Use Ramp, and the existing overflow parking lot would be used as a staging area. This would make the day use area and the ramp unavailable during construction. However, once construction is complete, this area would provide permanent parking for maintenance staff and recreational users.

Construction of the Tunnel Intake Structure would introduce a permanent, industrial-looking structure that would be built into the hillside, but would rise approximately 45 feet above the surrounding terrain and 50 feet above the minimum water surface elevation at the reservoir. In addition, a small, permanent control building would be built in close proximity to the Tunnel Intake Structure. The Tunnel Intake Structure and associated control building have the potential to degrade the quality of permanent views; however, they would be in an area already highly manipulated and modified by reservoir operational infrastructure because they would be in close proximity to the dam, dam spillway, and reservoir outflow structure in to the Nacimiento River. Affected viewers are likely to accept this permanent visual change in the landscape because of its proximity to other engineered structures associated with the reservoir and because they are familiar such features and the need for managed reservoir operations. A permanent debris log boom would float in front of the Tunnel Intake Structure, similar to the restriction barrier near the dam, and would not detract from views. Temporarily disturbed areas would be revegetated once construction is complete so that these areas would blend in with the surrounding landscape.

During construction, the area would remain of the same visual quality for the following reasons: (1) the majority of affected viewers recognize that the reservoirs are human-made features with a primary function of managing water and downstream water flows, with associated habitat goals, and a secondary function of providing recreation; (2) the existing natural character of the recreation areas generally would be maintained; (3) the views to the surrounding foothills would be retained; (4) there would be very little vegetation removal; (5) public access to recreational facilities during construction would be retained so that visual access to most of the reservoirs would be retained; (6) the proposed features are relatively small or are in proximity to other engineered structures associated with reservoir functions; and (7) major construction activities would fall within a 2-year timeframe, with minor construction activities occurring in the third year. In addition, none of the work areas are expected to be visible in publicly accessible scenic vista views available from Interlake Road (Road G14), Nacimiento Lake Drive (Road G14), or vantage points at a higher elevation that the work areas, in the surrounding foothills. If visible, it is not expected that the whole work area would be visible due to intervening terrain and vegetation. Furthermore, if visible, it is expected that the reservoirs and surrounding rolling, vegetated hillsides and sky would be the focal point of such views, and the project features would not stand out or draw attention from the larger vista view.

For the proposed project, temporary mobilization activities at the Spillway Modification work area would be most visible to reservoir employees accessing the area of the San Antonio dam and spillway and using publicly restricted access roads in proximity to these features. There likely would not be views of the activities and changes occurring immediately near the spillway because public access to roadways in this area is restricted, and the hilly terrain and vegetation obscures water-based views and views from the lands north of the San Antonio Reservoir toward the spillway. However, the northernmost end of the spillway structure and the work area surrounding that end of the new structure may be visible to water-based viewers because it is in closer proximity to the reservoir. In addition, the temporary staging area may be partially visible to water-based recreational viewers using the reservoir and for a small portion of roadway users on Vista Road, in proximity to the gates restricting access. There are no prominent trails in this area, so there are not expected to be many recreationists hiking in the hillsides north of the San Antonio dam where the staging area would be temporarily visible. Therefore, there would be a limited number of viewers seeing a limited amount of temporary construction activities associated with the San Antonio Dam Spillway Modification work area.

The proposed project changes at San Antonio dam are in an area that already has highly modified landforms due to the presence of the dam, spillway, and roadway cuts needed to construct access roads in a hilly area. Therefore, permanent landform alterations at the staging area would not detract greatly from views associated with the work area, due to the predominance of other landform modifications in the area. Temporarily disturbed areas would be revegetated once construction is complete so that these areas would blend in with the surrounding landscape. The northern portion of the Spillway Modification may make a small portion of the spillway permanently visible to recreational viewers in the area. However, the Spillway Modification would be low-profile, the concrete would weather and blend fairly well with the surrounding landscape, and it is not large enough to overpower and detract from the surrounding views. Therefore, the Spillway Modification would not detract from the overall visual character and quality of the surrounding landscape. Because the Tunnel-Only Alternative would not include the Spillway Modification, visual impacts associated with this alternative would be reduced slightly compared to the proposed project because the existing spillway would not be modified and, therefore, visual changes during temporary mobilization and construction would not be visible to affected viewers at this location.

Operation

Proposed Project

The proposed project and Tunnel-Only Alternative would require operations and maintenance activities, including debris removal at the Tunnel Intake Structure. However, maintenance is an ongoing part of reservoir operations, and debris is currently removed using the Overflow/Day Use Ramp, so debris removal would occur in the same area as the Tunnel Intake Structure. Therefore, periodic maintenance and debris removal would not detract from views in the area. Water flowing from the Energy Dissipation Structure would not stand out as out of place, because water flowing from the outlet would be an expected visual condition associated with the structure.

The primary visual change associated with project operation would be the change in water levels seen at the reservoirs. Section 4.12, *Recreation*, includes **Table 4.12-2**, which shows the modeled water level changes at Nacimiento Reservoir for baseline conditions and both the proposed project and the Tunnel-Only Alternative. **Table 4.12-3** contains the same information for San Antonio Reservoir. Views of the reservoirs vary depending on the season and water-year type, with the highest water levels at Nacimiento Reservoir and San Antonio Reservoir occurring in wet years and the lowest water elevations occurring in dry years. Years with lower water elevations result in views that are typical for reservoirs throughout California, where viewers are used to and would expect to see exposed striations, or “bathtub rings,” due to fluctuating water levels. Conversely, years with higher water elevations expand the surface area of the reservoir so that waters reach into the “finger” valleys, hiding the bathtub rings.

As shown in **Table 4.12-2**, this trend would continue for the proposed project at Nacimiento Reservoir; however, the model results suggest that the maximum water level for all years would be lower in Nacimiento Reservoir with the proposed project. It should be noted that the SVOM model was used to estimate changes in reservoir storage and releases under a modeled scenario that prioritizes water supply storage using the Interlake Tunnel. Because this modeled scenario is only one of many potential modeled scenarios, the results should be interpreted as representations of potential changes; they may not represent actual changes that would occur under real-time reservoir operations, as described further in Section 2.5.1.1, *Operations*.

As reflected in the SVOM output, modeled annual average water levels for all water-years could be reduced from 753.5 feet under modeled baseline conditions to 736.3 feet, a difference of approximately 17 feet. Model results suggest that the annual average minimum water levels for all water-year types for Nacimiento Reservoir could be approximately 24 feet lower under the proposed project (716 feet) compared to modeled baseline conditions (740 feet). Under dry water-year types, the modeled annual average water levels could be approximately 28 feet lower under the proposed project (704.8 feet) relative to the modeled baseline (732.3 feet). However, the potential decrease in average water levels as reflected in the modeled results is consistent with fluctuations between the modeled baseline minimum monthly average WSE for all water-years of 740 feet and maximum monthly average WSE of 768.9 feet, a difference of approximately 29 feet. These results suggest that the changes associated with the proposed project could reduce the overall average water levels at Nacimiento Reservoir, however such fluctuations in water levels, although at a potentially lower overall average water level, would be within the range of modeled baseline fluctuations between minimum and maximum monthly average WSE. As a result, viewers are not expected to perceive these changes as different from existing reservoir fluctuations. Furthermore, MCWRA has the operational flexibility to manage releases and transfers of water through the

Interlake Tunnel to minimize the impacts of tunnel transfers and reservoir releases on reservoir levels and boat ramp access during peak recreational periods, which in turn translate to changes in views of the reservoirs. As described further in Section 2.5.1.1, *Operations*, this operational flexibility includes operating Nacimiento Reservoir to a WSE of 730 feet during the recreational period to the extent feasible, with potentially lower Nacimiento Reservoir elevations outside of the recreational period as needed to achieve other water supply needs.

As shown in **Table 4.12-3**, the average, maximum and minimum modeled water levels for all years would increase at San Antonio Reservoir under the proposed project relative to the modeled baseline. Modeling suggests that average monthly water levels at San Antonio Reservoir would increase by approximately 32 feet from 704.4 feet under the proposed project to 736.4 feet across all water-year types relative to the modeled baseline. The modeled maximum water level for all water-years would increase from 717.9 to 748.4 feet at San Antonio Reservoir, approximately 31 feet higher than modeled baseline conditions. The modeled minimum water levels for San Antonio Reservoir would be maintained approximately 36 feet higher under the proposed project (724.3 feet) compared to modeled baseline conditions (687.9 feet). These elevation differences are larger than would be observed in Nacimiento Reservoir, and viewers may notice the different water levels under the proposed project at San Antonio Reservoir compared to existing conditions. As described in Section 4.12, *Recreation*, current average water levels in San Antonio Reservoir are too low for some recreational facilities to be fully functional; although these levels would increase under the proposed project, the frequency of higher water levels would not be enough to result in a notable increase in recreational viewer access at such facilities.

However, other recreational facilities are likely to be affected by more frequent and higher inundation levels compared to existing conditions, limiting the availability and use of these features during higher levels. These facilities include the Harris Creek Campground parking lot (760–765 feet) and boat ramp (690–790 feet), Beach Road parking area (785–790 feet), San Antonio Marina boat launch (690–790 feet) and parking area (790–815 feet), New Pleyto boat ramp (740–785 feet) and parking area (775–790 feet), Loop A Campground (780–825 feet), Pleyto launch ramp (740–790 feet), and portions of several roads, such as Pleyto Cemetery Road. Baseline model results suggest that San Antonio Reservoir would not be expected to reach an elevation of 780 feet on any days across all water-year types. Modeling suggests that water levels with the proposed project in San Antonio Reservoir would exceed 780 feet (the baseline maximum) on an average of 71 days across all water-year types, 97 days during wet years, 94 days during normal years, and 0 days during dry years. Modeling suggests that water levels with the proposed project in San Antonio Reservoir would reach 787 feet on an average of 14 days across all water-year types, 40 days during wet years, 60 days during normal years, and 0 days during dry years.

Although higher water levels would extend slightly further up the banks and fingers of the reservoir under the proposed project, viewers accessing the reservoir and other recreational areas would not see a notable change because views would appear very similar to existing conditions. The most notable change would be seen in flatter areas, where the higher water levels would spread over a larger area, such as at the Beach Road and New Pleyto parking areas and near where Interlake Road (Road G14) curves in toward the western end of the reservoir, where the San Antonio River flows into the it. However, flat areas like this are very limited due to the steep terrain surrounding most of San Antonio Reservoir.

Tunnel-Only Alternative

Modeled monthly average, minimum, and maximum WSE fluctuations at Nacimiento Reservoir for the Tunnel-Only Alternative would be similar to those modeled for the proposed project (generally within 1 or 2 feet). Therefore, the results presented for the proposed project are reflective of what could occur at Nacimiento Reservoir under the Tunnel-Only Alternative. The Tunnel-Only Alternative does not include the San Antonio Reservoir Spillway Modifications, and this alternative would therefore not increase the maximum water surface elevation of San Antonio Reservoir. However, water would still be conveyed from Nacimiento Reservoir to San Antonio Reservoir via the Interlake Tunnel, and water levels at San Antonio Reservoir would still increase relative to existing conditions and be visible to recreational viewers. Modeled baseline conditions suggest that San Antonio Reservoir would not be expected to reach an elevation of 780 feet on any days across all water-year types, but under the Tunnel-Only Alternative, the reservoir would reach 780 feet on approximately 1 day per year across all water-year types, 2 days in a wet water-year, 1 days in a normal water-year, and 0 days in a dry water-year. Accordingly, public and private lands at or below the existing maximum WSE of 780 feet would experience a nominal increase in frequency and duration of inundation compared to existing conditions. As identified in Section 4.12, *Recreation*, modeling shows that monthly average water levels at San Antonio Reservoir could increase across all water-year types by approximately 29 feet under the Tunnel-Only Alternative compared to modeled baseline conditions, versus approximately 32 feet under the proposed project compared to modeled baseline conditions. Therefore, changes could be slightly less pronounced under the Tunnel-Only Alternative. However, the change in average water levels is close enough that they would not result in visual changes notable between the proposed project and the Tunnel-Only Alternative.

CEQA Conclusion

Construction and operation of the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to visual character, including scenic vistas.

Impact AES-2: Impacts on Scenic Roadways

Construction

The two state-designated County Scenic Highways in the project vicinity are Interlake Road (Road G14) and Nacimiento Lake Drive (Road G14). Project features seen from these roadways have the potential to result in visual impacts on these scenic roadways. The Tunnel-Only Alternative includes all of the same project features as the proposed project, except that the Spillway Modifications would not be constructed under the Tunnel-Only Alternative. However, the Spillway Modification work area would not be visible from Nacimiento Lake Drive (Road G14), nor affect scenic roadways. Therefore, the proposed project and the Tunnel-Only Alternative would result in the same impacts on state-designated County Scenic Highways under construction because they share the same project features that would be visible from Interlake Road (Road G14) and Nacimiento Lake Drive (Road G14).

Construction of the proposed project is described above under Impact AES-1, *Impacts on Visual Character, including Scenic Vistas*. Portions of the Energy Dissipation Structure work area at San Antonio Reservoir would be visible from Interlake Road (Road G14), near the work area access point. In addition, the Tunnel Intake Structure work area at Nacimiento Reservoir would be visible, in the middleground, from across the reservoir from Nacimiento Lake Drive (Road G14), at the southern end of the dam. As described under Impact AES-1, it is not expected that either of these work areas would be visible from any other publicly accessible scenic vista views available from Interlake Road (Road G14) or Nacimiento Lake Drive (Road G14), due to intervening terrain and vegetation.

Viewers on Interlake Road (Road G14) would see temporary grading and construction activities, the movement of heavy equipment, and trucks entering and existing the Energy Dissipation Structure work area via Interlake Road (Road G14). This area would be accessed via an existing dirt road that would be regraded and surfaced with gravel (as part of the project) to accommodate construction equipment and traffic. Access road improvements would not require tree removals along the access road. Therefore, the minor access road improvements would not result in a noticeable change in permanent views from Interlake Road (Road G14). The placement and grading of the spoil disposal area and the finished landform would not be visible from Interlake Road (Road G14), due to terrain and vegetation that would limit views. However, the Energy Dissipation Structure would be lower down on the slope and would be visible, briefly and in passing, from Interlake Road (Road G14). The structure would be a low-profile concrete structure with riprap at the end of the structure. Although this would introduce a permanent, industrial-looking feature in the landscape, it would be just over a mile away from Interlake Road (Road G14), the concrete and riprap would weather and blend fairly well with the surrounding landscape within a short period of time, it would not be large enough to overpower and detract from the surrounding natural views, the structure would not detract from the overall visual character and quality of the surrounding landscape with valued views from Interlake Road (Road G14), and many roadway travelers would not notice the structure in passing views due to its position in the landscape and dominance of the natural setting in this viewshed.

Viewers on Nacimiento Lake Drive (Road G14) would see temporary grading and construction activities, the movement of heavy equipment, and trucks entering and existing the Tunnel Intake Structure work area via Nacimiento Lake Drive (Road G14). Access road upgrades would not result in a noticeable change to the landscape. Cofferdam(s) would be installed along the water's edge to aid in dewatering the work area, which would be visible during construction. Construction of the Tunnel Intake Structure would introduce a permanent, industrial-looking apparatus that would be built into the hillside and rise approximately 45 feet above the surrounding terrain and 50 feet above the minimum water surface elevation at the reservoir. In addition, a small control building would be built in close proximity to the intake structure. The Tunnel Intake Structure and associated control building have the potential to degrade the quality of views; however, these permanent features would be approximately 1 mile away from the most direct views of the work area available from Nacimiento Lake Drive (Road G14). In addition, they would be in an area already highly manipulated and modified by reservoir operational infrastructure because they would be in close proximity to the dam, dam spillway, and reservoir outflow structure in to the Nacimiento River, and these features are readily visible in views from this segment of Nacimiento Lake Drive (Road G14). Travelers on Nacimiento Lake Drive (Road G14) are likely to accept this permanent visual change in the landscape because of its proximity to other engineered structures associated with the reservoir and because they are familiar such features and the need for managed reservoir operations. A permanent debris log boom would float in front of the intake structure and restrict boat access near the intake, similar to the restriction barrier near the dam, and would not detract from views. Temporarily disturbed areas would be revegetated once construction is complete so that these areas would blend in with the surrounding landscape.

Operation

The proposed project and the Tunnel-Only Alternative would result in similar impacts on scenic roadways under construction. Prospective changes to water levels on Nacimiento Reservoir and San Antonio Reservoir are described under Impact AES-1 for both the proposed project and the Tunnel-Only Alternative.

Views of Nacimiento Reservoir from Interlake Road (Road G14) and Nacimiento Lake Drive (Road G14) would not be affected under either alternative because changes to water levels would be in keeping with normal reservoir fluctuations that currently exist, and roadway travelers would not perceive these changes as any different than existing conditions.

Most views from Interlake Road (Road G14) in the area of San Antonio Reservoir would not be affected by the proposed project or Tunnel-Only Alternative because views of fluctuating water surface elevations would not be visible.

Under the proposed project, views of fluctuating water surface elevations at San Antonio Reservoir would be visible from Interlake Road (Road G14) near the Energy Dissipation Structure work area and at the very western end of the reservoir, near where the roadway crosses the San Antonio River. Near the Energy Dissipation Structure work area, the water levels would be slightly closer the roadway under the proposed project and the Tunnel-Only Alternative, but would appear very similar to existing conditions, and there would not be a notable visual change. In addition, at the western end of the reservoir, where the San Antonio River flows into the reservoir, the WSE would extend farther upstream on the river under the proposed project relative to the Tunnel-Only Alternative. The higher reservoir levels and backed-up river water would swell and expand the river's floodplain so that floodwaters would be visible immediately adjacent to the roadway near where Interlake Road (Road G14) curves in toward the western end of the reservoir. These areas of high water would not detract from views, but are likely to create visual interest under the proposed project and Tunnel-Only Alternative.

CEQA Conclusion

Construction and operation of the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to scenic roadways.

Impact AES-3: Affect Daytime or Nighttime Views

Construction

The majority of construction of the proposed project and Tunnel-Only Alternative would be constructed during daylight hours for the Tunnel Intake Structure, Energy Dissipation Structure, and Spillway Modification. However, tunnel construction activities could also occur during the night. Therefore, this analysis conservatively assumes that high-intensity lighting would likely be needed to light construction activities occurring at the tunnel entrance at the Energy Dissipation Structure work area. This lighting would be directed toward work activities and would be used approximately 0.5 mile away from the isolated residence opposite of the work area. Due to distance and lighting minimization measures, it is not anticipated that lighting used to illuminate nighttime construction activities would result in a substantial increase in nighttime lighting or glare at this location during construction. It is also not anticipated that the proposed structures would increase daytime glare because removal of trees that provide shade would be minimal, the concrete would weather in a short period of time and blend with the surrounding landscape, and the resulting increase in glare reflecting off of the structures would be negligible.

Operation

The Tunnel Intake Structure would be lit with light-emitting diode (LED) lights to enable maintenance staff to observe intake operations at night under both the proposed project and the Tunnel-Only Alternative. However, the Energy Dissipation Structure at the modified spillway would not be lit. Therefore, the proposed project and the Tunnel-Only Alternative would result in the same levels of nighttime lighting because the Tunnel Intake Structure would be built under both the proposed project and the Tunnel-Only Alternative.

The lights installed at the Tunnel Intake Structure would include six double-fixture overhead light posts and two triple-fixture overhead light posts, for a total of 18 LED lamps. In addition, there would be two exterior lights on the control building, with one over each doorway entrance, which may also use LED lamps. Lighting systems would be manually operated. Lighting could negatively affect sensitive receptors if not properly designed. Illumination of outdoor spaces using LED lighting can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if proper shielding is not provided and blue-rich white light lamps are used (American Medical Association 2016; International Dark-Sky Association 2010a, 2010b, 2015). Studies have found that a 4000 Kelvin white LED light causes approximately 2.5 times more pollution than high-pressure sodium lighting with the same lumen output, which would affect sensitive receptors, and more than double the perceived brightness of the night sky (Aubé et al. 2013; Falchi et al. 2011, 2016). As described in Chapter 2, *Project Description*, all lighting would be shielded and downward-facing to minimize light trespass into adjacent open space areas. This would also benefit nearby residential and recreational viewers, both in the distant foreground, approximately 0.4 mile way from the Tunnel Intake Structure. Roadway travelers on Interlake Road (Road G14) are a mile away from the Tunnel Intake Structure and would not be affected by nighttime lighting at this distance. Due to distance away from the structure and lighting design measures to minimize light trespass, lighting at the Tunnel Intake Structure would not result in a substantial increase in nighttime lighting or glare.

CEQA Conclusion

Construction and operation of the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to daytime or nighttime views.

4.13.5 Impact Summary

Table 4.13-2 provides a summary of the significance of impacts on aesthetics and visual resources.

Table 4.13-2. Summary of Impacts on Aesthetics and Visual Resources

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact AES-1: Impacts on Visual Character, including Scenic Vistas			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact AES-2: Impacts on Scenic Roadways			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact AES-3: Affect Daytime or Nighttime Views			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A

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4.14 Utilities and Service Systems

4.14.1 Overview

This section describes the regulatory and environmental setting related to utilities and service systems and evaluates the potential impacts on utilities and service systems that would result from implementation of the proposed project or Tunnel-Only Alternative. For a detailed discussion on energy use refer to Section 4.16, *Energy.*

4.14.1.1 Study Area

The study area for utilities impacts consists of the following:

- All areas related to construction of the project components: staging areas, access roads, and the soil disposal area (see **Figures 2-4, 2-5, 2-9, and 2-13**)
- The area around San Antonio Reservoir that could be inundated following project implementation (see **Figures 2-17a through 2-17k**). This is understood to be the land area between:
  - The existing maximum WSE (780 feet)
  - The maximum with-project WSE (787 feet)

4.14.1.2 Scoping Comments

MCWRA did not receive any comments pertaining to public utilities during public scoping for this EIR.

4.14.2 Regulatory Setting

4.14.2.1 Federal Laws, Regulations, and Policies

Federal Power Act

The Federal Power Act established FERC as an independent agency to regulate the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas terminals and interstate natural gas pipelines and licenses hydropower projects. The Federal Power Act was amended with the Energy Policy Act of 2005 to include reliability standards following a massive power outage in 2003 that affected 55 million people in the Unites States and Canada (USC Section 792 *et seq*., amended 2005). The Energy Policy Act of 2005 expanded FERC's responsibilities to include protecting the high-voltage interstate transmission system through mandatory reliability standards, ensuring the safety and reliability of proposed and operating liquified natural gas terminals, and regulating the transportation of oil by pipeline in interstate commerce. FERC has regulatory jurisdiction over Nacimiento Dam because of the hydropower plant located at the dam.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA, 42 USC Section 6901, *et seq*.) is the public law that creates the framework for the proper management of hazardous and non-hazardous solid waste. RCRA defines solid waste as garbage or refuse; sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility; or other discarded materials. Hazardous waste burns readily, is corrosive or reactive, contains certain amounts of toxic chemicals, or has been included on the EPA's list of hazardous wastes. RCRA regulates the disposal of waste and aims to reduce waste generation. Under the authority of RCRA, EPA develops regulations, guidance, and policies that ensure safe management and cleanup of solid and hazardous waste as well as programs that encourage waste reduction.

4.14.2.2 State Laws, Regulations and Policies

California Division of Occupational Safety and Health Construction Safety Orders

Construction Safety Orders (California Code of Regulations Title 8, Section 1541) from the California Division of Occupational Safety and Health, known as "Cal/OSHA," regulate general excavation activities that may affect utilities. Contractors working in the vicinity of both aboveground and underground utilities are required by Article 2 of California Government Code Section 4216 to contact a regional notification center at least 2 days prior to any subsurface excavation. The regional notification center will then notify utility companies that may have buried lines within 1,000 feet of the excavation. The excavator is required to probe for underground facilities and safely expose them prior to using power equipment for trenching and excavation. Utilities are located within the study area.

California Integrated Waste Management Act of 1989 and Assembly Bill 341

The California Department of Resources Recycling and Recovery (CalRecycle) oversees, manages, and tracks waste in California. The California Integrated Waste Management Act of 1989 (Public Resources Code [Pub. Res. Code], Division 30) mandated all California cities and counties to implement programs to reduce, recycle, and compost at least 50 percent of their waste by 2000 (Pub. Res. Code Section 41780). The state, acting through CalRecycle, determines compliance with the mandate. Per capita disposal rates are used to determine whether a jurisdiction's efforts are meeting the intent of the act.

Assembly Bill (AB) 341, which was adopted by the California Legislature in October 2011, amended the Integrated Waste Management Act of 1989 by directing CalRecycle to adopt a state policy that called for diverting 75 percent of solid waste from landfills by 2020. AB 341 focused largely on commercial waste generators because that sector was identified as most in need of improved waste management. AB 341 was a legislative declaration of policy and did not alter the 50 percent diversion mandate.

California Water Code

Division 3 of the California Water Code entrusts regulatory power pertaining to dam safety to the DSOD, which oversees the design, construction, and maintenance of more than 1,200 dams in California.

4.14.2.3 Local Laws, Regulations, and Policies

Monterey County General Plan

The Monterey County General Plan (2010), which guides land use in unincorporated Monterey County, contains goals and policies concerning land use development decisions. The goals and policies related to utilities and service systems ensure that adequate public facilities and services are available to support development, including the needed infrastructure for water, wastewater, recycling, solid waste, and public utilities in the county. General Plan policies applicable to the proposed project include:

- **Policy PS-1.1** Adequate Public Facilities and Services (APFS) requirements shall:
    a. Ensure that APFS needed to support new development are available to meet or exceed the level of service of "Infrastructure and Service Standards" (Table PS-1) concurrent with the impacts of such development;
    b. Encourage development in infill areas where APFS are available, while acknowledging the rights of property owners to economically viable use of existing legal lots of record throughout the county; and
    c. Seek to achieve acceptable level of service (LOS) standards through improvements funded by fair share impact fees and planned capital improvements (CIFPs).
- **Policy PS-2.1** Coordination among, and consolidation with, those public water service providers drawing from a common water table to prevent overdrawing the water table is encouraged.
- **Policy PS-2.8** The County shall require that all projects be designed to maintain or increase the site's pre-development absorption of rainfall (minimize runoff), and to recharge groundwater where appropriate. Implementation shall include standards that could regulate impervious surfaces, vary by project type, land use, soils and area characteristics, and provide for water impoundments (retention/detention structures), protecting and planting vegetation, use of permeable paving materials, bioswales, water gardens, and cisterns, and other measures to increase runoff retention, protect water quality, and enhance groundwater recharge.
- **Policy PS-3.6** The County shall coordinate and collaborate with all agencies responsible for the management of existing and new water resources.
- **Policy PS-5.3** Programs to facilitate recycling/diversion of waste materials at new construction sites, demolition projects, and remodeling projects shall be implemented.

San Luis Obispo County General Plan

The San Luis Obispo County General Plan (2010), which guides land use in unincorporated San Luis Obispo County, contains goals and policies that guide development decisions. None of these goals and policies are related to utilities and service systems.

4.14.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to public utilities is provided in Appendix C, *Consistency with Applicable Plans and Policies*.

4.14.3 Environmental Setting

4.14.3.1 Water Supply

Water supply in the region is managed by several agencies, both public and private. The MCWRA is the primary water management agency for Monterey County and is responsible for managing, protecting, and enhancing water supply and water quality, as well as providing flood protection, in the County (Regional Water Management Group 2018).

Major water suppliers in the region include California Water Service Company, California American Water Company, Alco Water Service Company, Marina Coast Water District, Castroville Community Services District, and the municipalities of Gonzales, Greenfield, Soledad, and King City. The U.S. Army supplies water for use on their properties (Regional Water Management Group 2018).

The water supply in Monterey County is provided primarily by groundwater storage (roughly 75 percent), with remaining supplies coming from local and imported surface water storage (Monterey County 2010). Reservoirs in the county, including Nacimiento Reservoir and San Antonio Reservoir, are a means of groundwater recharge supply.

4.14.3.2 Wastewater

Residential areas and campgrounds in the vicinity of the project and around Nacimiento and San Antonio Reservoirs rely on a combination of private septic systems, holding tanks, and local wastewater treatment plants for sewage disposal. Wastewater from Heritage Ranch, a small community along the eastern shore of Nacimiento Reservoir, and Lake Nacimiento Resort is treated at the Heritage Ranch Treatment Plant (San Luis Obispo County 1980a). Oak Shores is a residential community along the northern perimeter of Nacimiento Reservoir with its own wastewater treatment plant, the Oak Shores Wastewater Treatment Plant (San Luis Obispo County 1980b). There is no wastewater infrastructure on San Antonio Dam or within the footprint of the Interlake Tunnel.

4.14.3.3 Stormwater

The study area is mostly undeveloped open space, with no formal stormwater conveyance system. Where rural development has occurred, stormwater collects in privately constructed channels, roadside ditches, and natural drainages and then discharges into local watercourses and water bodies, such as Nacimiento Reservoir, San Antonio Reservoir, San Antonio River, Nacimiento River, or associated tributaries and reservoirs. For a more detailed discussion on stormwater, please refer to Section 4.1, *Hydrology.*

4.14.3.4 Solid Waste

Landfills within a 25-mile radius of the project site include Paso Robles Landfill, at 9000 State Route 46 East in Paso Robles, and the Chicago Grade Landfill, at 2290 Homestead Road in Templeton. Paso Robles Landfill, approximately 20 miles southeast of the project site, is a Class III landfill and permitted by the Central Coast Regional Water Quality Control Board (RWQCB) to dispose of non-hazardous solid wastes (e.g., construction and demolition waste, green material, metals, mixed municipal waste, wood waste). Its projected operating life extends to 2067 (CalRecycle 2018c). The landfill covers approximately 80 acres and has a permitted disposal area of 65 acres (CalRecycle 2020a). Approximately 37 acres of this area is currently used for disposal operations (CalRecycle

2018c). The landfill has a maximum permitted capacity of 6,495,000 cubic yards and, as of December 2017, a remaining capacity of 4,216,402 cubic yards (CalRecycle 2020a). Paso Robles Landfill is permitted to accept 450 tons per day of waste (CalRecycle 2020a). The current permit for the landfill was issued in 2018.

The Chicago Grade Landfill, approximately 25 miles southeast of the project site, is also a Class III landfill. The facility is permitted by the Central Coast RWQCB to dispose of non-hazardous solid waste. Its projected operating life extends to 2039 (CalRecycle 2020d). The landfill covers approximately 188 acres and has a permitted disposal area of approximately 77 acres. The landfill has a maximum permitted capacity of 10,548,980 cubic yards and, as of November 2017, a remaining capacity of 6,022,396 cubic yards (CalRecycle 2020b). The Chicago Grade Landfill is permitted to accept 500 tons per day of waste (CalRecycle 2020b). The current permit for the landfill was issued in 2016.

4.14.3.5 Electrical and Natural Gas Service

Electrical and natural gas distribution lines in the study area are serviced by PG&E. PG&E's service area extends throughout Monterey and San Luis Obispo Counties.

The study area includes a source of energy generation. Water released from Nacimiento Reservoir is used to generate electricity at the Nacimiento Hydroelectric Facility, located on the downstream slope of the Nacimiento Dam, on the base on the south side (MCWRA 2021). This facility, which has a maximum generating capacity of 4.4 megawatts, generated a total of 11,675 megawatt hours of electricity in 2020 (California Energy Commission 2021). The facility contains both large and small turbines, with operating capacities ranging from 25 to 400 cubic feet per second. Electricity generated by the Nacimiento Hydroelectric Facility is used by the Northern California Power Agency as part of a long-term power purchase agreement (MCWRA 2021).

4.14.4 Impact Analysis

4.14.4.1 Methods for Evaluating Impacts

This impact analysis considers whether construction or operation of the proposed project or Tunnel-Only Alternative would result in significant impacts on public utilities. A significant impact would occur if the proposed project or Tunnel-Only Alternative would result in the need for new, expanded, or extended utilities, including landfills. Potential impacts related to changes in reservoir levels and fluctuations were evaluated using results from the SVOM. MCWRA provided the results of hydrologic modeling for the proposed project and Tunnel-Only Alternative in comparison with modeled baseline conditions. The model is discussed further in Section 2.5.1.1, *Operations*.

The analysis focuses on the reasonably foreseeable direct and indirect effects of construction and operation of the proposed project and Tunnel-Only Alternative and compares them with baseline conditions. The impact analysis uses significance criteria based on the CEQA Guidelines, Appendix G.

4.14.4.2 Criteria for Determining Significance

Appendix G of the CEQA Guidelines (14 California Code of Regulations 15000 *et seq*.) provides guidance for assessing whether a project would have significant impacts on the environment. Consistent with Appendix G, and in consideration of project-specific environmental conditions, MCWRA has determined that the project would have significant impacts related to utilities and service systems if it would:

a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction of which could cause significant environmental effects

b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years

c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments

d. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals

e. Conflict with federal, state, or local management and reduction goals, statutes, and regulations related to solid waste

The project site does not have a stormwater drainage system and the proposed project and Tunnel-Only Alternative do not include the construction or modification of any such facilities; therefore, stormwater utilities are not discussed further in this chapter.

4.14.4.3 Avoidance and Minimization Measures

No AMMs related to utilities and service systems have been proposed.

4.14.4.4 Impacts and Mitigation Measures

Impact UT-1: Impacts Resulting from Construction or Relocation of Utility Infrastructure

Construction

The proposed project or Tunnel-Only Alternative would not require construction or relocation of wastewater treatment or stormwater drainage, natural gas, or telecommunication facilities. For both the proposed project and Tunnel-Only Alternative, electrical power would be required to operate construction equipment and supporting infrastructure (e.g., construction trailers, security lighting). Accordingly, new temporary and permanent electrical facilities (transmission lines) would be needed to construct and operate aspects of the proposed project and Tunnel-Only Alternative. Because of the nature of the proposed project and Tunnel-Only Alternative, no other new or expanded utility infrastructure would be needed for construction. Construction would not affect the electrical generating capacity of the Nacimiento Hydropower Facility. Hydropower generation would continue to fluctuate throughout the duration of construction, based on changes in water levels and reservoir releases, but no modification or reconstruction of facilities associated with the dam would be required. Accordingly, the remainder of this impact discussion focuses on impacts associated with construction of new electrical infrastructure.[1]

[1] See Section 4.16, *Energy*, for additional detail on energy use associated with construction.

The proposed project and Tunnel-Only Alternative propose construction of two permanent electrical utility extensions as well as temporary extensions. The proposed permanent extensions are as follows:

1. A new underground electrical transmission line from the Tunnel Intake Structure (on Nacimiento Reservoir) to an existing electrical line along Nacimiento Lake Drive (Road G14) would be used for construction and operation of the Tunnel Intake Structure.
2. A new aboveground transmission line from the Energy Dissipation Structure work area (on San Antonio Reservoir) to an existing electrical line along Vista Drive. Although no operational electricity use is anticipated at the Energy Dissipation Structure, the transmission line would remain in place after the completion of construction.

In addition to these new permanent facilities, temporary electrical connections would be needed to provide electrical connections at all project work sites and staging areas. Poles would be installed within the staging areas for the temporary power supply but would be removed upon completion of construction.

Construction of the underground transmission line would entail trenching, burying conduit and pull vaults, backfilling and patching, and installing aboveground equipment, including a service disconnect, equipment pad, ground rods, metering socket, and current transformer (CT) cabinet. Other equipment would be required to connect the underground transmission lines to existing PG&E infrastructure. The aboveground transmission lines would require the installation of poles, placement of power lines, and the installation of equipment to connect the new power lines to existing PG&E infrastructure.

Some components of the electrical facilities would be installed by the construction contractor. However, the installation of equipment to connect the new electrical lines to existing lines as well as new overhead lines would be completed by the utility provider (PG&E). All installations would be within the project footprint. Accordingly, utility construction is considered part of the total construction effort associated with the proposed project and Tunnel-Only Alternative. Moreover, given the rural nature of the study area, utility-related construction is not expected to result in any substantial interruption of electrical power to nearby users.

Operation

Operation of the proposed project and Tunnel-Only Alternative would require electrical power for operation of the Tunnel Intake Structure.[2] A permanent underground electrical line to the Tunnel Intake Structure would provide electricity during operations. Once operational, temporary utility poles and connections would be removed. Operation of the proposed project or Tunnel-Only Alternative would not require any other utility connections or expansions (e.g., water, wastewater).

Operation of the proposed project and Tunnel-Only Alternative would not substantially affect the electrical generating capacity of the Nacimiento Hydropower Facility as a result of changes in reservoir releases. According to historical data[3] provided by the Nacimiento Reservoir hydropower facility operator, the facility produces, on average, 10,431 MWh of hydroelectric power per year, when accounting for normal, wet, and dry years. Based on the hydrologic modeling conducted for the

[2] See Chapter 4.16, *Energy*, for additional information on energy use associated with operation.

[3] Historical yearly hydroelectric generation data was provided for the years 1987 through 2021.

proposed project and Tunnel-Only Alternative, it is anticipated that releases at Nacimiento Reservoir could, at a maximum, decrease by approximately 15 percent compared to the modeled baseline, when accounting for normal, wet, and dry years. Thus, assuming a conservative linear relationship between all Nacimiento Reservoir releases and hydroelectric production, it is estimated that hydroelectric production would also decrease by approximately 15 percent with the proposed project or Tunnel-Only Alternative. [4]

As depicted in **Table 4.16-6**, in Section 4.16, *Energy*, even with the loss in hydroelectric production, the proposed project and Tunnel-Only Alternative would result in an increase in electricity demand of 0.16 percent compared to existing San Luis Obispo County electricity demand. It should be noted that the loss in potential renewable energy is in comparison to a modeled hydrologic baseline and not the actual additional energy demand with the proposed project or Tunnel-Only Alternative. Thus, hydropower generation at Nacimiento Dam would continue to fluctuate with the proposed project and Tunnel-Only alternative as water levels and reservoir releases change, but operation of the proposed project and Tunnel-Only Alternative would not require the modification or relocation of facilities associated with Nacimiento Dam.

Operation of the proposed project and Tunnel-Only Alternative may require the relocation, removal, or construction of protective berms around restrooms or fish cleaning facilities within San Antonio Reservoir's increased maximum WSE. This increase could result in intermittent inundation of some access roads and recreational facilities (e.g., launch ramps and related facilities, such as parking areas) on the reservoir's north and south shores. Although the Tunnel-Only Alternative would not increase the reservoir's maximum inundation level, it would nonetheless increase the frequency at which lands at or below the existing maximum WSE of 780 feet would experience inundation relative to existing conditions.

Under the proposed project and Tunnel-Only Alternative, changes in inundation may result in operational disruptions to or accelerated deterioration of small auxiliary utility facilities (e.g., streetlights, electrical poles), a restroom facility on the north shore (serving the boat ramp off New Pleyto Road), a restroom facility on the south shore (serving the boat ramp off Harris Creek Road), and a water tank on the south shore. These facilities would need to be removed, relocated, or protected through the construction of berms.

At this stage of project development, it is not known which approach would be implemented to protect facilities from partial inundation. With all options, there would be localized construction impacts related to removing, relocating, or protecting facilities through the construction of berms, as discussed in the applicable resource sections of this EIR. In the context of utilities, if restroom facilities are removed rather than relocated or protected with a berm, other restrooms would be available nearby to meet the need. In regard to the water tank, MCWRA's Draft Reservoir Operations Plan indicates that the water supply for the south shore exceeds the need at the facility (MCWRA 2019). Any utility removal or replacement activities would be small scale, localized, and limited to the affected structures. Facility relocation, if needed, would occur within the study area. As such, the effect on utility infrastructure would not extend beyond the immediate facilities that may need to be removed, relocated, or protected with a berm.

[4] This is considered a worst-case estimation; it is unlikely that a 15 percent drop in total releases would result in a 15 percent drop in hydroelectric production because not all releases result in hydroelectric production. Even with the drop in total releases due to the proposed project or Tunnel-Only Alternative, it is possible that hydroelectric production would stay the same.

CEQA Conclusion

Both the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts on utility infrastructure.

Impact UT-2: Impacts on Water Supply

Construction

Construction of the proposed project and Tunnel-Only Alternative would require water for dust control, on-site grout batch plants, off-site concrete preparation, increasing the moisture content of soil used as compacted fill, fire suppression, erosion control or revegetation efforts, and other miscellaneous construction-related uses. Water for all construction uses, except imported concrete, would be sourced from Nacimiento Reservoir and/or San Antonio Reservoir and pumped into water trucks. Tunnel construction under the proposed project and Tunnel-Only Alternative would require water for dust control and operation of the grout batch plant. Under the proposed project, construction of the Spillway Modification would require additional water for dust control **(Table 4.14-1).**

Table 4.14-1. Construction Water Use

	Quantity (gallons per week)	
Water Use	**Proposed Project**	**Tunnel-Only Alternative**
Tunnel construction—dust control	500–1,000	500–1,000
Tunnel construction—grout batch plant	250–1,000	250–1,000
Spillway Modification construction—dust control	500 - 1,000	N/A

Under both the proposed project and Tunnel-Only Alternative, the quantity of water required to assist with compacted fill, fire suppression, and temporary construction-period irrigation is unknown and would vary, depending on the season and needs (e.g., whether there is a fire).

Approximately 16,198 cubic yards (cy) of concrete is estimated to be required for the Tunnel Intake Structure, Interlake Tunnel, and Energy Dissipation Structure. For the proposed project, an additional 11,289 cy of concrete would be required for the Spillway Modification. Concrete vendors typically draw water from the local water source where they are headquartered. At the time of this document's preparation, it was not known what construction contractor would be selected and where concrete vendors would be located, but it is likely that contractors would be coming from locations in Monterey County or San Luis Obispo County.

The quantity of water required for construction would be insubstantial relative to the available water supply from Nacimiento Reservoir and San Antonio Reservoir and would not affect the ability of the reservoirs to meet water demands. No new or expanded water supply facilities would be required to construct the proposed project or Tunnel-Only Alternative.

Operation

One of the proposed project's objectives is to increase the overall surface water supply available from Nacimiento and San Antonio Reservoirs by maximizing the opportunity for water to be collectively stored in the reservoirs. The proposed project would increase the capacity of San Antonio Reservoir by 41,000 acre-feet. Operation of the proposed project or Tunnel-Only

Alternative would have beneficial effects on the water supply because the overall surface water supply and reliability would increase. Operation of the proposed project or Tunnel-Only Alternative would not require water and would not result in a need for new or expanded water supply facilities.

CEQA Conclusion

Both the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to the need for new or expanded water supply facilities.

Impact UT-3: Impacts on Wastewater Treatment Capacity

Construction

Small quantities of wastewater generated during construction would be removed from the construction site and discharged to a local sanitary facility. Beyond the small quantities of wastewater generated by construction workers, construction of the proposed project or Tunnel-Only Alternative would not discharge water to wastewater treatment providers and therefore would have no effect on wastewater treatment facilities. In addition, the construction footprint for the proposed project and Tunnel-Only Alternative would not physically disturb wastewater facilities.

Operation

During the operational phase, neither the proposed project nor the Tunnel-Only Alternative would create wastewater. Accordingly, there would be no impact on the ability of wastewater treatment providers to serve existing commitments.

CEQA Conclusion

Both the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to wastewater treatment facilities during construction. During operation, the proposed project and the Tunnel-Only Alternative would result in **no impact** related on the ability of wastewater treatment providers to serve existing commitments.

Impact UT-4: Impacts Pertaining to Solid Waste Disposal and Conflicts with Solid Waste Regulations

Construction

Proposed Project

Construction of the proposed project would generate solid waste in the form of excavated soils, tunneling spoils, and construction debris. Excavated soils and tunneling spoils would be placed in a soil disposal area within the construction site for San Antonio Reservoir if determined to be free of hazardous materials. The disposal area would be located along the southern shoreline of San Antonio Reservoir, in an upland area that would not be exposed to inundation, approximately 1,200 feet southwest of the Energy Dissipation Structure. No contaminated soils are anticipated to be excavated during construction; however, excavated soils would be screened and treated for contamination prior to reuse or disposal in the soil disposal area. It is possible that excavated materials could become contaminated by fuel or fluid leakage. If unable to be reused, spoils, including on-site soils contaminated by fluids (e.g., hydraulic fluid) used in heavy construction equipment, would be hauled to an appropriate off-site disposal area, in compliance with federal, state, and local regulations. Paso Robles Landfill, which is approximately 27 route miles from the eastern end of the project site, and Chicago Grade Landfill, which is approximately 30 route miles from the work areas, have sufficient capacity for construction debris and soils that would not be reused or placed in the soil disposal area.

The solid waste regulations that are applicable to the proposed project and Tunnel-Only Alternative set targets for diverting solid waste from landfills. Most solid waste from construction of the proposed project would consist of excavated soils that would not be sent to landfills. Soils and other construction debris generated during construction would be reused, recycled, or donated when feasible and landfilled only if necessary. The quantity of construction material that could require disposal in a landfill would not result in a conflict with the diversion targets established in the applicable solid waste regulations. The solid waste generated by construction of the proposed project or Tunnel-Only Alternative would not prevent applicable jurisdictions from achieving the solid waste reduction goals included in the applicable solid waste regulations.

Construction of the proposed project would generate solid waste material that would require disposal. However, the disposal of construction-related solid waste from the project site would not compromise the ability of existing solid waste facilities to continue to provide their existing services and meet applicable regulatory requirements.

Tunnel-Only Alternative

Construction of the Tunnel-Only Alternative would result in the same types of solid waste as construction of the proposed project but in smaller quantities because of the reduced scale of construction required for this alternative. Disposal of construction-related solid waste from the Tunnel-Only Alternative would not compromise the ability of existing facilities to continue to provide their existing services.

Operation

Operation of the proposed project or Tunnel-Only Alternative would generate small amounts of solid waste that would require disposal at local facilities. A trash rack would be installed to prevent vegetative matter and small woody debris from entering the tunnel. The debris would be periodically removed, then reused on-site when possible. Any solid waste requiring disposal would be transported to an appropriate permitted landfill. Existing landfill capacity would be sufficient for operational solid waste from the proposed project or Tunnel-Only Alternative.

CEQA Conclusion

Both the proposed project or Tunnel-Only Alternative would have **less-than-significant** impacts related to solid waste and conflicts with solid waste regulations.

4.14.5 Impact Summary

Table 4.14-2 provides a summary of the significance of potential impacts on public utilities.

Table 4.14-2. Summary of Impacts on Public Utilities

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact UT-1: Impacts Resulting from Construction or Relocation of Utility Infrastructure			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact UT-2: Impacts on Water Supply			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact UT-3: Impacts on Wastewater Treatment Facilities			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: No impact	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: No impact	N/A	N/A
Impact UT-4: Impacts Pertaining to Solid Waste Disposal and Conflicts with Solid Waste Regulations			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A

4.15 Wildfire

4.15.1 Overview

This section presents the environmental and regulatory settings for wildfire risk and prevention and discusses the potential for wildfire-related impacts that could result from construction and operation of the proposed project and Tunnel-Only Alternative.

4.15.1.1 Study Area

The wildfire study area is based on the state's fire hazard designation maps and includes all High and Very High Fire Hazard Severity Zone (FHSZ) or State Responsibility Area (SRA) land within, between, or adjacent to all areas related to construction and operation of the project components (i.e., staging areas, access roads, the soil disposal area) (see **Figures 2-4, 2-5, 2-9,** and **2-13**). **Figure 4.15-1** shows the project site in relation to the FHSZs.

4.15.1.2 Scoping Comments

Table 4.15-1 summarizes the scoping comments relevant to wildfire risk and prevention received during the scoping comment period. All comments are from a June 10, 2016, letter from CAL FIRE, San Luis Obispo County. The table indicates where such comments are addressed in this EIR.

Table 4.15-1. Scoping Comments Related to Wildfire Impacts

Summary of Comment	Location Where Comment Is Addressed
Concerns regarding general wildfire safety, given the project's location within a designated Very High FHSZ, and development and implementation of project-specific fire safety and protection plans (CAL FIRE)	Impact WF-1, *Impair an Adopted Emergency Response Plan or Emergency Evacuation Plan*, includes a discussion of requirements for preparation of a Fire Safety Plan in accordance with California Fire Code Sections 404.3.1 (Evacuation Plans) and 404.3.2 (Fire Safety Plans).
Concerns with access requirements, including concerns related to emergency vehicle access and lane closures during construction as well as impacts on roads resulting from increased maximum water levels at San Antonio Reservoir and related road improvements (CAL FIRE)	Analysis regarding emergency access during construction is provided in Impact WF-1, *Impair an Adopted Emergency Response Plan or Emergency Evacuation Plan*.
Concerns regarding the need for an operational water supply and wildfire compliance measures prior to construction (CAL FIRE)	Analysis regarding operational water supply and wildfire compliance measures prior to construction is provided in Impact WF-2, *Increase Potential Exposure to Pollutant Concentrations from a Wildfire*.

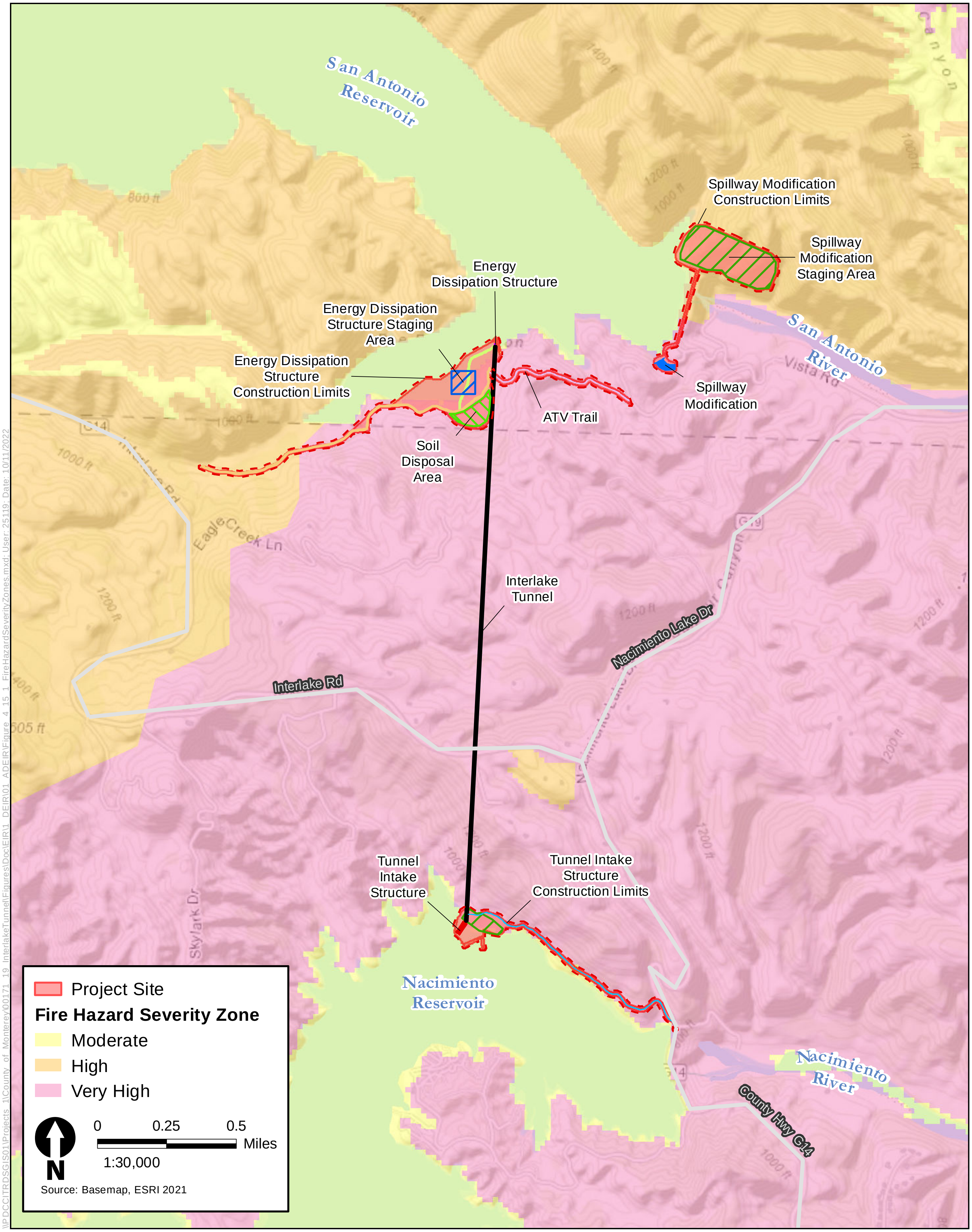

Figure 4.15-1
Fire Hazard Severity Zones

4.15.1.3 Definitions

Wildfire

A wildfire is a nonstructural fire that occurs in vegetative fuels, excluding prescribed fire. Wildfires can occur in undeveloped areas and spread to urban areas where the landscape and structures are not designed and maintained to be ignition resistant. The potential for wildland fires represents a hazard where development is adjacent to open space or within proximity to wildland fuels or designated fire severity zones.

Fire Hazard Designations

CAL FIRE has mapped areas with significant fire hazards in the state through its Fire and Resources Assessment Program (CAL FIRE 2022). The maps partition areas of the state into different FHSZs, based on a hazard scoring system that uses subjective criteria for fuels, fire history, terrain influences, housing density, and occurrences of severe fire weather in areas where urban conflagration could result in catastrophic losses. As part of this mapping system, land where CAL FIRE is responsible for wildland fire protection, generally in unincorporated areas, is classified as an SRA. Where local fire protection agencies are responsible for wildfire protection, the land is classified as a Local Responsibility Area (LRA). The entire study area is within an SRA. **Figure 4.15-1** shows the project site overlain with CAL FIRE High and Very High FHSZs.

4.15.2 Regulatory Setting

4.15.2.1 Federal Laws, Regulations, and Policies

No federal regulations related to wildfire risk and prevention apply to the proposed project.

4.15.2.2 State Laws, Regulations, and Policies

California Department of Forestry and Fire Protection

CAL FIRE protects the people of California from fires, responds to emergencies, and protects and enhances forest, range, and watershed values by providing social, economic, and environmental benefits to rural and urban citizens. CAL FIRE's firefighters, fire engines, and aircraft respond to more than 5,600 wildland fires each year (CAL FIRE 2020). The Office of the State Fire Marshal supports CAL FIRE's mission by focusing on fire prevention. It provides support by regulating buildings in which people live, congregate, or are confined; by controlling substances and products that may, in and of themselves, or by their misuse, cause injury, death, or destruction by fire; by providing statewide direction for fire prevention in wildland areas; by regulating hazardous liquid pipelines; by reviewing regulations and building standards; and by providing training and education in fire protection methods and responsibilities.

The Office of the State Fire Marshal and CAL FIRE administer state policies regarding wildland fire safety. Construction contractors must comply with the following requirements in the Public

Resources Code (Pub. Res. Code) during construction activities at any sites with forest-, brush-, or grass-covered land:

a. Earthmoving and portable equipment with internal-combustion engines must be equipped with a spark arrestor to reduce the potential for igniting a wildland fire (Pub. Res. Code Section 4442).

b. Appropriate fire-suppression equipment must be maintained from April 1 to December 1, the highest danger period for fires (Pub. Res. Code Section 4428).

c. On days when a burning permit is required, flammable materials must be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame and the construction contractor must maintain the appropriate fire-suppression equipment (Pub. Res. Code Section 4427).

d. On days when a burning permit is required, portable tools powered by gasoline-fueled internal-combustion engines must not be used within 25 feet of any flammable materials (Pub. Res. Code Section 4431).

Additional CAL FIRE/San Luis Obispo County Fire Department requirements include:

a. Development of a Fire Safety Plan in accordance with California Fire Code Chapter 4, Emergency Planning and Preparedness;

b. Development of a Fire Protection Plan that describes ways to minimize and mitigate a potential loss from wildfire exposure (California Fire Code Section 4902.1);

c. Development of a Wildland Fire Vegetation Management Plan, to be approved by CAL FIRE/San Luis Obispo County Fire Department; and

d. Establishment of an operational water supply system and installation of an access road system prior to construction (California Fire Code Sections 503.1 and 508).

California Emergency Services Act

The California Emergency Services Act (California Government Code Section 8550–8669.7) was adopted to establish the state's role and responsibility during human-caused or natural emergencies that result in disaster and/or extreme peril with respect to life, property, or resources of the state. The act is intended to protect the lives and property of the people of the state.

California Fire Code

The California Fire Code (24 California Code of Regulations 9) regulations are consistent with nationally recognized accepted practices for safeguarding, to a reasonable degree, life and property from hazards associated with the following: fire and explosion, hazardous conditions arising from the use or occupancy of buildings, and dangerous conditions arising from the storage, handling, and use of hazardous materials and devices. The code also contains provisions to assist emergency response personnel. The California Fire Code and the California Building Code use a hazard classification system to determine the protective measures necessary to protect life and property. These may include measures pertaining to construction standards, separation from property lines, and specialized equipment.

California Fire Code Section 404.3 requires fire safety and evacuation plans to be reviewed or updated annually or as necessitated by changes in staff assignments, occupancy, or the physical arrangement of the building. California Fire Code Section 503.1 requires fire apparatus access roads to be provided and maintained for every facility, building, or portion of a building. The fire code official is authorized to require more than one fire apparatus access road, based on the potential for impairment of a single road by vehicle congestion, terrain conditions, climatic conditions, or other factors that could limit access.

2019 Strategic Plan for CAL FIRE

The 2019 Strategic Plan for CAL FIRE represents a cooperative effort between the State Board of Forestry and Fire Protection and CAL FIRE (CAL FIRE and California Natural Resources Agency 2019). In 2019, the State Board of Forestry and Fire Protection adopted a new strategic fire plan to address fire concerns in California. The board, which has adopted fire plans since the 1930s, periodically updates them to reflect current and anticipated needs. Over time, as the environmental, social, and economic landscape of California's wildlands changed, the board has updated the Strategic Plan to respond to the changes and provide CAL FIRE with appropriate guidance "for adequate statewide fire protection of state responsibility areas" (Pub. Res. Code Section 4130). The Strategic Plan calls for a natural environment that is more fire resilient; buildings, as well as infrastructure, that are more fire resistant; and a society that is more aware of and responsive to the benefits and threats of wildland fire, all of which are achieved through local, state, federal, tribal, and private partnerships.

The goals that are critical to achieving the 2019 Strategic Plan's vision revolve around fire prevention, natural resource management, and fire suppression efforts, as broadly construed. The major components are:

- Improve the availability and use of consistent, shared information on hazard and risk assessment.
- Promote the role of local planning processes, including general plans; new development; and existing developments and recognize individual landowner/homeowner responsibilities.
- Foster a shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as Community Wildfire Protection Plans.
- Increase awareness and actions to improve fire resistance of man-made assets at risk and fire resilience of wildland environments through natural resource management.
- Integrate implementation of fire and vegetative fuels management practices consistent with the priorities of landowners or managers.
- Determine and seek the needed level of resources for fire prevention, natural resource management, fire suppression, and related services.
- Implement needed assessments and actions for post-fire protection and recovery.

4.15.2.3 Local Laws, Regulations, and Policies

Monterey County

Monterey County 2010 General Plan

The Monterey County 2010 General Plan guides land use and development in the unincorporated areas of Monterey County. The Monterey County General Plan Safety Element contains the following goal and policies related to wildfire prevention, which may apply to the proposed project (County of Monterey 2010):

- **Goal S-4:** Minimize the Risks from Fire.
  - **Policy S-4.8:** Fire hazards shall be reduced to an acceptable level of risk by prescribing the use, location, type, and design of roadways.
  - **Policy S-4.9:** Roadways shall be constructed and maintained in accordance with Monterey County Code Chapter 18.56 or the California Fire Code, as updated from time to time, as determined by the fire authority having jurisdiction.
  - **Policy S-4.11:** The County shall require all new development to be provided with automatic fire protection systems (such as fire breaks, fire-retardant building materials, automatic fire sprinkler systems, and/or water storage tanks) approved by the fire jurisdiction.
  - **Policy S-4.13:** The County shall require all new development to have adequate water available for fire suppression. The water system shall comply with Monterey County Code Chapter 18.56, National Fire Protection Association Standard 1142, or other nationally recognized standards. The fire authority having jurisdiction, the County Departments of Planning and Building Services, and all other regulatory agencies shall determine the adequacy and location of the water supply and/or storage to be provided.
  - **Policy S-4.22:** Every building, structure, and/or development shall be constructed to meet the minimum requirements specified in the current adopted state building code, state fire code, Monterey County Code Chapter 18.56, and other nationally recognized standards.
  - **Policy S-4.32:** Property owners in high, very high, and extreme fire hazard areas shall prepare an overall Fuel Modification Zone plan in conjunction with permits for new structures, subject to approval and performed in conjunction with CAL FIRE and/or other fire protection agencies in compliance with state law.

Monterey County Code of Ordinances

Chapter 18.56, Wildfire Protection Standards in State Responsibility Areas

Chapter 18.56 requires the establishment of wildfire protection standards in conjunction with building, construction, and development in SRAs to provide for emergency access and perimeter wildfire protection measures, based on Pub. Res. Code Section 4290. Per Chapter 18.56, road and street networks, whether public or private, must provide safe access for emergency wildland fire equipment and civilian evacuation concurrently as well as unobstructed traffic circulation during wildfire emergencies.

Monterey County Community Wildfire Protection Plan

The Monterey County Community Wildfire Protection Plan (MCCWPP) was developed by the Monterey Fire Safe Council in coordination with CAL FIRE, the U.S. Forest Service, the Bureau of Land Management, and the County of Monterey. The MCCWPP provides countywide wildfire planning recommendations and aims to reduce wildfire ignitions, spreading, costs, and losses (Monterey Fire Safe Council 2010).

San Luis Obispo County

San Luis Obispo County General Plan

The 2010 San Luis Obispo County General Plan guides land use and development in the unincorporated areas of San Luis Obispo County. The San Luis Obispo County General Plan Safety Element, which includes amendments adopted in 2013, contains the following goal and policies related to wildfire prevention, which may apply to the proposed project (County of San Luis Obispo 1999):

- **Goal S-4:** Reduces the Threat to Life, Structures, and the Environment Caused by Fire.
  - **Policy S-13:** Pre-Fire Management. New development should be carefully located, with special attention given to fuel management in higher fire risk areas. Large, undeveloped areas should be preserved so they can be fuel managed. New development in fire hazard areas should be configured to minimize the potential for added danger.
  - **Policy S-16:** Loss Prevention. Improve structures and other values at risk to reduce the impact of fire. Regulations should be developed to improve the defensible area surrounding habitation.

San Luis Obispo County Multi-Jurisdictional Local Hazard Mitigation Plan

The San Luis Obispo County Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP), which underwent a comprehensive update, was adopted by the Board of Supervisors on June 16, 2020 (Resolution 2020-139) (County of San Luis Obispo 2019). The County of San Luis Obispo (lead jurisdiction), its municipalities, and its special districts[1] developed the LHMP, which includes mitigation actions to reduce the vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. The LHMP works in conjunction with other County of San Luis Obispo plans, including the general plan, and other hazard mitigation plans developed for specific programs, such as flood control and fire prevention programs. The LHMP contains the following mitigation actions related to wildfire prevention, which may apply to the proposed project:

- H.5: Adopt and enforce Wildland Urban Interface Building Code standards that emphasize ignition-resistant construction.
- C.1.1: Work with the San Luis Obispo County Fire Safe Council to conduct fuel thinning and chipping projects in high-priority areas. Collaborate with property owners and regulatory agencies in order to utilize prescribed fire on private and state-owned lands in the county.

[1] Municipalities include the City of Arroyo Grande, City of Atascadero, City of Grover Beach, City of Morro Bay, City of Paso Robles, City of Pismo Beach, and City of San Luis Obispo. Community Service Districts (CSDs) include the Avila Beach CSD, Ground Squirrel Hollow CSD, Heritage Ranch CSD, Los Osos CSD, Nipomo CSD, Oceano CSD, San Miguel CSD, San Simeon CSD, and Templeton CSD. Special districts include the San Luis Obispo County Flood Control and Water Conservation District, Cayucos Sanitary District, Port San Luis Harbor District, and South San Luis Obispo County Sanitation District.

- C.3.8: Evacuation Planning. Develop enhanced evacuation plans for San Luis Obispo County. Benefits: Reduced evacuation time and potential loss of life.
- C.4.3: Prevent wildfires through aggressive code enforcement efforts by working with engine company captains and the fire prevention staff to increase the education and enforcement of Pub. Res. Code 4291 (defensible space rules).
- C.4.5: Create and maintain fuel breaks in strategic locations.

San Luis Obispo County Municipal Code

Title 16 – Fire Prevention

Title 16 of the San Luis Obispo County Municipal Code includes regulations related to burning limitations and adherence to the 2019 California Fire Code.

16.04.060 – Hazard Reduction

In the county, outside incorporated cities and towns, defensible space free of forest-, brush-, or grass-covered land or lands covered with inflammable vegetation must be maintained within 30 feet of any building or structure.

16.10.060 – Amendments made to the California Fire Code

Section 503.4, Obstruction of Fire Apparatus Access Roads

Fire apparatus access roads shall not be obstructed in any manner, including the parking of vehicles. Minimum required widths and clearances established under Section 503.2.1 shall be maintained at all times.

4.15.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to wildfire is provided in Appendix C, *Consistency with Local Laws, Regulations, and Policies*.

4.15.3 Environmental Setting

As shown on **Figure 2-1**, the proposed project would be constructed within, between, and adjacent to Nacimiento and San Antonio Reservoirs. Nacimiento Reservoir is in northern San Luis Obispo County. Nearly all of San Antonio Reservoir is within Monterey County, but an arm of the reservoir extends across the county line into San Luis Obispo County. The reservoirs are generally northwest of Paso Robles, in the sparsely developed rolling hills between U.S. Highway 101 and the Santa Lucia Mountains.

More than half of the land area in Monterey County is mountainous and covered with natural plant communities that are both highly combustible and naturally maintained by periodic wildfires (County of Monterey 2010). Flammable vegetation exists in proximity to the proposed construction area at the northern tunnel opening. According to the fire hazards map of the San Luis Obispo County General Plan Safety Element (County of San Luis Obispo 1999), Nacimiento Reservoir is completely enveloped in a Very High FHSZ. Although Nacimiento Reservoir's Tunnel Intake

Structure would be at the reservoir's edge and the tunnel would be constructed by means of horizontal boring underground, flammable vegetation exists in proximity to the proposed construction area at this location.

Figure 4.15-1 shows the project site overlain with CAL FIRE FHSZs, which represent a measurement of the likelihood that an area will burn, combined with the severity of burn behavior characteristics (e.g., intensity, speed, and embers produced). Portions of the Tunnel Intake Structure and associated staging area, Nacimiento Reservoir Overflow/Day Use Ramp Road, Energy Dissipation Structure access road and associated staging area, ATV trail, soil disposal area, and Spillway Modification work site are in a Very High FHSZ. Portions of the Spillway Modification staging area and Energy Dissipation Structure access road are in areas identified as a High and Very High FHSZs. The entirety of the Interlake Tunnel would be located within an area designated as a Very High FHSZ; however, in that area, the Interlake Tunnel would be located underground.

Fire hazards in Monterey County are heavily influenced by topography and wind patterns. Fast-rising topography along the Coast Ranges encourages wildland fires to quickly spread uphill. According to the wildland fire threat area maps produced by CAL FIRE, the wildfire threat is most extreme at the highest elevations. Electrical equipment, such as power lines and transformers, has caused numerous fires. An emerging cause for concern is mowing, along with the use of power equipment around very dry vegetation (MCWRA 2014).

4.15.3.1 Fire Suppression and Firefighting

Wildfire control is dependent on a number of variables, including weather, topography, fuel conditions (e.g., structure, volume, moisture content), access, and timing of ignition. Most fires occur within early to middle afternoon hours when ambient temperature and fuel moisture levels are conducive to ignition. The first attempt at control and suppression is called the initial attack. If fires are not controlled within the first 2 or 3 hours, additional firefighting resources are usually called in, beginning the extended attack phase. With the onset of evening, fire intensity is typically reduced, assisting firefighters in containing the fire within a single burning period. When the extended attack fails and thousands of acres burn, the incident is classified as a major event.

Wildland fire suppression operations are complex and expensive. Fire suppression typically involves a multi-agency firefighting response with hundreds of firefighters participating in coordinated air and ground operations. The availability and response times for resources vary, according to the number of other emergencies in the area and the availability of volunteer firefighters.

Because of the dry summer climate, highly flammable vegetation, and rugged terrain, the fire hazard in the Nacimiento Reservoir area is high, and fire control is difficult. Increasing numbers of recreational users intensifies the hazard in both developed areas and along miles of shoreline. Although the primary responsibility of CAL FIRE/San Luis Obispo County Fire Department in the Nacimiento Reservoir area is to control brush and forest fires, they are also under contract with the County of San Luis Obispo to combat structural fires. The Paso Robles Air-Attack Base emergency response program, based at Paso Robles Airport, responds to forest and brush fires in remote areas. Tactical aircraft fly overhead to direct air tankers and helicopters to critical areas of the fire for retardant and water drops (San Luis Obispo County Fire Department 2021).

CAL FIRE/San Luis Obispo County Fire Department provides fire protection to many county communities, including the entirety of the study area. The closest CAL FIRE/San Luis Obispo County

Fire Department stations to the project site are Las Tablas, at the intersection of Chimney Rock Road and Cypress Mountain Drive in Creston (on State Route 46 near Branch Road [Meridian]), and Fire Station 40 on Parkhill Road east of Santa Margarita (San Luis Obispo County 2014). In Monterey County, the closest stations to the project site are the CAL FIRE King City Fire Station and King City Fire Department station, approximately 31 miles northwest of the project site.

4.15.4 Impact Analysis

4.15.4.1 Methods for Evaluating Impacts

This impact analysis considers whether implementation of the proposed project or Tunnel-Only Alternative would result in significant impacts related to wildfires. The analysis focuses on reasonably foreseeable direct and indirect effects of construction and operation of the proposed project and Tunnel-Only Alternative. The analysis uses project-specific significance criteria, based on the CEQA Guidelines, Appendix G.

4.15.4.2 Criteria for Determining Significance

Appendix G of the CEQA Guidelines provides guidance for assessing whether a project would have significant impacts on the environment. Consistent with Appendix G, and in consideration of project-specific environmental conditions, MCWRA has determined that a project would have significant wildfire impacts if it would:

a. Substantially impair an adopted emergency response plan or emergency evacuation plan.

b. Due to slope, prevailing winds, or other factors, exacerbate wildfire risks, thereby exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

c. Require the installation or maintenance of associated infrastructure (e.g., roads, fuel breaks, emergency water sources, power lines, other utilities) that may exacerbate fire risks or result in temporary or ongoing impacts on the environment.

d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

4.15.4.3 Avoidance and Minimization Measures

MCWRA has incorporated AMMs into the project design to prevent the occurrence of environmental impacts. The AMMs applicable to this wildfire analysis include the following:

- **AMM GEN-6**, *Staging, Stockpiling of Soil, and Access*
- **AMM GEN-10**, *Fire Safety and Evacuation Plan*
- **AMM GEN-11**, *Wildfire Protection Plan and Safety Measures*
- **AMM GEN-12**, *Fire Safety Measures during Construction*
- **AMM GEN-13**, *Emergency Access Measures*

A complete description of the measures is provided in Section 2.6, *Avoidance and Minimization Measures.*

4.15.4.4 Impacts and Mitigation Measures

Impact WF-1: Impair an Adopted Emergency Response Plan or Emergency Evacuation Plan

Construction

For the proposed project and the Tunnel-Only Alternative, project work areas would be accessed primarily from established roads, including Nacimiento Lake Drive and Interlake Road. The Tunnel Intake Structure work area would be accessed from Nacimiento Lake Drive and the Nacimiento Reservoir Overflow/Day Use Ramp Road. The tunneling and Energy Dissipation Structure work areas would be accessed from Interlake Road and remnant existing roads within MCWRA property. As a condition of the contract, construction would not require temporary or permanent closure of roadways or block access to on-site uses that would physically impair or otherwise interfere with emergency response or evacuation in the project vicinity.

MCWRA and the project contractor(s) would follow all pertinent CAL FIRE requirements regarding fire safety and emergency access in constructing the proposed project and/or the Tunnel-Only Alternative.

The proposed project and Tunnel-Only Alternative incorporate **AMM GEN-10**, *Fire Safety and Evacuation Plan*, which would involve preparation of a Fire Safety Plan, in accordance with California Fire Code Sections 404.3.1 (Evacuation Plans) and 404.3.2 (Fire Safety Plans). The plan would address issues regarding employee training, record keeping, and hazard communications and drills to be completed prior to construction. All access routes would be required to meet CAL FIRE's grade requirements to facilitate the movement of fire suppression equipment. For emergency access purposes, the contractor would install a Knox Box on all access gates. Furthermore, the proposed project would be required to comply with Chapter 18.56 of the Monterey County Code, which establishes wildfire protection standards in SRAs to provide emergency access. As such, construction of the proposed project would adhere to the fire safety and evacuation plan developed in accordance with the California Fire Code and would not substantially impair an adopted emergency response or evacuation plan.

Operation

Proposed Project

Maintenance activities conducted during operation of the Tunnel Intake Structure, Spillway Modification, and Energy Dissipation Structure would adhere to the fire safety and evacuation plan prepared for the proposed project (see **AMM GEN-10**). The plan would include emergency egress or escape routes, procedures for employees who must remain to operate critical equipment before evacuating, procedures to account for employees after evacuation has been completed, preferred and alternative means of reporting fires and other emergencies to the fire department or designated emergency response organization, and site plans, including the occupancy assembly point, locations of fire hydrants, and normal routes of fire department vehicle access. A Fire Safety Plan for the proposed project would be developed in accordance with California Fire Code Section 404.3. In addition, per Policy S-4.32 of the Monterey County General Plan, a Fuel Modification Plan would be prepared, including a site plan that illustrates how vegetation around the control building and roadways would be maintained to reduce fuel loads. As such, operations and maintenance activities would not substantially impair an adopted emergency response or evacuation plan.

As discussed in Section 4.6, *Transportation*, the proposed project has the potential to result in periodic inundation and impassable roadways (see **Figure 4.6-1**) due to the increase in maximum WSE at San Antonio Reservoir. Although the affected areas are low-volume local roadways, such inundation can create a safety hazard if drivers attempt to pass through an inundated area and become stuck potentially interfering with an emergency response or evacuation scenario.

Tunnel-Only Alternative

As with the proposed project, the Tunnel-Only Alternative would involve maintenance activities that would be completed by MCWRA staff at the Tunnel Intake Structure and Energy Dissipation Structure. The Tunnel-Only Alternative would not include the Spillway Modification and therefore would not raise the maximum WSE at San Antonio Reservoir. Operations and maintenance of the Tunnel-Only Alternative would not substantially impair an adopted emergency response or evacuation plan.

CEQA Conclusion

Construction of the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to substantially impairing an adopted emergency response or evacuation plan.

Operation of the proposed project would result in significant impacts because the Spillway Modification could create additional inundation on roadways during high-water events in San Antonio Reservoir rendering certain roadways impassible which could substantially impair an adopted emergency response or evacuation plan. **MM TRA-1** (see Section 4.6, *Transportation*) would provide advanced and up-to-date notification about roadway inundation hazards and instruct drivers to follow detours. Impacts would be reduced to **less-than-significant with mitigation**.

Operation of the Tunnel-Only Alternative would have **less-than-significant** impacts related to substantially impairing an adopted emergency response or evacuation plan.

Impact WF-2: Increase Potential Exposure to Pollutant Concentrations from a Wildfire

Construction

The project site is primarily within a Very High FHSZ, with portions of the Spillway Modification work area and Energy Dissipation Structure access road in a High FHSZ. Heat or sparks from construction equipment or vehicles, as well as flammable materials, have the potential to ignite adjacent vegetation and start a fire, especially during weather events with low humidity and high wind speeds, which are typically experienced in the summer and fall but can occur year-round in the Salinas Valley region. Compliance with California Fire Code Sections 503.1 and 508, which concern spark arresters, adequate clearance around welding operations, smoking restrictions, and extinguishers on work sites during project construction, would reduce potential risks. Furthermore, the proposed project would be required to comply with Section 16.10.030 of the San Luis Obispo County Municipal Code, which establishes limits regarding the storage of flammable or combustible liquids. Potential risks associated with wildfire ignition and spread during construction of the proposed project would be reduced through AMMs, which would be incorporated into the project design. The AMMs would ensure access to an operational water supply system at the construction site and implementation of a construction-phase Wildland Fire Vegetation Management Plan (i.e., **AMM GEN-11**, *Wildfire Protection Plan and Safety Measures*, and **AMM GEN-12**, *Fire Safety Measures* *during Construction*). Adherence to the AMMs regarding fire safety during construction would lower ignition risks and aid in the control of wildfire spread should ignition occur. The proposed project and Tunnel-Only Alternative would not result in the addition of new residents to the study area and therefore would not expose people to hazards associated with wildfires during construction. As such, construction of the proposed project would not exacerbate wildfire risks, nor would it increase risks related to exposure to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

Operation

Growth and development adjacent to and within areas that have been designated as High and Very High FHSZs would have the potential to exacerbate wildfire risks by increasing the number of people in areas that are prone to wildfire. However, operation of the proposed project and Tunnel-Only Alternative would not result in the addition of new residents to the study area and would not expose people to hazards associated with wildfire.

The Interlake Tunnel would operate as a full-flow conveyance tunnel. Maintenance and inspections at the Tunnel Intake Structure and Energy Dissipation Structure would occur as frequently as every week. Full tunnel system inspections would be performed by the MCWRA engineering staff or qualified engineering consultant at least once per year. Adherence to current building codes and standards, which require defensible space to be provided around all aboveground structures, including the Tunnel Intake Structure control building and Energy Dissipation Structure, both of which would be located within a Very High FHSZ, would ultimately reduce the potential flammability of the landscape during operations. These structures would be constructed mostly of hard, non-flammable materials, such as concrete and cinder blocks, in accordance with **AMM GEN-11**, *Wildfire Protection Plan and Safety Measures*, which requires aboveground buildings to be constructed and designed to withstand a wildfire. The proposed project and Tunnel-Only Alternative would incorporate **AMM GEN-11**, *Wildfire Protection Plan and Safety Measures*, which would involve development of a Wildland Fire Vegetation Management Plan to minimize and mitigate potential losses from wildfire exposure. This includes requiring at least 100 feet of clearance from flammable vegetation, consistent with Pub. Res. Code Section 4291. Landscaping within the project site would also be fire resistive. CAL FIRE/San Luis Obispo County Fire Department requirements include development of a Fire Protection Plan that describes ways to minimize and mitigate potential losses from wildfire exposure. Per Policy S-4.32 of the Monterey County General Plan, a Fuel Modification Plan would be prepared, including a site plan that illustrates how vegetation around the control building and roadways would be maintained to reduce fuel loads. Operation of the proposed project and Tunnel-Only Alternative would not exacerbate wildfire risks and would not expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

CEQA Conclusion

Construction and operation of the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to exacerbating wildfire risks, and risks related to exposure to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

Impact WF-3: Include Components that Would Exacerbate Fire Risk

Construction

The proposed project or Tunnel-Only Alternative would be constructed in accordance with current fire/life/safety regulations, including all applicable CAL FIRE requirements related to wildland fire safety. Earthmoving and portable equipment with internal-combustion engines used during construction of the proposed project or Tunnel-Only Alternative would be equipped with a spark arrestor to reduce the potential for igniting a wildland fire, consistent with Pub. Res. Code Section 4442. Construction contractors would comply with Pub. Res. Code requirements during construction and maintain appropriate fire-suppression equipment on-site. The proposed project and Tunnel-Only Alternative would incorporate **AMM GEN-12**, *Fire Safety Measures during Construction*, which requires the construction contractor(s) to comply with California Fire Code Section 503.1 regarding spark arresters, clearance around welding operations, and smoking. It also requires extinguishers on work sites. Portable tools powered by gasoline-fueled internal-combustion engines would not be used within 25 feet of any flammable materials. MCWRA and the construction contractor would also be required to comply with all applicable County Fire Code requirements for development in a Very High FHSZ, including, but not limited to, development of a Fire Safety Plan that describes ways to minimize and mitigate potential losses from wildfire exposure, development of a Wildland Fire Vegetation Management Plan, installation of an access road system prior to construction, and installation of a Knox key box for fire department emergency access at all access point gates (**AMM GEN-13**, *Emergency Access Measures*). Therefore, construction of the proposed project or Tunnel-Only Alternative would not exacerbate wildfire risks and would not expose people or structures, either directly or indirectly, to a significant risk involving wildland fires.

Operation

During operation of the proposed project or Tunnel-Only Alternative, power to the Energy Dissipation Structure site would be provided from a new PG&E overhead power service along the access road from Interlake Road. Operation of power lines has the potential to exacerbate fire risks. However, MCWRA would maintain defensible space around all project structures, including utility equipment, consistent with Pub. Res. Code Section 4291. This would also be consistent with the standards outlined in Monterey County Code Chapter 18.56 and San Luis Obispo County Code Section 16.04.060. MCWRA would also comply with all applicable California Fire Code requirements for development in a Very High FHSZ, including, but not limited to, specific requirements for water supply and flow, signage, and fire department access. Proposed road improvements would facilitate site access for responding fire agency personnel and project maintenance staff in the event of a fire.

None of the proposed infrastructure or aboveground development features, including the Tunnel Intake Structure control building and Energy Dissipation Structure, are expected to exacerbate wildfire risks. Operation of the proposed project or Tunnel-Only Alternative would not exacerbate wildfire risks and would not expose people or structures, either directly or indirectly, to a significant risk involving wildland fires.

CEQA Conclusion

Neither the proposed project nor the Tunnel-Only Alternative would exacerbate wildfire risks or expose people or structures, either directly or indirectly, to a significant risk involving wildland fires; impacts during construction and operation would be **less than significant**.

Impact WF-4: Impacts Related to Post-Fire Slope Instability or Drainage Changes

Construction

Increases in surface runoff and erosion are possible in a post-fire environment where surface vegetation has been removed and steep slopes increase runoff flow velocities. However, post-fire conditions are not expected to increase risks associated with erosion during construction activities for the proposed project or Tunnel-Only Alternative. As described in Section 4.1, *Hydrology and Water Quality*, MCWRA and the construction contractor would be required to comply with local ordinances, including Monterey County Code Chapter 16.12, which requires control of all existing and potential conditions related to accelerated erosion to eliminate or prevent conditions that led to, or could lead to, a loss of topsoil or vegetation cover. MCWRA and the construction contractor would also be required to comply with the County of San Luis Obispo's drainage and grading regulations (Section 19.02.050), which establish administrative rules and procedures for regulating construction activities that may affect the velocity, direction, or volume of natural drainage on or in the vicinity of a construction site or involve site preparation, vegetation removal, earthmoving, excavation, filling, or other grading activities. During construction of the proposed project or Tunnel-Only Alternative, the soil disposal area would be covered prior to rain events to prevent erosion and sedimentation. The soil pile would be permeable; therefore, water could still infiltrate and not interfere with drainage. Other BMPs would be implemented as needed to minimize erosion and the movement of sediment. These could include silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric material, and/or sandbag dikes. The proposed project and Tunnel-Only Alternative would incorporate **AMM GEN-6**, *Staging, Stockpiling of Soil, and Access*, which concerns stockpiling soils away from waterways and the placement of straw wattles or other erosion control material during construction. Through compliance with drainage and grading regulations, BMPs, and AMMs, construction activities would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

Operation

During operation of the proposed project or Tunnel-Only Alternative, wildfires could occur in wildland areas within or adjacent to the project site. Under existing conditions, the project site has potential fire issues, including unmaintained, fire-prone vegetation. Wildfires can greatly reduce the amount of vegetation from hillsides. Plant roots stabilize the soil, and aboveground plant parts slow water, allowing it to percolate into the soil. The removal of surface vegetation resulting from a wildfire reduces the ability of the soil surface to absorb rainwater and can allow for increased runoff, which may include large amounts of debris. If hydrophobic conditions exist in the post-fire environment, the rate of surface water runoff will increase as percolation into the soil profile decreases.

Downslope or downstream flooding, mudflows, and landslides are common in areas where steep hillsides and embankments are present. A post-fire environment would exacerbate risks in areas where vegetative cover has been removed. As described in Section 4.2, *Geology, Soils, and Seismicity and Paleontological Resources*, the area surrounding the project site is characterized by its rolling hills. Landslides have occurred near the north and south ends of the proposed Interlake Tunnel alignment. Given the slope characteristics of the project site, post-fire conditions may increase risks associated with slope failures, mudflows, or landslides. However, no change in slope would occur during operation of the proposed project or Tunnel-Only Alternative. Therefore, the proposed project and Tunnel-Only Alternative would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

CEQA Conclusion

The proposed project and the Tunnel-Only Alternative would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes; impacts during construction and operation would be **less than significant**.

4.15.5 Impact Summary

Table 4.15-2 provides a summary of the significance of impacts associated with wildfires.

Table 4.15-2. Summary of Impacts Associated with Wildfires

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact WF-1: Impair an Adopted Emergency Response Plan or Emergency Evacuation Plan			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Significant	**MM TRA-1**	Less than significant
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact WF-2: Increase Potential Exposure to Pollutant Concentrations from a Wildfire			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact WF-3: Include Components that Would Exacerbate Fire Risk			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact WF-4: Impacts Related to Post-Fire Slope Instability or Drainage Changes			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A

4.16 Energy

4.16.1 Overview

This section describes the environmental and regulatory setting for energy resources and evaluates impacts related to energy use and the needs of the proposed project and Tunnel-Only Alternative. For setting and impact discussions related to GHG emissions, refer to Section 4.10, *Greenhouse Gas Emissions.*

4.16.1.1 Study Area

The energy study area considers the demand for fuel (diesel, gasoline) and electricity within Monterey County and San Luis Obispo County. PG&E provides electricity for the entire project study area.

4.16.1.2 Scoping Comments

Comments regarding energy resources were not submitted during public scoping for this EIR.

4.16.2 Regulatory Setting

4.16.2.1 Federal Laws, Regulations, and Policies

Energy Policy Act of 2005

The Energy Policy Act of 2005 was intended to establish a comprehensive, long-term energy policy and is implemented by the U.S. Department of Energy. The Energy Policy Act addresses energy production in the United States, including oil, gas, coal, and alternative forms of energy and energy efficiency and tax incentives. Energy efficiency and tax incentive programs include credits for the construction of new energy-efficient homes, production or purchase of energy-efficient appliances, and loan guarantees for entities that develop or use innovative technologies that avoid the production of GHGs. Furthermore, the Energy Policy Act includes hydroelectric production incentives as well as hydroelectric efficiency improvements.

4.16.2.2 State Laws, Regulations, and Policies

Senate Bill 350 (2015)

SB 350 (De Leon, also known as the "Clean Energy and Pollution Reduction Act of 2015") was approved by the California legislature in September 2015 and signed by Governor Brown in October 2015. Its key provisions are to require the following by 2030: (1) a RPS of 50 percent; and (2) a doubling of efficiency for existing buildings.

California Integrated Energy Policy

SB 1389, passed in 2002, requires the CEC to prepare an Integrated Energy Policy Report for the governor and legislature every 2 years (CEC 2021a). The report analyzes data and provides policy recommendations on trends and issues concerning electricity and natural gas, transportation, energy efficiency, renewable energy, and public interest energy research (CEC 2021a). The 2020 Draft Integrated Energy Policy Report includes policy recommendations such as California's transportation future and the transition to zero-emission vehicles, the potential for microgrids to contribute to a more resilient energy system, and California's energy demand outlook (CEC 2021b).

California Renewables Portfolio Standard

SBs 1078 (2002), 107 (2006), 2 (2011), and 100 (2015) govern California's RPS, under which investor-owned utilities, energy service providers, and Community Choice Aggregators must procure additional retail sales per year from eligible renewable sources. SB XI-2, passed in 2011, required utilities to procure renewable energy products equal to 33 percent of retail sales by December 31, 2020, and also established interim targets of 20 percent by December 31, 2013, and 25 percent by December 31, 2016. Subsequent legislation further increased the RPS and accelerated its timeframe for implementation. The most recent bill, SB 100 (Chapter 312, Statutes of 2018), increased the requirement to 50 percent by December 31, 2026, 60 percent by December 31, 2030, and 100 percent by December 31, 2045. As of 2019, PG&E's eligible renewable procurement was approximately 29 percent (CEC 2020).

California Code of Regulations, Title 20 and Title 24 (2019)

Updated every 3 years through a rigorous stakeholder process, CCR Title 24 requires California homes and businesses to meet strong energy efficiency measures, thereby lowering their energy use. Title 24 contains numerous subparts, including:

- Part 1 (Administrative Code)
- Part 2 (Building Code)
- Part 3 (Electrical Code)
- Part 4 (Mechanical Code)
- Part 5 (Plumbing Code)
- Part 6 (Energy Code)
- Part 8 (Historical Building Code)
- Part 9 (Fire Code)
- Part 10 (Existing Building Code)
- Part 11 (Green Building Standards Code)
- Part 12 (Referenced Standards Code)

New buildings constructed in California must comply with the standards contained in CCR Title 20, Energy Building Regulations, and Title 24, Energy Conservation Standards. Title 20 contains standards ranging from power plant procedures and siting to energy efficiency standards for appliances to ensuring reliable energy sources are provided and diversified through energy efficiency and renewable energy resources.

Energy Conservation Standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission in June 1977. The most recent update was the 2019 Building Energy Efficiency Standards, which were adopted in May 2018 and took effect on January 1, 2020 (Part 6, Title 24). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 Standards improve upon the previous 2016 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The 2019 update to the Building Energy Efficiency Standards focuses on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. The most significant efficiency improvements to the nonresidential Standards include alignment with the American Society of Heating, Refrigerating and Air-Conditioning Engineers 90.1 2017 national standards.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11, Title 24) (CALGreen) was adopted as part of the California Building Standards Code (24 CCR) and applies to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure, unless otherwise indicated in the code, throughout the state. The current version of CALGreen (2019) became effective on January 1, 2020. Part 11 establishes voluntary standards that became mandatory in the 2010 edition of the code, including planning and design for sustainable site development, energy efficiency (in excess of CEC requirements), water conservation, material conservation, and internal air contaminants. In addition, Section 5.408 of CALGreen requires that a minimum of 65 percent all nonhazardous construction and demolition waste be recycled and/or salvaged for reuse. This specific requirement applies to nonresidential construction projects.

California Energy Commission Requirements

The CEC is tasked with conducting assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The CEC uses these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety (Pub. Res. Code Section 25301(a)).

As the state's primary energy policy and planning agency, the CEC collaborates with state and federal agencies, utilities, and other stakeholders to develop and implement state energy policies. Since 1975, the CEC has been responsible for reducing the state's electricity and natural gas demand, primarily by adopting new Building and Appliance Energy Efficiency Standards that have contributed to keeping California's per capita electricity consumption relatively low. The CEC is also responsible for the certification, and environmental review of thermal power plants 50 MW and larger, including all project-related facilities in California (CPUC 2019). The CPUC regulates investor-owned electric and natural gas utilities operating in California. The energy work responsibilities of the CPUC are derived from the California State Constitution—specifically, Article XII, Section 3, and, more generally, other sections, numerous state legislative enactments, and various federal statutory and administrative requirements.

California's 2017 Climate Change Scoping Plan

California's 2017 Climate Change Scoping Plan details the state's strategy for achieving the state's long-term GHG reduction targets of SB 32. The plan has the following energy-related goals dealing with water:

- Develop and support more reliable water supplies for people, agriculture, and the environment, provided by a more resilient, diversified, sustainably managed water resources system with a focus on actions that provide direct GHG reductions

- Make conservation a California way of life by using and reusing water more efficiently through greater water conservation, drought-tolerant landscaping, stormwater capture, water recycling, and reuse to help meet future water demands and adapt to climate change
- Develop and support programs and projects that increase water sector energy efficiency and reduce GHG emissions through reduced water and energy use
- Increase the use of renewable energy to pump, convey, treat, and utilize water
- Reduce the carbon footprint of water systems and water uses for both surface and groundwater supplies through integrated strategies that reduce GHG emissions while meeting the needs of a growing population, improving public safety, fostering environmental stewardship, aiding in adaptation to climate change, and supporting a stable economy

The following actions are listed as potential ways to help achieve the goals above and may be applicable to the proposed project:

- Where technically feasible and cost-effective, local water and wastewater utilities should adopt a long-term goal to reduce GHGs by 80 percent below 1990 levels by 2050 (consistent with DWR's Climate Action Plan), and thereafter move toward low carbon or net-zero carbon water management systems.
- Local water and wastewater utilities should develop distributed renewable energy where feasible, using the expanded Local Government Renewable Energy Bill Credit tariff and new Net Energy Metering (which allow for installation without system size limit).

4.16.2.3 Local Laws, Regulations, and Policies

Monterey County

The *Monterey County General Plan* (2010) has policies to promote sustainable and efficient energy use. The G*eneral Plan Conservation and Open Space Element* contains the following energy-related goal and policy that may be relevant to the proposed project:

- **Goal OS-9.** Promote Efficient Energy Use.
    - **Policy OS-9.1.** The use of solar, wind and other renewable resources for agricultural, residential, commercial, industrial, and public building applications shall be encouraged.

San Luis Obispo County

The *County of San Luis Obispo General Plan* (2010) *Conservation and Open Space Element* contains the following energy-related goals and policies that may be relevant to the proposed project:

- **Goal E 2** Energy consumption at County facilities will be reduced by 20 percent from 2006 levels by 2020.
    - **Policy E 2.3** Energy and water. Promote water conservation for all water users in the county to reduce the amount of energy used to pump and treat water and wastewater at public water and wastewater treatment and distribution facilities.
- **Goal E 3** Energy efficiency and conservation will be promoted in both new and existing development.

- **Policy E 3.1** Use of **renewable** energy. Ensure that new and existing development incorporates renewable energy sources such as solar, passive building, wind, and thermal energy. Reduce reliance on non-sustainable energy sources to the extent possible using available technology and sustainable design techniques, materials, and resources.

- **Goal E 4** Green building practices will be integrated into all development.
- **Goal E 6** The use of renewable energy resources will be increased.

4.16.2.4 Compatibility with Plans and Laws

The proposed project and Tunnel-Only Alternative were found to be consistent with all applicable local laws, regulations, and policies. A complete description of compatibility with applicable local laws, regulations, and policies related to energy is provided in Appendix C, *Consistency with Local Laws, Regulations and Policies.*

4.16.3 Environmental Setting

PG&E provides electricity service in the counties of Monterey and San Luis Obispo. Approximately 29 percent of the power provided is from solar and wind renewable sources, whereas the remaining 71 percent results from a mixture of other eligible renewable sources, nuclear, large hydroelectric, and unspecified sources of power. As such, PG&E achieved the goal of providing almost 100 percent renewable energy in 2019. California's RPS requires electricity suppliers to increase the amount of electricity generated from renewable sources to 60 percent by 2030 and 100 percent by 2045. **Table 4.16-1** outlines the PG&E power mix in 2019 compared to the power mix for the state (CEC 2020).

Table 4.16-1. Summary of Energy Sources for PG&E and the Statewide Power Mix in 2019

	Utility Power Mix (%)	
Energy Resources	**PG&E Base Plan (2019)**	**California Power Mix (2019)[2]**
Eligible Renewable	29	32
Biomass and Waste	3	2
Geothermal	2	5
Small hydroelectric	2	2
Solar	12	12
Wind	9	10
Coal	0	3
Large Hydroelectric	27	15
Natural Gas	0	34
Nuclear	44	9
Other	0	< 1
Unspecified Power[1]	0	7
Total	100	100

Source: CEC 2020

[1] Unspecified power is defined as electricity from transactions that are not traceable to specific generation sources.

[2] Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the identified year.

The annual average hydroelectric generation from 1983 through 2020 is 34,132.5 gigawatt-hours (GWh), and in 2020 hydro-produced electricity used by California totaled nearly 21,414 GWh. The Nacimiento Reservoir hydroelectric facility has a capacity of 4.4 MW and generated 11,675 MWh in 2020 (CEC 2021g), which was less than one-tenth of one percent of the total amount of hydro-produced electricity used by California that year. The Nacimiento Reservoir hydroelectric facility can produce electricity when water levels at Nacimiento Reservoir are above 728 feet. As shown in the hydrologic modeling conducted for the project, existing monthly average water levels at Nacimiento Reservoir exceed 728 feet during all months of wet and normal water years, as well as all months during dry water years except for July, August, and September (MCWRA 2021a). The electricity generated by the Nacimiento Reservoir hydroelectric facility is used by the Northern California Power Agency (MCWRA 2021b).

4.16.4 Impact Analysis

4.16.4.1 Methods for Evaluating Impacts

This impact analysis considers whether implementation of the proposed project and Tunnel-Only Alternative would result in significant adverse impacts associated with energy resources. The analysis focuses on reasonably foreseeable direct and indirect effects of construction and operation of the proposed project and the Tunnel-Only Alternative compared with baseline conditions at the time the NOP was prepared. This analysis uses significance criteria that are based on the CEQA Guidelines, Appendix G.

Fabrication of equipment and materials such as cement and steel requires energy, which in this context is referred to as *embodied energy* and based on life-cycle analyses of individual materials. The embodied energy from construction materials has not been estimated for this analysis, because detailed specifications and estimates of materials needed are not available. For a typical construction project, the materials that have some of the largest amounts of embodied energy are the aforementioned cement and steel.

Potential impacts related to changes in reservoir levels and fluctuations are evaluated using results from the SVOM. MCWRA provided the results of hydrologic modeling for the proposed project and Tunnel-Only Alternative in comparison with baseline conditions. The model is discussed further in Section 2.5.1.1, *Operations*. For the purposes of this analysis, operational emissions associated with the proposed project and Tunnel-Only Alternative are assumed to be the same.[1]

4.16.4.2 Criteria for Determining Significance

CEQA Guidelines Appendix G provides guidance on assessing whether a project would have significant impacts on the environment. Consistent with Appendix G and in consideration of project-specific environmental conditions, MCWRA has determined that the project would have significant energy impacts if it would:

1. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy or wasteful use of energy resources during project construction or operation
2. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency

[1] The primary difference between the proposed project and Tunnel-Only Alternative is the inclusion of the Spillway Modification, and this project feature would not require additional maintenance activities beyond what is currently required for the existing San Antonio Dam.

CEQA Guidelines Appendix F is an advisory document that assists EIR preparers in determining whether a project will result in the inefficient, wasteful, and unnecessary consumption of energy. The analysis in Impact Statement EN-1, *Result in Wasteful, Inefficient, or Unnecessary Consumption of Energy*, relies on CEQA Guidelines Appendix F, which includes the following criteria to determine whether this threshold of significance is met:

- **Criterion 1**: The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project, including construction, operation, maintenance, and/or removal (if appropriate, the energy intensiveness of materials may be discussed)
- **Criterion 2**: The effects of the project on local and regional energy supplies and on requirements for additional capacity
- **Criterion 3**: The effects of the project on peak and base period demands for electricity and other forms of energy
- **Criterion 4**: The degree to which the project complies with existing energy standards
- **Criterion 5**: The effects of the project on energy resources
- **Criterion 6**: The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives

4.16.4.3 Avoidance and Minimization Measures

No energy-related avoidance or minimization measures have been proposed to reduce environmental impacts.

4.16.4.4 Impacts and Mitigation Measures

Impact EN-1: Result in Wasteful, Inefficient, or Unnecessary Consumption of Energy

Construction

Construction would occur within two separate counties: Monterey County and San Luis Obispo County. **Table 4.16-2** highlights the different project features, as well as construction phasing, that would occur within each air basin and county.

Within Monterey County, construction of the following would occur:

- The Energy Dissipation Structure and tunnel portal, a portion of the Interlake Tunnel, and the Spillway Modification

Within San Luis Obispo County, construction of the following would occur:

- The Tunnel Intake Structure and tunnel portal and a portion of the Interlake Tunnel

In addition to the proposed project, construction of a Tunnel-Only Alternative was analyzed. The Tunnel-Only Alternative would include all of the construction features listed in **Table 4.16-2,** except for the Spillway Modification. Therefore, it is assumed that environmental analysis of the proposed project would yield more conservative results because the proposed project would include more construction features and phases.

Table 4.16-2. Construction Schedule and Features

Feature	Start Date	End Date	Working Days
Monterey County			
Energy Dissipation Structure	10/2/2023	1/24/2025	345
Spillway Modification	4/17/2023	11/1/2024	405
Energy Dissipation Structure Tunnel Portal	7/10/2023	4/12/2024	200
Tunneling	7/10/2023	11/15/2024	355
San Luis Obispo County			
Tunnel Intake Structure	10/2/2023	2/28/2025	370
Tunnel Intake Structure Tunnel Portal	4/17/2023	11/15/2024	415

Source: McMillen Jacobs Associates 2021

Proposed Project

During construction, the proposed project would consume fuel energy used by construction vehicles and equipment and bound energy in construction materials, such as steel, raw concrete materials, pipes, and manufactured or processed materials such as lumber. Electrical power would be required to operate construction equipment and supporting infrastructure (e.g., construction trailers, security lighting). In 2019, 100 percent of the electricity PG&E provided came from GHG-free resources (CEC 2020).Electrical power use for construction of the proposed project would be beneficial because it would reduce reliance on nonrenewable resources that produce higher GHG emissions. PG&E relies on renewable energy resources, including solar, wind, bioenergy, geothermal and small, eligible-renewable hydroelectric (30 MW or smaller) power that are aligned with the RPS standards and state energy efficiency goals.

At the Tunnel Intake Structure, underground electrical transmission lines would be installed from the existing transmission line near Nacimiento Dam at Nacimiento Lake Drive (Road G14), along the Nacimiento Reservoir Overflow/Day Use Ramp Road, to supply electrical power for construction activities at the Tunnel Intake Structure. An aboveground transmission line would be installed by PG&E to supply electrical power to the Energy Dissipation Structure for construction of that structure, as well as tunneling activities.

Fossil fuels for construction vehicles and other energy-consuming equipment would be used during land clearing, grading, tunneling activities, and construction of project components, including the Interlake Tunnel, Energy Dissipation Structure, Tunnel Intake Structure, and Spillway Modification. Construction equipment would be required to comply with the latest EPA and CARB engine emissions standards. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption (CEQA Appendix F, Criterion 4).

Electricity and fuel consumption associated with construction of the proposed project is summarized below in **Table 4.16-3** and **Table 4.16-4**. As shown in **Table 4.16-3**, the project's energy usage during construction would constitute an approximate 0.55 percent increase over Monterey County's typical annual electricity consumption. In addition, the project's construction diesel and gasoline fuel consumption would result in a temporary increase in overall consumption in Monterey County (0.42 percent and 0.01 percent, respectively) (CEQA Appendix F, Criterion 1).

Table 4.16-3. Project and Monterey County Energy Consumption during Construction

Energy Type	Project Annual Energy Consumption[1]	Monterey County Annual Energy Consumption	Percentage Increase Countywide
Electricity Consumption	9.7 GWh[2]	1,772.56 GWh[3]	0.55%
Diesel Consumption	224,900 gallons[2]	54,166,667 gallons[4,5]	0.42%
Gasoline Consumption	21,948 gallons[2]	174,000,000 gallons[4]	0.01%

[1] Construction within Monterey County would last approximately 1.78 years under the proposed project.
[2] Source: McMillen Jacobs Associates 2021
[3] Source: CEC 2021c
[4] Source: CEC 2021e
[5] Diesel consumption in Monterey County is adjusted to account for retail (48 percent) and non-retail (52 percent) diesel sales.
GWh = gigawatt hours

Table 4.16-4. Project and San Luis Obispo County Energy Consumption during Construction

Energy Type	Project Annual Energy Consumption[1]	San Luis Obispo County Annual Energy Consumption	Percentage Increase Countywide
Electricity Consumption	1.29 GWh[2]	1,060.09 GWh[3]	0.12%
Diesel Consumption	53,036 gallons[2]	45,833,333 gallons[3,5]	0.12%
Gasoline Consumption	2,229 gallons[2]	138,000,000 gallons[3]	0.01%

[1] Construction within San Luis Obispo County would last approximately 1.87 years under the proposed project.
[2] Source: McMillen Jacobs Associates 2021
[3] Source: CEC 2021d
[4] Source: CEC 2021f
[5]Diesel consumption in San Luis Obispo County is adjusted to account for retail (48 percent) and non-retail (52 percent) diesel sales.
GWh = gigawatt hours

As shown in **Table 4.16-4**, the project's construction-related energy usage would constitute a temporary increase of approximately 0.12 percent compared with San Luis Obispo County's typical annual electricity consumption. In addition, the project's construction-related diesel and gasoline fuel consumption would result in a temporary increase in San Luis Obispo County's overall fuel consumption (0.12 percent and 0.01 percent, respectively) (CEQA Appendix F, Criterion 1).

As indicated in **Table 4.16-3** and **Table 4.16-4**, average diesel fuel consumption during project construction would total 224,900 gallons per year in Monterey County and 53,036 gallons per year in San Luis Obispo County and result in a temporary nominal increase (0.42 percent and 0.12 percent, respectively) in diesel fuel use. For gasoline fuel usage, annual average gasoline fuel consumption would total 21,948 gallons in Monterey County and 2,229 gallons in San Luis Obispo County. This would result in a temporary nominal increase of 0.01 percent for both counties. As such, project construction would have a minimal effect on the local and regional energy supplies and would not require additional capacity (CEQA Appendix F, Criterion 2).

Energy use associated with construction of the proposed project would be temporary and cease upon completion of construction activities. Therefore, fuel energy and construction materials consumed during construction would not represent a significant demand on energy resources (CEQA Appendix F, Criterion 5).

Total energy consumed during the construction period represents a small increase (less than 1 percent annually) in demand on local and regional energy supplies. Therefore, the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction.

Tunnel-Only Alternative

Similar to the proposed project, the Tunnel-Only Alternative would include construction of the Tunnel Intake Structure, Interlake Tunnel, and Energy Dissipation Structure. The Tunnel-Only Alternative would not involve construction of the Spillway Modification, which would be located in Monterey County. As such, site preparation and staging, demolition, and excavation at the top of the spillway; construction of a new passive weir structure; and concrete work to raise the spillway walls would not occur. The Tunnel-Only Alternative would affect energy use only within Monterey County. It is anticipated that the Tunnel-Only Alternative would result in the same level of energy usage within San Luis Obispo County, as shown in **Table 4.16-4**.

As shown in **Table 4.16-5**, electricity usage with the Tunnel-Only Alternative would constitute a temporary increase of approximately 0.55 percent compared with Monterey County's typical annual electricity consumption. In addition, the project's construction diesel and gasoline fuel consumption would temporarily increase Monterey County's consumption by 0.25 percent and 0.01 percent, respectively (CEQA Appendix F, Criterion 1).

Table 4.16-5. Project and Monterey County Energy Consumption during Construction of Tunnel-Only Alternative

Energy Type	Project Annual Energy Consumption[1]	Monterey County Annual Energy Consumption	Percentage Increase Countywide
Electricity Consumption	9.7 GWh[2]	1,772.56 GWh[3]	0.55%
Diesel Consumption	134,028 gallons[2]	54,166,667 gallons[4,5]	0.25%
Gasoline Consumption	21,095 gallons[2]	174,000,000 gallons[4]	0.01%

[1] Construction within Monterey County would last approximately 1.55 years under the Tunnel-Only Alternative.
Sources:
[2] Source: McMillen Jacobs Associates 2021
[3] Source: CEC 2021c;
[4] Source: CEC 2021e.
[5]Diesel consumption in Monterey County is adjusted to account for retail (48 percent) and non-retail (52 percent) diesel sales.
GWh = gigawatt hours

Energy use associated with the Tunnel-Only Alternative would be less than energy use under the proposed project. Therefore, the Tunnel-Only Alternative would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction.

Operation

Operation of the proposed project and Tunnel-Only Alternative would involve the use of energy resources associated with employee vehicle trips and utility-related consumption (e.g., electricity) required for operation of the Tunnel Intake Structure and control building in San Luis Obispo County.[2] As shown in **Table 4.16-6**, assuming 255 working days per year, annual project operations are estimated to require 0.10 GWh of energy. In addition, operation of the proposed project would reduce Nacimiento Reservoir hydroelectric power generation by approximately 1.58 GWh, which has been reflected in the project's total energy consumption. The loss in hydroelectric power generation is discussed in greater detail below. Operational energy use would occur within San Luis Obispo County. In total, operation of the proposed project would result in a total annual energy consumption of 1.68 GWh. Operational energy consumption with the project would represent an approximately 0.16 percent increase in electricity consumption compared with the current San Luis Obispo County usage, which would be a minimal increase compared with San Luis Obispo County's annual consumption.

Table 4.16-6. Estimated San Luis Obispo County Energy Consumption during Operation

Energy Type	Project Annual Energy Consumption[1]	San Luis Obispo County Annual Energy Consumption[b]	Percentage Increase Countywide
Electricity Consumption and Loss of Hydroelectric Production	1.68 GWh[2]	1,060.09 GWh[3]	0.16%
Diesel Fuel Consumption	954 gallons[2]	45,833,333 gallons[4,5]	0.01%

[2] Source: McMillen Jacobs Associates 2021
[3] Source: CEC 2021d.
[4] Source: CEC 2021f.
[5] Diesel consumption in San Luis Obispo County is adjusted to account for retail (48 percent) and non-retail (52 percent) diesel sales.
GWh = gigawatt hours

Project compliance with the 2019 Title 24 Building Energy Efficiency Standards, which provide minimum efficiency standards related to various structure features, would significantly reduce energy usage (30 percent compared to the 2016 standards) associated with utility-related consumption. The Title 24 Building Energy Efficiency Standards are updated every 3 years and become more stringent between each update; therefore, complying with the latest 2019 Title 24 standards would make the proposed project more energy efficient than existing facilities built under the earlier versions of the Title 24 standards (CEQA Appendix F, Criterion 4).

Furthermore, the electricity provider, PG&E, is subject to California's RPS, which requires investor-owned utilities, electricity service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 60 percent of total procurement by 2030 and 100 percent of total procurement by 2045. *Renewable energy* is generally defined as energy that results from resources that are naturally replenished within a human timescale, such as sunlight,

[2] The Energy Dissipation Structure and Spillway Modification area in Monterey County would require only one or two additional annual maintenance trips compared to existing conditions. One or two annual trips would result in negligible additional fuel consumption in Monterey County and would not have the potential to result in a wasteful or inefficient use of energy.

wind, tides, waves, and geothermal heat. The increase in reliance of such energy resources further ensures that the proposed project would not result in the waste of the finite energy resources (CEQA Appendix F – Criterion 5).

As shown in **Table 4.16-6**, project operations are estimated to consume approximately 954 gallons of diesel fuel and 1,760 gallons of gasoline fuel per year, which would increase countywide automotive diesel and gasoline fuel consumption by less than 0.01 percent. Assuming 255 working days per year and maintenance inspections for the tunnel systems performed at least once per year, operational maintenance would require minimal energy use associated with transportation. Energy requirements related to fuel use associated with vehicles used for maintenance would decrease over time with improved motor vehicle fuel economy standards and adoption of zero-emission vehicles (ZEVs). The proposed project and Tunnel-Only Alternative do not include any features that would result in excessive long-term operational fuel consumption (CEQA Appendix F, Criterion 6). Therefore, fuel consumption associated with vehicle trips generated by the proposed project and Tunnel-Only Alternative would not be considered inefficient, wasteful, or unnecessary.

Lastly, operation of the proposed project or Tunnel-Only Alternative would generally reduce the amount of water available for Nacimiento Reservoir for the production of hydroelectricity. The amount of electricity generated by the Nacimiento Reservoir hydropower facility fluctuates, depending on the level of precipitation and corresponding amount of water flowing into Nacimiento Reservoir as well as the flow rate through Nacimiento Dam. In dry years, when less water is released, less electricity is generated. Furthermore, when Nacimiento Reservoir water levels drop below 728 feet, the Nacimiento Reservoir hydroelectric facility is not able to generate electricity. The proposed project and Tunnel-Only Alternative would transfer water from Nacimiento Reservoir to San Antonio Reservoir, thereby potentially reducing the amount of water for Nacimiento Reservoir, which could reduce the amount of electrical energy generated by the Nacimiento Reservoir hydropower facility.

According to historical data[3] provided by the Nacimiento Reservoir hydropower facility operator, the facility produces, on average, approximately 10,431 MWh of hydroelectric power per year, when accounting for normal, wet, and dry years. Based on the hydrologic modeling conducted for the proposed project and Tunnel-Only Alternative, it is anticipated that releases at Nacimiento Reservoir could, at a maximum, decrease by approximately 15 percent compared to the modeled baseline, when accounting for normal, wet, and dry years. Thus, assuming a conservative linear relationship between all Nacimiento Reservoir releases and hydroelectric production, it is estimated that hydroelectric production would also decrease by approximately 15 percent with the proposed project.[4] Applying this 15 percent reduction to historical yearly average hydroelectric production (10,431 MWh) results in a loss of approximately 1,578 MWh per year. This loss in hydroelectric production has been reflected in the project's yearly energy consumption in **Table 4.16-6.**

As depicted in **Table 4.16-6**, even with the loss in hydroelectric production, the proposed project and Tunnel-Only Alternative would result in an increase in electricity demand of 0.16 percent compared to existing San Luis Obispo County electricity demand. It should be noted that the loss in potential renewable energy is in comparison to a modeled hydrologic baseline and not the actual additional energy demand with the proposed project or Tunnel-Only Alternative.

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[3] Historical yearly hydroelectric generation data was provided for the years 1987 through 2021.

[4] This is considered a worst-case estimation as it is unlikely that a 15 percent drop in total releases would be equivalent to a 15 percent drop in electricity productions, as not all water releases would result in hydroelectricity production. Even with the drop in total releases due to the proposed project or Tunnel-Only Alternative, it is possible that hydroelectric production would stay the same.

Total energy consumed during operation represents a small increase in demand on local and regional energy supplies and would not result in unique or more intensive peak- or base-period electricity demand compared to existing conditions (CEQA Appendix F, Criterion 2 and Criterion 3). Therefore, the proposed project and Tunnel-Only Alternative would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project operation.

CEQA Conclusion

Both the proposed project and Tunnel-Only Alternative would have **less-than-significant** impacts related to a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy or wasteful use of energy resources during project construction or operation.

Impact EN-2: Conflict with or Obstruct Plan for Renewable Energy or Energy Efficiency

Construction and Operation

State and local renewable energy and energy efficiency plans that are applicable to the proposed project and Tunnel-Only Alternative are discussed above in Section 4.16.2, *Regulatory Setting.* State plans, California Title 24 energy efficiency standards, SB 350, and SB 100 contain required standards related to energy efficiency and renewable energy development. The proposed project and Tunnel-Only Alternative would be required to comply with the state and local plans and regulations, all of which are aimed at increasing energy efficiency and renewable energy development. Some plans and regulations are statewide and do not require local or project action to implement; refer to Appendix C, *Consistency with Local Laws, Regulations and Policies,* for further details.

The proposed project and Tunnel-Only Alternative would be consistent with Policy OS 0-1 of the Monterey County General Plan as well as Policy E 2.3 and Policy E 3.1 of the San Luis Obispo County General Plan (refer to Appendix C, *Consistency with Local Laws, Regulations and Policies,* for more information). In addition, the construction contractor would use electrically powered construction equipment where feasible and ensure that the proposed structures would be consistent with current Title 24 standards. Thus, the proposed project and Tunnel-Only Alternative would be consistent with statewide and local renewable energy or energy efficiency plans and regulations during construction and operation.

CEQA Conclusion

Both the proposed project and Tunnel-Only Alternative would be consistent with statewide and local renewable energy or energy-efficiency plans and regulations during construction and operation; impacts would be **less than significant**.

4.16.5 Impact Summary

Table 4.16-7 provides a summary of the significance of potential impacts on energy resources.

Table 4.16-7. Summary of Impacts on Energy Resources

Alternative	CEQA Conclusion	Mitigation Measures	Significance after Mitigation
Impact EN-1: Result in Wasteful, Inefficient, or Unnecessary Consumption of Energy			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Impact EN-2: Conflict with or Obstruct Plan for Renewable Energy or Energy Efficiency			
Proposed Project	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A
Tunnel-Only Alternative	Construction: Less than significant	N/A	N/A
	Operation: Less than significant	N/A	N/A

Chapter 5
Other Statutory Considerations

5.1 Overview

This chapter presents discussions of irreversible impacts, growth-inducing impacts, cumulative impacts, and significant and unavoidable impacts as required by the CEQA Guidelines. The focus of this chapter is on the environmental effects of both construction and operation of the Interlake Tunnel and Spillway Modification Project and Tunnel-Only Alternative.

5.2 Irreversible Impacts

CEQA Guidelines Section 15126.2(d) requires that an EIR discuss any environmental changes that would be irreversible if the project were implemented. CEQA defines irreversible environmental changes as either an irretrievable commitment of resources and/or irreversible damage resulting from environmental accidents. Irreversible changes may include current or future uses of nonrenewable resources and secondary or growth-inducing impacts that commit future generations to similar uses (e.g., highway improvements that provide access to a previously inaccessible area). The CEQA Guidelines describe three distinct categories of significant irreversible changes: (1) changes in land use that would commit future generations to similar uses, (2) irreversible changes from environmental actions, and (3) irretrievable commitments of resources.

5.2.1 Changes in Land Use that Would Commit Future Generations

The proposed project consists of a water conveyance tunnel and associated intake and outlet structures, modifications to an existing spillway, and construction of a control building within the shorelines and current operating areas of two reservoirs that would not otherwise be available for development or for uses other than water conveyance, management, and operations. Likewise, the components of the Tunnel-Only Alternative, which does not include modification to the existing spillway, are in the same general area as the project and similarly would not be in a location available for development or uses other than water operations. The proposed project and Tunnel-Only Alternative do not propose new urban development within the project area. No new land use is proposed that would commit the MCWRA or future generations to any specific course of action. Although the proposed water conveyance tunnel and spillway modifications under the project and the Tunnel-Only Alternative would commit future generations to use of the reservoirs for project operations, the proposed modifications that are part of the project and the Tunnel-Only Alternative would not preclude the MCWRA from reconsidering those modifications in the future.

5.2.2 Irreversible Changes from Environmental Actions

The proposed project and Tunnel-Only Alternative would not change any land uses in the project area. However, excavation for construction of the Interlake Tunnel would permanently alter the land in which it would be constructed, making either the proposed project or Tunnel-Only Alternative an irreversible action. MCWRA would need to obtain permanent underground easements for lands under which the Interlake Tunnel would be located. Construction of the Interlake Tunnel, its subcomponents, and the Spillway Modifications would result in temporary and permanent land disturbance related to excavation, site access (i.e., roads), and temporary work areas, causing some permanent vegetation community loss, which would be irreversible (refer to Chapter 2, *Project Description*, for a summary of temporary and permanent project disturbance areas). Areas subject to temporary disturbance during construction would be revegetated with native plant mixes. In addition, the project would result in the use, transport, storage, and disposal of hazardous wastes, as identified in Section 4.7, *Hazards and Hazardous Materials*. MCWRA would require all construction, operation, and maintenance activities to comply with applicable federal, state, and local laws related to hazardous materials, which would significantly reduce the likelihood and severity of potential accidents that could cause irreversible environmental damage as a result of construction, operation, and maintenance activities associated with the proposed project or Tunnel-Only Alternative.

5.2.3 Irretrievable Commitments of Resources

Use of nonrenewable resources, such as fossil fuels (i.e., refined petroleum products) and petrochemicals (e.g., solvents, lubricants, engine coolant, plastics), and water for dust suppression, on-site grout batch plants, increasing moisture content in soil used as compacted fill, fire suppression, and irrigation for erosion control or revegetation efforts, would be required for construction and operations of the proposed project or Tunnel-Only Alternative. The proposed project and Tunnel-Only Alternative would also require the use of renewable natural resources (e.g., water, lumber, soil), resources that can be replenished by natural means,.

Although the proposed project and Tunnel-Only Alternative would use minor amounts of both renewable and nonrenewable natural resources for construction, this use would not result in substantial depletion of any nonrenewable natural resource.

5.3 Growth Inducement

Section 15126.2(d) of the CEQA Guidelines requires an EIR to include a detailed statement of a proposed project's anticipated growth-inducing impacts. The analysis of growth-inducing impacts must discuss the ways in which a proposed project could foster economic or population growth or the construction of additional housing in the surrounding environment. The analysis must also address project-related actions that would remove existing obstacles to population growth, tax existing community-service facilities, and require construction of new facilities that cause significant environmental effects or encourage or facilitate other activities that could, individually or cumulatively, significantly affect the environment. A project would be considered growth inducing if it induces growth directly (i.e., through the construction of new housing or increasing population) or indirectly (i.e., by increasing employment opportunities or eliminating existing constraints on development). Under CEQA, growth is not assumed to be either beneficial or detrimental.

The proposed project and Tunnel-Only Alternative would not involve new development or infrastructure installation that directly could induce population growth in the project area. Additionally, the project would not involve construction of new housing or create a demand for additional housing. The water management benefits of the proposed project, including increased water storage in the two reservoirs, improved reliability of water supplies, and reduced flood damage, also would not promote population growth because the proposed project would not convert agricultural land into residential uses, nor would it increase the availability of allocated water for residential development (i.e., potential for population growth due to water availability). Furthermore, the proposed project would not displace any existing housing units or persons. The project site is located on MCWRA-operated lands, and no housing currently exists within the project area. Therefore, the proposed project and Tunnel-Only Alternative would have no effect on population growth or housing demand.

During the construction periods, which range from 2 to 3 years, for components of the proposed project and the Tunnel-Only Alternative, there could be as few as two workers or up to a peak of about 110 workers on the site at any given time. It is expected that the construction workforce requirements would be met with the local labor force within Monterey and San Luis Obispo Counties (i.e., within driving distance). This temporary employment condition would not create demand for additional housing. Although some workers might temporarily relocate from other areas, the increase would be minor and short-term (i.e., approximately 2 years) and would not result in a substantial permanent increase in population. Thus, project construction would not induce substantial population growth in the region indirectly, and no mitigation measures are required.

No additional staff would be required for operation of the proposed project because existing MCWRA staff would conduct long-term operation and maintenance of the project facilities. Should additional staff become necessary to operate and maintain the project, it is expected that new employees would be drawn from the local area and would not require recruitment of workers from out of the area. Thus, the proposed project would not foster population growth as a result of creation of new jobs.

The purpose of the proposed project is to develop a multi-benefit project for the Salinas Valley Groundwater Basin to improve water supply sustainability, water quality, and flood management. Among other benefits, the proposed project would increase the overall surface water supply available from Nacimiento and San Antonio Reservoirs by maximizing the opportunity for water to be stored collectively in the reservoirs. The proposed project would not extend roads or public services into a currently undeveloped area, with the exception of any new access roads leading to project facilities (e.g., intake structure at Nacimiento Reservoir). Therefore, the proposed project and Tunnel-Only Alternative would not result in growth-inducing impacts.

5.4 Cumulative Impacts

CEQA Guidelines define a *cumulative impact* as two or more individual impacts that, when considered together, are considerable or that compound or increase other significant environmental impacts. The incremental impact of a project may be considerable when viewed in the context of other closely related past, present, and reasonably foreseeable future projects.[1] Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time (CEQA Guidelines Section 15355).

[1] *Reasonably foreseeable future projects* are defined as projects that have been adopted or have otherwise demonstrated likelihood to occur based on documentation from project sponsors.

CEQA Guidelines Section 15130(b) states that an adequate discussion of potential cumulative effects requires consideration of either a project list-based approach or a projection-based approach. This EIR uses a combination of a projection-based/plan-based approach and a project list-based approach to determine whether significant cumulative impacts would occur.

The focus of this cumulative analysis is to identify the proposed project's contribution to significant cumulative impacts and determine whether that contribution would be considerable. When cumulative impacts on a project-affected resource can be clearly shown to be less than significant, and when the project would have no impact on a resource, the discussion of cumulative impacts is brief. When the project is likely to contribute considerably to a significant cumulative impact, the analysis provides more detail. The cumulative analysis focuses on the project's potential contribution to the cumulative impact, rather than a detailed description of the cumulative impact.

Under CEQA, MCWRA is not responsible for mitigating the overall cumulative impacts. MCWRA is responsible for identifying and implementing only potentially feasible mitigation to address the project's considerable contributions to identified significant cumulative impacts. Thus, the obligation to assess mitigation is limited to the *fair share*[2] portion of a significant cumulative impact that is due to the project's considerable contribution. Other cumulative projects have a similar obligation for their contributions to significant cumulative impacts.

5.4.1 Consideration of Scoping Comments Regarding Cumulative Impacts

The public expressed concerns regarding cumulative impacts during public scoping for this EIR. **Table 5-1** summarizes the scoping comments received regarding cumulative impacts and identifies how and where these comments have been addressed.

Table 5-1. Scoping Comments Related to Cumulative Impacts

Summary of Comment	Location Comment Is Addressed
The project must be evaluated in the context of all the "live" project and project proposals currently in place or being planned. Including. but not limited to, Water Right 11043, Pure Water Monterey, Salinas Valley Water Project, Salinas Industrial Pond diversion, and an enlargement of the Castroville Seawater Intrusion Project. The project EIR must acknowledge, consider, and evaluate the cumulative impacts of (1) stopping or diverting optimal flows from the few short months available for steelhead migration when all projects are operational; and (2) the impact on Salinas Lagoon water temperatures and dissolved oxygen when the new storage and diversion does not allow water flow to reach and cool the lagoon during the summer months (The Otter Project).	Section 5.1.6, *Projects Considered and Growth Forecasts*; Section 5.1.7.1, *Hydrology and Water Quality*, Section 5.1.7.3, *Biological Resources*, and Chapter 4, *Hydrology and Water Quality*

[2] *Fair share* in this context refers to the portion of the cumulative impact to which a project contributes and a project would also be responsible for mitigating.

Summary of Comment	Location Comment Is Addressed
The EIR should discuss whether the proposed project would have a cumulative effect on stream flow or flow prescriptions in the Salinas and Old Salinas River watersheds based on current diversions proposed by MCWRA for Water Right Application 32263 A (California Department of Fish and Wildlife [CDFW]).	Section 5.1.7.1, *Hydrology and Water Quality*
A cumulative impact analysis should be performed to evaluate the combined air quality impacts of this project and impacts from existing and proposed future development in the area. This should encompass all planned construction activities within one mile of the project (San Luis Obispo County Air Pollution Control District [SLO APCD]).	Section 5.1.5, *Approach and Methodology*, and Section 5.1.7.9, *Air Quality*

5.4.2 Approach and Methodology

CEQA Guidelines Section 15130(b) states that the discussion of cumulative impacts should include the following:

1. Either (1) a list of past, present, and probable future projects producing related or cumulative impacts or (2) a summary of projections contained in an adopted general plan or similar document, or in an adopted or certified environmental document, that described or evaluated conditions contributing to a cumulative impact;
2. A description of the geographic scope of the area affected by the cumulative impact;
3. A summary of expected environmental effects to be produced by these projects; and
4. Reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

CEQA does not require cumulative analysis in topic areas where the project would have no impact, because a project that would have no impact at a project-level of analysis would have no potential for a considerable contribution to a cumulative impact. Accordingly, there is no further discussion in this section of the following resource topics that would have no impact at the project level—Land Use, Mineral Resources, Population and Housing, Public Services, and Forestry Resources—these topics were eliminated from analysis in this EIR based on the nature and scope of the proposed project activities (refer to Section 4.0.4, *Environmental Resource Topics Eliminated from Further Analysis*).

MCWRA used the following steps to determine the contribution of the proposed project and Tunnel-Only Alternative, if any, to cumulative impacts for each resource:

- Compile a list and description of, as well as environmental impact information for, relevant plans and projects for consideration of cumulative impacts. This included a review of projects in adopted plans such as local land use general and specific plans, along with capital improvement programs and lists of planned improvement programs and projects maintained by Monterey and San Luis Obispo County planning, public works, and parks agencies.

- Planned actions in this analysis are those that are likely to occur and will add to the cumulative impacts on a particular resource. Generally, projects are considered in the analysis if they are part of an adopted plan as described in this section or fall under any of the following conditions:
  - Applications for project entitlements or construction are pending with a government agency.
  - The project is included in an agency's budget or capital improvement program.
  - The project is a foreseeable future phase of an existing project.
- Define the geographic context for the cumulative impacts for each resource topic.
- Identify and evaluate the cumulative impacts of the planned projects, including the proposed project and Tunnel-Only Alternative, that make up the cumulative condition for each resource topic. Determine as part of this evaluation whether there is a cumulative impact.
- Determine whether the incremental contribution of the proposed project and Tunnel-Only Alternative to the cumulative impacts for each resource area is cumulatively considerable under CEQA. "Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (CEQA Guidelines Section 15355).
- Identify reasonable, feasible options for avoiding or mitigating the contribution of the proposed project and Tunnel-Only Alternative to cumulative impacts, where applicable.

The resource evaluations in Chapter 4, *Introduction to the Environmental Analysis*, form the basis for analyzing the cumulative impacts of each resource. The cumulative analysis includes all resources considered in Chapter 4 (i.e., Sections 4.1 through 4.16). Where applicable, the cumulative impacts analysis describes why impacts of the proposed project and Tunnel-Only Alternative would not contribute to a significant cumulative impact.

This cumulative analysis takes into account that this project would enhance efficacy, control, and conveyance of water at an existing facility within the current operating area of the MCWRA. Whereas many development or infrastructure projects considered by CEQA lead agencies result in some new or expanded facility or similar improvement, the proposed project would not directly expand capacity of the existing water conveyance system. Moreover, the proposed project does not entail any land-development activities beyond construction of the proposed control building.

For those resources with impacts at the project level, this EIR uses a combined projection-based/plan-based approach and project list-based approach to identify cumulative impacts. In addition, each resource has a different geographic area in which cumulative impacts could occur. **Table 5-2** presents the geographic area of analysis for each resource area.

For those resources whose project level analysis depended on hydrologic modeling results (e.g., hydrology and water quality, biological resources), modeled projections, using the SVOM, were also developed, taking into account climate change and projected land-use changes through 2070. The SVOM model is discussed further in Section 2.5.1.1, *Operations*, and assumptions guiding the 2070 SVOM model scenarios and results of the cumulative modeling output are presented in Appendix H, *Assumptions for Cumulative Analysis*.

Table 5-2. Summary of Cumulative Impact Geographic Scope by Resource

Resource Issue	Geographic Area of Impact
Aesthetics	Project footprint
Agricultural Resources	Nacimiento and San Antonio Rivers watershed
Air Quality	
Criteria pollutants	San Luis Obispo County Air Pollution Control District
Toxic air contaminants	Project footprint and immediate vicinity
Biological Resources	
Terrestrial Resources	Project footprint
Aquatic species	Project footprint, basin and downstream
Cultural Resources	0.5 mile of the project footprint
Energy	State and local region
Geology, Soils, Seismicity, and Paleontology	
Geologic hazards	Project footprint
Seismicity	Greater Monterey Bay region, including northern San Luis Obispo County
Soils	Project footprint and the region, including downstream, the Salinas River, and its tributaries
Paleontological resources	The full extent of geologic units with high paleontological sensitivity that the project would disturb
GHG Emissions	Regional and global
Hazards and Hazardous Materials	Project footprint
Hydrology and Water Quality	Project footprint, vicinity, and downstream water bodies
Noise	Project footprint and vicinity
Recreation	Counties of Monterey and San Luis Obispo, CDFW
Transportation and Circulation	
Bicycle, and pedestrian facilities	Roadways providing access to project footprint
Local traffic and transit systems	Community of Lake Nacimiento
Tribal Cultural Resources	0.5 mile of the project footprint
Utilities and Service Systems	Service areas of the public service providers in the project area
Wildfire	Service areas for fire protection service providers of the project area; Counties of Monterey and San Luis Obispo

CDFW = California Department of Fish and Wildlife; GHG = greenhouse gas

5.4.3 Plans and Projects Considered and Growth Forecasts

This section describes the plans and projects considered in the cumulative impact analysis, the status of their environmental documentation, and anticipated environmental impacts of implementation of those plans and projects (identifying only those resources that would also be affected by the proposed project or Tunnel-Only Alternative).

This analysis considers three types of cumulative actions:

- Plans that pertain to the Salinas, Nacimiento, and San Antonio Rivers, the Basin, and Nacimiento and San Antonio Reservoirs;
- Public works and infrastructure projects in San Luis Obispo and Monterey Counties that are in proximity (within 1 mile) of the project footprint or within the Salinas, Nacimiento, and San Antonio Rivers watersheds or Basin; and
- Land development within 1 mile of the project area in the community of Lake Nacimiento in San Luis Obispo and Monterey Counties.

For public works and infrastructure projects, a list of current major projects and planned projects was consulted (County of Monterey 2022c; County of San Luis Obispo 2022a). For planning documents, documents were reviewed that covered areas within the project vicinity and that pertain to the Salinas, Nacimiento, and San Antonio Rivers, the Salinas Valley Groundwater Basin (Basin), and Nacimiento and San Antonio Reservoirs. **Table 5-3** summarizes the planning documents considered for this cumulative analysis. For land development, a list of reasonably foreseeable and planned projects in San Luis Obispo and Monterey Counties was consulted (County of Monterey RMA 2021b; County of San Luis Obispo 2022a). **Table 5-4** summarizes the projects considered for this cumulative analysis.

Table 5-3. Plans Considered in the Cumulative Analysis

Plan Name	Description	Status	Location	Location Relative to Proposed Project
High Priority Capital Asset Management Program (MCWRA 2021)	MCWRA is developing a program for capital asset management priorities. Nacimiento Reservoir and Dam was completed in 1957 and San Antonio Reservoir and Dam was completed in 1967. The dams are 63 and 53 years old, respectively. The appurtenant structures are reaching their useful life spans and thus need replacement or repairs to continue their service. The related projects would replace or repair reservoir components and roads and provide operations and maintenance.	In process of development	Nacimiento and San Antonio Reservoirs	Project footprint
San Antonio and Nacimiento Rivers Watershed Management Plan (MCWRA and SWRCB 2008)	MCWRA and the SWRCB developed the *San Antonio and Nacimiento Rivers Watershed Management Plan* (also known as the Nacitone Watershed Management Plan) to identify the existing conditions of and stresses in the Nacitone watershed, which is made up of the San Antonio and Nacimiento River watersheds, related to water quality and recommend methods for reducing or eliminating those stressors, such as alternative land use practices. A core finding of the plan is that the Klau/Buena Vista Mines Mercury situation appears to be the only documented water quality issue in either watershed. The watershed strategy is structured toward partnership approaches to water quality protection, particularly with legacy landowners in the watersheds.	Current	Nacitone watershed	Project footprint
Integrated Regional Water Management Plan for the Greater Monterey County (Regional Water Management Group 2018)	The *Integrated Regional Water Management Plan for the Greater Monterey County,* adopted in 2013 and updated in 2018, addresses the protection and improvement of water supply reliability, drinking-water quality, groundwater resources, and aquatic, riparian, and watershed resources in the plan area. Resource management strategies in the plan include ways to reduce water demand; improve operational efficiency and transfers; increase water supply; improve water quality; practice resource stewardship; improve flood protection; acknowledge people's water needs; and other strategies. A list of projects is included to carry out the Plan, and the projects are categorized as proposed implementation, funded, and concept proposals. The planning phases of the proposed project is listed as a 2014 proposed implementation project for water supply and water quality and also under 2014 concept proposals (Regional Water Management Group 2018).	Current	Monterey County	Project footprint

Plan Name	Description	Status	Location	Location Relative to Proposed Project
Monterey County Groundwater Management Plan (MCWRA 2006)	MCWRA, recognizing that management of its natural water resources is critical to ensuring a long-term sustainable and reliable good-quality water supply, prepared the *Monterey County Groundwater Management Plan* (GWMP). The purpose of the GWMP is to provide a comprehensive overview of the Basin and to recommend various management strategies. The GWMP identifies a number of plan elements or implementing activities, such as monitoring of groundwater levels, quality, production, and subsidence; and development of basin yield and avoidance of overdraft (MCWRA 2006). The plan is a framework for present and future action items, and in general the plan elements have little effect on the environment. Many elements are related to information gathering, reporting, policy identification, or continuance of existing uses, practices, and programs. Depending on results of groundwater monitoring, other actions may be taken, including re-distributed or reduced groundwater pumping. There are few specific actions that would have an effect on the environment, though there will likely be several technical reports on topics such as development of supplemental water supplies for agricultural and municipal uses and continuing utilization of recycled water for irrigation.	Current	Monterey County	Project footprint
Monterey County Multi-Jurisdictional Hazard Mitigation Plan (County of Monterey 2022a)	Monterey County has developed comprehensive update to the 2016 Multi-Jurisdictional Hazard Mitigation Plan which covers the unincorporated county, 12 municipalities and two special purpose districts. All mitigation actions can be classified under five categories of approaches: local plans and regulations, structure and infrastructure projects, natural systems protection, education and outreach, and emergency preparedness and response.	Current	Monterey County	Project region

Plan Name	Description	Status	Location	Location Relative to Proposed Project
County of Monterey Capital Improvement Program Five-Year Plan FYs 2022/23 through 2026/27 (County of Monterey 2022b)	The Capital Improvement Program (CIP) for fiscal years 2022/23 through 2026/27 sets forth capital projects essential to maintain and improve County of Monterey public facilities and facilitates the orderly implementation of the Monterey County General Plan. CIP projects are those projects that cost more than $100,000 and provide long-term assets to Monterey County. The following projects in the CIP are directly relevant to the proposed project: • Lake Nacimiento Resort: Lodge replacement and road repairs. • San Antonio Reservoir: Construct north shore amphitheater, replace marina, renovate oak room, renovate administration building, repair north and south shore roads, resurface campsite "pad," and implement park amenities replacement program. • *Parks Water and Sewer Projects Master Plan* (ARPA Funds): Designates a portion of the county's American Rescue Plan Act (ARPA) funding to water and sewer system improvement projects in the county parks system, including Toro, Royal Oaks, Manzanita, San Antonio Reservoir, and Nacimiento Reservoir. • Parks Repair (Proposition 68 per Capita Funding): Project implements various repair and improvement projects in county parks, including the removal of unusable modular units at San Antonio and Nacimiento Reservoirs.	In process of development	Nacimiento and San Antonio Reservoirs	Adjacent to the project site and the area of proposed maximum WSE at San Antonio Reservoir
San Luis Obispo County Multi-Jurisdictional Hazard Mitigation Plan (County of San Luis Obispo 2019)	San Luis Obispo County has developed this document, which covers the unincorporated county, seven municipalities, ten community service districts, and four special districts. The plan, as required by law, provides a framework for planning responses to natural and manmade hazards. It includes a mitigation strategy to achieve established mitigation goals. The mitigation actions include prevention, property protection, structural, natural resource protection, emergency services, and public information/education and awareness. Related projects under all these categories other than public information/education and awareness could affect the physical environment.	Current	San Luis Obispo County	Project region

Plan Name	Description	Status	Location	Location Relative to Proposed Project
San Luis Obispo County General Plan – Housing Update (County of San Luis Obispo 2020)	The *San Luis Obispo County General Plan – Housing Update* updates the Housing Element, including the framework to facilitate housing development and address current and projected housing needs in San Luis Obispo County through 2028. As one of the required elements of the *County of San Luis Obispo General Plan*, the Housing Element is the overarching strategic housing plan for the unincorporated county. The Housing Element Update was adopted on November 17, 2020. It provides a framework to increase production of a range of housing types.	Current	San Luis Obispo County	Project footprint
San Luis Obispo County Regional Water Infrastructure Resiliency Planning (San Luis Obispo County Flood Control and Water Conservation District 2021)	San Luis Obispo County is in the process of identifying specific prioritized actions to address priority vulnerability areas in regional water infrastructure. In response to the recent drought and in anticipation of future drought conditions, the Water Resources Division is coordinating with key water agencies throughout the county and would develop an action plan for mitigating vulnerabilities and enhancing reliability, resilience, and optimum utilization of existing and future regional water infrastructure. This effort implements state priorities related to countywide drought planning and key recommendations from the Countywide Master Water Report. Key elements are: • Leading efforts to optimize the use of unsubscribed and/or underutilized water from the State Water Project (SWP) and Nacimiento Water Project, in conjunction with other facilities, to promote enhanced use of existing available resources that support local agency use and exchanges; • Supporting development of contingency plans; and • Developing streamlined processes for local interagency collaboration and governance structures for future projects and programs (County of San Luis Obispo 2022a). The San Luis Obispo County Regional Water Infrastructure Resiliency Plan identifies regional mitigation opportunities that include an enhancement of the supply risk evaluation, interconnections and agreements from agency to agency, transfer of water between different supply sources (interconnections, interlake tunnels, etc.). The Countywide Master Water Report recommendations include the hydraulic capacity study of SWP Coastal Branch to find out if there is enough capacity to transmit State Water to coastal communities, understanding exchange opportunities with other resources in the District, and giving a final opportunity to existing SWP participants to execute Drought Buffer Agreements.	In process of development	San Luis Obispo County	Project region

Plan Name	Description	Status	Location	Location Relative to Proposed Project
2010 Monterey County General Plan (County of Monterey 2010)	The *2010 Monterey County General Plan* (County of Monterey 2010a) includes policies that address the existing and future land use for large rural areas used predominately for agricultural purposes, as well as for the diversity of unincorporated communities. The General Plan is the blueprint for land use in Monterey County through 2030.	Current	Monterey County	Project footprint
San Luis Obispo County General Plan (County of San Luis Obispo n.d.)	The *San Luis Obispo County General Plan* contains policies that are used for all land use decisions. Its main purposes are to illustrate the public policy for future land use for both public and private lands and provide the County Board of Supervisors, Planning Commission, Subdivision Review Board, and Zoning Administrator (Hearing Officer) with specific direction for future decisions affecting land use development.	Current	San Luis Obispo County	Project footprint

Sources: MCWRA 2021; MCWRA and SWRCB 2008; Regional Water Management Group 2018; MCWRA 2006; County of Monterey 2022a; County of Monterey 2022b; County of San Luis Obispo 2019; County of San Luis Obispo 2020; San Luis Obispo County Flood Control and Water Conservation District 2021;County of Monterey 2010; County of San Luis Obispo n.d.

Table 5-4. Projects Considered in the Cumulative Analysis

Name	Description	Status	Location	Location Relative to Proposed Project
Draft Lakes Operations Plan (PWFP 2019)	Monterey County Public Works, Facilities, and Parks (PWFP) has developed an operations/business plan for San Antonio and Nacimiento Reservoirs, based on how the County of Monterey has chosen to operate these facilities. The Monterey County Board of Supervisors expressed an intent to transition all management at San Antonio Reservoir to the County of Monterey; Nacimiento Reservoir would continue to operate under a third-party agreement. The County of Monterey would retain responsibility for capital improvements at both facilities under this option. Capital projects proposed under the plan include drilling three new wells, installing water storage tanks for 200,000 gallons; a shift from park-wide sewer system to independent septic systems and portables; converting employee housing trailers to RV pads; removal of one marina and upgrading the restroom of the second marina; repairing/repaving roads and campsites; destruction, repair, or remodeling of assorted structures; and relocating modular units.	Draft released 2019	Nacimiento and San Antonio Reservoirs	Project footprint
Salinas Valley Water Project (MCWRA 2022a)	MCWRA developed the Salinas Valley Water Project (SVWP) in coordination with various Salinas Valley interests. It was intended to provide for the long-term management and protection of groundwater resources in the basin by meeting the following objectives: stopping seawater intrusion; providing adequate water supplies and flexibility to meet current and future (year 2030) needs; and improving the hydrologic balance of the Salinas Basin. Operation of the proposed project would be subject to the SVWP Flow Prescription, such that releases from Nacimiento and San Antonio Reservoirs would need to continue to meet the flow prescription requirements (MCWRA 2016).	Current	Salinas Basin; Nacimiento and San Antonio Reservoirs	Project footprint

Name	Description	Status	Location	Location Relative to Proposed Project
Salinas River Long-Term Management Plan (MCWRA and Coastal Conservancy 2019)	MCWRA and State Coastal Conservancy are finalizing the development of the *Salinas River Long-Term Management Plan* (LTMP), a multi-benefit management program intended to: provide guidance to MCWRA regarding its facilities and operations; address river management challenges, such as flood control, water supply, and water quality; and outline strategies for conserving and managing natural resources, including threatened and endangered species. Because operating MCWRA facilities and managing the sandbar at the mouth of the Salinas River Lagoon may result in incidental take of threatened and endangered species, the LTMP would also support the development of a habitat conservation plan (HCP), a planning document required to obtain take authorization from federal authorities. The LTMP's goals include identifying solutions for management of the Salinas River that include flood reduction, water resource management, stream maintenance, and habitat management (MCWRA and State Coastal Conservancy 2019).	Current	Salinas River; Monterey County	Salinas River downstream of the reservoirs
Salinas River Stream Maintenance Program (MCWRA 2022b)	MCWRA developed the Salinas River Stream Maintenance Program in collaboration with the Resource Conservation District of Monterey County, Salinas River Channel Coalition, Grower-Shipper Association of Central California, The Nature Conservancy, the Conservation Collaborative, and other local entities and contractors. This program, which was fully implemented in 2016, is intended to help protect landowners and farms along the Salinas River against flooding during and after moderate storm events while enhancing the habitat value of the Salinas River. The Salinas River Stream Maintenance Program facilitates the vegetation and sediment management activities conducted voluntarily by individual property owners, growers, and municipalities.	Current	Salinas River; Monterey County	Salinas River downstream of the reservoirs

Name	Description	Status	Location	Location Relative to Proposed Project
Pure Water Monterey Groundwater Replenishment Project (Monterey One Water and Monterey Peninsula Water Management District 2019)	The Pure Water Monterey project would produce up to 10,350 acre-feet per year of new water by recycling wastewater. The purpose of this project is to replenish the Seaside Groundwater Basin with purified recycled water and reduce pumping from the over-drafted Salinas Valley Groundwater Basin by increasing recycled water production for food-crop irrigation. The project would also strengthen the resiliency of regional water supplies and enhance habitats in the watershed by restoring flows or removing pollutants. Modifications to the Pure Water Monterey Groundwater Replenishment Project would provide additional purified recycled water for recharge of a groundwater basin that serves as drinking water supply and augment recycled water supply for agricultural irrigations. The modifications would expand the Advanced Water Purification Facility capacity and increase recharge of the Seaside Groundwater Basin.	Approved; proposed modifications under review	Monterey County	Project footprint
New-Source Water Supply Study (MCWRA 2018)	MCWRA currently obtains water from three sources: recycled wastewater from the Salinas Valley Reclamation Project (which has included agricultural wash water since 2015), surface water from the Salinas River Diversion Facility, and water from CSIP supplemental groundwater. The objective of obtaining new source waters is to reduce the use of water from CSIP groundwater wells. MCWRA and Monterey One Water (M1W) have conducted the *New Source Waters Study* to provide a cost analysis for the operation, maintenance, and capital costs for new-source water facilities. This will allow determination of specific rates and charges for final consideration. The new-source waters evaluated in the study were Blanco Drain and Reclamation Ditch, including existing source waters for treated wastewater, supplemental wells, and industrial wash water.	In process of development	Monterey County	Water released from the reservoirs and diverted downstream at the Salinas River Diversion Facility is one of the three sources of water for deliveries to CSIP

Name	Description	Status	Location	Location Relative to Proposed Project
Optimization of the Castroville Seawater Intrusion Project (Henson pers. comm.)	The CSIP, owned by MCWRA and operated by M1W, is part of a conjunctive use system that delivers a combination of recycled water, Salinas River water, and groundwater to farmers to reduce groundwater extraction within seawater-intruded areas. CSIP has slowed the rate of seawater intrusion but is limited by the inability to meet all pressure and flow demands with peak summer irrigation during periods of drought. Optimizing the CSIP system will increase the reliability of the recycled water supply and help protect the drinking water supplies of underrepresented, disadvantaged communities in Castroville and Salinas, which are threatened by seawater intrusion. In drought years, the annual reduction in groundwater pumping due to this project is anticipated to be 1,200 to 1,600 acre-feet. This project would address these challenges with remote monitoring units to track and control water use, dynamic hydraulic modeling of existing and future seasonal and diurnal water use, implementation of a water scheduling system, and upgrades to critical pipeline segments.	In process of development	Monterey County	Downstream of project site within Salinas Valley Groundwater Basin, approximately 5 miles southwest of Salinas River near Monterey Bay
Current Major Projects: Nacimiento Lake Drive – Bridge No. 449 Replacement (County of Monterey 2022c)	The existing one-lane bridge (17 feet wide and 292 feet long) constructed in 1921 does not meet current design/seismic standards. The existing bridge is functionally and structurally deficient. The project includes replacement of the existing Nacimiento Lake Drive Bridge over San Antonio River with a new 34-foot-wide and 297-foot-long bridge.	In process of development	Over San Antonio River downstream of San Antonio Reservoir	Approximately 2 miles northeast of project site
Current Major Projects: Gonzales River Road Bridge Rehabilitation Project (County of Monterey 2022c)	The project includes replacement of the superstructure of the existing two-lane Gonzales River Road Bridge (Bridge No. 44C0035) over the Salinas River in Monterey County, California, with a wider bridge deck that meets current American Association of State Highway and Transportation Officials (AASHTO) requirements. The project would address certain existing structural deficiencies (e.g., cracks, exposed reinforcing bars, failing joints in the superstructure) and improve the conditions for conveying floodflows.	In process of development	Gonzales, California	Downstream of project site along Salinas River near the city of Gonzales

Name	Description	Status	Location	Location Relative to Proposed Project
Current Major Projects: Cooper Road Reconstruction (County of Monterey 2022c)	The project includes reconstruction of Cooper Road (approximately 2.9 miles) from Blanco Road to State Route 183, just west of Salinas. Construction activities will require closing Cooper Road intermittently to through traffic, except for residents and emergency vehicles, for the duration of the project.	In process of development	West of Salinas, California	Downstream of project site along Salinas River near the city of Salinas
Current Major Projects: Davis Road Bridge Replacement and Road Widening (County of Monterey 2022c)	The project includes replacement of the Davis Road and Reservation Road intersection with a single-lane roundabout and a southbound free right-turn lane from Davis Road onto Reservation Road. A new right turn will be constructed from Davis Road (northbound) to Blanco Road (eastbound); the centerline alignment of the Davis Road bridge will be shifted 25 feet to the east. Additional changes include drainage improvements, grading access roads, utility relocation/modification, and additional right-of-way acquisitions.	In process of development	Southwest of Salinas, California	Downstream of project site along Salinas River near the city of Salinas
Oak Shores Wastewater Treatment Facility Upgrade (County of San Luis Obispo 2022b)	Improvements to increase system capacity, provide nitrogen removal, increase flow capacity, and upgrade the collection system for the community of Oak Shores.	Environmental phase complete	Oak Shores Community	Approximately 5 miles west of project site on north shore of Nacimiento Reservoir
Interceptor Design Development (County of San Luis Obispo 2022c)	The interceptor is exposed in several areas at Nacimiento reservoir shoreline. A sewer spill would shut down lake operation. Effort is needed to evaluate and design a solution for repairing and/or replacing the interceptor line.	In project development	Adjacent to/within Nacimiento Reservoir	Approximately 3 miles west of project site on north shore of Nacimiento Reservoir

Sources: County of San Luis Obispo 2022b and 2022c; PWFP 2019; MCWRA 2018; MCWRA 2022a; MCWRA 2022b; MCWRA and Coastal Conservancy 2019; Monterey One Water and Monterey Peninsula Water Management District 2019; Henson, A. Monterey County Water Resources Agency. May 13, 2022—*Optimization of the Castroville Seawater Intrusion Project*; County of Monterey 2022c.

5.4.4 Analysis of Cumulative Impacts

This section provides the cumulative impacts analysis, which considers both the Interlake Tunnel and Spillway Modification Project and the Tunnel-Only Alternative as a whole in combination with the cumulative plans and projections and projects. The purpose of the cumulative impact analysis is to assess the impacts of a proposed action in combination with a group of actions or projects with similar or overlapping impacts.

5.4.4.1 Hydrology and Water Quality

The geographic context of the cumulative impact analysis for hydrology and quality consists of the project footprint, vicinity, and downstream water bodies. The cumulative analysis for hydrology and water quality relies on a combined approach that considers projects associated with the plans identified in **Table 5-3** and projects in **Table 5-4** in a geographic context, along with the proposed project and Tunnel-Only Alternative. Refer to Section 4.1, *Hydrology and Water Quality,* for a description of the existing surface water, groundwater hydrology, and water quality resources in the study area, which includes the geographic context for this analysis.

Cumulative Effects

Construction

Construction associated with the actions identified in plans listed in **Table 5-3**, projects listed in **Table 5-4,** the proposed project, and the Tunnel-Only Alternative would result in ground-disturbing activities and, thus, have the potential to result in erosion, increases in contaminated runoff, and possible degradation of water quality. In addition, operations associated with the identified plans and projects may cause changes in water levels, which could lead to siltation and sedimentation. However, actions associated with the identified plans and projects within the geographic context for water quality would be subject to applicable laws and regulations, including the requirements of the construction general permit and city municipal codes, which would minimize cumulative impacts associated with water quality such as erosion. These activities would be required to implement BMPs; therefore, construction-related cumulative impacts from erosion would be less than significant.

Construction activities associated with the identified plans and projects also have the potential to change groundwater supply and recharge. Dewatering during construction of these projects, if it is needed, is expected to be conducted on a one-time or temporary basis during the construction phase but would not result in a permanent loss of water that would deplete groundwater supplies. Therefore, cumulative impacts associated with groundwater, including supply and recharge, during construction would be less than significant.

Construction associated with the plans listed in **Table 5-3** and projects in **Table 5-4** may cause changes in impervious surface cover and associated runoff as well as water levels, which could lead to changes in flow rates and volumes. However, actions associated with the identified plans and projects within the geographic context for hydrology, drainage, and flood hazards would be subject to applicable laws and regulations, including the requirements of the MS4 general permit and local ordinances and general plan policies. All new development is required to handle stormwater in a manner that ensures that flooding will not increase and floodflows will not be redirected to other areas that are not currently prone to flooding. All cumulative projects would be required to include stormwater management features, such as LID measures, into project designs to reduce flows to pre-project conditions. Therefore, cumulative impacts associated with hydrology, drainage, and flooding during construction would be less than significant.

Operation

Operation of surface-water projects associated with the plans listed in **Table 5-3** and projects in **Table 5-4**, including the *Draft Lakes Operations Plan* and the *Salinas River Long-Term Management Plan,* along with the proposed project and Tunnel-Only Alternative, has the potential to change the flooding regime, as discussed further below, which could result in an increase in downstream erosion and sedimentation. Erosion resulting from increased downstream flooding during operation would represent a significant cumulative impact.

During operation, new impervious areas can reduce the potential for groundwater recharge. Some projects, such as the *Pure Water Monterey Groundwater Replenishment Project* and the *Salinas Valley Water Project,* are intended to increase groundwater supply or recharge. Actions associated with the identified plans and projects within the geographic context for groundwater would be subject to applicable laws and regulations, including the requirements of local ordinances and general plan policies, as well as sustainable groundwater management plans, which would collectively minimize the potential for these actions to interfere with groundwater recharge. Therefore, cumulative impacts associated with groundwater, such as supply and recharge impacts during operation, would be less than significant. In addition, operation of surface water projects associated with the plans listed in **Table 5-3**, as well as the proposed project and Tunnel-Only Alternative, has the potential to change the flooding regime, potentially resulting in alterations in flow rates and volumes. However, actions associated with the identified plans and projects within the geographic context for hydrology, drainage, and flood hazards would be subject to applicable laws and regulations, including the requirements of the MS4 general permit and local ordinances and general plan policies. All new development is required to handle stormwater in a manner that ensures that flooding will not increase and floodflows will not be redirected to other areas that are not currently prone to flooding. All cumulative projects would be required to include stormwater management features, such as LID measures, into project designs to reduce flows to pre-project conditions. Therefore, cumulative impacts associated with hydrology, drainage, and flooding during operation would be less than significant.

Project Contribution

With future climate change considerations assumed through the 2070 modeled year, the average annual number of 2070 flood control releases from Nacimiento Reservoir is variable when compared to both the modeled baseline and the proposed project and Tunnel Only Alternative modeled scenarios. The number of modeled flood control releases is anticipated to decrease in wet water years and increase in normal water years as well as when all water years are considered. Conversely, the modeled average annual number of flood control releases from San Antonio Reservoir and the combined flood control release is anticipated to increase for all water year types (see **Table H-12** and **Table H-43** in Appendix H, *Assumptions for Cumulative Analysis*). With future climate change considerations through the modeled year 2070, the modeled average annual flow volume from flood control releases is anticipated to decrease from Nacimiento Reservoir and is anticipated to increase from San Antonio Reservoir for all water year types compared to the modeled 2070 baseline. Increases in the flood control release volume could result in an increase in downstream erosion (see **Table H-44** in Appendix H, *Assumptions for Cumulative Analysis*). However, modeled total combined flood control releases for both the proposed project and the Tunnel-Only Alternative are anticipated to decrease. Further, implementation of **MM HYD-1** (see Section 4.1, *Hydrology and Water Quality*) would require MCWRA to actively manage Interlake Tunnel and reservoir operations through development and operation of a detailed operational plan for controlling the rate and timing of Interlake Tunnel transfers during projected storm events to reduce flood hazards and associated erosion. With this measure in place, the change in magnitude of the potential combined flood control releases associated with the proposed project and Tunnel-Only Alternative would not be a cumulatively considerable contribution to the significant cumulative impact on erosion.

CEQA Conclusion

Implementation of **MM HYD-1** would reduce the potential for hazardous downstream flows and the potential for erosion associated with higher river flows. With implementation of **MM HYD-1**, the proposed project and Tunnel-Only Alternative would not cause an incremental impact that would be significant when added to the erosion-related impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.2 Geology, Soils, Seismicity, and Paleontological Resources

The geographic context of the cumulative impact analysis for geology, soils, seismicity, and paleontological resources varies by issue. The geographic context of the cumulative impact analysis for primary hazards from seismicity—specifically, the potential for surface fault rupture and seismic ground shaking and dam failure—is the greater Monterey Bay region, including northern San Luis Obispo County. The geographic context of the cumulative impact analysis for geologic hazards—specifically. ground failure and landslide—is the proposed project footprint plus a 0.25-mile buffer. The geographic context of the cumulative impact analysis for paleontological resources is the full extent of geologic units with high paleontological sensitivity that the project would disturb. The analysis of cumulative impacts relies on a combined approach and considers projects associated with the plans identified in **Table 5-3** and projects in **Table 5-4** in the geographic context, along with the proposed project and Tunnel-Only Alternative. Refer to Section 4.3, *Geology and Soils*, for a description of the existing setting of the study area related to geology, soils, seismicity, and paleontological resources, which includes the geographic context for this analysis.

Cumulative Effects

The study area is seismically active, and past actions have placed development throughout the study area and thus potentially at risk of surface rupture. In addition, construction of Nacimiento and San Antonio Reservoirs presents some risk of dam failure and associated downstream inundation. The actions associated with plans in **Table 5-3**, projects listed in **Table 5-4**, and the proposed project and Tunnel-Only Alternative represent a continuation of development in the study area, which is potentially at risk of seismic activity. However, regulatory standards that specify seismic standards for structural integrity and safety, including adherence to the CBSC, apply to all development within the study area. Furthermore, DSOD regulates safe operation and inspections of Nacimiento and San Antonio Reservoirs to minimize risk of seismic impacts and risk of failure. FERC also regulates Nacimiento Dam and associated appurtenant structures for dam safety. Thus, although there is some risk of seismic activity and surface fault rupture in the study area that could affect past, present, and future actions, this risk is expected to be effectively managed through building code and DSOD requirements; therefore, the cumulative impact for seismicity would be less than significant.

Past actions within the geographic context for geologic hazards, including ground failure and landslide, include creation of Nacimiento and San Antonio Reservoirs and minor development actions, including construction of roadways surrounding the reservoirs. No actions associated with plans in **Table 5-3** or projects in **Table 5-4** are expected to occur within the geographic context for geologic hazards; thus, future actions within this cumulative context are limited to the proposed project and Tunnel-Only Alternative. As described in Impact GSP-3, *Impacts as a Result of Soil Instability*, the proposed project and Tunnel-Only Alternative would be subject to applicable laws and regulations, including the requirements of the CBSC, which would ensure impacts associated with geologic hazards, such as ground failure and landslide, would be less than significant. Past actions in this geographic context are not known to have created a substantial risk of geologic hazards; thus, cumulative impacts associated with geologic hazards would be less than significant.

Construction activities associated with the plans listed in **Table 5-3** and projects in **Table 5-4**, as well as the proposed project and Tunnel-Only Alternative, have the potential to result in erosion. Construction associated with these plans and projects also has the potential to result in loss of topsoil. These activities would be required to implement BMPs; therefore, construction-related cumulative impacts from erosion would be less than significant. Construction associated with these plans also has the potential to result in the loss of topsoil. In addition, operation of the proposed project has the potential to result in erosion in the topsoil due to wave action with the increased maximum WSE at San Antonio Reservoir. Much of the geographic area downstream of the reservoirs is not in a built-up urban environment, and its native soils are therefore largely intact. Although it is likely that activities associated with the plans listed in **Table 5-3** and projects in **Table 5-4** would include mitigation that would minimize loss of topsoil, it is nevertheless possible that such actions would lead to loss of topsoil. Loss of topsoil as a result of construction and erosion resulting from increased downstream flooding would represent a significant cumulative impact.

Monterey and San Luis Obispo Counties contain sensitive geological units for paleontological resources, so ground-disturbing activities in this area have the potential to damage paleontological resources. Construction associated with the plans listed in **Table 5-3** and projects in **Table 5-4**, as well as the proposed project and Tunnel-Only Alternative, have the potential to damage or destroy unique paleontological resources if they are constructed on geologic units with high paleontological sensitivity. The cumulative impact on paleontological resources from construction activities is significant.

Project Contribution

Construction of the proposed project or Tunnel-Only Alternative could cause loss of topsoil. Implementation of **MM GSP-1** would reduce impacts from construction by requiring the stockpiling of topsoil. During operation, implementation of **MM GSP-2** would be effective at avoiding the loss of topsoil through the planting of erosion-resistant vegetation along unstable vegetated slopes. These mitigation measures would avoid the loss of topsoil; therefore, construction and operation would not represent a cumulatively considerable contribution to the cumulative impact.

Construction of the proposed project or the Tunnel-Only Alternative on geologic units with high sensitivity has potential to damage or destroy unique paleontological resources. Implementation of Implementation of **MM GSP-3** and **MM GSP-4** would reduce impacts by requiring retention of a qualified paleontological resource specialist and paleontological resource monitor, consultation with the qualified paleontological resource specialist, preparation of a Paleontological Resources Monitoring and Mitigation Plan (PRMMP), monitoring of paleontological resources during construction, and implementation of the PRMMP. This mitigation would ensure that any paleontological resources that would be unearthed during ground disturbance would be recognized by construction crews, that construction would stop to allow for recovery of the resource, and that scientifically important information would be captured from all paleontological resources that ground disturbance could unearth. Therefore, all scientific information from paleontological resources would be captured. Accordingly, any increased risk of damage to or destruction of unique paleontological resources as a result of project or Tunnel-Only Alternative construction would be less than cumulatively considerable.

CEQA Conclusion

With the implementation of **MM GSP-1** and **MM GSP-2**, construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to the loss of topsoil that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

With the implementation of **MM GSP-3** and **MM GSP-4**, construction of the proposed project or Tunnel-Only Alternative would not cause an incremental impact on paleontological resources that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.3 Biological Resources

Refer to Section 4.3, *Biological Resources*, for a description of the existing biological resources setting of the project. This analysis considers the potential cumulative impacts on sensitive biological resources, which includes potential impacts on special-status species, riparian habitats, or other sensitive natural communities, protected wetlands or waters, wildlife migration corridors or nursery sites, and the overall potential for habitat loss. This analysis also examines potential cumulative conflicts with local biological protection ordinances or adopted habitat conservation plans.

For potential impacts on terrestrial species, the cumulative geographic context includes the project footprint, where proposed elements would be located, and adjacent areas that may be subject to indirect impacts. For aquatic species, the cumulative geographic context includes both the proposed project footprint, as well as the aquatic features within the project footprint, the Basin, upstream areas, downstream of the reservoirs, the downstream portions of the San Antonio and Nacimiento Rivers east of the reservoir spillways, the Salinas River (starting from its confluence with the Nacimiento River and ending at the Salinas River Lagoon), the Salinas River Lagoon, the Old Salinas River channel, Moss Landing Harbor, and any associated riparian/wetland corridor along these waterways that may be affected (as discussed in Section 4.3, *Biological Resources*). These downstream portions are included in the study area because the project has a potential to affect the timing and quantity of water flowing through these river sections, which could result in indirect impacts on existing plant and wildlife species. Cumulative projects within this geographic context include the actions associated with the plans listed in **Table 5-3** and the projects listed in **Table 5-4,** along with the proposed project and Tunnel-Only Alternative. The cumulative analysis for biological resources relies on a combined approach.

Cumulative Effects

As discussed in Section 4.3, *Biological Resources*, vast areas of valley and foothill grasslands, riparian woodlands, and freshwater wetlands that support endemic plant species assemblages and wildlife productivity and movement in the study area have already been either lost to urban development or have been converted to agricultural production. The historical trend of converting or altering these natural communities has compromised the biological complexity of the region and has been a factor in the listing of natural communities, special-status species, and critical habitats for protected status by federal and state agencies.

The majority of land within the geographic setting for this cumulative analysis is actively used for agriculture. Native vegetation in these agricultural areas is absent or highly disturbed. As seen in the *Land Cover Mapbook* in Appendix E, *Biological Resource Attachments,* agricultural land cover types occur immediately adjacent to the active channel of the Salinas River for much of the 100-mile stretch that extends from the project site to the confluence with Moss Landing Harbor and the Pacific Ocean. As a result, any occurrences of natural communities, jurisdictional aquatic resources, and special-status plant and wildlife species are considered sensitive biological resources under the existing, altered conditions of the cumulative geographic setting. Cumulative effects associated with ongoing urban development and agricultural practices are expected to continue within the cumulative geographic setting. Urban development stemming from anticipated population increase through 2070 would result in the conversion of additional areas of land that is presently used for agriculture or is undeveloped to accommodate housing, commercial, and transportation. Plans and projects listed in **Table 5-3** and **Table 5-4** such as the *Draft Lakes Operations Plan*, *Pure Water Monterey Groundwater Replenishment Project*, and others listed in the Monterey County General Plan would contribute to development in the geographic setting. Planned transportation projects such as the *Nacimiento Lake Drive – Bridge No. 449 Replacement Project*, *Gonzales River Road Bridge Rehabilitation Project*, and the *Davis Road Bridge Replacement and Road Widening Project* are located within the geographic setting. Together, the proposed project, Tunnel-Only Alternative, and development planned under land use plans, planned transportation improvements, agricultural farm operations, and relevant additional future projects identified in **Table 5-3** and **Table 5-4** constitute the cumulative effects relevant to sensitive biological resources, including natural communities, special-status plants and wildlife, jurisdictional aquatic resources, critical habitat, essential fish habitat, and wildlife corridors.

The permanent conversion of existing land uses to residential, commercial, agricultural, and transportation uses has resulted in significant cumulative impacts on sensitive biological resources including natural communities, special-status plants and wildlife, jurisdictional aquatic resources, critical habitat, essential fish habitat, and wildlife corridors within the cumulative geographic setting for these resources. Construction of the projects identified in **Table 5-3** and **Table 5-4**, along with the proposed project or Tunnel-Only Alternative, would result in continued land disturbance, increased vehicle traffic, and topography alteration, which could lead to disturbance, injury, or mortality of various special-status wildlife species and their respective habitats. Taken together, these cumulative construction impacts would be considered a significant cumulative impact on sensitive biological resources.

Operation of these planned projects could result in additional cumulative impacts. For example, operation of transportation projects could result in the loss of individual members of special-status species through maintenance and mowing of roadside embankments or from the death of animals trying to cross transportation facilities where they are expanded. Indirect habitat degradation could occur near developed sites from new nighttime lighting that illuminates sensitive habitat areas or from trash blown from nearby residential and commercial areas. For the proposed project and Tunnel-Only Alternative, with future climate change considerations through the modeled year 2070, the modeled average annual flow volume from flood control releases during operations is anticipated to decrease from Nacimiento Reservoir and is anticipated to increase[3] from San Antonio Reservoir for all water year types compared to the modeled 2070 baseline. Increases in flood control release volume could result in an increase in downstream erosion and result in habitat degradation (see **Table H-44** in Appendix H, *Assumptions for Cumulative Analysis*). However, total combined flood control releases for both the proposed project and the Tunnel-Only Alternative would decrease. Taken together, these cumulative operations impacts would be considered a significant cumulative impact on sensitive biological resources.

Existing laws and regulations provide protection to biological resources are protected by law. Any planned development, transportation or other projects would be required to incorporate measures to minimize disturbance to these resources, such as by conducting protocol-level surveys; salvaging, relocating, and propagating identified species; and restoring potential habitat areas after construction. The proposed project and Tunnel-Only Alternative include requirements that would avoid or minimize many of the direct and indirect impacts associated with project construction. For example, MCWRA incorporated **AMM GEN-1** through **AMM GEN-6**, **AMM GEN-8**, and **AMM BIO-1** through **AMM BIO-5** into the design of the proposed project and Tunnel-Only Alternative. These AMMs include spill prevention, control, and containment measures; proper waste management; vehicle maintenance and parking requirements; measures stipulating that construction activity be located away from sensitive habitat and waterways; soil control and stabilization; worker environmental awareness training; construction best management practices; decontamination and control measures to avoid the spread of invasive species; and restoration of temporarily disturbed areas to pre-project conditions. Other planned development and transportation projects would have in place similar measures to minimize impacts. Although these measures would minimize project-specific impacts, they would not completely avoid destruction of habitat or loss of individual members of the species. These effects would combine within the geographic setting to result in a significant cumulative impact on sensitive biological resources.

Project Contribution

Construction of the proposed project and Tunnel-Only Alternative could affect sensitive biological resources, including sensitive natural communities, special-status plant and wildlife species, jurisdictional aquatic resources, critical habitat, essential fish habitat, and wildlife corridors. The application of mitigation measures **MM BIO-3.1, MM BIO-3.2, MM BIO-4.1, MM BIO-4.2, MM BIO-5.1**, and **MM BIO-8.1** through **MM BIO-8.15** would reduce direct and indirect construction impacts on sensitive biological resources by requiring preconstruction surveys; exclusion fencing; biological monitoring; protections regarding the use of herbicide, pesticide, and rodenticide; site restoration; requirements to follow best practices to reduce bird collisions; and compensatory mitigation. ‘=

Operation of the proposed project and Tunnel-Only Alternative could also affect fish productivity in Nacimiento Reservoir as well as downstream channel maintenance flows in the Nacimiento River and San Antonio River. Implementation of **MM BIO-7.1** and **MM BIO-8.16** would reduce operational impacts on fish productivity and channel maintenance flows by requiring compensatory mitigation and development and implementation of a set of new operation rules designed to preserve key

[3] In January through March only. Spillover is not anticipated in April through December.

components of peak flow events necessary for channel and habitat maintenance. In addition, operations of both the proposed project and Tunnel-Only Alternative would allow flexibility that could change the way reservoir storage operations and reservoir releases are managed such that impacts on sensitive biological resources could be minimized on a real-time basis. Furthermore, with respect to flood control releases and the corresponding potential for erosion and disturbance of habitats, implementation of **MM HYD-1** (see Section 4.1, *Hydrology and Water Quality*) would require MCWRA to actively manage Interlake Tunnel and reservoir operations through development and implementation of a detailed operational plan for controlling the rate and timing of Interlake Tunnel transfers during projected storm events to reduce flood hazards and associated erosion. This operations plan would allow MCWRA to substantially reduce the magnitude of the potential combined flood control releases and associated effects on habitat from erosion.

With implementation of the aforementioned mitigation, construction and operation of the proposed project or Tunnel-Only Alternative would not result in a cumulatively considerable contribution to a significant cumulative impact on sensitive biological resources, including downstream natural communities, jurisdictional aquatic resources, and special-status species habitats.

CEQA Conclusion

The proposed project and Tunnel-Only Alternative would result in the removal of vegetation for the placement of permanent infrastructure during construction as well as the removal of vegetation within temporary impact areas. The mitigation proposed to address impacts on natural communities and special-status species includes habitat preservation, in combination with restoration and enhancement, to maintain or improve existing conditions within the geographic setting. With implementation of **MM BIO-3.2, MM BIO-4.2, MM BIO-7.1**. **MM BIO-8.5,** and **MM BIO-8.13**, the proposed project and Tunnel-Only Alternative would not cause an incremental impact that would be significant when added to the impact on sensitive biological resources from other past, present, and reasonably foreseeable future actions.

5.4.4.4 Cultural Resources

The geographic context of the cumulative impact analysis for cultural resources consists of the area within 0.50 mile of the project site and the area around San Antonio Reservoir that could be inundated following implementation of the proposed project. The cumulative analysis for cultural resources relies on a project list approach and considers projects associated with the plans identified in **Table 5-3** in the geographic context along with the proposed project and Tunnel-Only Alternative. The projects identified in **Table 5-4** are not expected to occur within the geographic context and therefore are not applicable. Refer to Section 4.4, *Cultural Resources*, for a description of the existing cultural resources setting of the study area, which includes the geographic context for this analysis.

Cumulative Effects

Documented cultural resources exist within the geographic context. Furthermore, it is likely that as-yet documented cultural resources also exist within the geographic context. Past activities in the geographic context include creation of Nacimiento and San Antonio Reservoirs, which inundated and resulted in the potential disturbance of known cultural resources as well as areas sensitive for cultural resources in which as-yet cultural resources may have existed. Future construction associated with the proposed project, Tunnel-Only Alternative, and the actions associated with the plans identified in **Table 5-3** that are within the geographic context, including actions identified in the *Draft Lakes Operations Plan*, would result in ground-disturbing activities and, thus, have the potential to result in further disturbance of documented and as-yet undocumented cultural resources and human remains (PWFP 2019). In addition, operations associated with the proposed project would cause an increase in the maximum WSE at San Antonio Reservoir, which could lead to erosion and possible destruction of cultural resources due to wave action in that area. Therefore, the cumulative impact on cultural resources in the geographic context would be significant.

Project Contribution

Construction and operations of the proposed project and Tunnel-Only Alternative could affect cultural resources through disruption and potential destruction due to ground-disturbing activities and wave action with the new maximum WSE at San Antonio Reservoir. Mitigation measures would be implemented for the proposed project and Tunnel-Only Alternative, including **MM CUL-1.1**, **MM CUL-1.2**, **MM CUL-1.3**, and **MM CUL-2.1**, which provide rigorous requirements for preconstruction worker sensitivity training, protocols to manage unanticipated discoveries, development and implementation of a data recovery plan, and treatment measures for the appropriate treatment of human remains if discovered.

CEQA Conclusion

With the implementation of **MM CUL-1.1**, **MM CUL-1.2**, **MM CUL-1.3**, and **MM CUL-2.1**, construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to cultural resources that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.5 Tribal Cultural Resources

The geographic context of the cumulative impact analysis for TCRs consists of the area within 0.50 mile of the project site and the area around San Antonio Reservoir that could be inundated following implementation of the proposed project. The cumulative analysis for TCRs relies on a project lists approach and considers projects associated with the plans identified in **Table 5-3** in the geographic context along with the proposed project and Tunnel-Only Alternative. The projects identified in **Table 5-4** are not expected to occur within the geographic context and therefore are not applicable. Refer to Section 4.5, *Tribal Cultural Resources*, for a description of the existing TCR setting of the study area, which includes the geographic context for this analysis.

Cumulative Effects

No documented TCRs exist within the geographic context. However, as-yet undocumented TCRs may exist within the geographic context. Past activities in the geographic context include creation of Nacimiento and San Antonio Reservoirs, which inundated areas in which TCRs may have existed.

Project Contribution

Construction associated with the proposed project or Tunnel-Only Alternative, and actions associated with the plans identified in **Table 5-3** would result in ground-disturbing activities in the geographic context and, thus, have the potential to disturb as-yet undocumented TCRs. In addition, operations associated with the proposed project which could lead to erosion and possible destruction of TCRs in the area around San Antonio Reservoir that is subject to an increase in the maximum WSE. Mitigation measures would be implemented for the proposed project and Tunnel-Only Alternative, including **MM CUL-1.1**, **MM CUL-1.2**, **MM CUL-1.3**, **MM CUL-2.1**, and **MM TCR-1**, which provide rigorous requirements for preconstruction worker sensitivity training; protocols to manage unanticipated discoveries; development and implementation of a data recovery plan; treatment measures for the appropriate treatment of human remains, if discovered; and requirements to implement procedures to avoid, preserve in place, and consult with relevant tribes in the event of a TCR discovery. Although past activities may have resulted in impacts on TCRs and there is some potential for future projects to result in impacts on TCRs, the cumulative impact in the geographic context would not be significant given the lack of documented TCRs and the mitigation that would be applied for the proposed project and Tunnel-Only Alternative.

CEQA Conclusion

With implementation of **MM CUL-1.1**, **MM CUL-1.2**, **MM CUL-1.3**, **MM CUL-2.1**, and **MM TCR-1**, construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to TCRs that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.6 Transportation

The geographic context of the cumulative impact analysis for transportation consists of the roadways within 10 miles of the project site. The cumulative analysis for transportation relies on a combined approach and considers projects associated with the plans identified in **Table 5-3** and projects identified in **Table 5-4** in the geographic context along with the proposed project and Tunnel-Only Alternative. Refer to 4.6, *Transportation and Circulation*, for a description of the existing transportation setting of the study area, which includes the geographic context for this analysis.

Cumulative Effects

Planned development associated with the *Monterey County General Plan, San Luis Obispo County General Plan,* and the *San Luis Obispo County General Plan – Housing Update* would be dispersed geographically throughout each respective county, with some growth anticipated in the vicinity of the geographic context for transportation, including around the Lake Nacimiento CDP. As of 2020, the population of the Lake Nacimiento CDP was 2,956, an increase of 38 percent compared to the 2000 population of 2,139, representing a 1.9 percent annual growth rate (U.S. Census Bureau 2022a and 2022b).[4] The Monterey and San Luis Obispo County general plans and San Luis Obispo general plan housing update do not specifically address growth in this area; however, if the historic growth rate between 2000 and 2010 of 1.9 percent per year extends into the future, the current population of the Lake Nacimiento CDP could be expected to double in approximately 36 years. Even with a doubling of population in the geographic context and a corresponding increase in vehicular traffic from that growth, roadways in the geographic context could be expected to operate at free-flowing conditions and experience delays less than 70 percent of the time, given the low existing traffic volumes (see Impact TRA-1, *Conflict with Transportation Program, Plan, Ordinance, or Policy*, and Tables **4.6-2** and **4.6-3** in Section 4.6, *Transportation*). Construction and operational activities associated with the actions identified in plans, including the Monterey County Resource

[4] Other communities exist around Nacimiento and San Antonio Reservoirs; however, the Lake Nacimiento CDP has the largest population of the areas around the reservoirs for which reliable population estimates are available.

Management Agency's *Lakes Operation Plan*, *Salinas River Long-Term Management Plan*, and *Pure Water Monterey Groundwater Replenishment Project,* along with the proposed project and Tunnel-Only Alternative, would not generate a substantial increase in traffic or VMT over the long term; with the exception of the proposed project, these activities and projects would not be expected to increase transportation hazards or affect emergency vehicle access.

Project Contribution

As described in Impact TRA-2, *Increase Transportation Hazards*, and Impact TRA-3, *Result in Inadequate Emergency Access*, temporary periodic inundation of local roadways around San Antonio Reservoir as a result of the increased maximum WSE could interfere with emergency access or alter existing emergency routes. Implementation of **MM TRA-1** includes provisions to minimize hazards created by inundation by alerting motorists to alternate routes, including emergency providers, during periods of expected inundation. Because no other actions or projects are anticipated to interfere with emergency access, and **MM TRA-1** would be effective at minimizing impacts, no significant cumulative impact associated with transportation would occur.

CEQA Conclusion

With the implementation of **MM TRA-1**, construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to transportation that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.7 Hazards and Hazardous Materials

The geographic context of the cumulative impact analysis for hazards and hazardous materials consists of the area within 1 mile of the project site and the area around San Antonio Reservoir that could be inundated following implementation of the proposed project. The cumulative analysis for hazards and hazardous materials relies on a project lists approach and considers actions associated with the plans identified in **Table 5-3** in the geographic context along with the proposed project and Tunnel-Only Alternative. The projects identified in **Table 5-4** are not expected to occur within the geographic context and therefore are not applicable. Refer to 4.7, *Hazards and Hazardous Materials*, for a description of the existing hazards and hazardous materials setting of the study area, which includes the geographic context for this analysis.

Cumulative Effects

Past actions in the geographic context that are relevant to this cumulative analysis include multiple hazadous material leak and cleanup sites and mercury contamination from upstream mining activities. As described in Section 4.7.3.1, *Existing Hazardous Materials and Wastes*, all hazardous material leak and cleanup sites are either remediated to the satisfaction of regulatory bodies or are too far away from the study area to be relevant. Mercury contamination from upstream mining activities has resulted in a water quality impairment of Nacimiento and San Antonio Reservoirs, which triggered a fish consumptionconsumptin advisory to protect public health (COEHHA 2020). In addition to the proposed project and Tunnel-Only Alternative, future actions associated with plans identified in **Table 5-3** within the geographic context that would require the use of hazardous materials or could result in a release of or exposure to hazardous materials include the *High Priority Capital Asset Management Program*, *County of Monterey Capital Improvement Program Five-Year*

Plan FYs 2022/23 through 2026/27, and *Draft Lakes Operations Plan* (MCWRA 2021; County of Monterey 2022b; PWFP 2019). As it relates to construction activities for all of these potential future actions, the Construction General Permit, which applies to projects that disturb 1 acre of soil or more, requires the applicant to prepare and implement a SWPPP. The SWPPP must include a site map and a description of proposed construction activities, demonstrate compliance with relevant local ordinances and regulations, and present an overview of the BMPs that would be implemented to prevent soil erosion and any discharge of construction-related pollutants, including hazardous materials, that could contaminate nearby water resources, soil, or air quality. Furthermore, as exemplified by past accidental hazardous releases for which cleanup actions have been taken, such releases have largely been localized, as is expected to be the case for future actions. The exception to this remains the widespread contamination of Nacimiento and San Antonio Reservoirs from upstream mining and natural sources that results in a significant cumulative impact.

Construction and operational activities associated with the plans identified in **Table 5-3**, proposed project, and Tunnel-Only Alternative would be required to comply with CAL FIRE regulations related to fire safety and emergency access. Furthermore, the design of the proposed project and Tunnel-Only Alternative incorporates **AMM GEN-10**, *Fire Safety and Evacuation Plan*, **AMM GEN-13**, *Emergency Access Measures*, and **AMM GEN-9**, *Confined Space/Trench Rescue Plan*. These measures would require preparation of and adherence to a fire safety and evacuation plan, would ensure that more than one access road should be established if project construction requires temporary lane closures or detours on main local arterials, and would minimize risks to construction personnel from work within confined spaces by establishing protocols that identify safety risks, requiring notification of emergency service providers in advance of activities within confined spaces. Lastly, as described in Impact HAZ-3, *Impair or Interfere with an Emergency Response Plan or Emergency Evacuation Plan*, temporary periodic inundation of local roadways around San Antonio Reservoir as a result of the increased maximum WSE could interfere with emergency access or alter existing emergency routes. Implementation of **MM TRA-1** includes provisions to minimize hazards created by inundation by alerting motorists to alternate routes, including emergency providers, during periods of expected inundation. Because no other actions or projects are anticipated to interfere with emergency access, and **MM TRA-1** would be effective at minimizing impacts, no significant cumulative impact associated with interference with an emergency response plan or evacuation plan would occur.

Project Contribution

As described in Impact HAZ-2, *Impacts Associated with a Release of Hazardous Materials into the Environment*, mercury could be encountered during construction of the proposed project and Tunnel-Only Alternative, particularly during dewatering of cofferdams at either Nacimiento or San Antonio Reservoirs. However, Construction General Permit requirements include dewatering and address the potential for treatment of discharged water to ensure compliance with applicable construction dewatering discharge permitting. Dewatering would also be required to comply with the discharge sampling, monitoring, and reporting requirements of the Central Coast RWQCB as well as waste discharge requirements for dewatering (Order No. 2003-0003-DWQ). These requirements would ensure that such activities would not result in undue exposure of construction personnel to existing mercury contamination. Therefore, construction activities associated with the proposed project and Tunnel-Only Alternative would not result in a cumulatively considerable contribution to the significant cumulative impact associated with the release of hazardous materials into the environment.

CEQA Conclusion

With the implementation of **MM TRA-1**, construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to hazards and hazardous materials that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.8 Noise

The geographic context of the cumulative impact analysis for noise includes the area within 2,500 feet of the project site. Monterey County's threshold for examination of construction noise is 2,500 feet. The geographic context within San Luis Obispo County also includes properties within 2,500 feet of construction activities. Areas that would be very close to operational sources of noise are also considered in the geographic context. The cumulative analysis for noise and vibration considers projects associated with the plans identified in **Table 5-3** in the geographic context along with the proposed project and Tunnel-Only Alternative. The projects identified in **Table 5-4** are not expected to occur within the geographic context and therefore are not applicable. Refer to 4.8, *Noise*, for a description of the existing setting relevant to noise in the study area, which includes the geographic context for this analysis.

Cumulative Effects

Past and present actions in the geographic context relevant to noise include the addition of roadways throughout the area, with traffic on roadways generating relatively low levels of noise, and housing, which constitute sensitive receptors that could be affected by new sources of potential construction and operational noise. Existing sources of noise also include recreational activity at both reservoirs. In addition to the proposed project and Tunnel-Only Alternative, future actions associated with the plans identified in **Table 5-3** that could include construction or operational activities that would generate noise and vibration in the geographic context include the *High Priority Capital Asset Management Program*, *County of Monterey Capital Improvement Program Five-Year Plan FYs 2022/23 through 2026/27*, and *Draft Lakes Operations Plan* (MCWRA 2021; County of Monterey 2022b; PWFP 2019). Each of these future actions is expected to result in periodic, temporary sources of noise during construction at varying distances from sensitive receivers and at varying points in time.

Project Contribution

As described in Impact NV-1a, *Expose Sensitive Receptors to Increased Noise Levels during Project Construction*, some nighttime construction activity associated with the proposed project and Tunnel-Only Alternative has the potential to exceed acceptable noise criteria limits. Implementation of **MM NV-1a** would require development and implementation of a construction noise control plan for nighttime and weekend evening construction periods. The noise control plan would include measures to limit noise propagation at off-site receptors and require monitoring to ensure compliance. Amongst the potential future actions within the geographic context for noise, the potential need for nighttime construction is expected to be unique to the proposed project and Tunnel-Only Alternative because of tunneling activities, which may need to be conducted on a 24-hour basis. No other activity associated with the aforementioned plans appears as likely to require such nighttime construction or result in the associated potential for noise impacts.

Although it is possible that some construction and/or operations activities could overlap in time, the relatively low level of planned construction and operations and maintenance activities, wide dispersal of sensitive receptors, and substantial attenuation of noise at distances of less than a mile, render such an occurrence unlikely. Construction-related vibration is even less likely to result in disturbance of sensitive receptors for the same reasons as for noise, compounded by an even more rapid attenuation of vibration levels with distance. No significant cumulative impact associated with noise would occur. This is because the combination of actions associated with the aforementioned plans, along with the proposed project and Tunnel-Only Alternative, are not expected to generate substantial combined levels of noise, and **MM NV-1a** would be effective at minimizing nighttime noise impacts from the proposed project and Tunnel-Only Alternative.

CEQA Conclusion

With the implementation of **MM NV-1a**, construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to noise that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.9 Air Quality

The geographic context of the cumulative impact analysis for air quality consists of the North Central Coast and South Central Coast air basins, which include Monterey and San Luis Obispo Counties. The cumulative analysis for air quality considers projects associated with plans identified in **Table 5-3** and projects identified in **Table 5-4** in the geographic context, along with the proposed project and Tunnel-Only Alternative. The existing conditions for the air quality study area, which includes the geographic context for this analysis, are described in Section 4.9, *Air Quality*.

Cumulative Effects

As discussed in Section 4.9.4.2, *Criteria for Determining Significance*, projects that exceed the San Luis Obispo Air Pollution Control District (SLOAPCD) and Monterey Bay Air Resources District (MBARD) emissions thresholds (**Tables 4.9-7 and 4.9-8**) would have a significant cumulative impact on regional air quality.

Project Contribution

As shown in Impact AQ-2, *Result in a Cumulatively Considerable Increase in a Criteria Pollutant*, with implementation of **MM AQ-1** and **MM AQ-2**, the proposed project and Tunnel-Only Alternative would not exceed either SLOAPCD or MBARD emissions thresholds during construction or operations. Furthermore, as discussed in Impact AQ-1, *Conflict with or Obstruct Implementation of the Applicable Air Quality Plan*, the proposed project and Tunnel-Only Alternative would not conflict with the applicable SLOAPCD and MBARD AQMP. Accordingly, the contribution of the proposed project and Tunnel-Only Alternative to the cumulative impact would not be cumulatively considerable.

CEQA Conclusion

With the implementation of **MM AQ-1** and **MM AQ-2**, construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to air quality that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.10 Greenhouse Gas Emissions

The geographic context for the analysis of potential contributions to GHGs comprises Monterey and San Luis Obispo Counties and the state of California.

GHG emissions—typically carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O)—once emitted, are circulated into the atmosphere on a global scale, resulting in global climate-change impacts. However, California, through SB 32 in 2006 and AB 1279 in 2022, has chosen to reduce its statewide GHG emissions. Therefore, the project's GHG emissions, from all construction and operational activities, could affect statewide GHG emissions and climate change. The cumulative analysis for greenhouse gas emissions considers projects associated with plans identified in **Table 5-3** and projects identified in **Table 5-4** in the geographic context, along with the proposed project and Tunnel-Only Alternative. The existing conditions pertaining to GHGs in the study area, which includes the geographic context for this analysis, are described in Section 4.10, *Greenhouse Gas Emissions*.

Cumulative Effects

GHG emissions and climate change are exclusively cumulative impacts; there are no noncumulative GHG emissions impacts from a climate-change perspective (CAPCOA 2008). Therefore, in accordance with the scientific consensus regarding the cumulative aspect of GHGs, project-related GHG emissions are cumulative by nature. The cumulative impact related to GHG emissions would be significant.

Project Contribution

As stated under Impact GHG-1, *Generate a Substantial Amount of GHG Emissions*, and GHG-2, *Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs*, implementation of mitigation measures **MM GHG-1** through **MM GHG-3** would result in the proposed project and Tunnel-Only Alternative achieving net-zero GHG emissions. Achieving net-zero GHG emissions would be consistent with the state's 2030 GHG reduction goals under SB 32 and the 2045 carbon-neutrality goal under AB 1279. With mitigation, the proposed project and Tunnel-Only Alternative would be consistent with state goals; therefore, their contribution to the cumulative impact would not be cumulatively considerable.

CEQA Conclusion

With the implementation of **MM GHG-1** through **MM GHG-3**, construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to GHG emissions that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.11 Agricultural Resources

The geographical context for the analysis of potential contributions to cumulative impacts on agricultural resources is agricultural land in the Salinas Valley. The cumulative analysis for agricultural resources primarily considers development envisioned in the *2010 Monterey County General Plan* (County of Monterey 2010). The actions associated with the remaining plans identified in **Table 5-3** and projects identified in **Table 5-4** are not expected to result in impacts on agricultural land in the Salinas Valley. The existing conditions for agricultural resources within the study area, which includes the geographic context for this analysis, are identified in Section 4.11, *Agricultural Resources*.

This analysis focuses on cumulative impacts on lands zoned for agricultural use or those under Williamson Act contract because the proposed project and Tunnel-Only Alternative would not result in impacts from direct or indirect conversion of important farmland to nonagricultural use.

Cumulative Effects

A cumulative impact would occur if the construction of cumulative projects would result in (1) direct conversion of agricultural land zoned for agricultural use or under Williamson Act contract to nonagricultural uses or (2) indirect effects on land zoned for agricultural use or under Williamson Act contract through changes in water supply that could result in conversion to nonagricultural uses.

As described in the Monterey County 2007 General Plan EIR (see Section 4.2, Agricultural Resources) implementation of the Monterey County General Plan, including area plans, would result in the eventual conversion of Williamson Act–contracted farmland to nonagricultural uses, primarily where future planned development would be in proximity to agricultural lands, including areas in or around the city Spheres of Influence, the Castroville, Chualar, and Pajaro Community Areas and the San Lucas Rural Center (County of Monterey 2008). Accordingly, a significant cumulative impact related to loss of land zoned for agricultural use or under Williamson Act contract exists in the geographic context for agricultural resources.

Project Contribution

As discussed in Section 4.11, *Agricultural Resources*, modifications to the San Antonio Dam spillway associated with the proposed project would result in an increased maximum WSE for San Antonio Reservoir, which would have the potential to result in inundation on portions of two parcels enrolled under Williamson Act contracts and multiple properties zoned for agricultural use (see Impact AG-2, *Impacts from Conflicts with Existing Agricultural Zoning or a Williamson Act Contract*). However, the parcels are entirely within existing floodage easements held by MCWRA, and the frequency and duration of inundation under the proposed project would not substantially affect existing uses of these properties, zoning requirements, or the eligibility of these properties to remain under Williamson Act contracts.

As discussed under Impact AG-1, *Impacts from Direct or Indirect Conversion of Farmland to Nonagricultural Use*, the modeled results indicate that the proposed project and Tunnel-Only Alternative could increase the risk of flooding during large storm events. Such an outcome could affect land along the Salinas River, which is bordered by extensive areas of land that have been zoned for agricultural use and/or enrolled under Williamson Act contracts. However, as also described in Impact HWQ-3, *Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or Exceeding the Drainage System Capacity*, the modeled results provide an approximation of potential operational effects from operating the proposed project, but they do not simulate historical conditions. The model is unable to capture the real-time reservoir operational decision-making that occurs to reduce downstream effects of reservoir releases. Such real-time reservoir operational decision-making is anticipated to reflect a continuation of MCWRA's ongoing operational decision-making process and the ability of the reservoir operations managers to maximize water supply and minimize downstream effects. Although the ability to mitigate downstream flooding through a continuation of MCWRA's operational decision-making process is considerable under the proposed project, the potential for such effects is, in an abundance of caution, considered to be substantial in light of the SVOM modeling results available for flood releases and the inherent uncertainty of hydrologic conditions in MCWRA's watersheds. Implementation of **MM HYD-1** would require MCWRA to actively manage Interlake Tunnel and reservoir operations through the development and implementation of a detailed operational plan for controlling the rate and timing of Interlake Tunnel transfers during projected storm events. The operational plan would reduce the potential for downstream floodplain inundation as well as erosion and siltation changes associated with higher river flows.

Furthermore, operation of the proposed project and Tunnel-Only Alternative would have a beneficial effect on such lands in the region along the Salinas Valley because of improvements to agricultural water-supply reliability that would be beneficial to farmlands zoned for agricultural use or under Williamson Act contract. With implementation of **MM HYD-1**, the contribution of construction and operations of the proposed project and the Tunnel-Only Alternative to the significant cumulative impact would not be cumulatively considerable.

CEQA Conclusion

With the implementation of **MM HYD-1**, construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to agricultural resources that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.12 Recreation

The geographic context for the analysis of cumulative impacts on recreation consists of the recreational areas within and adjacent to Nacimiento and San Antonio Reservoirs. The cumulative analysis for recreation considers actions associated with the plans identified in **Table 5-3** in the geographic context, along with the proposed project and Tunnel-Only Alternative. The projects identified in **Table 5-4** are not expected to occur within the geographic context and therefore are not applicable. Refer to Section 4.12, *Recreation*, for a description of the existing recreational facilities and services setting of the study area, which includes the geographic context for this analysis.

Cumulative Effects

Planned infrastructure improvements and cumulative conditions disclosed under the Monterey and San Luis Obispo County General Plans; the actions identified in the *High Priority Capital Asset Management Program*, *County of Monterey Capital Improvement Program Five-Year Plan FYs 2022/23 through 2026/27*, and *Draft Lakes Operations Plan*; and the proposed project and Tunnel-Only Alternative constitute the cumulative condition relevant to recreation (MCWRA 2021; County of Monterey 2022b; PWFP 2019).

Although the aforementioned actions may result in temporary construction activities that could result in temporary closures of certain recreational amenities, no long-term disruption of such facilities is anticipated. Instead, some of the planned actions would result in improvements to recreational facilities, including some of those identified in the *County of Monterey Capital Improvement Program Five-Year Plan FYs 2022/23 through 2026/27* (County of Monterey 2022b). Recreational opportunities associated with water bodies identified in the cumulative plans could also be affected if the water elevation decreased to a level at which facilities such as boat ramps, docks, and other in-water facilities became inaccessible or inoperable. For example, the *2002 Salinas Valley Water Project EIR/EIS* and *2008 San Antonio and Nacimiento Rivers Watershed Management Plan* used 730 feet above mean sea level as the elevation at and above which most boat ramps around Nacimiento Reservoir are considered operational, acknowledging that facilities can still operate below these levels but using this as a general guideline to assess at what level recreational use may begin to be affected (MCWRA and USACE 2002; NWSC & CCSE 2008). If water surface levels change as a result of such future actions, this may displace recreational uses to alternate facilities, resulting in increased potential for physical deterioration. Only the proposed project and Tunnel-Only Alternative are expected to result in meaningful changes in water levels at Nacimiento and San Antonio Reservoirs. As described in Impact REC-1, *Deterioration of Recreational Facilities Resulting from Project-Related Intensification of Use,* the infrequent inundation events projected at San Antonio Reservoir under the proposed project and Tunnel-Only Alternative would not be likely to result in the deterioration of recreational facilities to a degree that would require the construction of new facilities. Furthermore, at Nacimiento Reservoir, changes in water elevations under the proposed project and Tunnel-Only Alternative would not be expected to interfere with recreational activities to the degree that such activities would substantially shift from Nacimiento Reservoir to other facilities. Accordingly, cumulative impacts related to recreational facilities would not be significant.

CEQA Conclusion

Construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to recreation that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.13 Aesthetics and Visual Resources

The geographic context of the cumulative impact analysis on aesthetics consists of areas in, adjacent to, and within3 miles of Nacimiento and San Antonio Reservoirs. The cumulative analysis for aesthetics and visual resources considers actions associated with the plans identified in **Table 5-3** and projects identified in **Table 5-4** in the geographic context, along with the proposed project and Tunnel-Only Alternative. Refer to 4.13, *Aesthetics and Visual Resources*, for a description of the existing aesthetics setting of the study area, which includes the geographic context for this analysis.

Cumulative Effects

The landscapes surrounding both reservoirs are characterized by low, semi-arid rolling hills. Past actions include construction of Nacimiento and San Antonio Dams, which created the respective reservoirs, and residential development interspersed throughout the valleys surrounding the reservoirs. This past development includes the construction of three residential developments located along Nacimiento Reservoir: Heritage Ranch, Oak Shores, and one other private residential development along the reservoir's north shore. Although there are no residential developments around San Antonio Reservoir, scattered rural residences are located along both sides of the reservoir. The area is rural in character, and potential development associated with plans—including the *Monterey County General Plan, San Luis Obispo General Plan,* and *San Luis Obispo County General Plan – Housing Update*—could result in slow incremental changes in the visual character as construction of residential developments continues to occur over time. As noted on page 6-24 in the cumulative impact analysis of the Monterey County 2007 General Plan EIR, "Light and glare are impacts where undeveloped or rural lands adjoin urbanized development or where new sources of light and glare are introduced into a dark environment…Individual projects under these county and city plans that result in the urbanization of open lands, development on ridgelines, and expansion of urban areas all contribute to the incremental loss of aesthetically pleasing views or the introduction of incompatible light and glare" (County of Monterey 2008). Continued development of residences in the geographic context, along with the proposed project and Tunnel-Only Alternative, would result in a significant cumulative impact.

Project Contribution

As discussed in Impact AES-1, *Impacts on Visual Character, including Scenic Vistas*, during construction, the area would retain the same visual quality for the following reasons: the majority of affected viewers recognize that the reservoirs are human-made features with a primary function of managing water and downstream water flows, with associated habitat goals, and a secondary function of providing recreation; the existing natural character of the recreation areas generally would be maintained; the views to the surrounding foothills would be retained; there would be very little vegetation removal; public access to recreational facilities during construction would be retained so that visual access to most of the reservoirs would be retained; the proposed features are relatively small or are in close proximity to other engineers structures associated with reservoir functions; and major construction activities would be temporary. In addition, none of the work areas are expected to be visible in publicly accessible scenic vista views available from Interlake Road (Road G14), Nacimiento Lake Drive (Road G14), or vantage points at a higher elevation than the work areas, in the surrounding foothills. Once in operation, the proposed structures that are visible aboveground would not detract from views of the project area, and water going into the Tunnel Intake Structure and flowing out of the Energy Dissipation Structure would not affect views. Thethe permanent features associated with the proposed project and Tunnel-Only Alternative would generally be consistent with existing features of the landscape and would not introduce substantial new sources of light and glare; thus, the contribution to the significant impact would not be cumulatively considerable.

As discussed under Impact AES-2, *Impacts on Scenic Roadways*, the two state-designated County Scenic Highways in the project vicinity are Interlake Road and Nacimiento Lake Drive (Road G14). Temporarily disturbed areas would be revegetated once construction is complete so that these areas would blend in with the surrounding landscape. During operation, views of Nacimiento Reservoir from Interlake Road and Nacimiento Lake Drive (Road G14) would not be affected under either alternative because changes to water levels would be consistent with normal, existing reservoir fluctuations, and roadway travelers would not perceive these changes as any different than existing conditions. Most views from Interlake Road (Road G14) in the area of San Antonio Reservoir would not be affected by the proposed project or Tunnel-Only Alternative because views of fluctuating water-surface elevations would not be visible. Although, under the proposed project, views of fluctuating water surface elevations at San Antonio Reservoir would be visible from Interlake Road (Road G14) near the Energy Dissipation Structure work area and at the very western end of the reservoir, near where the roadway crosses the San Antonio River, these areas of high water would not detract from views, but are likely to create visual interest. Therefore, the contribution of the proposed project or Tunnel-Only Alternative to the significant cumulative impact would not be cumulatively considerable.

As discussed under Impact AES-3, *Affect Daytime or Nighttime Views*, the majority of the proposed project and Tunnel-Only Alternative would be constructed during daylight hours for the Tunnel Intake Structure, Energy Dissipation Structure, and Spillway Modification. The proposed structures are not expected to increase daytime glare because removal of trees that provide shade would be minimal, the concrete would weather in a short period of time and blend with the surrounding landscape, and the resulting increase in glare reflecting off of the structures would be negligible and shielded from most viewers by intervening terrain. All lighting would be shielded and downward-facing to minimize light trespass into adjacent open space areas, which would also be shielded from most viewers by intervening terrain. Because of the distance from the structure and lighting design measures to minimize light trespass, lighting at the Tunnel Intake Structure would not result in a substantial increase in nighttime lighting or glare. Therefore, the contribution of the proposed project and Tunnel-Only Alternative to significant cumulative impacts related to daytime or nighttime views would not be cumulatively considerable.

CEQA Conclusion

Construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to aesthetics and visual resources that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.14 Utilities and Service Systems

The geographic context for the analysis of cumulative impacts on utilities and service systems consists of the service area of electric, water, wastewater treatment, and solid waste disposal systems providers serving the project site and, thus, relies on a projection approach. As described in Impact UT-1, *Impacts Resulting from Construction or Relocation of Utility Infrastructure*, the proposed project or Tunnel-Only Alternative would not require construction or relocation of stormwater drainage, natural gas, or telecommunication facilities; similarly, operations would not have the potential to affect stormwater drainage, natural gas, or telecommunication facilities and therefore these are not further discussed in this analysis. The cumulative analysis for utilities and service systems considers actions associated with plans identified in **Table 5-3** and projects identified in **Table 5-4** in the geographic context, along with the proposed project and Tunnel-Only Alternative. Refer to 4.14, *Utilities and Service Systems*, for a description of the existing setting for utilities and service systems in the study area, which includes the geographic context for this analysis.

Cumulative Effects

Cumulative impacts would occur if the incremental demand associated with planned development under the cumulative condition combines with project demands and results in increased demand for electric, water, waste water disposal, or solid waste disposal services that exceed planned capacity or if expansion results in environmental impacts or cumulative effects that require the relocation of infrastructure, which could result in environmental impacts. Past growth in the geographic context has led to the development of residential communities throughout the service providers' territories, which are supported by the infrastructure needed to serve these communities, including electric transmission and distribution, water, wastewater, and solid waste disposal facilities. Electric, water, wastewater, and solid waste disposal service providers plan for upgrades to support future planned growth, including that identified in the San Luis Obispo County General Plan – Housing Update, 2010 Monterey County General Plan, San Luis Obispo County General Plan, and the San Luis Obispo County Regional Water Infrastructure Resiliency Planning as well as plans related to water supply, including the Nacitone Watersheds Management Plan, Monterey County Groundwater Management Plan, and State Water Project Management Tools. Future growth in Monterey and San Luis Obispo Counties could increase future demand on existing utility infrastructure and service systems and would be subject to the approval of local jurisdictions. As such future development occurs, the respective decision-making jurisdictions would be required to evaluate the need for any increased utility services that may be needed to serve whatever new development is proposed or approved. In addition, such development would be required to undergo CEQA analysis to identify potential impacts on existing utility infrastructure and service systems.

As described in Impact UT-1, *Impacts Resulting from Construction or Relocation of Utility Infrastructure*, construction and operation of the proposed project or Tunnel-Only Alternative would entail minor relocation and changes to existing electric infrastructure, along with potential changes in output of electricity from the Nacimiento Hydropower Facility; however, such activities would not require substantial relocation or construction of alternative infrastructure. Similarly, construction of the proposed project or Tunnel-Only Alternative would require temporary uses of water that would primarily be drawn from Nacimiento and San Antonio Reservoirs during construction, with additional water needed for construction-related concreate production, which is anticipated to be drawn from local water sources where the concrete is produced; however, such activities would not substantially affect existing supplies such that relocation or the construction of alternative infrastructure would be necessary. Construction of the proposed project could require actions to protect or relocate existing restroom facilities that are in areas that would be affected by the increased maximum WSE at San Antonio Reservoir; however, these facilities are not connected to larger wastewater treatment systems. Construction of both alternatives would also generate small quantities of wastewater during construction via portable mobile toilet facilities, which would be disposed of at local wastewater treatment facilities with capacity to accept such discharges. No wastewater would be generated during operation of either alternative; thus, construction and operation would not substantially affect wastewater treatment systems such that relocation or construction of alternative infrastructure would be necessary.

The Monterey County General Plan EIR determined that there would be a potentially significant impact related to solid waste disposal but not related to other utilities (County of Monterey 2007). The San Luis Obispo Housing Element ND determined that there would be no cumulative impact related to utilities (County of San Luis Obispo 2020). In combination with the potential needs for disposal of construction debris from the proposed project or Tunnel-Only Alternative, there is a significant cumulative impact related solid waste disposal in the geographic context. There is no significant cumulative impact related to electric, water, or wastewater utilities.

Project Contribution

As described in Impact UT-4, *Impacts Pertaining to Solid Waste Disposal and Conflicts with Solid Waste Regulations,* construction of the proposed project or Tunnel-Only Alternative would generate solid waste in the form of excavated soils, tunneling spoils, and construction debris. Most solid waste from construction of the proposed project would consist of excavated soils that would not be sent to landfills. Soils and other construction debris generated during construction would be reused, recycled, or donated when feasible and landfilled only if necessary. No contaminated soils are anticipated to be excavated during construction; however, excavated soils would be screened and treated for contamination prior to reuse or disposal in the soil disposal area. It is possible that excavated materials could become contaminated by fuel or fluid leakage. If unable to be reused, spoils, including on-site soils contaminated by fluids (e.g., hydraulic fluid) used in heavy construction equipment, would be hauled to an appropriate off-site disposal area, in compliance with federal, state, and local regulations. The quantity of construction material that could require disposal in a landfill would not result in a conflict with the diversion targets established in the applicable solid waste regulations. The solid waste generated by construction of the proposed project or Tunnel-Only Alternative would not prevent applicable jurisdictions from achieving the solid waste reduction goals included in the applicable solid waste regulations.

As shown in **Table 2-6**, the proposed project and Tunnel-Only Alternative are anticipated to produce approximately 2,033,843 CY of spoils, which would be disposed of at the soil disposal area. The potential exists for an additional 66,667 CY to be disposed of at the soil disposal area with construction of the Spillway Modification under the proposed project. An unknown quantity of construction waste, and potentially contaminated materials, would need to be disposed of at one or both of the following municipal facilities: Paso Robles Landfill or Chicago Grade Landfill, which have sufficient capacity for construction-related debris, with projected operating lives through 2067 and 2039, respectively. Although the quantity of construction waste and other potentially contaminated materials is currently unknown, such materials would constitute only a small fraction of the estimated spoils disposed of at the soil disposal site. Furthermore, such materials would be reused, recycled, or donated to the maximum extent feasible and landfilled only if necessary. Operation of either the proposed project or Tunnel-Only Alternative would not require the disposal of solid waste. Therefore, the contribution of the proposed project or Tunnel-Only Alternative to the significant cumulative impact regarding solid waste disposal would not be cumulatively considerable.

CEQA Conclusion

Construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to utilities and service systems that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.15 Wildfire

The geographic context for the analysis of cumulative impacts related to wildfire is based on the state's fire hazard designation maps and includes all High and Very High FHSZ or SRA land adjacent to Nacimiento and San Antonio Reservoirs. The cumulative analysis for wildfire considers actions associated with the plans identified in **Table 5-3** and projects identified in **Table 5-4** in the geographic context, along with the proposed project and Tunnel-Only Alternative. Refer to Section 4.15, *Wildfire*, for a description of the existing wildfire setting of the study area, which includes the geographic context for this analysis.

Cumulative Effects

Past growth in the geographic context has led to the development of residential communities throughout the geographic context, most of which lie in a High or Very High FHSZ. With respect to future planned growth, the San Luis Obispo County General Plan – Housing Update, 2010 Monterey County General Plan, and San Luis Obispo County General Plan indicate continued growth in the area, although such growth is expected at a relatively slow rate (see discussion of potential population growth in the Lake Nacimiento CDP in Section 5.4.4.6, *Transportation*). Construction and operational activities associated with the proposed project and Tunnel-Only Alternative, the actions identified in the plans in **Table 5-3**, and the projects in **Table 5-4** would be required to comply with CAL FIRE's regulations related to fire safety and emergency access. It is expected that other projects under construction and operation within CAL FIRE and San Luis Obispo Fire Department service areas similarly would be required to comply with CAL FIRE's regulations related to fire safety and emergency access, such as preparation of fire safety plans (California Fire Code Sections 404.3.1 [Evacuations Plans] and 404.3.2 [Fire Safety Plans]), CAL FIRE grade requirements for access routes, Knox key boxes on all locked access gates, and compliance with Chapter 18.56 of the Monterey County Code of Ordinances, which establishes wildfire-protection standards in State Responsibility Areas to provide for emergency access.

It is expected that other projects under construction and operation within CAL FIRE and San Luis Obispo Fire Department service areas similarly would be required to comply with CAL FIRE's regulations related to wildfire safety. Furthermore, the actions associated with plans identified in **Table 5-3** and projects in **Table 5-4** must adhere to wildfire safety regulations, including Pub. Res. Code 4291, which requires that all earthmoving and portable equipment with internal-combustion engines be equipped with a spark arrestor to reduce the potential for igniting a wildland fire; and the California Fire Code, which requires the maintenance of defensible space, development of a Fire Safety Plan and Wildland Fire Vegetation Management Plan, and installation of an access road–system prior to construction. To minimize the risks related to flooding and landslides due to runoff, post-fire slope instability, and drainage changes, future development within the CAL FIRE and San Luis Obispo Fire Department service areas similarly would be required to comply with local drainage and grading regulations, utilize BMPs, and develop a post-construction erosion plan where applicable. Nevertheless, as described in the Monterey County 2007 General Plan EIR (see Section 6.4.3.9, *Wildfire Hazard*), existing and future development in rural communities that have the potential for wildfires would result in a significant cumulative impact in spite of the aforementioned laws and policies.

Project Contribution

As described in Impact WF-1, *Impacts Associated with a Release of Hazardous Materials into the Environment*, the proposed project and Tunnel-Only Alternative would incorporate **AMM GEN-10**, *Fire Safety and Evacuation Plan*, which would involve preparation of a fire safety plan, in accordance with California Fire Code Sections 404.3.1 (Evacuation Plans) and 404.3.2 (Fire Safety Plans) to minimize potential wildfire-related impacts during construction and operation. In addition, operation of the proposed project has the potential to result in inundation and impassable roadways due to the increase in maximum WSE at San Antonio Reservoir. Although the affected areas are low-volume local roadways, such inundation could create a safety hazard if drivers attempt to pass through an inundated area and become stuck, thereby potentially interfering with an emergency response or evacuation scenario. Implementation of **MM TRA-1** (see Section 4.6, *Transportation*) would provide advanced and up-to-date notification about roadway inundation hazards and instruct drivers to follow detours. This measure would be effective at reducing potential emergency response or evacuation impacts.

As described in Impact WF-2, *Increase Potential Exposure to Pollutant Concentrations from a Wildfire*, and Impact WF-3, *Include Components that Would Exacerbate Fire Risk*, the design of the proposed project and Tunnel-Only Alternative would incorporate **AMM GEN-11**, *Wildfire Protection Plan and Safety Measures*; **AMM GEN-12**, *Fire Safety Measures during Construction*; and **AMM GEN-13**, *Emergency Access Measures.* Adherence to these AMMs regarding fire safety during construction would lower ignition risks and aid in the control of wildfire spread should ignition occur. Emergency access requirements would also be stipulated, including the use of Knox boxes for emergency service providers to use in the event of a wildfire. Furthermore, the proposed project and Tunnel-Only Alternative would not result in the addition of new residents to the geographic context and therefore would not expose people to hazards associated with wildfires during construction. As such, construction and operation of the proposed project and Tunnel-Only Alternative would not exacerbate wildfire risks or expose people or structures, either directly or indirectly, to a significant risk involving wildland fires. In addition, risks related to exposure to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire would not increase.

As described in Impact WF-4, *Impacts Related to Post-Fire Slope Instability or Drainage Changes*, the design of the proposed project and Tunnel-Only Alternative would incorporate **AMM GEN-6**, *Staging, Stockpiling of Soil, and Access*, which concerns stockpiling soils away from waterways and the placement of straw wattles or other erosion control material during construction. As such, post-fire conditions are not expected to increase risks associated with erosion during construction or operation of the proposed project or Tunnel-Only Alternative. Therefore, construction and operations associated with the proposed project and Tunnel-Only Alternative would not result in a cumulatively considerable contribution to a significant cumulative impact related to wildfire.

CEQA Conclusion

Construction and operation of the proposed project or Tunnel-Only Alternative would not cause an incremental impact related to wildfire that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.4.4.16 Energy

The geographical context for the analysis of potential cumulative impacts related to energy use consists of state and local areas, including California and Monterey and San Luis Obispo Counties. The cumulative analysis for energy relies on a combined projection and project-list approach and considers projects associated with the plans identified in **Table 5-3** and projects identified in **Table 5-4** in the geographic context, along with the proposed project and Tunnel-Only Alternative. Refer to Section 4.16, *Energy*, for a description of the existing energy setting of the study area, which includes the geographic context for this analysis.

Cumulative Effects

Section 4.16, *Energy,* analyzed the project's construction and operational energy demand at a cumulative level. Specifically, the construction and operational energy demand and consumption for the proposed project and Tunnel-Only Alternative was compared against the county-wide usage in Monterey and San Luis Obispo County, which is reflective of existing energy demands. Construction and operation associated with the actions identified in the plans listed in **Table 5-3** and the projects listed in **Table 5-4** could result in additional energy demand in Monterey and San Luis Obispo County; however, electricity providers perform regular demand projections that assess future demand created by planned development. Although the future actions and projects listed in **Table 5-3** and **Table 5-4** may result in an increase of energy demand, such an increase is anticipated to be accounted for by electricity providers. As it relates to the proposed project and Tunnel-Only Alternative, as shown in Impact EN-1, *Result in Wasteful, Inefficient, or Unnecessary Consumption of Energy*, of Section 4.16, *Energy*, the energy demand and potential loss of hydroelectric production would result in less than a 0.55 percent increase (see **Table 4.16-3** in Section 4.16, *Energy*) in Monterey and San Luis Obispo County's total energy demand and would be consistent with the CEQA Appendix F Criterion requirements.

As discussed in Impact EN-2, *Conflict with or Obstruct Plan for Renewable Energy or Energy Efficiency*, of Section 4.16, *Energy*, the proposed project and Tunnel-Only Alternative would be consistent with State of California regulatory energy requirements (Renewable Portfolio Standards, Title 24, SB 100) and Policy OS 0-1 of the Monterey County General Plan as well as Policy E 2.3 and Policy E 3.1 of the San Luis Obispo County General Plan (refer to Appendix C, *Consistency with Local Laws, Regulations and Policies,* for more information). As with the proposed project and Tunnel-Only

Alternative, the future actions and projects listed in **Table 5-3** and **Table 5-4** would be required to be consistent with the State of California regulatory energy requirements and policies found within the Monterrey County and San Luis Obispo County General Plans. Thus, because the construction and operational energy demand for past, present, and future uses, including the proposed project and Tunnel-Only Alternative, would not result in a large increase of energy demand within Monterey and San Luis Obispo County, is consistent with the CEQA Appendix F criterion requirements, and is consistent with the energy goals of the state, Monterey County, and San Luis Obispo County, no cumulative impact related to energy would occur.

CEQA Conclusion

The proposed project and Tunnel-Only Alternative would not cause an incremental impact related to energy that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

5.5 Significant and Unavoidable Impacts

In accordance with Pub. Res. Code Section 21100 (b)(2)(A) and CEQA Guidelines Section 15126(b), the purpose of this section is to identify significant environmental impacts that could not be eliminated or reduced to less-than-significant levels by implementation of mitigation measures.

All impacts evaluated in the resource sections in Chapter 4, *Introduction to the Environmental Analysis*, were found to be no impact, less than significant, or less than significant with mitigation. The proposed project and Tunnel-Only Alternative would not result in significant and unavoidable impacts.

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Chapter 6
Alternatives

6.1 Introduction

This chapter describes and evaluates alternatives to the proposed project and examines the potential environmental impacts associated with each alternative. By comparing these alternatives to the proposed project, the relative environmental advantages and disadvantages of each alternative are evaluated, and the environmentally superior alternative is identified. CEQA Guidelines Section 15126.6(a) provides that an EIR must describe and evaluate a reasonable range of alternatives to the project that would feasibly attain most of the proposed project's basic objectives but would avoid or substantially lessen any identified significant adverse environmental impacts of the proposed project.

6.1.1 Organization of This Chapter

This chapter is divided into seven main sections.

- Section 6.1, *Introduction*, is this introductory section, which includes a discussion of state and local requirements for the analysis of alternatives.
- Section 6.2, *Alternatives Screening Process*, describes the process utilized to select the alternatives analyzed in this EIR. More specifically, it reviews the project objectives, summarizes the significant impacts of the project that were identified in Chapter 4, *Environmental Setting and Impacts*, and describes the alternatives screening and selection process.
- Section 6.3, *Environmental Impacts of the Proposed Project*, presents the environmental impacts of the proposed project.
- Section 6.4, *Background and Alternatives Considered and Dismissed*, presents the alternatives and project concepts that were considered, but rejected from further study.
- Section 6.5, *Alternatives Evaluated in This EIR*, provides a detailed description of each of the selected alternatives and summarizes their ability to meet the project objectives.
- Section 6.6, *Comparison of Impacts*, provides a comparison of impacts of the alternatives to the proposed project.
- Section 6.7, *Environmentally Superior Alternative*, identifies the environmentally superior alternative.

6.1.2 Requirements for Alternatives Analysis

CEQA requires that an EIR evaluate a reasonable range of potentially feasible alternatives to a project, including a No Project Alternative. A No Project Alternative allows decision makers to compare the impacts of approving the project against the impacts of not approving the project. The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those potentially feasible alternatives necessary to foster informed public participation and an informed and reasoned choice by the decision-making body (per CEQA Guidelines Section 15126.6[f]). In determining whether alternatives are potentially feasible, lead agencies are guided by the general definition of feasibility found in CEQA Guidelines Section 15364: "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." In accordance with CEQA Guidelines Section 15126.6(f), the lead agency should consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, and jurisdictional boundaries in determining the feasibility of alternatives to be evaluated in an EIR. An EIR does not need to consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote (unlikely) and speculative (per CEQA Guidelines Section 15126.6[f][3]). Therefore, an EIR does not need to address every conceivable alternative or consider infeasible alternatives.

The alternatives described in an EIR must feasibly accomplish most of the basic project objectives, should reduce or eliminate one or more of the significant impacts of the proposed project (although the alternative could have greater impacts overall), and must be potentially feasible (CEQA Guidelines Section 15126.6[a]). An EIR must briefly describe the rationale for selection and rejection of alternatives and the information that the Lead Agency relied on in making the selection. It also should identify any alternatives that were considered by the Lead Agency but were rejected as infeasible during the scoping process and briefly explain the reason for their exclusion (CEQA Guidelines Section 15126.6[c]). In accordance with CEQA Guidelines Section 15126.6(f), the Lead Agency should consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, jurisdictional boundaries, and the proponent's control over alternative sites in determining the range of alternatives to be evaluated in an EIR. An EIR must briefly describe the rationale for selection and rejection of alternatives and the information that the Lead Agency relied upon in making the selection. It should also identify any alternatives that were considered by the Lead Agency but rejected as infeasible during the scoping process, and briefly explain the reason for their exclusion (CEQA Guidelines Section 15126[d][2]).

An EIR's analysis of alternatives is required to identify the environmentally superior alternative among all those considered (CEQA Guidelines Sections 15126.6[a] and [e][2]). If the "no project" alternative is identified as the environmentally superior alternative, then the EIR must also identify an environmentally superior alternative amongst the other alternatives.

These guidelines were used in developing and evaluating the alternatives described in this section.

6.1.3 Scoping Comments

Table 6-1 summarizes the scoping comments received pertaining to alternatives for this EIR and states where and how these comments have been addressed. Refer to Appendix B, *Notice of Preparation, Initial Study, and Scoping Comments,* for a complete list of public comments received during the public scoping period.

Table 6-1. Scoping Comments Related to Alternatives

Summary of Comment	Location Comment is Addressed
Consider building other alternatives, such as a dam downstream of Nacimiento, a power general project, additional reservoir projects, or an optimal steelhead trout plan as alternatives to the proposed tunnel (Blois, CAL-SHASTA, Dupree, Heath, Monterey County Farm Bureau, Nielsen, Otter Project, Salinas Valley Water Coalition, Sgheiza, Tri-Counties Club).	See Section 6.4.2, *Alternatives Considered and Dismissed*.
Blois – Comment suggests raising the tunnel inlet by 20 feet to address concerns that the average water level in Nacimiento Reservoir would be lowered. This commentor also suggests an alternate dam location downstream of Nacimiento Reservoir, on the military base, that could be used as an "afterbay."	See Section 6.4.2, *Alternatives Considered and Dismissed*.
CAL-SHASTA – Comment suggests raising the tunnel elevation to reduce impacts on property values and the environment. This commentor also suggests using Jerrett Reservoir to address water supply issues.	See subsection titled *Higher Tunnel Intake Elevation Alternative* in Section 6.4.2.2, *Design Alternatives*, and Section 6.4.1.1, *Other Reservoir Locations Considered*.
Dupree – The comment requests consideration of construction of an open canal.	See Section 6.4.2, *Alternatives Considered and Dismissed*.
Monterey County Farm Bureau – The comment requests a review of alternatives within the Salinas Valley watershed area.	See Section 6.4, *Background and Alternatives Considered and Dismissed*, and Section 6.5, *Alternatives Evaluated in this EIR*.
Nielsen – The comment relates to the feasibility of water supply from the Oak Shores Development.	See Section 6.4.2, *Alternatives Considered and Dismissed*.
Otter Project – The commentor requests the analysis of an alternative that is optimal for the recovery of steelhead trout.	See Section 6.5, *Alternatives Evaluated in this EIR*.
Salinas Valley Water Coalition – The commentor requests that the EIR clearly identify and document those alternatives that are not feasible due to significant impacts and those alternatives with fewer adverse impacts that could be implemented to mitigate potential impacts. The commentor also requests consideration of the Spillway Modification as a stand-alone project.	See Section 6.4.2, *Alternatives Considered and Dismissed*.
Sgheiza – The commentor suggests pumping or siphoning excess water from Nacimiento Reservoir to Bee Rock Creek to San Antonio Reservoir.	See Section 6.4.2, *Alternatives Considered and Dismissed*.
Tri-Counties Club – The commentor suggests raising the tunnel elevation to reduce impacts on property values and the environment. This commentor also suggests using Jerrett Reservoir to address water supply issues.	See subsection titled *Higher Tunnel Intake Elevation Alternative* in Section 6.4.2.2, *Design Alternatives*, and Section 6.4.1.1, *Other Reservoir Locations Considered*.

6.2 Alternatives Screening Process

Twelve alternatives to the project were considered, including the required No Project Alternative. These alternatives were analyzed based on input received during the scoping process, which included suggestions to evaluate alternative reservoir locations, alternative methods to transfer water between reservoirs, and alternative design considerations for the proposed project. To determine which of the alternatives should be evaluated in this EIR, each alternative was screened to determine whether it would meet most of the objectives of the project, reduce any of the significant impacts identified in this EIR, and be potentially feasible.

This chapter provides a description of the alternatives considered, but rejected, followed by an analysis of the No Project Alternative and the Expanded Nacimiento Low Level Outlet Works Alternative.

The proposed project's purpose and objectives, as well as its potentially significant environmental impacts, were considered while developing alternatives. In accordance with the requirements of CEQA, alternatives were developed to achieve most of the proposed project's basic objectives, while reducing one or more of its significant adverse environmental impacts. Alternatives development was also based on potential feasibility. Potential site locations were selected based on a number of planning, environmental, design, and engineering considerations. A reasonable range of potentially feasible alternatives is presented in Section 6.4.2, *Alternatives Considered and Dismissed*, describing their potential impacts and benefits.

6.2.1 Project Objectives

The purpose of the proposed project is to develop a multi-benefit project for the Salinas Valley Groundwater Basin (Basin) that improves the sustainability of the water supply, water quality, and flood management for the Basin. The proposed project is intended to meet the following objectives:

- Minimize flood control releases through the Nacimiento Dam spillway and reduce associated downstream flood damage.
- Increase the overall surface water supply available from Nacimiento and San Antonio Reservoirs by maximizing the opportunity for water to be collectively stored in the reservoirs.
- Improve the hydrologic balance of the Basin and reduce seawater intrusion.
- Continue to meet downstream environmental flow requirements for South-Central California Coast steelhead.
- Minimize the impact on existing hydroelectric production.
- Preserve recreational opportunities in the reservoirs.
- Protect agricultural viability and prime agricultural land.

6.3 Environmental Impacts of the Proposed Project

Based on the evaluations in this EIR and supporting technical analyses, a number of impacts have been identified as significant; however, these would be mitigated to a level of less than significant through implementation of mitigation measures. These impacts are listed in Section 6.3.2, *Less-than-Significant Impacts with Mitigation*. A discussion of beneficial effects of the proposed project is provided in Section 6.3.1 below.

6.3.1 Beneficial Effects

Agriculture. The proposed project and Tunnel-Only Alternative would increase the overall surface-water supply available from Nacimiento and San Antonio Reservoirs, protect agricultural viability and prime agricultural land, improve the hydrologic balance of the Basin, and reduce seawater intrusion for the benefit of agricultural uses.

Biological. The proposed project and Tunnel-Only Alternative would benefit riparian habitat in the lower reaches of the San Antonio River through: (1) enhanced fish productivity in San Antonio Reservoir; (2) adult steelhead migration in Salinas River downstream of Soledad; (3) juvenile steelhead rearing habitat in Nacimiento and San Antonio Rivers from increased summer flows; (4) resident fish populations (including special-status species, such as Monterey roach and Monterey hitch) from increases in summer flows; (5) Tidewater goby, especially spawning adults; (6) steelhead smolts in the Nacimiento River and Salinas River reaches upstream of Soledad; and (7) steelhead smolts migrating through the lagoon.

Hydrology/Flooding. The proposed project would increase the overall surface-water supply available from Nacimiento and San Antonio Reservoirs by maximizing the opportunity for water to be collectively stored at the reservoirs; it would also minimize releases from the Nacimiento Reservoir spillway, reduce associated downstream flood damage, and have beneficial effects related to groundwater supplies and recharge and improvement of the hydrologic balance of the Basin.

Recreation. The proposed project would enhance recreational opportunities at San Antonio Reservoir, thereby benefitting recreation.

6.3.2 Less than Significant Impacts with Mitigation

Table 6-2 summarizes the impacts in this EIR that were found to be significant, lists each impact title, reports the level of significance of each impact prior to mitigation, indicates mitigation measures that have been developed to reduce significant impacts, where appropriate, and identifies the level of significance after mitigation measures are implemented.

Table 6-2. Summary of Less than Significant with Mitigation Impacts of the Proposed Project

Impact	Project Phase	CEQA Conclusion	Mitigation	Significance after Mitigation
Hydrology and Water Quality				
Impact HWQ-3: Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity	Operation	Significant	**MM HYD-1, MM GSP-2**	Less than significant
Impact HWQ-4: In a Flood Hazard Area, Risk Release of Pollutants Due to Project Inundation	Operation	Significant	**MM HYD-1**	Less than significant
Geology, Soils, Seismicity, and Paleontological Resources				
Impact GSP-2: Impacts of Soil Erosion or the Loss of Topsoil	Construction	Significant	**MM GSP-1**	Less than significant
	Operation	Significant	**MM GSP-2**	Less than significant
Impact GSP-5: Impacts on Paleontological Resources	Construction	Significant	**MM GSP-3, MM GSP-4**	Less than significant
Biological Resources				
Impact BIO-3: Impacts on Terrestrial Habitat	Construction	Significant	**MM BIO-3.1, MM BIO-3.2**	Less than significant
	Operation	Significant	**MM BIO-3.2**	Less than significant
Impact BIO-4: Impacts on Listed, Candidate, Sensitive, or Special-Status Terrestrial Plant Species	Construction	Significant	**MM BIO-4.1, MM BIO-4.2**	Less than significant
	Operation	Significant	**MM BIO-4.1, MM BIO-4.2**	Less than significant
Impact BIO-5: Impacts on Wetland and Non-Wetland Water Habitats	Construction	Significant	**MM BIO-5.1**	Less than significant
Impact BIO-8a: Native Bumble Bees	Construction	Significant	**MM BIO-8.1, MM BIO-8.2, MM BIO-8.3**	Less than significant
	Operation	Significant	**MM BIO-8.1, MM BIO-8.2, MM BIO-8.3**	Less than significant
Impact BIO-8c: Arroyo Toad, California Red-Legged Frog, and Foothill Yellow-Legged Frog	Construction	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-5.1, MM BIO-8.4, MM BIO-8.5, MM BIO-8.6**	Less than significant
	Operation	Significant	**MM BIO-3.2, MM BIO-8.6**	Less than significant
Impact BIO-8d: Western Spadefoot toad and Coast Range Newt	Construction	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-5.1, MM BIO-8.4**	Less than significant
	Operation	Significant	**MM BIO-3.2, MM BIO-8.4**	Less than significant

Impact	Project Phase	CEQA Conclusion	Mitigation	Significance after Mitigation
Impact BIO-8e: Coast Horned Lizard, Northern California Legless Lizard, and San Joaquin Coachwhip	Construction	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-5.1, MM BIO-8.4**	Less than significant
	Operation	Significant	**MM BIO-3.2, MM BIO-8.4**	Less than significant
Impact BIO-8f: Two-Striped Gartersnake and Western Pond Turtle	Construction	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-5.1, MM BIO-8.4**	Less than significant
	Operation	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-5.1, MM BIO-8.4**	Less than significant
Impact BIO-8g: Bald Eagle and Golden Eagle	Construction	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-8.7, MM BIO-8.8, MM BIO-8.9, MM BIO-8.10**	Less than significant
	Operation	Significant	**MM BIO-3.2, MM BIO-8.9**	Less than significant
Impact BIO-8i: Coast Horned Lark, Loggerhead Shrike, and Western Burrowing Owl	Construction	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-8.7, MM BIO-8.9, MM BIO-8.10, MM BIO-8.11, MM BIO-8.12, MM BIO-8.13**	Less than significant
	Operation	Significant	**MM BIO-3.2, MM BIO-8.9**	Less than significant
Impact BIO-8j: Northern Harrier, Cooper's Hawk, Ferruginous Hawk, Sharp-Shinned Hawk, Prairie Falcon, and White-Tailed Kite	Construction	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-8.7, MM BIO-8.9, MM BIO-8.10, MM BIO-8.11**	Less than significant
	Operation	Significant	**MM BIO-3.2, MM BIO-8.9**	Less than significant
Impact BIO-8k: Tricolored Blackbird	Construction	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-8.11**	Less than significant
	Operation	Significant	**MM BIO-3.2**	Less than significant
Impact BIO-8m: Hoary Bat, Long-eared Myotis, Pallid Bat, Townsend's Big-eared Bat, Western Red Bat, Western Mastiff Bat, Western Small-Footed Myotis, Yuma Myotis, and Colonies of Non-special-status Roosting Bats	Construction	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-8.14**	Less than significant
	Operation	Significant	**MM BIO-3.2**	Less than significant
Impact BIO-8o: American Badger, Monterey Dusky-Footed Woodrat, Salinas Pocket Mouse, and Mountain Lion	Construction	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-8.9, MM BIO-8.15**	Less than significant
	Operation	Significant	**MM BIO-3.2, MM BIO-8.9**	Less than significant

Impact	Project Phase	CEQA Conclusion	Mitigation	Significance after Mitigation
Impact BIO-8p: South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch	Operation	Significant	**MM BIO-8.16**	Less than significant
Impact BIO-10: Potential Conflict with Local Policies or Ordinances Protecting Biological Resources	Construction	Significant	**MM BIO-3.1, MM BIO-3.2, MM BIO-4.1, MM BIO-4.2, MM BIO-5.1, MM BIO-8.1, MM BIO-8.2, MM BIO-8.3, MM BIO-8.5, MM BIO-8.6, MM BIO-8.7, MM BIO-8.8, MM BIO-8.9, MM BIO-8.10, MM BIO-8.11, MM BIO-8.12, MM BIO-8.13, MM BIO-8.14, MM BIO-8.15**	Less than significant
	Operation	Significant	**MM BIO-3.2, MM BIO-4.1, MM BIO-4.2, MM BIO-8.1, MM BIO-8.4, MM BIO-8.6, MM BIO-8.9, MM BIO-8.13, MM BIO-8.16**	Less than significant
Cultural Resources				
Impact CUL-1: Impacts on Archaeological Resources	Construction	Significant	**MM CUL-1.1, MM CUL-1.2, MM CUL-1.3, MM CUL-1.5**	Less than significant
	Operation	Significant	**MM CUL-1.3, MM CUL-1.4, MM CUL-1.5**	Less than significant
Impact CUL-2: Disturb Human Remains	Construction	Significant	**MM CUL-1.1, MM CUL-1.2, MM CUL-1.3, MM CUL-2.1**	Less than significant
	Operation	Significant	**MM CUL-1.3, MM CUL-2.1**	Less than significant
Tribal Cultural Resources				
Impact TCR-1: Impacts on Listed or Eligible Tribal Cultural Resources	Construction	Significant	**MM CUL-1.1, MM CUL-1.2, MM CUL-2.1, MM TCR-1**	Less than significant
	Operation	Significant	**MM CUL-1.3, MM CUL-2.1, MM TCR-1**	Less than significant
Transportation				
Impact TRA-2: Increase Transportation Hazards	Operation	Significant	**MM TRA-1**	Less than significant
Impact TRA-3: Result in Inadequate Emergency Access	Operation	Significant	**MM TRA-1**	Less than significant

Impact	Project Phase	CEQA Conclusion	Mitigation	Significance after Mitigation
Hazards and Hazardous Materials				
Impact HAZ-2: Impacts Associated with a Release of Hazardous Materials into the Environment	Construction	Significant	**MM HAZ-1**	Less than significant
Impact HAZ-3: Impair or Interfere with an Emergency Response Plan or Emergency Evacuation Plan	Operation	Significant	**MM TRA-1**	Less than significant
Noise and Vibration				
Impact NV-1a: Expose Sensitive Receptors to Increased Noise Levels during Project Construction	Construction	Significant	**MM NV-1a**	Less than significant
Air Quality				
Impact AQ-2: Result in a Cumulatively Considerable Increase in a Criteria Pollutant	Construction	Significant	**MM AQ-1, MM AQ-2**	Less than significant
Impact AQ-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations	Construction	Significant	**MM AQ-1, MM AQ-2**	Less than significant
Greenhouse Gas Emissions				
Impact GHG-1: Generate a Substantial Amount of GHG Emissions	Construction	Significant	**MM GHG-1, MM GHG-2, MM GHG-3**	Less than significant
	Operation	Significant	**MM GHG-1, MM GHG-2, MM GHG-3**	Less than significant
Impact GHG-2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs	Operation	Significant	**MM GHG-1, MM GHG-2, MM GHG-3**	Less than significant
Agricultural Resources				
Impact AG-1: Impacts from Direct or Indirect Conversion of Farmland to Nonagricultural Use	Operation	Significant	**MM HYD-1**	Less than significant
Impact AG-2: Impacts from Conflicts with Existing Agricultural Zoning or a Williamson Act Contract	Operation	Significant	**MM HYD-1**	Less than significant
Wildfire				
Impact WF-1: Impair an Adopted Emergency Response Plan or Emergency Evacuation Plan	Operation	Significant	**MM TRA-1**	Less than significant

6.4 Background and Alternatives Considered and Dismissed

In 1991, MCWRA completed a Water Capital Facilities Plan that considered a wide variety of options for addressing groundwater overdraft, seawater intrusion, shortages during dry years, and increasing water cost, while also accommodating increasing water demand for municipal and industrial uses (MCWRA 1991). The Water Capital Facilities Plan evaluated both new water storage projects throughout the Basin, as well as various modifications to the existing Nacimiento and San Antonio Reservoirs. These evaluations were conducted before and independently of the current planning process for the proposed project and were factored into the agency's analysis of feasibility, constraints, and opportunities. The projects identified in the Water Capital Facilities Plan are not alternatives to the proposed project. This prior effort helped MCWRA conceptualize the proposed project and develop realistic alternatives to it.

The process that was undertaken to develop the alternatives considered in this EIR, as well as relevant background information, is discussed in Section 6.4.1, *Background*. This discussion includes several concepts that have been suggested and considered over time, but that were not necessarily developed in consideration of the proposed project.

Section 6.4.2, *Alternatives Considered and Dismissed*, then discusses alternatives that were initially considered by MCWRA for the proposed project, but were ultimately dismissed from further analysis for one or more of the following reasons: (1) they would not sufficiently meet most of the proposed project objectives; (2) they were determined to be infeasible; or (3) they would not avoid or substantially reduce one or more significant impacts of the proposed project. These alternatives are grouped according to the following categories: Location Alternatives, Design Alternatives, and Water Supply Alternatives.

6.4.1 Background

To fully understand the alternatives development process for the proposed project, it is important to know the background and the range of concepts, discussions, and considerations that have been undertaken by the MCWRA over the past several decades as possible ways to achieve some of the water-management objectives of the proposed project. Previously considered project concepts consisted of flood-reduction and storage projects in the Basin, and those investigative efforts have identified some alternatives that were not ultimately carried forward. Previously considered project concepts were developed independently of the proposed project, over an approximately 30-year timespan, and not as alternatives to the proposed project under CEQA. The discussion below is provided for context and includes a description of the other project concepts that have been considered by the MCWRA. Many of these project concepts were raised during the scoping process; therefore, the discussion below is also provided as a response to some of those comments.

6.4.1.1 Other Reservoir Locations Considered

Several scoping comments were received regarding the potential to use previously considered MCWRA reservoir locations downstream of the Nacimiento and San Antonio Reservoirs as possible alternatives to the proposed project for analysis in this EIR.

The MCWRA, over the past several decades, has previously conducted analyses for and considered the creation of multiple other reservoir located downstream of the Nacimiento and San Antonio Reservoirs, as well as multiple locations along the Arroyo Seco River and Gabilan Creek as part of its capital water planning processes (MCWRA 2019). Potential reservoirs that were previously evaluated and considered along the Arroyo Seco River range from a storage capacity of 100,000 acre-feet with a surface area of 750 acres to a capacity of 220,000 acre-feet with a surface area of 2,230 acres. Potential reservoirs that were previously evaluated and considered along Gabilan Creek are estimated to have a storage capacity of 6,000 acre-feet with a surface area ranging from 200 to 270 acres. These reservoirs could provide additional water supply for lower reaches of the Salinas River but have not been pursued by MCWRA for various reasons, including: infeasibility from a permitting perspective due to the presence of critical habitat for Central California Coast steelhead in those locations; likely conversion of agricultural lands, the lack of availability of military (Camp Roberts) lands or other lands for water storage; and interference with power production at the existing Nacimiento hydroelectric project.

These other previously considered reservoir projects were evaluated in the past and were not recently evaluated in relation to the proposed project or as specific alternatives for the proposed project. However, in response to the scoping comments regarding alternative reservoir locations, the EIR considers two alternatives that utilize alternate reservoir locations downstream of the Nacimiento and San Antonio Reservoirs. These alternatives were subsequently dismissed from further consideration: New Upstream Reservoir (Jerrett Reservoir) Alternative and New Downstream Reservoir Alternative. Refer to Section 6.4.2, *Alternatives Considered and Dismissed*, below.

6.4.1.2 Other Design Considerations

Spillway-Only Project

A concept that would include only the San Antonio Dam Spillway Modification (i.e., a portion of the proposed project [see Chapter 2, *Project Description*]) was raised in several scoping meeting comments. This concept would involve construction of the San Antonio Dam Spillway Modification without the Interlake Tunnel or other project features. Prior to development of the proposed project, MCWRA considered and evaluated the utility and functionality that different spillway elevations and pipe diameters would achieve and used this information to develop the proposed project.

Raising the spillway independently of the proposed Interlake Tunnel and other project features would not be effective because the inflow quantity would not change at San Antonio Reservoir. Raising the spillway alone would only increase the potential for the stored water volume. However, due to hydrological conditions and historical storage levels at San Antonio Reservoir, there is a low probability that stored water volumes would be higher than under current operations. Furthermore, a spillway-only project would not reduce flood-control releases from Nacimiento Reservoir, nor increase the available volume within Nacimiento Reservoir, because no water would be transferred to San Antonio Reservoir.

Larger Interlake Tunnel Diameter

This concept, raised during project scoping, would involve construction of all elements identified as part of the proposed project; however, it would include a tunnel diameter larger than 10 feet to allow for a lower intake elevation compared to the proposed project. MCWRA evaluated the functionality, hydraulic performance, and outcomes that different tunnel diameters would achieve in optimizing the design of the proposed project. Increased tunnel size could result in an increased drawdown rate when in operation due to higher discharge capacity.

San Antonio Reservoir Hydroelectric

This concept is related to a scoping comment received that would involve construction of all elements identified as part of the proposed project, but include the construction of hydroelectric production facilities. Specifically, a new hydroelectric plant would be constructed at San Antonio Dam, and/or a new hydropower facility would be constructed within the Interlake Tunnel. This concept would be a significant addition to the proposed project and would have higher costs and environmental impacts due to greater construction activity and land disturbance, and would not avoid any significant impacts of the proposed project. It is generally unrelated to the goals of the proposed project and is not necessary to achieve the project objectives. The benefits of this concept, compared to the proposed project, include a possible offset of any loss of hydroelectric generation at Nacimiento Reservoir that may result from operation of the proposed project, possible extra protection from the transfer of white bass to San Antonio Reservoir due to powerhouse mortality, and potentially more flexibility for flow releases, depending on the powerhouse design. However, the addition of hydroelectric production facilities would result in substantially more planning, design work, regulatory approval, and engineering costs, along with the significant effects associated with constructing a new hydroelectric plant or facility. Also, new hydroelectric production facilities could cause constraints for current San Antonio Reservoir operations.

6.4.1.3 Operational Changes Considered

Seasonal Releases Benefiting Aquatic Resources Concept

During the scoping process, modified operations were discussed. This would involve all elements of the proposed project, but with altered operations. The goal would be to increase water releases during important times for aquatic species, including steelhead and other species in the Salinas River. Such releases could occur during any time of year, but would be most evident during the dry season, when less water is typically released.

MCWRA is currently developing a Habitat Conservation Plan (HCP) that includes the project area, based on the findings in the Long-Term Management Plan (LTMP). The LTMP is a multi-benefit management program intended to provide guidance to MCWRA regarding its facilities and operations, address river management challenges such as flood control, water supply, and water quality, and outline strategies for conserving and managing natural resources, including threatened and endangered species (MCWRA and State Coastal Conservancy 2019). It is likely that the HCP, once finalized, will include a revised flow prescription for the Salinas River and might also stipulate other operational requirements.

6.4.2 Alternatives Considered and Dismissed

6.4.2.1 Location Alternatives

This section describes alternatives to the proposed project that consist of new reservoirs in locations other than Nacimiento Reservoir and San Antonio Reservoir that were envisioned to satisfy one or more of the project objectives. Each of these alternatives was considered and dismissed from further evaluation in this EIR as provided in the discussion following each description. **Figure 6-1** shows the locations of the two location alternatives discussed below.

Figure 6-1
Reservoir Location Alternatives

New Upstream Reservoir (Jerrett Reservoir) Alternative

This alternative would involve construction of two dams and a new reservoir, referred to as Jerrett Reservoir, upstream of Nacimiento Reservoir on the Nacimiento River, entirely on Fort Hunter Liggett property. The proposed reservoir location is currently utilized by the U.S. Army to train personnel in a variety of different environments, and it contains known archaeological sites, some of which contain human remains, as well as woodlands and riparian zones that would need to be flooded for the creation of a reservoir.

This location was first discussed as a possible reservoir site in 1933; MCWRA evaluated it again as recently as 2019 as an option for expanding the available surface water supply in Monterey County, while also providing flood protection and fisheries benefits. Jerrett Reservoir would impound 130,700 acre-feet of water with a surface area of 2,352 acres at a spillway crest elevation of 1,130 feet (MCWRA 2019). The additional water supply provided by Jerrett Reservoir could stabilize water levels at Nacimiento Reservoir for recreational use and also increase the potential for hydroelectric generation at Nacimiento Dam.

MCWRA concluded in 2019 that the Jerrett Reservoir would not be feasible. The impacts to training, environment, and economics at Fort Hunter Liggett "significantly reduce Fort Hunter Liggett's capability to meet the Department of Defense's current and future Readiness and Modernization priorities"[1] and present challenges that would be impractical to overcome with reasonable adaptation or mitigation strategies (MCWRA 2019). Because of the extent of ground disturbance and inundation that would occur with this alternative, it is anticipated that additional or more severe environmental impacts could result compared to the proposed project. Also, this alternative would not meet the objectives of the proposed project. For these reasons, this alternative was determined infeasible, and MCWRA has dismissed it from further consideration as a potential alternative to the proposed project.

New Downstream Reservoir Alternative

This alternative would involve construction of a new reservoir on the Nacimiento River immediately downstream of the Nacimiento Dam on Camp Roberts property, which is a California National Guard post. This alternative was considered in response to a scoping meeting comment. This new reservoir would capture flood-control releases from Nacimiento Reservoir that result from large storm events, thereby reducing associated downstream flooding and increasing the water supply for release at other times of the year.

This alternative would avoid construction impacts at the Interlake Tunnel Structure location but would likely result in greater overall construction impacts relative to the proposed project due to the extent of new ground disturbance and inundation at a new reservoir site, as well as the likely conversion of agricultural lands, military (Camp Roberts) lands, or other lands to water-storage use. Also, the headwater of New Downstream Reservoir Alternative could encroach on the toe of the existing Nacimiento Dam, thus reducing the power production of the hydroelectric project, and could necessitate modifications to the hydropower facility at Nacimiento Reservoir to optimize lower head, as well as structural modification to the facility to prevent higher tailwaters from entering the powerhouse. This alternative would likely not meet the project objective to preserve agricultural viability and prime agricultural land. Furthermore, because it would be on state property, this alternative would require an easement and permission from and coordination with the State of California, which is unlikely to be obtained given the current use of the property.

[1] Excerpt from presentation given by Fort Hunter Liggett staff at the September 18, 2019 meeting.

This alternative would not reduce impacts associated with the proposed project, would not meet project objectives, and would not be feasible because of permitting restraints. For these reasons, MCWRA has dismissed the New Downstream Reservoir Alternative as a potential alternative to the proposed project.

6.4.2.2 Design Alternatives

This section describes alternatives consisting of design refinements to the proposed project. Each of these alternatives was considered by MCWRA, but dismissed from further evaluation as alternatives to the proposed project in this EIR. The reasoning for these dismissals is provided in the following sections.

Lower Tunnel Intake Elevation Alternative

This alternative would involve construction of all elements identified as part of the proposed project. The Lower Tunnel Intake Elevation Alternative differs from the proposed project in that the design would relocate the proposed Interlake Tunnel invert (intake) to an elevation lower than 745 feet, resulting in a marginally longer tunnel compared to the proposed project. The intent of this alternative is to reduce the potential for white bass to enter the Interlake Tunnel. A lower intake elevation may also equalize drawdown, such that both reservoirs would drain slower over the dry season. MCWRA determined that this alternative would be infeasible because it would not achieve the flow capacity of the proposed project, based on the available driving head between Nacimiento Reservoir to San Antonio Reservoir. Also, this alternative would lengthen the Interlake Tunnel and require a lower outlet structure at San Antonio Dam, thereby resulting in greater construction impacts and land disturbance related to the Interlake Tunnel, as well as the need for increased underwater construction.

This alternative would not substantially reduce impacts associated with the proposed project and would not be feasible because of the reduced flow capacity of the tunnel at a lower intake elevation. For these reasons, MCWRA has dismissed the Lower Tunnel Intake Elevation Alternative as an alternative to the proposed project.

Higher Tunnel Intake Elevation Alternative

This alternative would involve construction of all elements identified as part of the proposed project. The Higher Tunnel Intake Elevation Alternative differs from the proposed project in that it would relocate the proposed Interlake Tunnel invert (intake) to an elevation higher than 745 feet and would result in a marginally shorter tunnel compared to the proposed project. With this alternative, fewer transfers would occur due to the elevated intake, thus decreasing flow capacity through the tunnel and reducing the ability of MCWRA to transfer water from Nacimiento Reservoir to San Antonio Reservoir. This alternative was included in a project proposed by the Nacimiento Recycled Water Management Agency Committee (NRWMAC) in 2010 that included the Interlake Tunnel portion of the proposed project with a preferred option of 770-feet elevation and was part of the *Greater Monterey County Integrated Regional Water Management (IRWM) Plan* (NRWMAC 2018). MCWRA determined that this alternative would be infeasible because the tunnel would not have sufficient capacity to move water quickly enough to provide flood control benefits. Because this alternative would not offer flood control benefits, it would not meet all of the project objectives.

This alternative could also result in greater biological resource impacts due to the shallower intake elevation at Nacimiento Reservoir; the relatively low probability of the transfer of white bass might increase with a higher intake due to a higher abundance of eggs/fish higher in the water column. Furthermore, this alternative could require a larger tunnel diameter to maintain the same flow-diversion volume, resulting in greater impacts associated with tunnel construction, including increased quantities of tunnel muck needing disposal. This alternative may not be as practical for capturing and transferring water as optimally as the project elevation and, thus, would not be able to be used unless water levels reached the invert elevation. Therefore, the Higher Tunnel Intake Elevation Alternative would not meet all of the project objectives, including minimizing flood-control releases.

This alternative would not reduce impacts associated with the proposed project, would not meet project objectives, and is infeasible due to insufficient capacity to move water at a rate that would provide flood-control benefits. For these reasons, MCWRA has dismissed the Higher Tunnel Intake Elevation Alternative as an alternative to the proposed project.

Larger Tunnel Diameter Alternative

This alternative would involve construction of all elements identified as part of the proposed project. It differs from the proposed project in that it would require that the Interlake Tunnel have a diameter larger than 10 feet and could require a lower intake elevation compared to the proposed project. If optimally designed, this alternative could meet all project objectives. The increased size could result in an increased drawdown rate when in operation due to its higher discharge capacity. This alternative would generate a greater volume of tunnel muck requiring disposal and would therefore result in greater construction impacts relative to the proposed project. MCWRA determined that this alternative would not be feasible because of the increased environmental impacts and costs associated with construction of a tunnel with a larger diameter, which could limit available construction tunneling methods.

This alternative would not reduce impacts associated with the proposed project. The increased tunnel size would also result in more adverse drawdown effects during operation. For these reasons, MCWRA has dismissed the Larger Tunnel Diameter Alternative as an alternative to the proposed project.

Open Channel Alternative

This alternative would involve construction of some elements identified as part of the proposed project. The Open Channel Alternative differs from the proposed project in that it would involve construction of an aboveground open channel instead of a bored underground tunnel. The topography of the area between Nacimiento and San Antonio Reservoirs precludes the use of a gravity-fed system; therefore, pumps would be required to lift the water over the ridgeline between the two reservoirs.

This alternative would likely meet all of the objectives of the proposed project. Construction impacts related to noise, vibration, aesthetics, biological resources, air quality, and cultural resources would be substantially greater under this alternative because construction of the open channel would be conducted aboveground, compared to the underground tunneling activities that would occur as part of the proposed project. Operational costs and environmental impacts associated with a pump/pressurized system would be greater under this alternative compared to the proposed project due to the energy required to operate the water pump system. Compared with the proposed project, this alternative would likely result in greater water loss because of evaporation during operation.

This alternative would increase impacts compared to the proposed project, and the topography between Nacimiento and San Antonio Reservoirs would undermine project feasibility. For these reasons, MCWRA has dismissed the Open Channel Alternative as an alternative to the proposed project.

Pump Water Between Reservoirs Alternative

This alternative would involve construction of some elements identified as part of the proposed project. The Pump Water Between Reservoirs Alternative differs from the proposed project in that it would involve construction of a cut-cover pipeline that would utilize pumps to transfer water over the small hills in the Bee Rock area from Nacimiento Reservoir, and then naturally flow into Bee Rock Creek and down to San Antonio Reservoir. This would require construction of a pump station with an estimated design flow of 1,700 cfs, which would require the discharge pipe to be increased compared to the project (at a velocity of 7 feet per second, a pipe diameter of about 17.5 feet would be needed). Electricity to power the pump station is estimated at approximately 180,000 horsepower.

This alternative would likely meet all of the objectives of the proposed project. Impacts during construction and operations would be greater relative to the proposed project. A pump station and cut-cover pipeline would increase impacts during construction related to aesthetics, noise, vibration, air quality, GHG emissions, and erosion. Similar or potentially greater construction impacts related to biological resources, cultural resources, and paleontological/tribal cultural resources could occur because of increased surface disturbance compared to the proposed project. Over the long-term, this alternative would demand significant electricity consumption to operate the pumps, thereby increasing the operational cost. Also, it would result in long-term increased demand for energy resources, along with associated air quality and GHG emissions impacts.

This alternative would result in greater environmental impacts from construction and operation and increase costs due to the long-term electricity demand during operations relative to the proposed project. For these reasons, MCWRA has dismissed the Pump Water Between Reservoirs Alternative as an alternative to the proposed project.

6.4.2.3 Water Supply Alternative

This section describes an alternative consisting of strategies for increasing regional water supply availability through mechanisms other than construction and operation of the proposed project. MCWRA is aware of and has considered other water supply projects such as aquifer storage and recovery, a desalination plant, and recycled water facility; however, each of these projects is part of a separate, ongoing process and they would not achieve the objectives of the proposed project. Therefore, these projects were not evaluated further in this EIR. As discussed below the Out-of-Basin Water Transfer Alternative was considered by MCWRA and dismissed from further evaluation as an alternative to the proposed project.

Out-of-Basin Water Transfer Alternative

This alternative would not include construction of any elements of the proposed project, but would instead require MCWRA to obtain water from another basin, such as through an inter-basin transfer agreement with associated water right permits. This would involve the construction and operation of inter-basin water transfer facilities and other related infrastructure.

This alternative would not meet key project objectives because it would not minimize flood-control releases from Nacimiento Reservoir, nor reduce associated downstream flood damages, and it would not increase the overall surface water supply available from Nacimiento and San Antonio Reservoirs by maximizing the opportunity for water to be collectively stored in the reservoirs. This alternative would avoid all identified construction- and operation-related impacts associated with the proposed project, but would present a new range of construction and operational impacts associated with the construction and operation of new water-transfer facilities that could be potentially more severe than the proposed project. Moreover, it is not expected that water from another basin would be available for transfer, nor that it would be feasible to obtain from the contractual, permitting, water rights, and entitlement perspectives.

This alternative would result in greater impacts associated with construction and operation and would not be feasible due to contractual, permitting, water rights, and entitlement restrictions. For these reasons, MCWRA has dismissed the Out-of-Basin Water Transfer Alternative as an alternative to the proposed project.

6.5 Alternatives Evaluated in This EIR

The following alternatives to the proposed project are evaluated in this EIR.

- No Project Alternative
- Tunnel-Only Alternative
- Expanded Nacimiento Outlet Works Alternative

These alternatives were identified in the context of the primary environmental concerns raised during EIR scoping, the set of potentially feasible alternatives identified during the scoping and site-evaluation processes, and the significant impacts of the proposed project that were identified during the preparation of this EIR. A complete description of the Tunnel-Only Alternative is provided in Chapter 3, *Tunnel-Only Alternative.* As described in Chapter 4, *Introduction to the Environmental Analysis*, the Tunnel-Only Alternative is evaluated at an equal level of detail as the proposed project in this EIR. As such, the description and summary of impacts of the Tunnel-Only Alternative are not described further in this chapter. **Table 6-3**, at the end of this chapter, summarizes the alternatives considered and compares them to the proposed project.

6.5.1 No Project Alternative

Consideration of a No Project Alternative is specifically required by CEQA Guidelines Section 15126.6(e)(1)-(3). The purpose of evaluating the No Project Alternative is to compare the impacts of the proposed project with the impacts that could occur without implementation of the proposed project or the circumstance under which the proposed project does not proceed.

6.5.1.1 Characteristics of this Alternative

The *No Project Alternative* is defined as what would be reasonably expected to occur in the foreseeable future if none of the other project alternatives were approved and implemented, based on current plans and consistent with available infrastructure. This alternative would involve no additional construction at the project site. Therefore, the Interlake Tunnel and San Antonio Dam

Spillway Modification would not be constructed. Operations at Nacimiento and San Antonio Reservoirs would proceed as under existing conditions. In order to meet the definition of a "no project" alternative under CEQA, the No Project Alternative would not permit discretionary approvals, entitlements, or other environmental reviews. Existing conditions at the project site would remain the same, and no new site access points or circulation improvements would be constructed.

The No Project Alternative would not meet any of the objectives of the proposed project. This alternative would not achieve project objectives to minimize flood-control releases nor reduce associated downstream flood damage, improve the hydrologic balance of groundwater in the Basin and reduce seawater intrusion, and maintain downstream environmental flow requirements for South-Central California Coast steelhead. Also, the No Project Alternative would not meet the project objective to increase the overall availability of surface water from Nacimiento and San Antonio Reservoirs by maximizing opportunities for water to be stored in the reservoirs, minimizing the impact on existing hydroelectric production, preserving recreational opportunities in the reservoirs, and protecting agricultural viability and prime agricultural land.

6.5.1.2 Impact Analysis

Analyzing the impacts for the No Project Alternative in topic areas where the proposed project would have no impact or a less than significant impact would not achieve avoidance or reduction of an impact. Accordingly, there is no further discussion in this section of the following resource topics for which this EIR found that the proposed project would have no impact or a less than significant impact: aesthetics, land use, mineral resources, population and housing, public services, recreation, utilities and service systems, and energy. Similarly, potential impacts that were found to be less than significant within the resources that follow are not discussed.

All construction-related and operational impacts of the proposed project would be avoided with the No Project Alternative because no construction nor changes to operations would occur. Likewise, none of the benefits of the proposed project would be achieved under the No Project Alternative.

Hydrology and Water Quality

The No Project Alternative would not involve construction. Therefore, all construction-related impacts on hydrology and water quality would be avoided compared to the proposed project. These include construction impacts related to ground disturbance, accidental chemical spills of construction materials, groundwater dewatering, groundwater supply and recharge, erosion, exceeding system capacity, impeding or redirecting flood flows and associated release of pollutants, stormwater management, and implementation of a water quality control plan or sustainable groundwater management plan. Accordingly, this alternative would not result in construction impacts on surface nor groundwater quality, and water quality would remain similar to existing conditions.

Because the No Project Alternative would not change reservoir operations such that water levels at the reservoirs or water releases for downstream uses could be adjusted for beneficial uses, the project's beneficial effects on groundwater supply and recharge and improvement of the hydrologic balance of the groundwater basin in the Salinas Valley would not occur. Also, the significant operational erosion impacts that could occur under the proposed project would be avoided. The No Project Alternative would have no impact related to conflicting or obstructing implementation of a water quality control plan or sustainable groundwater management plan. No mitigation measures pertaining to hydrology and water quality would be required.

The No Project Alternative would not achieve any of the beneficial effects related to hydrology and water quality that are described in Section 6.3.1, *Beneficial Effects*.

Geology, Soils, and Seismicity and Paleontological Resources

The No Project Alternative would not involve construction. Therefore, all construction-related impacts pertaining to loss of topsoil and potential for disturbance of paleontological resources would be avoided compared to the proposed project. Furthermore, operation of the No Project Alternative would not involve a transfer of water to San Antonio Reservoir nor an increase in the maximum WSE as would be provided under the proposed project. Therefore, potential impacts during operation related to erosion and loss of topsoil around San Antonio Reservoir would be avoided compared to the proposed project. No mitigation measures pertaining to geology, soils, and seismicity or paleontological resources would be required for the No Project Alternative.

Biological Resources

The No Project Alternative would not involve construction and, therefore, would not involve ground disturbance, noise, nighttime lighting, potential for accidental chemical spills of construction materials, nor removal of vegetation or other direct and indirect impacts on sensitive species habitat. Therefore, the No Project alternative would avoid all construction impacts on plants and wildlife and their habitat, and biological resources would remain similar to existing conditions.

Because the No Project Alternative would not involve a change in reservoir operations, alterations in reservoir levels and corresponding impacts on sensitive communities in the proposed increased maximum WSE at San Antonio Reservoir, impacts on fish productivity in Nacimiento Reservoir, and impacts on habitat downstream of the reservoirs from changes in water releases would not occur. Accordingly, the No Project Alternative would avoid all impacts on habitat within the reservoirs and downstream riverine systems. All operational impacts on biological resources would be avoided compared to the proposed project. No mitigation measures pertaining to biological resources would be required.

The No Project Alternative would not achieve any of the beneficial effects related to biological resources described in Section 6.3.1, *Beneficial Effects*.

Cultural Resources

The No Project Alternative would not involve construction activities, including ground disturbance. Therefore, the No Project Alternative would avoid all construction impacts on cultural and archaeological resources, and there would be no potential impact on or disturbance of human remains.

Because the No Project Alternative would not involve a change in reservoir operations, alterations in reservoir levels, including an increase in the maximum WSE at San Antonio Reservoir, would not occur. Accordingly, the No Project Alternative would avoid impacts on archaeological resources and the potential for disturbance of human remains related to increased WSE at San Antonio Reservoir. No mitigation measures pertaining to cultural resources would be required.

Tribal Cultural Resources

The No Project Alternative would not involve construction activities, including ground disturbance. Therefore, the No Project Alternative would avoid all construction impacts on tribal cultural resources.

The No Project Alternative would not involve a change in reservoir operations such that inundation from an increased WSE and corresponding potential for erosion at San Antonio Reservoir could occur, which could potentially destroy tribal cultural resources. Accordingly, operations of the No Project Alternative would avoid all impacts on tribal cultural resources. No mitigation measures pertaining to tribal cultural resources would be required.

Transportation

Operation of the No Project Alternative would not involve an increase in the maximum WSE at San Antonio Reservoir; therefore, possible roadway inundation in the area around San Antonio Reservoir would be avoided. The potential for the proposed project to increase hazards or result in inadequate emergency access during operation also would be avoided by the No Project Alternative. No mitigation measures pertaining to transportation would be required.

Hazards and Hazardous Materials

The No Project Alternative would not involve construction activities. Thus, the potential for hazardous materials exposure due to construction of the Spillway Modification would not occur under the No Project Alternative. Operation of the No Project Alternative would not involve an increase in the maximum WSE at San Antonio Reservoir; therefore, possible roadway inundation in the area around San Antonio Reservoir would be avoided. The potential for the proposed project to impair or interfere with an emergency response plan or emergency evacuation plan during operation also would be avoided by the No Project Alternative. No mitigation measures pertaining to hazards and hazardous materials would be required.

Noise

Under the No Project Alternative, there would be no demolition, grading, excavation, tunnel boring, or construction activities on the project site, and no new sources of noise would be introduced to the project site during construction. Therefore, the No Project Alternative would avoid the less than significant with mitigation construction noise impacts that could occur with construction of the proposed project or Tunnel-Only Alternative. No mitigation measures pertaining to noise would be required.

Air Quality

The No Project Alternative would not involve construction activities and would therefore avoid all air quality construction-related impacts of the proposed project and Tunnel-Only Alternative, including impacts related to a cumulatively considerable increase in criteria pollutants and exposure of sensitive receptors to substantial pollutant concentrations that would require mitigation to reduce to a less than significant level. No mitigation measures pertaining to air quality would be required.

Greenhouse Gas Emissions

The No Project Alternative would not involve construction activities and would therefore avoid all construction-related GHG emissions generation that would occur with the proposed project. Also, the No Project Alternative would avoid the operational GHG emissions impact related to conflicting with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions that would occur with the proposed project. No mitigation measures pertaining to GHG emissions would be required.

Agricultural Resources

Because the No Project Alternative would not alter downstream flows from either reservoir, this alternative would have no downstream effects on Farmland, land under Williamson Act contract, or lands zoned for agricultural use. Therefore, this alternative would avoid the operations-related impact on these resources under the proposed project and the corresponding need for **MM HYD-1**, and no mitigation would be required. No mitigation measures pertaining to agricultural resources would be required.

The No Project Alternative would not achieve any of the beneficial effects related to agricultural resources that are described in Section 6.3.1, *Beneficial Effects*.

Wildfire

Operation of the No Project Alternative would not involve an increase in the maximum WSE at San Antonio Reservoir; therefore, possible roadway inundation in the area around San Antonio Reservoir would be avoided. The potential for the proposed project to impair an adopted emergency response plan or emergency evacuation plan also would be avoided by the No Project Alternative. No mitigation measures pertaining to wildfire would be required.

6.5.2 Expanded Nacimiento Outlet Works Alternative

6.5.2.1 Characteristics of this Alternative

The Expanded Nacimiento Outlet Works Alternative would increase the flow through Nacimiento Dam from 450 cfs to 800 cfs by either expanding the low-level outlet works at Nacimiento Dam or constructing a second low-level outlet works. The existing low-level outlet at the Nacimiento Dam consists of a 53-inch-diameter pipe near the southern side of the dam (MCWRA 2022). The low-level outlet works intake structures are currently at the level of the physical minimum pool (or dead pool) of the Nacimiento Reservoir at an elevation of 670 feet, which has 10,300 acre-feet of storage at this level. Under this alternative, the existing outlet works would remain, and a new 8-foot-diameter microtunnel with an 800-cfs capacity would be constructed beneath the existing dam at a depth of approximately 230 feet below the top of Nacimiento Dam.

This alternative would provide additional flood control and water supply storage at Nacimiento Reservoir; however, it would not provide the same scale of benefit as the proposed project, nor provide any water-management benefits at or in coordination with San Antonio Reservoir. **Figure 6-2** shows the Expanded Nacimiento Outlet Works Alternative. Construction of the Expanded Nacimiento Outlet Works Alternative would take an estimated 24 months to complete. Operation of this alternative is expected to allow for the retention of more water in Nacimiento Reservoir, on average, compared to existing conditions. This is because the increased outflow

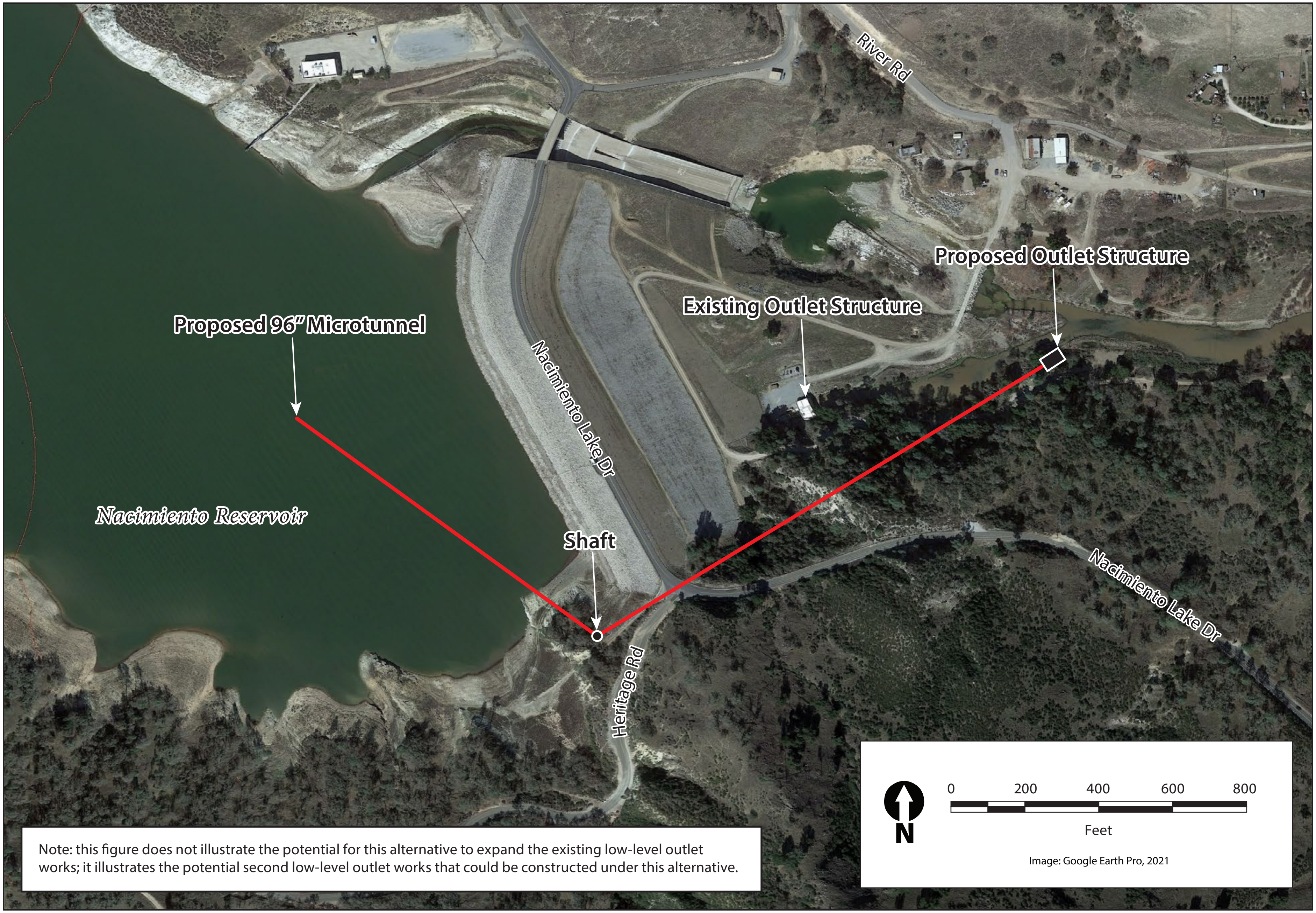

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Figure 6-2
Expanded Nacimiento Outlet Works Alternative

capacity would allow operations managers to avoid releasing as much water as they would need to under existing conditions in advance of a major storm, which is sometimes necessary to avoid exceeding the capacity of the reservoir and overtopping the spillway. In general, this alternative is anticipated to result in fewer flood-control releases and generally more water available for release for beneficial uses compared to existing conditions, although less water available overall compared to the proposed project and Tunnel-Only Alternative.

The Expanded Nacimiento Outlet Works Alternative would partially meet the objectives of the proposed project, but to a reduced degree. This alternative would not provide for any water transfer between Nacimiento and San Antonio Reservoirs and would only partially meet the project objective of increasing the overall surface water supply available from Nacimiento and San Antonio Reservoirs by maximizing the opportunity for water to be collectively stored at the reservoirs. The degree to which flood control and water releases for downstream uses could be managed operationally would be less certain than under the proposed project. Therefore, this alternative could partially achieve the project objectives of minimizing flood control releases through the Nacimiento Dam Spillway and reducing associated downstream flood damage, improving the hydrologic balance of the groundwater basin in the Basin and reduce seawater intrusion, and continuing to meet downstream environmental flow requirements for South-Central California Coast steelhead, but not to the same degree or level of long-term certainty optimized under the proposed project. The Expanded Nacimiento Outlet Works Alternative would meet the project objectives of minimizing the impact on existing hydroelectric production, preserving recreational opportunities at the reservoirs, and protecting agricultural viability and prime agricultural land, because it would increase the average storage of water at Nacimiento Reservoir and reduce flood-control releases compared to existing conditions.

6.5.2.2 Impact Analysis

Analyzing the impacts for the Expanded Nacimiento Outlet Works Alternative in topic areas where the project would have no impact or a less than significant impact would not achieve avoidance or reduction of an impact. Accordingly, there is no further discussion in this section of the following resource topics for which this EIR found that the proposed project would have no impact or a less-than-significant impact: aesthetics, land use, mineral resources, population and housing, public services, recreation, utilities and service systems, and energy.

Construction-related impacts of the Expanded Nacimiento Outlet Works Alternative would be reduced compared to the proposed project because construction of a micro-tunnel beneath the existing dam would require fewer construction activities and a similar or reduced timeframe, including less construction equipment and ground disturbance and a smaller construction footprint (refer to **Figure 6-2**). Most operational impacts under the Expanded Nacimiento Outlet Works Alternative would also be similar to or less than those of the proposed project.

Hydrology and Water Quality

The Expanded Nacimiento Outlet Works Alternative would involve construction at Nacimiento Reservoir, but at a reduced level compared to the proposed project. Therefore, all construction-related impacts on hydrology and water quality under this alternative would be similar to or reduced compared to the proposed project. The proposed project's less-than-significant construction impacts on ground disturbance, accidental chemical spills, and groundwater dewatering that could affect surface and ground water quality would be similar or reduced compared to the proposed project. Construction impacts on groundwater erosion and siltation and stormwater management would occur as with the proposed project, which would be managed with implementation of BMPs in the same way. This alternative would have a similar less-than-significant impact regarding conflict with the implementation of a water quality control plan or sustainable groundwater management plan. Incorporation of water quality avoidance measures **AMMs GEN-1, GEN-2, GEN-3, GEN-4, GEN-5, GEN-6,** and **GEN-8** into the design of this alternative, as with the proposed project, would avoid or minimize construction impacts.

Water quality impacts of operation under the Expanded Nacimiento Outlet Works Alternative would be less than significant, similar to the proposed project, with incorporation of **AMMs GEN-1, GEN-2, GEN-3, GEN-4, GEN-5, GEN-6,** and **GEN-8** into the design of this alternative, as with the proposed project. Because the Expanded Nacimiento Outlet Works Alternative would provide additional flood control and water-supply storage compared to existing conditions, it would result in beneficial effects related to groundwater supply and recharge, as with the proposed project. Operational flood impacts with the Expanded Nacimiento Outlet Works Alternative could occur similar to the proposed project and would be similarly managed to address erosion and siltation during storm events. As with the proposed project, the Expanded Nacimiento Outlet Works Alternative would have the potential to exceed the conveyance capacity of the river channels, particularly along downstream reaches of the Salinas River. **MM HYD-1** would be required. The impact of operation under this alternative would be the same as the project: less than significant with mitigation. Operations of the Expanded Nacimiento Outlet Works Alternative would not provide any water management benefits at or in coordination with San Antonio Reservoir.

Under the Expanded Nacimiento Outlet Works Alternative, beneficial effects related to hydrology and water quality that are described in Section 6.3.1, *Beneficial Effects*, would be slightly less than the proposed project.

Geology, Soils, and Seismicity and Paleontological Resources

Construction of the Expanded Nacimiento Outlet Works Alternative would result in impacts related to loss of topsoil. As with the proposed project, implementation of **MM GSP-1** would reduce the impact by requiring development of a soil storage and handling plan, which would specify the thickness of the topsoil that should be salvaged. With implementation of **MM GSP-1**, the impact with respect to loss of topsoil during construction would be less than significant with mitigation.

The Expanded Nacimiento Outlet Works Alternative would not raise the spillway nor increase the depth of maximum WSE of San Antonio Reservoir. Therefore, this alternative would not result in an increase in the potential for erosion and loss of topsoil during operation.

Construction of the Expanded Nacimiento Outlet Works Alternative would involve similar or reduced ground-disturbing activities as the proposed project, such as grading, excavating, and micro-tunnel boring, with a depth of excavation of at least 130 feet bgs, the depth of the physical minimum or dead pool. This is a reduced depth compared to the proposed project, but this could still significantly disturb or destroy unique paleontological resources. Construction of the shaft, proposed outlet structure, and tunnel between them would be in the Vaqueros Formation, which has high paleontological potential. Implementation of **MM GSP-3** and **MM GSP-4** would be required to reduce this construction impact to less than significant, similar to the proposed project.

Biological Resources

The Expanded Nacimiento Outlet Works Alternative would involve similar or reduced construction activities compared to the proposed project, including ground disturbance, excavation, and vegetation removal. Therefore, this alternative would have similar or reduced construction impacts on biological resources, including sensitive natural communities, native trees, non-wetland waters, and special-status species habitats protected by federal, state, and local laws and regulations. As with the proposed project, **MMs BIO-3.1, BIO-3.2, BIO-4.1, BIO-4.2, BIO-5.1**, and **BIO-8.1** through **BIO-8.15** would reduce construction impacts under the Expanded Nacimiento Outlet Works Alternative to less than significant.

Operation of the Expanded Nacimiento Outlet Works Alternative would not change the maximum WSE of the San Antonio Reservoir. Therefore, the operation of this alternative would not have significant impacts on biological resources such as sensitive communities or suitable habitats that support special status-species that occur adjacent to the San Antonio Reservoir shoreline. However, the operation of this alternative would change the flows and flood regime of the downstream reaches of the Nacimiento and Salinas Rivers similar to the proposed project. As with the proposed project, **MMs BIO-8.1** through **BIO-8.16** would reduce operation impacts under the Expanded Nacimiento Outlet Works Alternative to less than significant.

Under the Expanded Nacimiento Outlet Works Alternative, beneficial effects related to biological resources that are described in Section 6.3.1, *Beneficial Effects*, would be less than, the proposed project.

Cultural Resources

The Expanded Nacimiento Outlet Works Alternative would involve similar or reduced construction activities compared to the proposed project, including ground disturbance, excavation, and groundwater dewatering. Therefore, this alternative would have similar or reduced construction impacts on cultural and archaeological resources. As with the project, **MMs CUL-1.1, CUL-1.2**, and **CUL-1.3** would reduce construction impacts under the Expanded Nacimiento Outlet Works Alternative to less than significant. Similarly, construction of this alternative would have similar or reduced impacts on human remains. As with the project, **MMs CUL-1.1, CUL-1.2, CUL-1.3**, and **CUL-2.1** would reduce construction impacts under the Expanded Nacimiento Outlet Works Alternative to less than significant.

Operation of the Expanded Nacimiento Outlet Works Alternative would not change the maximum WSE of San Antonio reservoir. Therefore, the operation of this alternative would have no impact on cultural resources, nor the disturbance of human remains, and would avoid the project's less-than-significant impact with mitigation on archaeological resources and the disturbance of human remains. No mitigation measures would be required during operation.

Tribal Cultural Resources

The Expanded Nacimiento Outlet Works Alternative would involve similar or reduced construction activities compared to the proposed project, including ground disturbance, excavation, and groundwater dewatering. Therefore, this alternative would have similar or reduced construction impacts on listed or eligible tribal cultural resources. As with the project, **MMs CUL-1.1, CUL-1.2, CUL-2.1,** and **TRC-1** would reduce construction impacts on tribal cultural resources under the Expanded Nacimiento Outlet Works Alternative to less than significant.

Operation of the Expanded Nacimiento Outlet Works Alternative would not result in a change in the maximum WSE on San Antonio Reservoir. Therefore, operation of the Expanded Nacimiento Outlet Works Alternative would not disturb or destroy tribal cultural resources, and there would be no impact, which avoids the project's operational impact on tribal cultural resources. No mitigation measures would be required during operation.

Transportation

Operation of the Expanded Nacimiento Outlet Works Alternative would not involve an increase in the maximum WSE at San Antonio Reservoir, nor the corresponding periodic inundation of local roadways that could result in potential impacts related to inadequate emergency access. Therefore, no impact would occur under this alternative, and mitigation would not be required.

Hazards and Hazardous Materials

The Expanded Nacimiento Outlet Works Alternative would involve construction activities that require the handling of hazardous materials, as well as ground disturbance and dewatering activities. Similar to the proposed project, **AMMs GEN 1** through **GEN 5** would apply to the Expanded Nacimiento Outlet Works Alternative, and construction-period and operational impacts associated with the transport, use, or disposal of hazardous materials would be less than significant.

Construction of the Expanded Nacimiento Outlet Works Alternative would not involve demolition of the ogee crest-control structure at San Antonio Dam, nor result in the potential to encounter asbestos-containing materials or lead-based paint. Therefore, the risk of releasing asbestos-containing materials or lead-based paint to the environment would be avoided, and mitigation would not be required.

The Expanded Nacimiento Outlet Works Alternative would not include the spillway modification, nor cause an increase to the maximum WSE at San Antonio Reservoir, so there would not be any new inundation along roadways at elevations of more than 780 feet during certain times of the year. Therefore, operation of the Expanded Nacimiento Outlet Works Alternative would not have the potential to substantially impair an adopted emergency response or evacuation plan.

Noise

The Expanded Nacimiento Outlet Works Alternative involves similar or reduced construction activities as the proposed project, such as demolition, grading, excavation, and micro-tunnel boring that could result in significant construction-related noise during nighttime hours as a result of the potential for 24-hour construction activities during tunneling activities. Implementation of **MM NV-1a** would reduce these impacts to less-than-significant levels.

Air Quality

The Expanded Nacimiento Outlet Works Alternative would involve similar or reduced construction activities and air emissions compared to the proposed project and would therefore result in similar, if reduced, air quality construction-related impacts, including a cumulatively considerable increase in criteria pollutants and exposure of sensitive receptors to substantial pollutant concentrations. Similar to the proposed project, the Expanded Nacimiento Outlet Works Alternative would incorporate **AMMs GEN-7** and **GEN-8** and would be required to implement **MMs AQ-1** and **AQ-2**, which would reduce criteria air pollutants and reduce toxic air contaminants at nearby sensitive receptors. Thus, construction air quality impacts from the Expanded Nacimiento Outlet Works Alternatives would be less than significant.

Greenhouse Gas Emissions

Operation of the Expanded Nacimiento Outlet Works Alternative would not involve any additional electricity requirements and is not expected to reduce the output of the Nacimiento Hydropower Facility. Therefore this alternative would have no impact, and no mitigation would be required.

Agricultural Resources

The Expanded Nacimiento Outlet Works Alternative would not increase flows from San Antonio Reservoir because no tunnel between the reservoirs would be constructed. However, this alternative is expected to reduce Nacimiento Dam flood-control releases compared to existing conditions and the corresponding potential for impacts on agricultural farmland downstream of the Nacimiento Reservoir. No impact would occur, and no mitigation would be required.

The Expanded Nacimiento Outlet Works Alternative would achieve the same beneficial effects as the proposed project related to agricultural resources, described in Section 6.3.1, *Beneficial Effects*.

Wildfire

Operation of the Expanded Nacimiento Outlet Works Alternative would not involve an increase in the maximum WSE at San Antonio Reservoir; therefore, possible roadway inundation in the area around San Antonio Reservoir would be avoided. The potential for the proposed project to impair an adopted emergency response plan or emergency evacuation plan also would be avoided by the Expanded Nacimiento Outlet Works Alternative. No mitigation measures pertaining to wildfire would be required.

6.6 Comparison of Impacts

CEQA Guidelines Section 15126.6 requires a comparison of the alternatives to the proposed project (presented above) and suggest that a matrix be used to summarize the comparison. **Table 6-3** compares the impacts of the proposed project to those of the alternatives.

Table 6-3. Comparison of Impacts among Project Alternatives

Environmental Issue	Project Phase	Proposed Project	No Project Alternative	Tunnel-Only Alternative	Expanded Nacimiento Outlet Works Alternative
Hydrology and Water Quality					
Impact HWQ-1: Impacts on Surface or Groundwater Quality	Construction	LTS	NI	LTS	NI
	Operation	LTS	NI	LTS	LTS
Impact HWQ-2: Impacts on Groundwater Supplies and Recharge	Construction	LTS	NI	LTS	NI
	Operation	LTS	NI	LTS	LTS
Impact HWQ-3: Result in Increased Stormwater Runoff, Flooding, and Erosion or Siltation Effects or an Exceedance of Drainage System Capacity	Construction	LTS	NI	LTS	NI
	Operation	LTS/M	NI	LTS/M	LTS/M
Impact HWQ-4: In a Flood Hazard Area, Risk Release of Pollutants Due to Project Inundation	Construction	LTS	NI	LTS	NI
	Operation	LTS/M	NI	LTS/M	LTS/M
Impact HWQ-5: Conflict with, or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan	Construction	LTS	NI	LTS	NI
	Operation	LTS	NI	LTS	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Geology, Soils, and Seismicity and Paleontological Resources					
Impact GSP-1: Impacts Associated with Surface Rupture of a Known Earthquake Fault, Seismic Ground Shaking, or Seismic Ground Failure (including seismically induced landslides)	Construction	NI	NI	NI	NI
	Operation	LTS	NI	NI	NI
Impact GSP-2: Impacts of Soil Erosion or the Loss of Topsoil	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS	LTS
Impact GSP-3: Impacts as a Result of Soil Instability	Construction	LTS	NI	LTS	LTS
	Operation	NI	NI	NI	NI
Impact GSP-4: Impacts as a Result of Expansive Soil	Construction	NI	NI	NI	NI
	Operation	LTS	NI	NI	NI

Environmental Issue	Project Phase	Proposed Project	No Project Alternative	Tunnel-Only Alternative	Expanded Nacimiento Outlet Works Alternative
Impact GSP-5: Impacts on Paleontological Resources	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS	NI	LTS	LTS
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Biological Resources					
Impact BIO-1: Impacts on Riparian Habitat	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Impact BIO-2: Impacts on Listed, Candidate, Sensitive, or Special-Status Riparian Plant Species	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Impact BIO-3: Impacts on Terrestrial Habitat	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS	LTS
Impact BIO-4: Impacts on Listed, Candidate, Sensitive, or Special-Status Terrestrial Plant Species	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS	LTS
Impact BIO-5: Impacts on Wetland and Non-Wetland Water Habitats	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS	NI	LTS	LTS
Impact BIO-6: Impacts on Listed, Candidate, Sensitive, or Special-Status Wetland Plant Species	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Impact BIO-7: Impacts on Reservoir Fish and Wildlife Habitat	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Impacts on Listed, Candidate, Sensitive, or Special-Status Wildlife Species					
Impact BIO-8a: Native Bumble Bees	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS/M	LTS
Impact BIO-8b: Smith's Blue Butterfly	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS

Environmental Issue	Project Phase	Proposed Project	No Project Alternative	Tunnel-Only Alternative	Expanded Nacimiento Outlet Works Alternative
Impact BIO-8c: Arroyo Toad, California Red-Legged Frog, and Foothill Yellow-Legged Frog	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS	LTS
Impact BIO-8d: Western Spadefoot toad and Coast Range Newt	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS	LTS
Impact BIO-8e: Coast Horned Lizard, Northern California Legless Lizard, and San Joaquin Coachwhip	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS	LTS
Impact BIO-8f: Two-Striped Gartersnake and Western Pond Turtle	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS/M	LTS/M
Impact BIO-8g: Bald Eagle and Golden Eagle	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS/M	LTS
Impact BIO-8h: Bank Swallow, Great Blue Heron, Least Bell's Vireo, Western Yellow-Billed Cuckoo, Yellow-Breasted Chat, Yellow Warbler, Long-Eared Owl and Short-Eared Owl	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Impact BIO-8i: Coast Horned Lark, Loggerhead Shrike, and Western Burrowing Owl	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS/M	LTS
Impact BIO-8j: Northern Harrier, Cooper's Hawk, Ferruginous Hawk, Sharp-Shinned Hawk, Prairie Falcon, and White-Tailed Kite	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS/M	LTS
Impact BIO-8k: Tricolored Blackbird	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS	LTS
Impact BIO-8l: Western Snowy Plover	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Impact BIO-8m: Hoary Bat, Long-eared Myotis, Pallid Bat, Townsend's Big-eared Bat, Western Red Bat, Western Mastiff Bat, Western Small-Footed Myotis, Yuma Myotis, and Colonies of Non-special-status Roosting Bats	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS	LTS
Impact BIO-8n: Monterey Shrew and Salinas Harvest Mouse	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS

Environmental Issue	Project Phase	Proposed Project	No Project Alternative	Tunnel-Only Alternative	Expanded Nacimiento Outlet Works Alternative
Impact BIO-8o: American Badger, Monterey Dusky-Footed Woodrat, Salinas Pocket Mouse, and Mountain Lion	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS/M	LTS
Impact BIO-8p: South-Central California Coast Steelhead, Rainbow Trout, Tidewater Goby, Monterey Roach, Pacific Lamprey, and Monterey Hitch	Construction	LTS	NI	LTS	LTS
	Operation	LTS/M	NI	LTS/M	LTS/M
Impact BIO-9: Potential to Interfere with Fish or Wildlife Species Movement	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Impact BIO-10: Potential Conflict with Local Policies or Ordinances Protecting Biological Resources	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	LTS/M	LTS/M
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Cultural Resources					
Impact CUL-1: Impacts on Archaeological Resources	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	NI	NI
Impact CUL-2: Disturb Human Remains	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	NI	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Tribal Cultural Resources					
Impact TRC-1: Impacts on Listed or Eligible Tribal Cultural Resources	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS/M	NI	NI	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Transportation					
Impact TRA-1: Conflict with Transportation Program, Plan, Ordinance, or Policy	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI

Environmental Issue	Project Phase	Proposed Project	No Project Alternative	Tunnel-Only Alternative	Expanded Nacimiento Outlet Works Alternative
Impact TRA-2: Increase Transportation Hazards	Construction	LTS	NI	LTS	LTS
	Operation	LTS/M	NI	LTS	NI
Impact TRA-3: Result in Inadequate Emergency Access	Construction	LTS	NI	LTS	LTS
	Operation	LTS/M	NI	LTS	NI
Impact TRA-4: Conflict with CEQA Guidelines section 15064.3, subdivision (b)	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Hazards and Hazardous Materials					
Impact HAZ-1: Impacts Associated with the Transport, Use, or Disposal of Hazardous Materials	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Impact HAZ-2: Impacts Associated with a Release of Hazardous Materials into the Environment	Construction	LTS/M	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Impact HAZ-3: Impair or Interfere with an Emergency Response Plan or Emergency Evacuation Plan	Construction	LTS	NI	LTS	LTS
	Operation	LTS/M	NI	LTS	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Noise					
Impact NV-1a: Expose Sensitive Receptors to Increased Noise Levels during Project Construction	Construction	LTS/M	NI	LTS/M	LTS/M
Impact NV-1b: Expose Sensitive Receptors to Increased Noise Levels during Project Operations	Operation	LTS	NI	LTS	NI
Impact NV-2: Generate Excessive Groundborne Vibration or Groundborne Noise Levels during Construction and Operations	Construction	LTS	NI	LTS	NI
	Operation	LTS	NI	LTS	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI

Environmental Issue	Project Phase	Proposed Project	No Project Alternative	Tunnel-Only Alternative	Expanded Nacimiento Outlet Works Alternative
Air Quality					
Impact AQ-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Impact AQ-2: Result in a Cumulatively Considerable Increase in a Criteria Pollutant	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS	NI	LTS	LTS
Impact AQ-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations	Construction	LTS/M	NI	LTS/M	LTS/M
	Operation	LTS	NI	LTS	LTS
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Greenhouse Gas Emissions					
Impact GHG-1: Generate a Substantial Amount of GHG Emissions	Construction	LTS/M	NI	LTS/M	LTS
	Operation	LTS/M	NI	LTS/M	NI
Impact GHG-2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs	Construction	NI	NI	NI	LTS
	Operation	LTS/M	NI	LTS/M	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Agricultural Resources					
Impact AG-1: Impacts from Direct or Indirect Conversion of Farmland to Nonagricultural Use	Construction	NI	NI	NI	NI
	Operation	LTS/M	NI	LTS/M	NI
Impact AG-2: Impacts from Conflicts with Existing Agricultural Zoning or a Williamson Act Contract	Construction	LTS	NI	LTS	NI
	Operation	LTS/M	NI	LTS/M	NI
Cumulative Impacts	Construction	LTS	NI	LTS	NI
	Operation	LTS	NI	LTS	NI
Recreation					
Impact REC-1: Deterioration of Recreational Facilities Resulting from Project-related Intensification of Use	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI

Environmental Issue	Project Phase	Proposed Project	No Project Alternative	Tunnel-Only Alternative	Expanded Nacimiento Outlet Works Alternative
Impact REC-2: Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	LTS
Aesthetics					
Impact AES-1: Impacts on Visual Character, including Scenic Vistas	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Impact AES-2: Impacts on Scenic Roadways	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Impact AES-3: Affect Daytime or Nighttime Views	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Utilities and Service Systems					
Impact UT-1: Impacts Resulting from Construction or Relocation of Utility Infrastructure	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Impact UT-2: Impacts on Water Supply	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Impact UT-3: Impacts on Wastewater Treatment Facilities	Construction	LTS	NI	LTS	LTS
	Operation	NI	NI	NI	NI
Impact UT-4: Impacts Pertaining to Solid Waste Disposal and Conflicts with Solid Waste Regulations	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI

Environmental Issue	Project Phase	Proposed Project	No Project Alternative	Tunnel-Only Alternative	Expanded Nacimiento Outlet Works Alternative
Wildfire					
Impact WF-1: Impair an Adopted Emergency Response Plan or Emergency Evacuation Plan	Construction	LTS	NI	LTS	LTS
	Operation	LTS/M	NI	LTS	NI
Impact WF-2: Increase Potential Exposure to Pollutant Concentrations from a Wildfire	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Impact WF-3: Include Components that Would Exacerbate Fire Risk	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Impact WF-4: Impacts Related to Post-Fire Slope Instability or Drainage Changes	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Energy					
Impact EN-1: Result in Wasteful, Inefficient, or Unnecessary Consumption of Energy	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Impact EN-2: Conflict with or Obstruct Plan for Renewable Energy or Energy Efficiency	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI
Cumulative Impacts	Construction	LTS	NI	LTS	LTS
	Operation	LTS	NI	LTS	NI

NI = No Impact; LTS = Less than Significant; LTS/M= Less than Significant with Mitigation; NCC – not cumulatively considerable

6.7 Environmentally Superior Alternative

Section 21002 of the CEQA Guidelines requires lead agencies to adopt feasible mitigation measures or feasible environmentally superior alternatives in order to substantially lessen or avoid otherwise significant adverse environmental effects, unless specific social or other conditions make such mitigation measures or alternatives infeasible. CEQA also requires that an environmentally superior alternative be identified among the alternatives analyzed. In general, the environmentally superior alternative is the project that avoids or substantially lessens some or all of the significant and unavoidable impacts of a proposed project (CEQA Guidelines Section 15126.6). If the environmentally superior alternative is the No-Project Alternative, the EIR must also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines Section 15126.6[e][2]).

Table 6-3 compares the anticipated impacts of the No Project Alternative, proposed project, Tunnel-Only Alternative, and Expanded Nacimiento Outlet Works Alternative. The primary consideration in determining an environmentally superior alternative is the extent to which an alternative avoids or lessens the significant effects of the proposed project. On that basis, the No-Project Alternative would be the environmentally superior alternative because no construction or modifications would occur under this alternative and there would be no construction or operational impacts. However, per CEQA Guidelines Section 15126.6(e)(2), if the No-Project Alternative is identified as the environmentally superior alternative, the EIR must identify another environmentally superior alternative.

Among the remaining alternatives, the Expanded Nacimiento Outlet Works would be the environmentally superior alternative because it would avoid significant impacts related to hydrology and water quality, geology and soils, biological resources, cultural resources, tribal cultural resources, transportation, hazards and hazardous materials, greenhouse gas emissions, agricultural resources, and wildfire. However, this alternative would only partially meet the project objectives. Most notably, this alternative would not achieve the same scale of benefit as the proposed project in terms of minimizing flood-control releases and increasing the overall surface water supply available from Nacimiento and San Antonio Reservoirs by maximizing the opportunity for water to be collectively stored in the reservoirs.

Among the other alternatives that better meet the project objectives, the Tunnel-Only Alternative would fully meet all basic project and other project objectives, and would result in similar significant impacts as the proposed project, although without the impacts related to an increase in the maximum WSE at San Antonio Reservoir, including: geology, soils, and seismicity and paleontological resources; biological resources; cultural resources; tribal cultural resources; transportation; hazards and hazardous materials; and wildfire.

The proposed project would minimize flood control releases through the Nacimiento Dam spillway and reduce associated flood damage by transferring water that might otherwise be released for the purposes of flood control into San Antonio Reservoir. This transfer of water would also maximize the opportunity to collectively store water at the Nacimiento and San Antonio Reservoirs, allowing for more water to be released when it is needed, thereby improving the hydrologic balance of the Basin and reducing seawater intrusion. By increasing the overall water supply availability, the proposed project would also allow MCWRA to continue to meet downstream environmental flow requirements for south-central California coast steelhead, minimize the impact on existing hydroelectric production, preserve recreational opportunities in the reservoirs, and protect the viability of agricultural farmland. The proposed project is the only alternative that would fully meet all project objectives; however, this alternative would also result in the greatest number of significant impacts amongst all the alternatives considered.

Chapter 7
Report Preparation

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