

3.8.2 Regulatory Setting

Federal

Clean Water Act

Section 402 of the Clean Water Act (CWA) and the National Pollutant Discharge Elimination System (NPDES) are applicable to the proposed project related to sediment loading as a result of construction activities. Descriptions of Section 402 of the CWA and NPDES are provided in Section 3.11, “Hydrology and Water Quality.” Section 404 of the CWA provides that whenever any person discharges dredged or fill material into waters of the United States (e.g., streams, wetlands, lakes, bays) a permit is required from USACE. Compliance with CWA Section 404 permit requirements is discussed in Section 3.5, “Biological Resources - Vegetation and Wildlife.”

Section 408 of the Rivers and Harbors Act

Section 14 of the Rivers and Harbors Act (commonly known as Section 408) provides that the Secretary of the Army, on the recommendation of the Chief of Engineers, may grant permission for the temporary occupation or use of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the United States. The intent and function of permits under Section 408 are to ensure that the function of flood protection systems is not modified. An examination of sediment transport is often a requirement during the permitting process. Compliance with Section 408 of the Rivers and Harbors Act is discussed in Section 3.5, “Biological Resources - Vegetation and Wildlife.” Section 408 does not apply to the proposed project.

U.S. Army Corps of Engineers Engineering Manuals and Technical Letters

Several engineering manuals (EMs) prepared by USACE contain guidelines for design and construction of embankments, levees, and seepage berms. The primary USACE guidance is contained in EM 1110-2-1913, *Design and Construction of Levees* (USACE 2000). In addition, engineering technical letter (ETL) 1110-2-569, *Design Guidance for Levee Underseepage* (USACE 2005), ETL 1110-2-555, *Design Guidance on Levees* (USACE 1997), and Engineering Regulation (ER) 1110-2-806, *Earthquake Design and Evaluation for Civil Works Projects* (USACE 2016), contain guidance applicable to the proposed levee improvements. The proposed levee improvements were designed in accordance with these manuals and technical letters.

Federal Emergency Management Agency

For levees to be certified by FEMA as providing flood protection, evidence also must be provided that adequate design and operation and maintenance systems are in place to provide reasonable assurance that protection exists from a base flood (in the case of the proposed project, the Urban Levee Design Criteria [ULDC]). Specific requirements pertaining to amount of freeboard, closure devices, embankment protection from floods, embankment and foundation stability, settlement, interior drainage, operation plans, and maintenance plans are contained in 44 CFR Section 65.10. Additional information related to FEMA requirements is presented in Section 3.11, “Hydrology and Water Quality.”

Earthquake Hazards Reduction Act

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program. To accomplish this goal, the act established the National Earthquake Hazards Reduction Program (NEHRP). This program was

substantially amended in November 1990 by the National Earthquake Hazards Reduction Program Act (NEHRPA), which refined the description of agency responsibilities, program goals, and objectives.

The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk-reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRPA designates FEMA as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and U.S. Geological Survey.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Act (PRC Sections 2621–2630) was passed in 1972 to mitigate the hazard of surface faulting to structures designed for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as Earthquake Fault Zones around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults. The proposed project would not be located within an Alquist-Priolo Earthquake Fault Zone.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) addresses earthquake hazards from nonsurface fault rupture, including liquefaction and seismically induced landslides. The act established a mapping program for areas that have the potential for liquefaction, landslide, strong ground shaking, or other earthquake and geologic hazards. The act also specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

National Pollutant Discharge Elimination System Permit

In California, the State Water Resources Control Board (SWRCB) administers regulations promulgated by EPA (55 CFR Section 47990) requiring the permitting of stormwater-generated pollution under the NPDES program. In turn, SWRCB's jurisdiction is administered through nine regional water quality control boards. The SWRCB and the regional boards have adopted specific NPDES permits for a variety of activities that have the potential to discharge wastes (including sediment) to waters of the State. Under these regulations, an operator must obtain a general permit through the NPDES Stormwater Program (stormwater general permit for construction activity, Order 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-006-DWQ) for all construction activities with ground disturbance of 1 acre or more. Compliance with the NPDES permit requires submittal to the Central Valley RWQCB of notices of intent to discharge, and implementation of stormwater pollution prevention plans (SWPPPs) that include best management practices (BMPs) to minimize erosion and degradation of water quality

during construction activities. Additional information related to FEMA requirements is presented in Section 3.11, “Hydrology and Water Quality.”

Urban Levee Design Criteria

California Government Code (CGC) Sections 65865.5, 65962, and 66474.5 requires that levees and floodwalls in the Sacramento-San Joaquin Valley provide protection against a flood that has a 1-in-200 chance of occurring in any given year. The ULDC prepared by DWR (2012) provides engineering criteria and guidance for civil engineers in meeting the government code requirements, and offers this same guidance to civil engineers working on levees and floodwalls anywhere in California. The ULDC also provides engineering criteria and guidance for DWR’s levee evaluations and designs for levee remediations.

Central Valley Flood Protection Board Standards

California Code of Regulations (CCR) Title 23, Division 1, Article 8, Sections 111–137 are the primary State standards applicable to the proposed levee improvements. These Central Valley Flood Protection Board (CVFPB) standards govern the design and construction of encroachments that affect all flood control works and floodways, and are used by CVFPB for the regulation of encroachments. The standards apply to any work within the limits of, or which can affect, any authorized flood control project or any adopted plan of flood control. These standards also provide the public with information needed to prepare and submit encroachment applications. Article 8 contains a list of the regulated streams in California and dates of the allowable periods when work in the streams may occur, and contains regulations related to the types of structures that may and may not be placed in floodways, along with associated permit requirements. In addition to levees, Article 8 also covers borrow and spoil materials, borrow excavation activities, and dams and related structures that are located within floodways or could affect flood control works.

Local

Merced County General Plan

The *2030 Merced County General Plan* Natural Resources Element (Merced County 2013) identifies the following policies related to soils that are applicable to the proposed project.

- **Policy NR-3.1: Soil Protection.** Protect soil resources from erosion, contamination, and other effects that substantially reduce their value or lead to the creation of hazards.
- **Policy NR-3.2: Soil Erosion and Contamination.** Require minimal disturbance of vegetation during construction to improve soil stability, reduce erosion, and improve stormwater quality.

The *2030 Merced County General Plan* Health and Safety Element (Merced County 2013) identifies the following policies related to geology and seismicity that are applicable to the proposed project.

- **Policy HS-1.4: Ensure Earthquake Resistant Design.** Require earthquake resistant design for proposed critical structures such as hospitals, fire stations, emergency communication centers, private schools, high occupancy buildings, bridges and freeway overpasses, and dams that are subject to County permitting requirements.

Merced County Improvement Standards and Specifications

The *Merced County Improvement Standards and Specifications* (Merced County 2015) contain requirements for design and construction of County roads that are applicable to the proposed project.

3.8.3 Environmental Effects

No Action Alternative

Under the no action alternative, no construction-related activities would occur and no existing facilities would be modified. There would be no impact.

Proposed Project

- a) **Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:**
- i), ii), iii) **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, strong seismic ground shaking, or seismic-related ground failure, including liquefaction?
(Less-than-Significant Impact)**

The nearest known active fault and the nearest fault zoned under the Alquist-Priolo Act is the Ortigalita Fault, approximately 25 miles west of the project area (Jennings and Bryant 2010, CGS 2017). Although the Kings Canyon Lineament is located approximately 1 mile from the proposed Dan McNamara Road culvert replacement, the fault has not shown any evidence of activity in the last 1.6 million years (Jennings and Bryant 2010). Therefore, surface fault rupture in the project area is unlikely. The CGS Probabilistic Seismic Hazards Assessment Model indicates there is a 1-in-10 probability that an earthquake will occur within 50 years that would result in a peak horizontal ground acceleration exceeding 0.238g (CGS 2008). This indicates that a relatively low level of seismic ground shaking would be anticipated in the project area. However, most of the project elements would be constructed in unstable, unconsolidated riverine sediments in areas where a high water table is present. Thus, there is a potential for liquefaction to occur.

All levee improvements would be designed based on the results of geotechnical engineering studies and would be required to comply with standard engineering practices for levee design. CVFPB standards are the primary State standards applicable to the proposed levee improvements; these are stated in Title 23, Division 1, Article 8, Sections 111–137 of the CCR. CVFPB standards direct that levee design and construction be in accordance with EM 1110-2-1913 *Engineering Design and Construction of Levees* (USACE 2000), the primary Federal standards applicable to levee improvements. CVFPB standards also require that an engineering analysis evaluating levee embankment and foundation stability be submitted for review along with the CVFPB permit application, and that the analysis must verify that the levee is adequately designed and will be constructed to remain stable under appropriate loading conditions. A geotechnical analysis must also be provided to CVFPB as part of the permit application package. Finally, the levee improvements must also comply with DWR's Urban Levee Design Criteria (DWR 2012). Because the design, construction, and maintenance of levee improvements must comply with the regulatory standards of USACE, CVFPB, and DWR, the design and construction of all levee modifications would meet or exceed applicable design standards for static and dynamic stability, seismic

ground shaking, liquefaction, subsidence, and seepage. Furthermore, design and construction of the Dan McNamara Road crossing improvements would occur in compliance with the *Merced County Improvement Standards and Specifications* (Merced County 2015), which are designed to reduce damage from geologic hazards. Therefore, this impact would be less than significant.

**iv) Landslides?
(No Impact)**

Construction of the project elements would occur in areas that are topographically flat where there is no possibility of landslides; therefore, no impact would occur.

**b) Result in substantial soil erosion or the loss of topsoil?
(Less-than-Significant Impact with Mitigation Incorporated)**

Operations of the proposed improvements to structures in the Eastside Bypass and the Eastside Bypass levee improvements could affect erosion to a negligible degree. Removing the Merced NWR weirs, modifying the Eastside Bypass Control Structure and Dan McNamara Road culverts, and improving the levees would have minimal effects on long-term erosion and would be less than significant. Potential erosion- and flood-related impacts from Restoration Flow releases were addressed in the SJRRP PEIS/R (SJRRP 2012, Draft PEIS/R pages 2-22 through 2-28, incorporated by reference) through implementation of the measures contained therein, including, “Closely Monitor Erosion and Perform Maintenance and/or Reduce Interim and Restoration Flows as Necessary to Avoid Erosion-Related Impacts.” Reclamation is committed to implement erosion monitoring and management, including monitoring potential erosion sites, reducing Interim and Restoration Flows as necessary, and reporting ongoing results of monitoring and management actions to the Channel Capacity Advisory Group. Consequently, long-term operational impacts from any increases in channel erosion, sediment transport, and/or meander migration would be less than significant. (See also additional hydrologic impacts evaluated in Section 3.11, “Hydrology and Water Quality.”)

Project-related construction activities involving soil disturbance, channel alteration, dredging, excavation, cutting/filling, and grading could result in an increased volume of, or an accelerated rate of soil erosion and sedimentation, to local surface waters. Furthermore, clearing vegetation (where necessary to construct the proposed elements) may also destabilize soils and result in inadvertent permanent soil loss. Soil particles may become dislodged and transported downstream during winter storm events or Restoration Flow releases. Loss of topsoil could also occur from wind erosion during summer. In addition, construction of the proposed project could result in erosion or sedimentation immediately upstream or downstream of the proposed facilities due to increased scour and increased backwater conditions. Therefore, this temporary construction-related impact would be potentially significant.

DWR and/or Reclamation would implement Mitigation Measure GEO-1 before and during project construction to reduce this potential impact.

Mitigation Measure GEO-1: Prepare and Implement a Stormwater Pollution Prevention Plan that Minimizes the Potential Contamination of Surface Waters, and Complies with Applicable Federal Regulations during Construction Activities.

Construction activities may be subject to construction-related stormwater permit requirements of the Federal Clean Water Act’s NPDES program. Any required permits through the Central

Valley RWQCB will be obtained by DWR and Reclamation before any ground-disturbing construction activity. A SWPPP will be prepared that identifies BMPs to prevent or minimize the introduction of contaminants into surface waters. BMPs for the proposed project could include, but would not be limited to, silt fencing, straw bale barriers, fiber rolls, storm drain inlet protection, hydraulic mulch, and a stabilized construction entrance. The SWPPP will include development of site-specific structural and operational BMPs to prevent and control impacts on runoff quality, measures to be implemented before each storm event, inspection and maintenance of BMPs, and monitoring of runoff quality by visual and/or analytical means.

The construction-related impact would be less than significant after mitigation because DWR and Reclamation would comply with Central Valley RWQCB NPDES permit requirements.

- 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?
(Less-than-Significant Impact)**

Most project elements would be constructed in unstable, unconsolidated riverine sediments in areas where a high water table is present. Therefore, some project elements would be subject to geologic hazards from construction in unstable soils. However, as discussed in item a) i) above, project-related engineering design and construction would comply with Federal and State requirements, which are designed to reduce damage from geologic hazards. Therefore, this impact would be less than significant.

- d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?
(Less-than-Significant Impact)**

As shown in **Table 3.8-1**, most soils in the project area have a moderate to high shrink-well potential. However, as discussed in item a) i) above, project-related engineering design and construction would comply with Federal and State requirements, which are designed to reduce damage from geologic hazards. Therefore, this impact would be less than significant.

- e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?
(No Impact)**

The project would not require the development of wastewater disposal systems of any kind. Portable restrooms would be provided for construction workers. Thus, there would be no impact related to the ability of project area soils to support the use of septic systems.

3.9 Greenhouse Gas Emissions

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
IX. GREENHOUSE GAS EMISSIONS– Would the project:					
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.9.1 Affected Environment

When sunlight reaches the earth’s surface, shortwave energy heats the surface while longer-wave energy (infrared heat) is reradiated to the atmosphere. Greenhouse gases (GHGs) absorb this energy and trap the heat in the lower atmosphere.

Naturally occurring GHGs include water vapor, carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Synthetic GHGs include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). All of these GHGs, with the exception of water vapor, are targeted for reduction in Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. Nitrogen trifluoride (NF₃) was not initially listed in AB 32 but was subsequently added to the list via legislation.

While CO₂ occurs naturally in the atmosphere, such human activities as burning coal, oil, gas, and wood move carbon from solid storage to its gaseous state, thereby increasing atmospheric concentrations.

Sources of CH₄ are both natural (through biological processes in low-oxygen environments) and artificial (through rice farming, cattle production, natural gas use, and coal mining). Sources of N₂O include agricultural and industrial processes, as well as vehicle emissions. HFCs and PFCs are synthesized compounds used as refrigerants or in manufacturing. SF₆ is a synthetic gas used in the electricity and magnesium industries. NF₃ is a chemical used in the manufacture of electronics.

The current global concentration of GHGs in the atmosphere is at unprecedented levels when compared with the past 800,000 years. Concentrations of CO₂, CH₄, and N₂O have increased greatly since 1750 (40 percent, 150 percent, and 20 percent, respectively) (Intergovernmental Panel on Climate Change 2014). The long-lived GHGs (CO₂, CH₄, N₂O, CFCs, HFCs, and SF₄) are considered to be the largest and most important anthropogenic driver of climate change. Among long-lived GHGs, CO₂ is responsible for 64 percent of *radiative forcing*, which refers to a change in the earth’s radiative balance resulting from an imbalance between incoming solar radiation energy and outgoing thermal infrared emission energy. CH₄ contributes approximately 18 percent of total radiative forcing. To analyze the warming potential of GHGs, GHG emissions are typically quantified and reported as CO₂ equivalents (CO₂e).

Climate change refers to changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system over a long period of time. In California, observations of climate change include an increase in average annual air temperatures, a change in the trend toward more rain than snow, a change in runoff timing, an increase in extreme heat events, a decrease in winter chill times, a rise in sea level, and warmer conditions at higher elevations. Changes in climatic and environmental conditions can also strongly affect terrestrial, marine, and freshwater biological systems. Climate risk in the Sacramento River Hydrologic Region, within which the project area is located, includes stress on ecosystems and species resulting from increased temperatures, reduced reliability of water supplies caused by decreased snowpack storage, greater flood risks, and decreased water quality.

GHG Emissions Analysis

In May, 2012, DWR adopted the *Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan* (GGERP), which details DWR's efforts to reduce its GHG emissions consistent with EO S-3-05 and AB 32. DWR also adopted the initial study/negative declaration (IS/ND) prepared for the GGERP in accordance with the CEQA Guidelines review and public process. Both the GGERP and IS/ND are incorporated herein by reference (California Department of Water Resources 2012a; California Department of Water Resources 2012b). The GGERP provides estimates of historical (back to 1990), current, and future GHG emissions related to operations, construction, maintenance, and business practices (e.g., building-related energy use). The GGERP specifies aggressive 2020 and 2050 emission reduction goals and identifies a list of GHG emissions reduction measures to achieve those goals.

DWR specifically prepared its GGERP as a "Plan for the Reduction of Greenhouse Gas Emissions" for purposes of CEQA Guidelines Section 15183.5. Section 15183.5 provides that such a document, which must meet certain specified requirements, "may be used in the cumulative impacts analysis of later projects." Because global climate change, by its very nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG reduction plan may suffice to mitigate the project's incremental contribution to that cumulative impact, to a level that is not "cumulatively considerable" (see CEQA Guidelines, Section 15064, Subdivision [h][3]).

Section 15064 further states that "[l]ater project-specific environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG emissions reduction plan. "An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project" (CEQA Guidelines Section 15183.5, Subdivision [b][2]).

Section 12 of the GGERP outlines five steps that each DWR project must take to demonstrate consistency with the GGERP.

1. Analysis of GHG emissions from construction of the proposed project.
2. Determination that the construction emissions from the project do not exceed the levels of construction emissions analyzed in the GGERP.
3. Incorporation of DWR's project-level GHG emissions-reduction strategies into the design of the project.

4. Determination that the project does not conflict with DWR’s ability to implement any of the “Specific-Action” GHG emissions-reduction measures identified in the GGERP.
5. Determination that the project would not add electricity demands to the State Water Project system that could alter DWR’s emissions-reduction trajectory in such a way as to impede its ability to meet its emissions reduction goals.

Consistent with these requirements, Appendix A, “Air Quality and Greenhouse Gas Emissions Modeling Results and Consistency Determination,” demonstrates that the proposed project would meet each of the required elements and would be consistent with the GGERP.

3.9.2 Regulatory Framework

Key policies, guidance, executive orders, regulations, and legislation regarding GHGs and climate change are summarized below. For additional information on air quality regulations, refer to Section 3.3, “Air Quality.”

Federal

Federal Clean Air Act

At the Federal level, EPA administers the Clean Air Act (CAA). In 2007, the United States Supreme Court ruled that GHGs are “pollutants” under CAA. In 2009, EPA found, under Section 202(a) of the CAA, that six GHGs constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to climate change. These findings serve as a prerequisite to any CAA regulations of GHG emissions from vehicles.

State

California’s approach to addressing GHG emissions and climate change involves the passage of several pieces of legislation.

Executive Order S-3-05

EO S-3-05 included the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050 reduce GHG emissions to 80 percent below 1990 levels. The executive order directs the Secretary of the California Environmental Protection Agency to develop and lead a climate action team of State agency representatives and report on the progress made toward meeting the targets to the Governor and the Legislature.

Assembly Bill 32

AB 32 requires that GHG emissions in California be reduced to 1990 levels by 2020. To comply with AB 32, the California Air Resources Board prepared the AB 32 Scoping Plan, which lays out a GHG-reduction emission framework and identifies measures to meet the GHG emissions target. In May 2014, the *First Update to the Climate Change Scoping Plan* was released.

Senate Bill 97

In 2007, Senate Bill 97 required the Office of Planning and Research to develop amendments to the CEQA Guidelines that address the analysis and mitigation of GHG emissions. The California Natural

Resources Agency adopted the amendments to the CEQA Guidelines in 2010. Key points are summarized as follows:

- Lead agencies must analyze the GHG emissions of proposed projects and reach a conclusion regarding the significance of those emissions (see CEQA Guidelines Section 15064.4).
- When a project's GHG emissions may be significant, lead agencies must consider a range of potential mitigation measures to reduce those emissions (see CEQA Guidelines Section 15126.4[c]).
- Lead agencies may significantly streamline the analysis of GHGs on a project level by using a programmatic GHG emissions-reduction plan that meets certain criteria (see CEQA Guidelines Section 15183.5[b]). (Office of Planning and Research 2016.)

California Climate Adaptation Strategy

The California Natural Resources Agency updated its *2009 California Climate Adaptation Strategy with Safeguarding California: Reducing Climate Risk* in 2014. These policy guidance documents describe advances in climate science, climate risks, work done to date, and recommendations to manage climate risk.

Executive Order B-30-15

Per EO B-30-15, additional goals were set to reduce GHG emissions in California. By 2030, State agencies are further committed to reduce GHG emissions by 40 percent below 1990 levels and by 2050, reduce GHG emissions by 80 percent below 1990 levels.

Local

San Joaquin Valley Air Pollution Control District

The project area is located within Merced County and is regulated by the SJVAPCD. SJVAPCD is the local agency that is primarily responsible for controlling emissions from stationary sources. It also develops plans and implements control measures as required by State and Federal requirements. To assist lead agencies with analyzing GHG emission and climate change impacts under CEQA, SJVAPCD recommends two resources:

- *Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency* (SJVAPCD 2009a)
- *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* (SJVAPCD 2009b)

SJVAPCD has not adopted a quantitative threshold for evaluating the significance of GHG emissions; however, SJVAPCD's guidance document for San Joaquin Valley land-use agencies (2009b) would be most relevant for assessing GHG-related impacts from the proposed project. In this guidance document, SJVAPCD relies on the implementation of best performance standards (BPS), defined as the most effective achieved-in-practice means of reducing or limiting GHG emissions from a GHG emissions source, for evaluating a project's significance. Projects implementing BPS would be determined to have less-than-significant individual and cumulative impacts on global climate change. If a project does not implement BPS, then quantification of project-specific GHG emissions would be required. If project-related emissions would be reduced or mitigated by at least 29 percent compared to business-as-usual,

then the project would be determined to have a less-than-significant individual and cumulative impact for GHG.

Merced County General Plan

The 2030 Merced County General Plan (2013) does not include a standalone element for addressing climate change but rather incorporates goals and policies related to climate change throughout the plan. Key goals and policies that address GHG emissions and climate change include the following:

GOAL HS-6: Plan for the eventual impacts of climate change through adaptive management strategies and responses in order to mitigate climate change impacts while protecting the quality of life for current and future county residents.

- **Policy HS-6.1:** Development Restrictions in High Risk Areas – Prohibit development in areas that may be more severely impacted by climate change, including areas at high risk of wildfire or flooding, unless proper design mitigation is included in the project.
- **Policy HS-6.2:** Climate Change Monitoring and Adaptation – Prepare an analysis that monitors the impacts of climate change and use adaptive management to develop new strategies and modify existing strategies to respond to the impacts of climate change.
- **Policy HS-6.3:** New Agricultural Crops – Coordinate with University of California Cooperative Extension in efforts to identify new agricultural crop choices/varieties that accommodate a longer growing season and are resistant to heat, insects, and disease. Also, identify agricultural production methods, such as planting dates and irrigation methods, to adapt to changes in the climate.
- **Policy HS-6.4:** Public Health Facilities and Program – Support the expansion of public health facilities and programs that address increases in extreme weather events (e.g., heat waves) and reduced air quality.
- **Policy HS-6.5:** Early Warning System – Prepare and maintain an early warning system for disease outbreaks and extreme heat events.
- **Policy HS-6.6:** Emergency Planning – Support emergency planning for disease outbreaks and extreme weather events.
- **Policy HS-6.7:** Public Awareness – Support public awareness of water conservation measures, agricultural changes, storm and flood preparedness, forest/range fire protection, air quality issues, extreme weather events, and disease prevention.

GOAL AQ-1: Reduce air pollutants and GHG emissions and anticipate adaptation due to future consequences of global and local climate change.

- **Policy AQ-1.3:** Agricultural Operations Emission Reduction Strategies – Promote GHG emission reductions by encouraging agricultural operators to use carbon efficient farming methods (e.g., no-till farming, crop rotation, cover cropping); install renewable energy technologies; protect grasslands, open space, oak woodlands, riparian forest and farmlands from conversion to other uses; and develop energy-efficient structures.

- **Policy AQ-1.4:** CH₄ Digesters – Encourage large dairies to capture CH₄ through use of manure digester systems to generate an alternative source of energy, reduce GHG emissions, and serve as a source of profit for agricultural operations.
- **Policy AQ-1.5:** Climate Action Plan – Prepare a Climate Action Plan that includes an inventory of 1990 and 2010 GHG emissions, determines project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD, and identify strategies to achieve State emission reduction targets.
- **Policy AQ-1.10:** Public Awareness – Increase public awareness about climate change and encourage county residents and businesses to become involved in activities and lifestyle changes that will aid in reduction of GHG emissions.

3.9.3 Environmental Effects

The proposed project could affect GHG emissions through construction activities, including off-road construction equipment and increased traffic from trucks and construction workers. Proposed project operations and maintenance activities would be negligible.

Construction emissions are described as temporary or “short term” in duration. These temporary and short-term emissions have the potential to represent a significant impact to GHG emissions and climate change. GHG emissions are caused by on- and off-road vehicle exhaust. Construction-related emissions were estimated using CalEEMod Version 2016.3.1. Appendix A, “Air Quality and Greenhouse Gas Emissions Modeling Results and Consistency Determination,” provides detailed information on the emissions calculations resulting from proposed project construction.

SJVAPCD published *Guidance for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015) to assist lead agencies with uniform procedures for addressing GHG and climate change impacts in environmental documentation. SJVAPCD does not establish a specific quantitative level of GHG emissions increase above which a project would have a significant impact on the environment. As a result, SJVAPCD uses a tiered approach for assessing the significance of a project based on the following criteria:

- Projects complying with an approved GHG emission reduction plan or GHG mitigation program that avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less-than-significant individual and cumulative impact for GHG emissions.
- Projects implementing BPS would not require quantification of project-specific emissions. Such projects would be determined to have a less-than-significant individual and cumulative impact for GHG emissions.
- Projects not implementing BPS would require quantification of project-specific GHG emissions and demonstration that project-specific GHG emissions would be reduced or mitigated by at least 29 percent compared to business as usual.

The proposed project does not include the installation of any stationary sources that would be subject to the SJVAPCD’s BPS provisions. The BPS classes are generally geared toward stationary source fossil fuel-combustion equipment like boilers, engines, and heaters. In addition, the proposed project does not

consist of “traditional” land use development projects like proposed residential, commercial, industrial, or governmental operations that primarily increase GHG emissions through energy consumption and vehicle miles traveled.

The South Coast Air Quality Management District (SCAQMD), which has regional air quality similar to SJVAPCD, has an approved quantitative threshold for GHG emissions of 10,000 metric tons CO₂e per year (MTCO₂e/year) (2015). Furthermore, SCAQMD requires that construction emissions be amortized over the lifetime of the project (assumed to be 30 years if unknown) and then added to operational emissions. The total emissions (operational plus amortized construction) are then compared to the 10,000 MTCO₂e/year threshold. SCAQMD considers this threshold to be adequate to capture GHG emissions increases above which could hinder implementation of the State’s GHG reduction goals, including AB 32. Because of the inclusion of construction-related emissions in this quantitative threshold and the relationship with complying with an approved GHG emissions reduction plan (AB 32), SCAQMD’s method of quantifying emissions and the associated significance threshold was used in this analysis.

No Action Alternative

Under the no action alternative, no construction-related activities would occur and no existing facilities would be modified. There would be no impact. However, other projects under the SJRRP have been implemented and will be implemented in the future. These projects were evaluated at a program level in the SJRRP Draft PEIS/R and are not evaluated herein as construction of the proposed project is not known to coincide with the construction of any other SJRRP project in the area.

Proposed Project

**a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
(Less-than-Significant Impact)**

The proposed project would directly emit GHG emissions because of construction activities. Construction-related emissions were estimated for off-road construction equipment, on-road haul trucks and delivery vehicles, and construction worker commuting. As shown in Appendix A, “Air Quality and Greenhouse Gas Emissions Modeling Results and Consistency Determination,” annual emissions in 2019 would equal 1,411 MTCO₂e/year. Assuming a 30-year project lifetime, amortized emissions would be 47 MTCO₂e/year.

Based on the analysis provided in the GGERP and the demonstration that the proposed project is consistent with the Inventory and Calculation of Greenhouse Gas Emissions (see Appendix A), DWR, as lead agency, has determined that the proposed project’s incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs would be less than cumulatively considerable and, therefore, less than significant. DWR would further reduce the proposed project’s incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs by implementing DWR’s project-level GHG emissions-reduction best management practices (BMPs) for construction activities. Implementation of these BMPs would reduce GHG emissions from construction projects by minimizing fuel usage by construction equipment, reducing fuel consumption for transportation of construction materials, reducing the amount of landfill material, and reducing emissions from the production of cement.

Pre-Construction and Final Design BMPs

Pre-construction and Final Design BMPs are designed to ensure that individual projects are evaluated and their unique characteristics taken into consideration when determining if specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions from the proposed project. The following BMPs will be evaluated to determine which would be appropriate for the proposed project and these BMPs would be implemented:

- **GHG 1.** Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project.
- **GHG 2.** Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.
- **GHG 3.** Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.
- **GHG 4.** Evaluate the feasibility and efficacy of producing concrete on-site and specify that batch plants be set up on-site or as close to the site as possible.
- **GHG 5.** Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize GHG emissions from cement production and curing while preserving all required performance characteristics.
- **GHG 6.** Limit deliveries of materials and equipment to the site to off-peak traffic congestion hours. Construction BMPs apply to all construction and maintenance projects that DWR completes or for which DWR issues contracts. All projects are expected to implement all construction BMPs unless a variance is granted by the Division of Engineering Chief, Division of Operation and Maintenance Chief, or Division of Flood Management Chief (as applicable) and the variance is approved by the DWR CEQA Climate 18 Change Committee. Variances will be granted when specific project conditions or characteristics make implementation of the BMP infeasible and where omitting the BMP will not be detrimental to the project's consistency with the GGERP.

Construction BMPs

Construction BMPs apply to all construction and maintenance projects that DWR completes or for which DWR issues contracts. All projects are expected to implement all Construction BMPs unless a variance is granted by the Division of Engineering Chief, Division of Operation and Maintenance Chief, or Division of Flood Management Chief (as applicable), and the variance is approved by the DWR CEQA Climate Change Committee. Variances will be granted when specific project conditions or characteristics make implementation of the BMP infeasible and where omitting the BMP will not be detrimental to the project's consistency with the GGERP:

- **GHG 7.** Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by California Code of Regulations, Title 13, Section 2485, the State's airborne toxics control measure). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.

- **GHG 8.** Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer’s recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an air quality control plan prior to commencement of construction.
- **GHG 9.** Implement a tire inflation program on the job site to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an air quality management plan prior to commencement of construction.
- **GHG 10.** Develop a project-specific ride share program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.
- **GHG 11.** Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.
- **GHG 12.** For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box-type trailer is used for hauling, a SmartWay2 certified truck will be used to the maximum extent feasible.
- **GHG 13.** Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength, where appropriate.
- **GHG 14.** Develop a project-specific construction debris recycling and diversion program to achieve a documented 50-percent diversion of construction waste.
- **GHG 15.** Evaluate the feasibility of restricting all material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution, minimize, to the extent possible, uses of public roadways that would increase traffic congestion.

The proposed project would result in a less-than-significant impact on GHG emissions without implementation of the GHG BMPs identified above. With implementation of the GHG BMPs identified above, the proposed project’s less-than-significant impact with respect to GHG emissions would be further reduced.

**b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?
(No Impact)**

DWR’s GGERP is in compliance with all applicable plans and policies. The proposed project is consistent with the GGERP. Therefore, there would be no impact.

3.10 Hazards and Hazardous Materials

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
X. HAZARDS AND HAZARDOUS MATERIALS– Would the project:					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Expose people to a substantial hazard through increased risk of exposure to disease vectors?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.10.1 Environmental Setting

The project area is predominantly agricultural in nature, with large tracts of land on either side of the Eastside and Mariposa Bypasses dedicated to cropland and agricultural infrastructure. Public health and safety issues associated with the agricultural character of the area include low-flying aircraft used for aerial spraying and the regular use, storage, and transportation of fuel, pesticides, herbicides, and fertilizers used for agricultural equipment and crops.

Other safety issues in the area are inherent to the landscape such as seismic and other geologic hazards, floods, and fire. In addition, there are anthropogenic hazards such as the storage, transport, and management of hazardous materials and waste not associated with agriculture. Many of these topics are covered in other dedicated resource sections, including Sections 3.3, “Air Quality”; 3.8, “Geology and Soils”; 3.11, “Hydrology and Water Quality” (including flood management); and 3.17, “Public Services” (including fire and police services).

The area of analysis for this section includes the construction sites associated with the proposed project, the public roads that access those sites, and routes that may be used to transport construction debris to area landfills. These areas would have construction and physical changes to the environment that may result in public health and safety concerns, including increased risk from disease vectors.

Finally, there are a number of invasive plant species that could require the use of glyphosate or imazapyr to control existing infestations and prevent the spread of the species during project activities. The use, storage, and disposal of these herbicides are regulated by numerous laws and regulations under Federal and State jurisdictions to minimize impacts on the public and the environment from exposure to the chemicals.

Solid Waste and Hazardous Materials

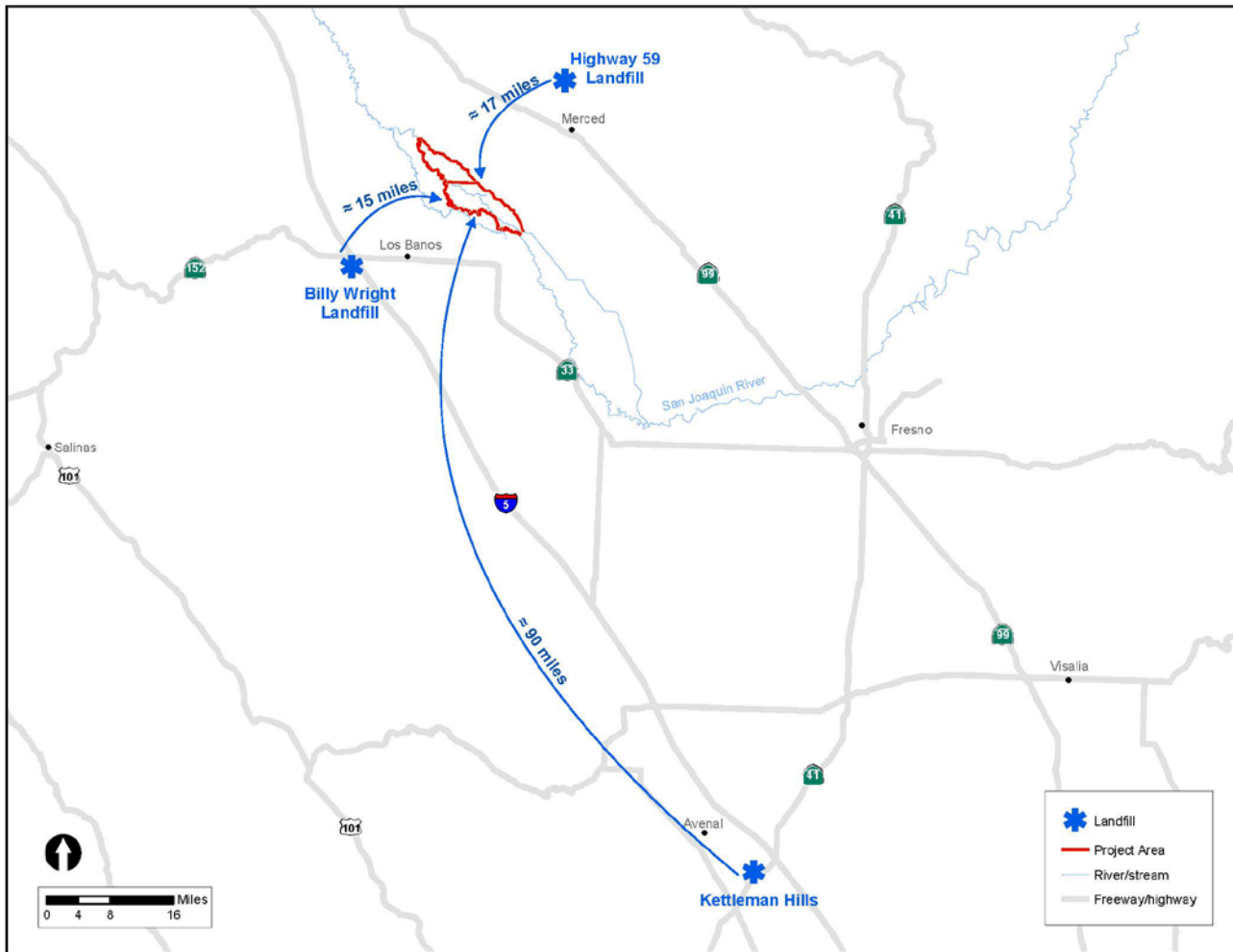
Hazardous waste is defined by California Health and Safety Code Section 25501 as “...any material that because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.”

Any hazardous waste found or generated during project construction would need to be disposed of in designated hazardous waste landfills. This would include treated wood waste, polychlorinated biphenyls (PCBs) present in transformers, pesticides, fuels and oils, and contaminated soils.

The Merced County General Plan shows no transfer stations for hazardous waste in the County although there are two solid waste disposal/landfill facilities owned and operated by the Merced County Regional Waste Management Authority (MCRWMA). These landfills, shown on **Figure 3.10-1** are the Highway 59 Landfill and the Billy Wright Landfill (County of Merced 2013).

The Highway 59 Landfill, located approximately 17 miles northeast of the study area, about 2 miles north of Bellevue and Highway 59 in Merced, collects construction waste, such as tree stumps, tires, or other materials. The Billy Wright Landfill, located approximately 15 miles southwest of the study area in Los Banos, accepts uncontaminated green waste, concrete, wood, and fill material.

Figure 3.10-1. Closest Landfills to the Project Area



Source: GEI Consultants, Inc., 2017

For any large volumes of contaminated soil or other hazardous materials that could be found but are not expected, the Chemical Waste Management Kettleman Hills Facility, approximately 100 miles south of the project area, would be used, depending on the type of contamination and volume of material. This is a commercial hazardous waste treatment, storage, and disposal facility regulated and permitted by EPA and the State of California. EPA regulates the handling, storage, and disposal of PCB waste, while the State regulates the handling and disposal of other hazardous wastes (EPA 2016).

Although the project area is predominantly agricultural in nature, the built environment in and surrounding the project area may have been previously affected by hazardous substances. Those sites were identified using the services of Environmental Data Resources (EDR), a company that provides database searches of sites that may have existing contamination or releases of pollutants that are listed on relevant agency databases. This section includes a discussion of known contamination in the project area, based on EDR's report of its database review.

Government agency records were reviewed for records of contamination in the project area. Because regulated facilities may impact other properties, it is also necessary to review governmental records for the surrounding area. EDR (2017) presents maps of potential historical contamination sites within 1 mile of the project area. The EDR report lists all databases searched and information found.

A review of applicable regulatory agency documents, lists of known or potential hazardous waste sites or landfills, and properties or facilities currently under investigation for potential environmental violations, was conducted to identify properties or facilities that may have the potential to adversely affect environmental conditions at the subject property. EDR used a 1-mile search radius around the entire Reach 4B/ESB Project area boundary (much larger than the Eastside Bypass Improvements Project area) to perform a computerized search of Federal, State, local, and Native American tribal databases for sites with environmental filings. These sites are shown as “listed sites” and are described in detail in EDR (2017). Five listed and mapped sites are located within 1 mile of the larger Reach 4B/ESB Project area. Each site may be listed in more than one database.

Unmapped sites are sites identified in the EDR report that are not mapped because of inadequate or erroneous geocode information. Such sites are designated as “orphan sites” by EDR. The EDR database report identified 90 orphan sites in the larger Reach 4B/ESB Project area. Because of the irresolvable geocode information and the length of the orphan list, a determination cannot be made regarding whether the orphan sites identified are within the 1-mile search radius, and the orphan list was therefore not reviewed.

In addition to the EDR report, separate database searches were conducted on the GeoTracker website maintained by SWRCB and the EnviroStor website maintained by the California Department of Toxic Substances Control (DTSC). Two additional sites were identified through these searches. The details regarding the sites identified through these database searches are summarized below.

There are two hazardous materials sites identified by Merced County near the project area (DTSC 2016). These sites are both associated with military activities. The Castle Radio Beacon Annex is located just south of Sandy Mush Road at the north side of the Merced NWR, and the Potter Auxiliary Field 5 site (not in the EDR report) is located approximately 2.5 miles east of the southeast end of the refuge, just north of West El Nido Road, as shown on **Figure 3.10-2**. Both sites are impaired for lead contamination. DTSC made “no further action” determinations for the Potter Auxiliary Field in 2005 and for the Castle Radio Beacon Annex site in 2016. There is no active cleanup or management at these sites.

Five other sites were identified within 1 mile of the larger Reach 4B/ESB Project area in a search of environmental database records that identify potentially hazardous materials sites such as leaking underground storage tanks, injection wells, and fuel storage sites.

Two of the sites, Turner Island Farms on West Erreca Road and the Lower San Joaquin Levee District office on Indiana Avenue, are permitted to store small amounts of diesel fuel and hazardous materials. These are active operations that use diesel, gasoline, and engine oil and are not remediation sites (DTSC 2016).

A third site, Newhall Land and Farming located on El Nido Road east of the project area, is also a permitted fuel storage site. It appeared on the Leaking Underground Storage Tank (LUST) database for a gasoline leak that was reported and stopped in 1950. The cleanup case was closed in 2001 (DTSC 2016).

The LUST database also included a diesel spill at the Merced NWR. The leak was discovered during a tank closure and was stopped in 1995. The cleanup case was closed in 1998 (GeoTracker 2017).

Figure 3.10-2. Hazardous Materials Sites in the Project Area

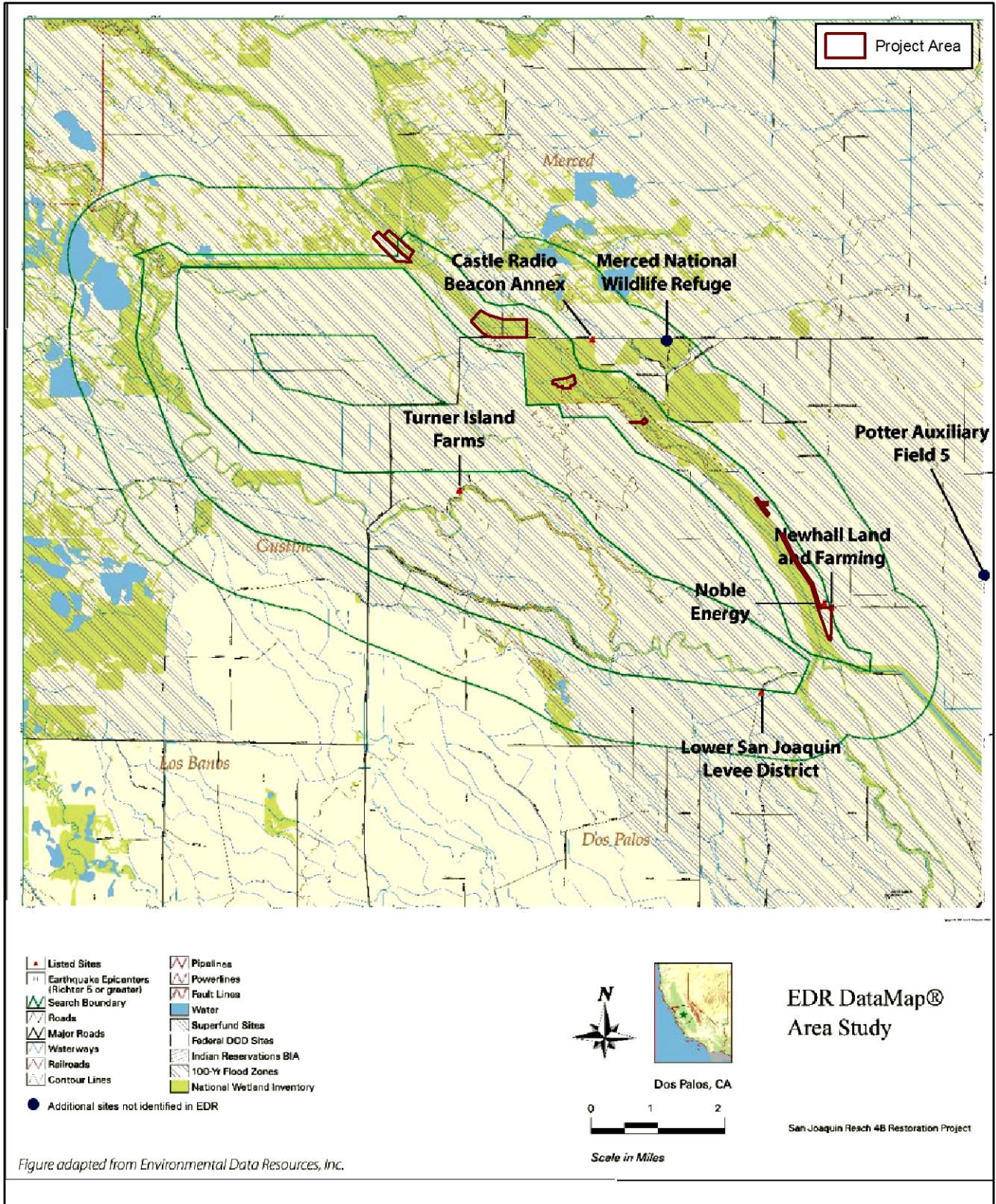


Figure adapted from Environmental Data Resources, Inc.

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03Aug2017 RS

Source: GEI Consultants, Inc. 2017

The final site identified in the database search is an underground control injection well that is owned by Noble Energy and located near the Newhall Land and Farming site on the east side of the Eastside Bypass. It is unknown if this is an active well or if it has been decommissioned (DTSC 2016).

In addition, areas currently or historically used for agricultural purposes are likely to have received pesticide, herbicide, and fertilizer applications.

Invasive Species Control

There are four high priority invasive vegetation species in the project area that are spread by water and that could require herbicide use if they are encountered (Reclamation 2012). These are:

- Red sesbania (*Sesbania punicea*)
- Salt cedar (*Tamarix* sp.)
- Giant reed (*Arundo donax*)
- Chinese tallow (*Sapium sebiferum*)

The species are easily transferred from one site to another during high flows and quickly colonize river bars and exposed soil. They can compromise and reduce salmonid habitat quality by stabilizing spawning gravel, choking river channels, or degrading habitat for insects that provide food for migrating fish. Due to these characteristics, controlling the existing infestations and preventing new ones is a high priority for SJRRP and could justify the use of herbicides in areas disturbed by project construction.

Herbicides would be used only on larger infestations of the target species. Sesbania would be sprayed with a glyphosate formulation approved for aquatic applications. Giant reeds would be treated with the same glyphosate mixture, but it would be applied directly to the stalks. Salt cedar would be treated using imazapyr or other chemical controls. Larger Chinese tallow would be cut down, and the stumps would be treated via spray with glyphosate while seedlings and saplings would be directly treated via injection with glyphosate.

Herbicide use is governed in the State by the California Department of Pesticide Regulation (CDPR). CDPR monitors the use of pesticides from farm fields to the grocery shelf to assure the safety of workers and the public. All instructions, restrictions, use limitations, and disposal/spill remediation methods described on each herbicide label must be followed. In addition, all rules, regulations, best practices, and restrictions as imposed by CDPR would be followed during herbicide application. On the Merced NWR, a USFWS pesticide use permit will be required.

Vector Control

Disease vectors found in the project vicinity include West Nile virus, Hantavirus, and Valley Fever. These diseases could expose construction workers and the public to health hazards.

West Nile virus – West Nile virus is an illness caused by a virus usually spread by infected mosquitos. Most commonly, mosquitoes become infected by feeding on infected birds; the virus is not contagious and cannot be transmitted through casual contact with an infected person or animal. According to the Mayo Clinic (2015b), most infected people will not have any symptoms, and 20 percent of people, who do get sick, will develop flu-like symptoms (e.g., fever, headache, fatigue, body aches, vomiting, diarrhea, and rash). In most people, the symptoms will go away on their own, but in severe cases (less than 1 percent of infected people), they could develop into a serious neurological infection, including

encephalitis or meningitis, that can linger for weeks or months and require hospitalization (Mayo Clinic 2015b).

The California Department of Public Health (CDPH) reported 2,765 cases in California from 2003 to 2008 (CDPH 2010). Local and State public health and vector control agencies, such as mosquito abatement districts, implement controls to prevent outbreaks of West Nile virus. In Merced County, the mosquito abatement district is the Merced County Mosquito Abatement District (MCMAD), although it does not operate on the refuge.

Hantavirus – Rodents can spread Hantavirus through bites, scratches, and their waste. Hantavirus infections can lead to Hantavirus Pulmonary Syndrome (HPS). Symptoms of HPS are fever, headaches, stomach problems, muscle aches, dizziness, and chills and can develop to shortness of breath and fluid filling the lungs. HPS can be fatal and requires immediate medical attention (Center for Disease Control 2017).

Valley Fever – Valley Fever (*coccidioidomycosis* or “cocci”) is an illness caused by a fungus found in the soil of some areas of the southwestern United States, including many areas of the San Joaquin Valley. The illness can be contracted by breathing in dirt or dust contaminated with fungal spores; it is not contagious and cannot be transmitted from one person or animal to another (CDPH 2017). It infects the lungs and can cause flu-like symptoms (e.g., fever, cough, chest pain, chills, headache, fatigue, joint aches, and rash) within 1 to 3 weeks after exposure. In most people, the infection is mild and will go away on its own, but severe cases could develop into a chronic form of pneumonia (Mayo Clinic 2015a). According to the CDPH, about 60 percent of infected people will not get sick, and most people who do get sick and fully recover are protected from getting Valley Fever again. Construction activities, including grading and construction vehicle traffic, could generate fugitive dust and expose construction personnel and the public to potential health hazards associated with Valley Fever. Extended periods of high heat or unusually windy conditions could increase fugitive dust and the resulting potential for exposure to Valley Fever.

3.10.2 Regulatory Setting

Federal

Hazardous materials, substances, and waste are regulated under various Federal laws, including the following:

- Resource Conservation and Recovery Act (RCRA) (42 United States Code [USC] Section 6901 et seq.)
- Hazardous Material Transportation Act (49 USC Sections 1801–1819 and 49 CFR Parts 101, 106, 107, and 171–180)
- Clean Air Act (42 USC Section 7400 et seq.)
- Clean Water Act (33 USC Section 1251 et seq.)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (43 USC Section 9601 et seq.)
- Superfund Amendment Reauthorization Act Title 3

- 40 CFR, Parts 260 to 279, hazardous waste management
- Emergency Planning and Community Right to Know Act (40 CFR Parts 350 to 372)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 USC Section 136 et seq. and 40 CFR Parts 152 to 171)
- Federal Food, Drug, and Cosmetic Act (FFDCA)
- Food Quality Protection Act of 1996 (FQPA)
- Safe Drinking Water Act (42 USC Section 300(f) et seq.)
- Toxic Substances Control Act (15 USC Section 2601 et seq.)
- Occupational Safety and Health Act (29 USC Section 661 et seq.)

Under RCRA, EPA regulates the generation, transportation, and disposal of hazardous wastes. RCRA requires permits for the treatment, storage, and/or disposal of hazardous wastes and tracks the wastes from generation to disposal. EPA delegates some of this authority, such as permitting, to individual states.

The U.S. Department of Transportation regulates transportation of hazardous materials through the Hazardous Material Transportation Act. Transporting hazardous materials requires special handling, packaging, placarding, and manifesting of cargoes. Various laws, including the Superfund Amendment Reauthorization Act and Hazardous Material Transportation Act, govern day-to-day management of hazardous materials. These laws define the requirements for storage of hazardous materials, safe handling practices, and employee training.

State

The California Health and Safety Program is a Federally certified, State-operated occupational safety and health program. The Occupational Safety and Health Standards Board is required to adopt reasonable and enforceable standards that are at least as effective as Federal standards within 6 months of the effective date of any Federal regulations. The Occupational Safety and Health Standards Board is also responsible for reviewing applications for variances and responding to petitions regarding new or revised standards. All work conducted in the State must comply with agency rules and regulations or the conditions of specific variances. The California Health and Safety Program standards are Federally recognized and act in lieu of the adopted Federal standards.

The California Integrated Waste Management Board is charged with managing solid waste in the State. CCR Title 14, Chapter 3 addresses minimum standards for solid waste handling and disposal. The primary California law regulating activities involving solid waste is the California Integrated Waste Management Act (Assembly Bill 939), also known as the Recycling Act. This law, passed in 1989, established specific solid waste diversion goals for cities and counties based on the volume of waste generated in the 1990 baseline year. Each city and county was required to divert 25 percent of its solid waste from landfill disposal, through source reduction, recycling, and composting, by the end of 1995 and to divert 50 percent of its waste streams by the year 2000.

DTSC and the Regional Water Quality Control Boards (RWQCBs) are the State agencies primarily responsible for regulating hazardous materials in California. DTSC is responsible for managing hazardous substances and overseeing the investigation and remediation of contaminated sites. Per the Porter-Cologne Act (California Water Code Section 13000 et seq.), SWRCB and RWQCBs regulate water quality through oversight of water monitoring and contamination cleanup and abatement. RWQCBs are primarily responsible for protecting the quality of the waters of the State for present and future beneficial uses. The Central Valley RWQCB, which has jurisdiction in the proposed project area, has adopted two Basin Plans that contain the water quality standards for the Central Valley Region and the implementation programs and policies to achieve these standards.

According to the California Government Code (Section 65962.5), DTSC is required to compile and update lists of hazardous materials sites, including land designated as hazardous waste sites and hazardous waste disposals on public lands. Similarly, SWRCB is required to compile and update hazardous materials site lists, including underground storage tanks for which an unauthorized release report is filed and solid waste disposal facilities from which there is a migration of hazardous wastes.

SWRCB also adopted the anti-degradation policy (Resolution 68-16), which states that whenever the existing quality of water exceeds the quality necessary to maintain present and potential beneficial uses of the water, existing water quality must be maintained. This policy pertains to both surface waters and groundwater of the State.

The primary laws and regulations pertaining to hazardous materials in California include the following:

- California Hazardous Waste Control Law, California Health and Safety Code, Division 20, Chapter 6.5 – This state legislation is the basic hazardous waste statute in California and is administered by DTSC. Similar to but more stringent than RCRA, this law applies to a broader range of hazardous wastes and requires recycling and waste reduction programs.
- Carpenter-Presley-Tanner Hazardous Substances Account Act, California Health and Safety Code, Division 20, Chapter 6.8 – This legislation authorizes DTSC and RWQCB to require and oversee the investigation of sites where contamination of soil and water present a hazard to human health or the environment. This legislation also authorizes DTSC and RWQCB to recover costs for the remediation of the sites, if necessary.
- Unified Hazardous Waste and Hazardous Materials Management Regulatory Program – Under this program, local agencies were designated by CalEPA as Certified Unified Program Agencies (CUPAs). The CUPA with local jurisdiction over the area of analysis is the Merced County Public Health Department.

Local

The CUPA provides regulatory oversight of investigations and cleanups at sites and manages hazardous substances (including heavy metals, pesticides and herbicides).

The 2030 Merced County General Plan addresses hazardous materials and waste by setting a goal to “protect Merced County residents, visitors, and property through providing for the safe use, storage, transport, and disposal of hazardous materials and wastes” (County of Merced 2013).

MCMAD provides areawide extermination of mosquitoes, flies, and other insects to prevent mosquito-borne disease by spraying and providing public education (MCMAD 2017).

3.10.3 Environmental Effects

The evaluation of impacts to public health and hazardous materials primarily focuses on the extent to which the proposed project could create hazardous conditions during construction by disturbing existing hazardous materials sites, releasing construction-related hazardous material, or exposing the public to hazardous materials during the transport of contaminated soil or other materials from the project construction sites to offsite disposal facilities.

The impact assessment also considers the operation of private airstrips and/or small aircraft for aerial spraying on agricultural fields, impacts related to conflicts with emergency response actions, and potential impacts from wildland fires, herbicides, and disease vectors.

No Action Alternative

Under the no action alternative, there would be no construction activities in the project area and thus no activities involving hazardous materials or waste. There would be no impact.

Proposed Project

- a) **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**
(Less-than-Significant Impact)

The project would not cause any unusual risks associated with the transport and handling of hazardous materials. However, project construction could include the use of hazardous materials in varying amounts during construction and operation/maintenance activities, including fuels (gasoline and diesel), oils and lubricants, and cleaners (which could include solvents and corrosives in addition to soaps and detergents) commonly used in construction projects. Construction workers and others could be exposed to hazards and hazardous materials as a result of improper handling or use, transportation accidents, fires, explosions, or other accidental release. Operations and maintenance activities would be relatively minor and impacts would be negligible.

The use, storage, and transport of hazardous materials are regulated by Federal, State, and local agencies, and compliance with relevant laws is required during project construction and operation. Transportation of hazardous materials on area roadways is regulated by the CHP and Caltrans. Hazardous materials regulations, which are codified in CCR Titles 8, 22, and 26, and their enabling legislation set forth in the California Health and Safety Code (§ 25100 et seq.), were established at the State level to ensure compliance with Federal regulations to reduce the risk to human health and the environment from the routine use of hazardous substances. These regulations must be implemented, as appropriate, and are monitored by the State (e.g., Cal/OSHA in the workplace, DTSC for hazardous waste, and California Air Resources Board for lead) and/or local jurisdictions (i.e., Merced County Department of Environmental Health). All construction would be required to comply with CalEPA's Unified Program; regulated activities would be managed by Merced County Department of Environmental Health in accordance with their Unified Program (e.g., hazardous materials release response plans and inventories, and California Uniform Fire Code hazardous material management plans and inventories). Such compliance would reduce the potential for accidental release of hazardous materials during construction and improvement activities. As a result, compliance with Merced County's Unified Program would lessen the risk of exposure of construction workers and others to accidental release of hazardous materials.

Workplace regulations addressing the use, storage, and disposal of hazardous materials included in CCR Title 8 also would apply to project construction. Compliance with these regulations would be monitored by a local agency, such as Merced County Department of Environmental Health when they perform inspections for flammable and hazardous materials storage. Other mechanisms in place to enforce the Title 8 regulations include compliance audits and reporting to State and local agencies. Implementation of the workplace regulations would further reduce the potential for hazardous materials releases during project construction and improvement activities.

The project would implement and comply with Federal, State, and local hazardous materials regulations monitored by the State (e.g., Cal/OSHA, DTSC, CHP) and/or local jurisdictions (e.g., Merced County Department of Environmental Health); therefore, impacts related to creation of substantial hazards to the public through routine transport, use, disposal, and risk of upset during project construction activities would be less than significant.

Aerial spraying could be affected by the presence of construction equipment and workers on the site, reducing the effectiveness of the flights. Spraying could occur while the construction workers are on site, exposing them to herbicides, pesticides, and low-flying aircraft. Herbicides, including glyphosate and imazapyr, may also be used to control the four priority invasive plant species (red sesbania, salt cedar, giant reed, and Chinese tallow). Existing small sites would be removed manually using hand tools or other mechanical means to remove the stalks and root structure.

Land uses near the project area consist of agricultural uses, and recreational uses including environmental interpretation and education, hiking, hunting, and wildlife viewing/nature observation. Agricultural workers and recreational visitors could be exposed to herbicides directly during application and indirectly after application. In addition, spray application of herbicides may migrate from the original application area into nearby surface water bodies through wind or erosion. Surface water is used by major water suppliers and water users, irrigation districts and national wildlife refuges areas. Workers could be exposed to herbicides while mixing, loading, or applying herbicides, and when entering a treated site.

Because the project would implement measures to comply with Federal, State, and local hazardous materials regulations, construction-related impacts related to creation of substantial hazards to the public through routine transport, use, disposal, and risk of upset would be less than significant.

Although these impacts would be less than significant, DWR and Reclamation would implement the following mitigation measures during construction to further reduce these potential impacts from any hazardous spills, exposure of workers to nearby aerial spraying, and/or herbicide use.

Mitigation Measure: HAZ-1a: Implement a Spill Prevention Control and Countermeasures Plan and Other Measures to Reduce the Potential for Environmental Contamination during Construction Activities.

In addition to compliance with all applicable Federal, State, and local regulations, DWR and Reclamation will implement the measures described below to further reduce the risk of accidental spills and protect the environment.

- **Prepare and Implement a Spill Prevention Control and Countermeasures Plan.** A written spill prevention control and countermeasures plan (SPCCP) will be prepared and implemented. The SPCCP and all material necessary for its implementation will be

accessible on site prior to initiation of project construction and throughout the construction period. The SPCCP will include a plan for the emergency cleanup of any spills of fuel or other material. Employees/construction workers will be provided the necessary information from the SPCCP to prevent or reduce the discharge of pollutants from construction activities to waters and to use the appropriate measures should a spill occur. In the event of a spill, work will stop immediately and CDFW, RWQCB, USFWS, NMFS, and Merced County will be notified within 24 hours.

- **Dispose of All Construction-related Debris and Materials at an Approved Disposal Site.** All debris, litter, unused materials, sediment, rubbish, vegetation, or other material removed from the construction areas that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site.
- **Use Safer Alternative Products to Protect Streams and Other Waters.** Every reasonable precaution will be exercised to protect streams and other waters from pollution with fuels, oils, and other harmful materials. Safer alternative products (such as biodegradable hydraulic fluids) will be used where feasible.
- **Prevent Any Contaminated Construction By-products from Entering Flowing Waters, and Collect and Transport Such By-products to an Authorized Disposal Area.** Petroleum products, chemicals, fresh cement, and construction by-products containing, or water contaminated by, any such materials will not be allowed to enter flowing waters and will be collected and transported to an authorized upland disposal area.
- **Prevent Hazardous Petroleum or Other Substances Hazardous to Aquatic Life from Contaminating the Soil or Entering Waters of the State or and/or Waters of the United States.** Gas, oil, other petroleum products, or any other substances that could be hazardous to aquatic life and resulting from project-related activities, will be prevented from contaminating the soil and/or entering waters of the State and/or waters of the United States.
- **Properly Maintain All Construction Vehicles and Equipment and Inspect Daily for Leaks, and Remove and Repair Equipment/Vehicles with Leaks.** Construction vehicles and equipment will be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease. Vehicles and equipment will be checked daily for leaks. If leaks are found, the equipment will be removed from the site and will not be used until the leaks are repaired.
- **Refuel and Service Equipment at Designated Refueling and Staging Areas.** Equipment will be refueled and serviced at designated refueling and staging sites located on the crown or landside of the levee and at least 50 feet from active stream channels or other water bodies. All refueling, maintenance, and staging of equipment and vehicles will be conducted in a location where a spill will not drain directly toward aquatic habitat. Appropriate containment materials will be installed to collect any discharge, and adequate materials for spill cleanup will be maintained on-site throughout the construction period.
- **Store Heavy Equipment, Vehicles, and Supplies at Designated Staging Areas.** All heavy equipment, vehicles, and supplies will be stored at the designated staging areas at the end of each work period.

- **Install an Impermeable Membrane between the Ground and Any Hazardous Material in Construction Storage Areas.** Storage areas for construction material that contains hazardous or potentially toxic materials will have an impermeable membrane between the ground and the hazardous material and will be bermed as necessary to prevent the discharge of pollutants to groundwater and runoff water.
- **Use Water Trucks to Control Fugitive Dust during Construction.** Water (e.g., trucks, portable pumps with hoses) will be used to control fugitive dust during temporary access road construction.
- **Use Only Nontoxic Materials and Materials with No Coatings or Treatments Deleterious to Aquatic Organisms for Placement in any Waters.** All materials placed in streams, rivers, or other waters will be nontoxic and will not contain coatings or treatments or consist of substances deleterious to aquatic organisms that may leach into the surrounding environment in amounts harmful to aquatic organisms.

Mitigation Measure HAZ-1b: Coordinate with Landowners and Farm Managers.

The impacts from aerial spraying will be reduced by coordinating with landowners and farm managers to avoid scheduling conflicts between restoration and construction workers and scheduled farm work, including aerial spraying. Coordination will minimize conflicts between farm operations and restoration activities and prevent construction worker exposure to aerial herbicide/pesticide spray or drift.

Mitigation Measure HAZ-1c: Implement Herbicide Restrictions.

Impacts from herbicide use will be reduced by using the minimum amount of the herbicide needed to remove the infestation and using herbicide formulations approved for aquatic applications. Spraying will be avoided during windy conditions to prevent herbicide migration to offsite areas or non-target species. Spraying of foliage will be minimized within 60 feet of standing or flowing water, and within this 60-foot buffer, herbicides will only be applied directly to stumps, using herbicides approved for use near water. Herbicides will not be used in the 60-foot buffer within 24 hours after rain or when the chance of rain within 24 hours is greater than 40 percent. To prevent airborne drift of herbicide mist into the 60-foot buffer, herbicides will not be applied to foliage outside the buffer when wind speed is greater than 10 miles per hour (mph) or less than 2 mph.

To reduce worker exposure to herbicides, DWR and Reclamation will comply with State and Federal OSHA standards for exposure to hazardous materials in the workplace. To minimize potential exposure of workers and the public, the amount of herbicide used will be the minimum amount required to achieve the needed results. Only licensed or certified pest control operators registered to apply the herbicides will be allowed to conduct the chemical applications. The operators will be required to maintain accurate and calibrated application equipment to ensure that the amounts of herbicides applied are as proposed.

To reduce public exposure to herbicides, procedures for public notification and education regarding the herbicide application will be followed at least 24 hours in advance of application. Landowners and irrigation districts will be notified. Personnel at the Merced NWR will also be notified to inform recreational visitors.

Implementation of Mitigation Measures HAZ-1a, -1b, and -1c would reduce any potential impacts from any hazardous spills, exposure of workers to nearby aerial spraying, and/or herbicide use because exposure risks would be minimized. The potential impacts would remain less than significant with implementation of these mitigation measures.

**b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?
(Less-than-Significant Impact with Mitigation Incorporated)**

Construction areas are not located within known hazardous materials sites, as shown in **Figure 3.10-2**, and a preliminary database search concluded that there were no known hazardous material sites in the immediate project area. However, there is potential to encounter pesticides, herbicides, fertilizers, and petroleum hydrocarbons in agricultural soils. Construction workers and others could potentially be exposed to previously unknown hazardous sites that are encountered during project construction. This construction-related impact would be potentially significant.

DWR and Reclamation would implement the following mitigation measure prior to construction to reduce these potential impacts.

Mitigation Measure HAZ-2: Prepare a Phase I Environmental Site Assessment and Remediate any Hazardous Site Adversely Affected by Project Construction According to Existing and Applicable Laws and Regulations.

A Phase I Environmental Site Assessment will be prepared for the project site by a certified Environmental Professional to evaluate past and current land uses that may have potentially contributed to site contamination that could impact Project construction or have longer-term impacts on project operation. The purpose of the assessment is to examine the site for potential hazardous materials and conditions, including but not limited to petroleum products or containers, underground storage tanks, pools of noxious liquids, potential polychlorinated biphenyl (PCB) containing equipment, pits, ponds or lagoons, stained soil and/or pavement, wastewater discharges, or wells. Remediation of any hazardous material or contaminant found during the Phase I Assessment would be enforced through existing applicable laws and regulations.

Implementation of Mitigation Measures HAZ-2 would reduce any potential impacts from any existing hazardous sites on the project site. The potential impacts would be less than significant with implementation of this mitigation measure.

**c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
(No Impact)**

There are no schools within 0.25 mile of the project area. The nearest school, Merced County Juvenile Court School (at 2840 W Sandy Mush Road) is 13 miles east of the proposed project. Therefore, neither construction nor operation of the proposed project would have an impact on an existing or proposed school.

- d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**
(No Impact)

Government Code Section 65962.5(a)(1) states that DTSC shall compile and update annually all hazardous waste facilities subject to corrective action. In accordance with this code, there are no active listed hazardous materials sites in the EnviroStor database within the project area or within a 3-mile radius of the project area. The proposed project would not be located on a hazardous materials site. Therefore, there would be no impact.

- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?**
(No Impact)

The proposed project is not located within an area covered by an airport land-use plan or within 2 miles of a public-use airport. Therefore, construction of the project would have no impact related to aircraft safety hazards.

- 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?**
(No Impact)

The project site is not located within 2 miles of a public or private airport. Therefore, there would be no exposure of people residing or working in the project area to aircraft hazards. There would be no impact.

- g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**
(No Impact)

The Merced County General Plan (Merced County 2012) identifies emergency response and evacuation plans, including major thoroughfares used for such purposes. The proposed project would not affect any major thoroughfares that may be used as an evacuation route, nor does the project site contain any essential facilities for emergency response. Please refer to Section 3.20, "Transportation and Transportation," for a discussion of emergency access and travel delays related to Dan McNamara Road closures during Restoration Flows in excess of 200 to 400 cfs at the Dan McNarmara Road.

- h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?**
(Less-than-Significant Impact with Mitigation Incorporated)

The project area is in an area designated by CAL FIRE as a Moderate Fire Severity Zone (CALFIRE 2007). Construction activities could potentially spark a wildland fire in the project or adjacent areas. This impact could be potentially significant.

In addition, if construction occurs near any tall trees or electrical lines, nearby vegetation may need to be removed or utilities may need to be relocated. Electricity can arc across an air gap from a high voltage line to a nearby tree, resulting in grounding of the circuit through the tree. Hazards arise not only from electric shock but also from the potential for starting fires. However, National Electrical Safety Code 2017 Edition (IEEE Standards Association 2017) guidelines would be followed regarding the allowed proximity of workers to energized lines and how a tree should be removed or trimmed, considering tree growth, movement of the tree and conductors in wind, voltage, and sagging of the conductor at high temperatures. The construction contractor would need to complete mandatory underground service alert surveys with local utilities during construction. Existing utilities would be avoided or relocated as needed.

The proposed project would be constructed at sites with no population center or housing structures; therefore, the project is not likely to expose people or structures to significant loss, injury, or death caused by wildland fires. However, due to the potential for a construction-related wildland fire, risk during construction of the proposed project would be potentially significant.

DWR and Reclamation will implement the following mitigation measure prior to and during construction to further reduce these potential impacts.

Mitigation Measure HAZ-3: Prepare and Implement a Fire Prevention Plan.

A fire prevention plan will be prepared and implemented by DWR and Reclamation in coordination with the appropriate emergency service and/or fire suppression agencies of the applicable local, State, or federal jurisdictions before the start of any construction activities. The plan shall describe emergency contact numbers and fire prevention and response methods, including fire precaution, requirements for spark arrestors on equipment, and suppression measures that are consistent with the policies and standards of the affected jurisdictions. When heavy equipment is used for construction during the dry season, a water truck shall be maintained on the construction site. Materials and equipment required for implementation of the plan will be available on the construction site. Training shall be provided to all construction personnel regarding fire safety, and all personnel shall be made familiar with the contents of the plan before the start of construction activities.

Implementation of Mitigation Measure HAZ-3 would reduce the potential for wildfire as a fire prevention plan would be prepared and implemented prior to construction activities. Therefore, the impact would be less than significant with mitigation incorporated.

**i) Expose people to a substantial hazard through increased risk of exposure to disease vectors?
(Less-than-Significant Impact with Mitigation Incorporated)**

Construction activities in the San Joaquin Valley may increase the risk of exposure to disease vectors (i.e., West Nile virus, Hantavirus, and Valley Fever) for construction workers and the public. The project would include improvements to structures in and adjacent to the Eastside Bypass, which carries Restoration Flows and flood flows. Although these activities could have minor effects on localized sites of the Eastside Bypass, they are not expected to substantially alter existing drainage patterns or the rate or amount of surface runoff. However, any temporary or newly permanently wetted portions of the San Joaquin River can provide mosquito habitat, and can increase construction worker and public exposure to mosquitoes potentially infected with West Nile virus. Additionally, construction workers could be

exposed to rodents with Hantavirus during demolition of existing structures. Also, construction workers and the public could potentially be exposed to Valley Fever fungus spores during earth-moving activities, which could release spores in the soil into windblown dust in the air. This impact would be potentially significant.

DWR and Reclamation would implement the following mitigation measures during construction to reduce potential impacts from vector-borne diseases.

Mitigation Measure HAZ-4a: Integrate Best Management Practices for Mosquito Control and Implement Workplace Precautions Against Vector-borne Diseases.

Construction activities will incorporate applicable Best Management Practices (BMPs) identified in the *Best Management Practices for Mosquito Control on California State Properties* (California Department of Public Health 2008); and other guidelines such as the Central Valley Joint Venture's *Technical Guide to Best Management Practices for Mosquito Control in Managed Wetlands* (Kwasny et al. 2004) and *Best Management Practices for Mosquito Control in California* (California Department of Public Health and Mosquito and Vector Control Association of California 2012) to reduce the public risk from exposure to West Nile Virus. DWR and/or Reclamation will also inform the Merced County Mosquito Abatement District about implementation of the project, and will provide information requested to support vector control activities along the Eastside Bypass at project construction sites. In addition, DWR and/or Reclamation will implement the following workplace precautions:

- Conduct construction worker personnel training that covers the potential hazards and risks associated with exposure to and protection from vector-borne diseases such as West Nile virus. Instruct personnel in the use of proper construction apparel and warn them against handling any dead animals (particularly birds) with bare hands.
- Inspect work areas and eliminate sources of standing water that could provide breeding habitat for mosquitoes. For example, eliminate uncovered, upright containers that could accumulate water, and fill or drain potholes or other areas where water is likely to accumulate.
- Provide insect repellent for worker use at construction sites. As recommended by the Centers for Disease Control and Prevention (CDC), the insect repellent should contain active ingredients that have been registered with EPA for use as insect repellents on skin or clothing such as diethyl(meta)toulamide (DEET) or picaridin.
- Notify the Merced County Public Health Department about dead birds found at any project site.

Mitigation Measure HAZ-4b: Implement Best Management Practices to Prevent Health Hazards Associated with Exposure to Valley Fever.

To the extent feasible, construction activities in the project area will be modified to reduce construction workers' and the public's risk from exposure to valley fever and will incorporate applicable Best Management Practices (BMPs) as detailed in the project Dust Control Plan (see Section 3.3, "Air Quality"). Additionally, prior to construction, DWR and/or Reclamation will:

- Conduct employee training that covers the potential hazards and risks of Valley Fever exposure and protection, including proper construction apparel.
- Provide dust masks for worker use at construction sites during ground-disturbing activities.

Implementation of Mitigation Measure HAZ-4a and -4b would reduce the potential public risk from exposure to vector-borne diseases and valley fever by following BMPs to minimize exposure and public risk. Therefore, the impact would be less than significant with mitigation incorporated.

3.11 Hydrology and Water Quality

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XI. HYDROLOGY AND WATER QUALITY – Would the project:					
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.11.1 Environmental Setting

The Eastside Bypass conveys flood flows from the San Joaquin, Fresno, and Chowchilla Rivers; Berenda and Ash Sloughs; and Deadman, Owens, and Bear Creeks. Flood flows in the Middle Eastside Bypass between the Sand Slough Control Structure to the Mariposa Bypass Control Structure split between the Mariposa Bypass and the Lower Eastside Bypass. Historical flood operations have shown that the first 2,000 to 3,000 cfs flow down the Lower Eastside Bypass. At up to 8,500 cfs, approximately one-quarter to one-half of the additional flows are routed to the Mariposa Bypass. Apart from some ponding in low-lying areas, the Eastside Bypass generally remains dry until required flood flows or Restoration Flows are conveyed. The flood season for the Lower San Joaquin Levee District (LSJLD) typically lasts from November 15 to June 15 of each water year, with rainfall contributing to higher flows during late fall/winter, and snowmelt contributing to higher flows in spring.

Water Quality

The project area is not 303(d) listed as impaired under the Clean Water Act. The Central Valley Regional Water Quality Control Board (Central Valley RWQCB) in coordination with the State Water Resources Control Board (SWRCB) has developed the Sacramento-San Joaquin River Basin Plan (RWQCB 2016) that defines Total Maximum Daily Loads (TMDLs) and water quality objectives for surface waters within the Central Valley. The salinity standard measured as electrical conductivity is 700 microSiemens per centimeter ($\mu\text{S}/\text{cm}$) from April 1 to August 31 and 1,000 $\mu\text{S}/\text{cm}$ for the remainder of the year. The Central Valley RWQCB in coordination with SWRCB has developed a control program for salt and boron discharge in the lower San Joaquin River. Degraded water quality in various segments of the San Joaquin River has been a long-term problem due to low river flows and discharges from agricultural areas, wildlife refuges, and municipal waste water treatment plants (Reclamation 2010).

General physical water quality parameters taken in the Eastside Bypass at Merced NWR are listed in **Table 3.11-1**, and those taken at Eastside Bypass below Mariposa Bypass, farther downstream, are listed in **Table 3.11-2**. This portion of the Eastside Bypass has significantly higher electrical conductivity compared to the water sampled upstream at West Washington Road. High electrical conductivity is an indicator of high salinity.

Table 3.11-1. Physical Water Quality Parameters Sampled in the Eastside Bypass at Merced National Wildlife Refuge

Water Quality Parameter	Minimum	Maximum	Average	Water Quality Standard*
Temperature (°Fahrenheit)	38	102	65	-- ¹
Electrical Conductivity (microSiemens/centimeter)	167	634	369	-- ¹

Note:

* State Water Resources Control Board 2015

Source: California Data Exchange Center 2016. Water quality data from continuous daily data generally taken from March 2013 through May 2016

Table 3.11-2. Physical Water Quality Parameters Sampled in the Eastside Bypass below Mariposa Bypass

Water Quality Parameter	Minimum	Maximum	Average	Water Quality Standard*
pH (standard units)	6.9	9.1	8.2	<6.5 & >8.5
Temperature (°Fahrenheit)	40	81	55	-- ²
Turbidity (Nephelometric Turbidity Units)	9	73	31	-- ¹
Chlorophyll (micrograms/liter)	2	152	7	
Dissolved Oxygen (milligrams/liter)	5.8	11.5	8.7	7.0 mg/l
Electrical Conductivity (microSiemens/centimeter)	195	1,156	850	-- ²

Notes:

¹ Increases shall not exceed 20%

² No objective in place for project area

* State Water Resources Control Board 2015

Source: California Data Exchange Center 2016. Water quality data from continuous daily data generally taken from March 2013 through April 2016

Beneficial Uses

The Eastside Bypass is not specifically identified in the Sacramento River Basin and San Joaquin River Basin Plan (RWQCB 2016) for beneficial uses. However, the beneficial uses of any specifically identified water body generally apply to its tributary streams. Beneficial uses for the San Joaquin River are included for the Eastside Bypass based upon application of the Central Valley RWQCB’s “tributary rule” as defined in the Basin Plan (RWQCB 2016). The tributary rule consists of applying beneficial uses and water quality attributes to any water feature that currently feeds into a known water feature. In this case, the beneficial uses of the project area are represented by the San Joaquin River. In some cases, a beneficial use may not be applicable to the entire body of water and is determined by the Central Valley RWQCB. The beneficial uses designated for waters within the project area (i.e., San Joaquin River) are presented in **Table 3.11-3**, and may or may not apply to the Eastside Bypass. Beneficial use designations that likely would not apply to the Eastside Bypass are Municipal and Domestic Supply, Industrial Process Supply, Water Contact Recreation, Canoeing and Rafting, and Coldwater Spawning Habitat.

Groundwater

The project area is underlain by the Merced and Delta-Mendota subbasins of the San Joaquin Valley groundwater basin, as defined by DWR Bulletin 118 (**Figure 3.11-1**) (DWR 2003). DWR has prioritized the Delta-Mendota and Merced subbasins as “high priority” based on groundwater reliability concerns (both current and projected) and documented overdraft issues in the subbasins. In addition to groundwater overdraft assessment in the subbasin, DWR has categorized both subbasins to have a very high potential for subsidence (DWR 2014). **Figure 3.11-2** presents the location of select groundwater monitoring wells with the project area and surrounding area.

Shallow geology in the project area consists of heterogeneous layers of alluvial materials such as sands, silts, and clays. The shallow geology along with the elevation of the water in the surface water relative to the groundwater level governs whether water can flow (i.e., seep) out of the surface water feature,

through the stream bed/bank, into the groundwater (losing), or if water movement could be from the groundwater to the surface water feature (gaining).

Table 3.11-3. San Joaquin River Beneficial Uses

Beneficial Use Designation	San Joaquin River ⁵
Municipal and Domestic Supply	✓ ^P
Irrigation Watering	✓ ^E
Stock Watering	✓ ^E
Industrial Process Supply	✓ ^E
Water Contact Recreation	✓ ^E
Canoeing and Rafting ¹	✓ ^E
Non-contact Water Recreation	✓ ^E
Warm Freshwater Habitat ²	✓ ^E
Cold Freshwater Habitat ²	
Warm ³ Water Migration Areas	✓ ^E
Cold ⁴ Water Migration Areas	✓ ^E
Warm Water Spawning Habitat ³	✓ ^E
Cold Water Spawning Habitat ⁴	✓ ^P
Wildlife Habitat	✓ ^E

Notes:

¹ Shown for streams and rivers only with the implication that certain flows are required for this beneficial use.

² Resident does not include anadromous. Any segments with both COLD and WARM beneficial use designations will be considered COLD waterbodies for the application of water quality objectives.

³ Striped bass, sturgeon, and shad.

⁴ Salmon and steelhead.

⁵ Sack Dam to Mouth of Merced River

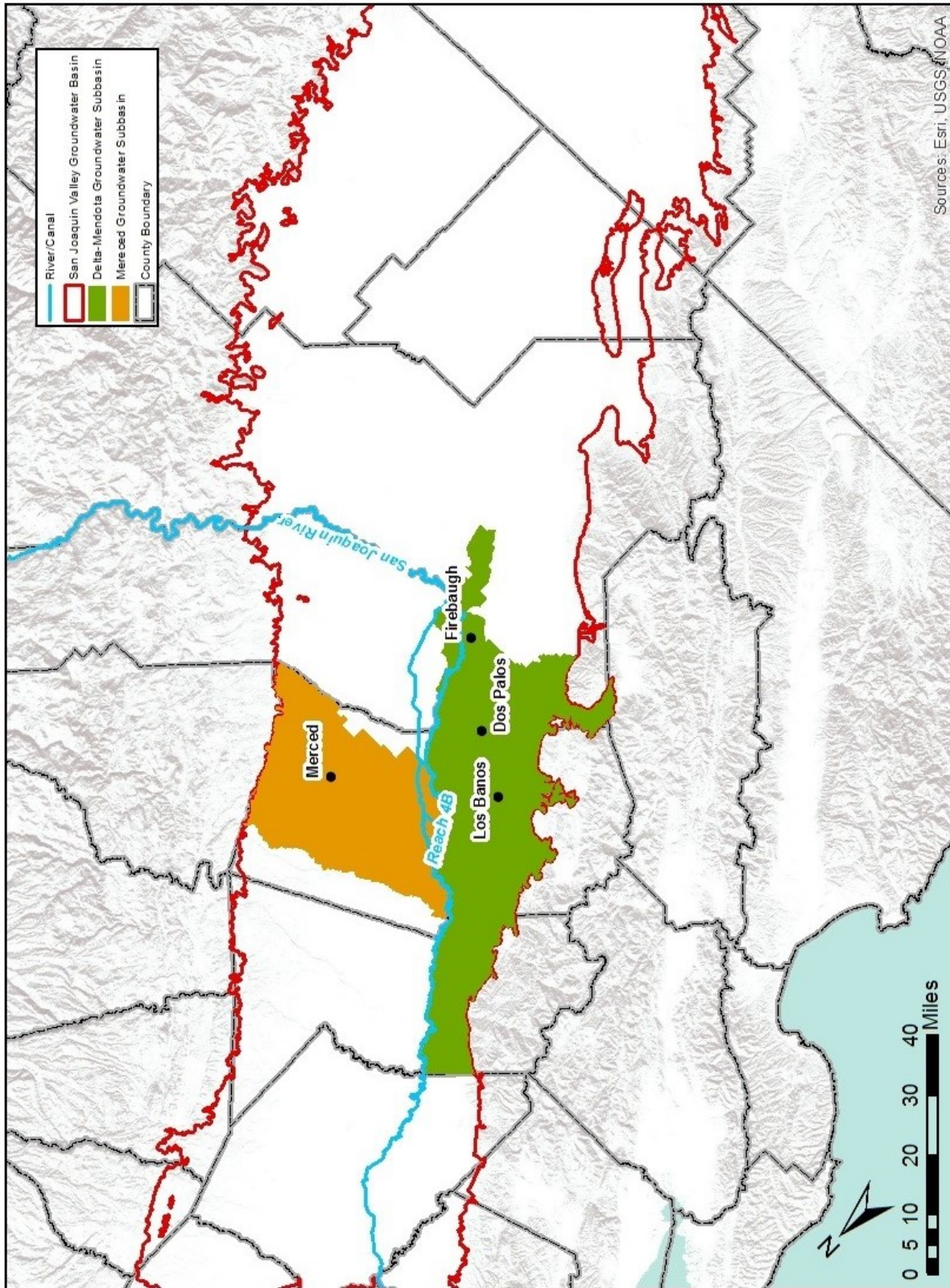
Key: ✓^P POTENTIAL BENEFICIAL USE; ✓^E EXISTING BENEFICIAL USE

Source: Regional Water Quality Control Board 2016

These changes in gaining and losing conditions can be seen in **Figures 3.11-3 through 3.11-5**. A gaining condition is seen when the water table line slopes toward a stream. A losing condition is noted when the lines slope away from a stream. Each of these figures shows that the water levels adjacent to the project area rise and drop, depending on the time of year. **Figure 3.11-2**, a transect approximately 1.5 mile downstream of the Sand Slough Control Structure, shows that the Eastside Bypass is typically a losing reach in this area, as groundwater levels are typically lower than the channel bed elevation; however, there is not a consistent pattern of gaining and/or losing conditions along the Eastside Bypass.

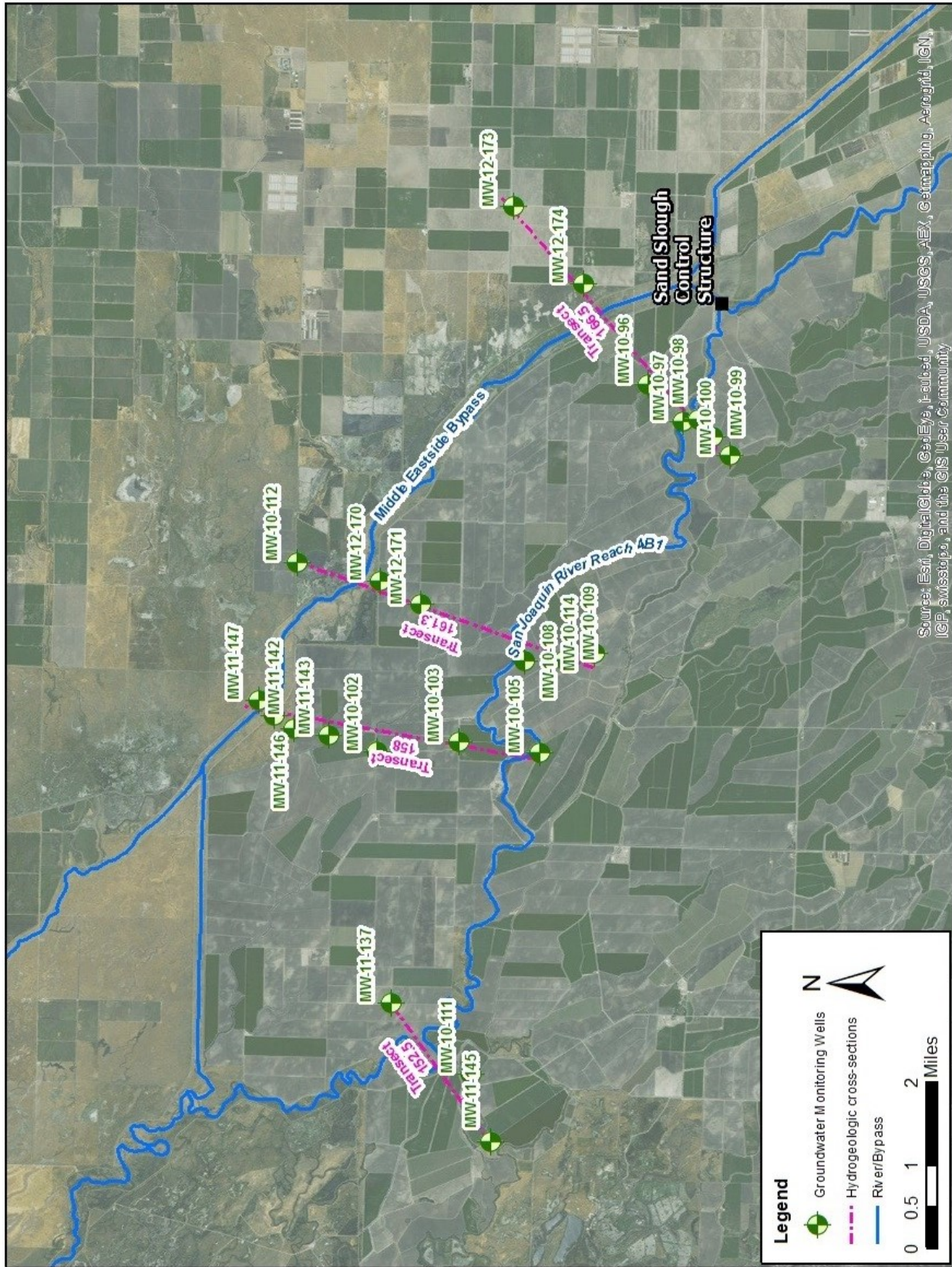
Groundwater levels in the project vicinity have been monitored since 2009. Data presented in **Figures 3.11-6 through 3.11-9** represent a short period of record (4 or less years). A longer duration data set for these areas does not exist. These data indicate that the Eastside Bypass has the potential to be a gaining or losing stream. The actual direction and rate of flow between groundwater and surface water depends on location along the bypass, groundwater levels, local geologic conditions, and the overall hydrologic conditions of the area. Additionally, groundwater levels vary with distance from the bypass and also based on time of year, likely due to agricultural activities. Groundwater levels have also shown a decline during this period, due to recent drought conditions.

Figure 3.11-1. Groundwater Resources in the Project Area and Surrounding Area



Source: CDM Smith 2017

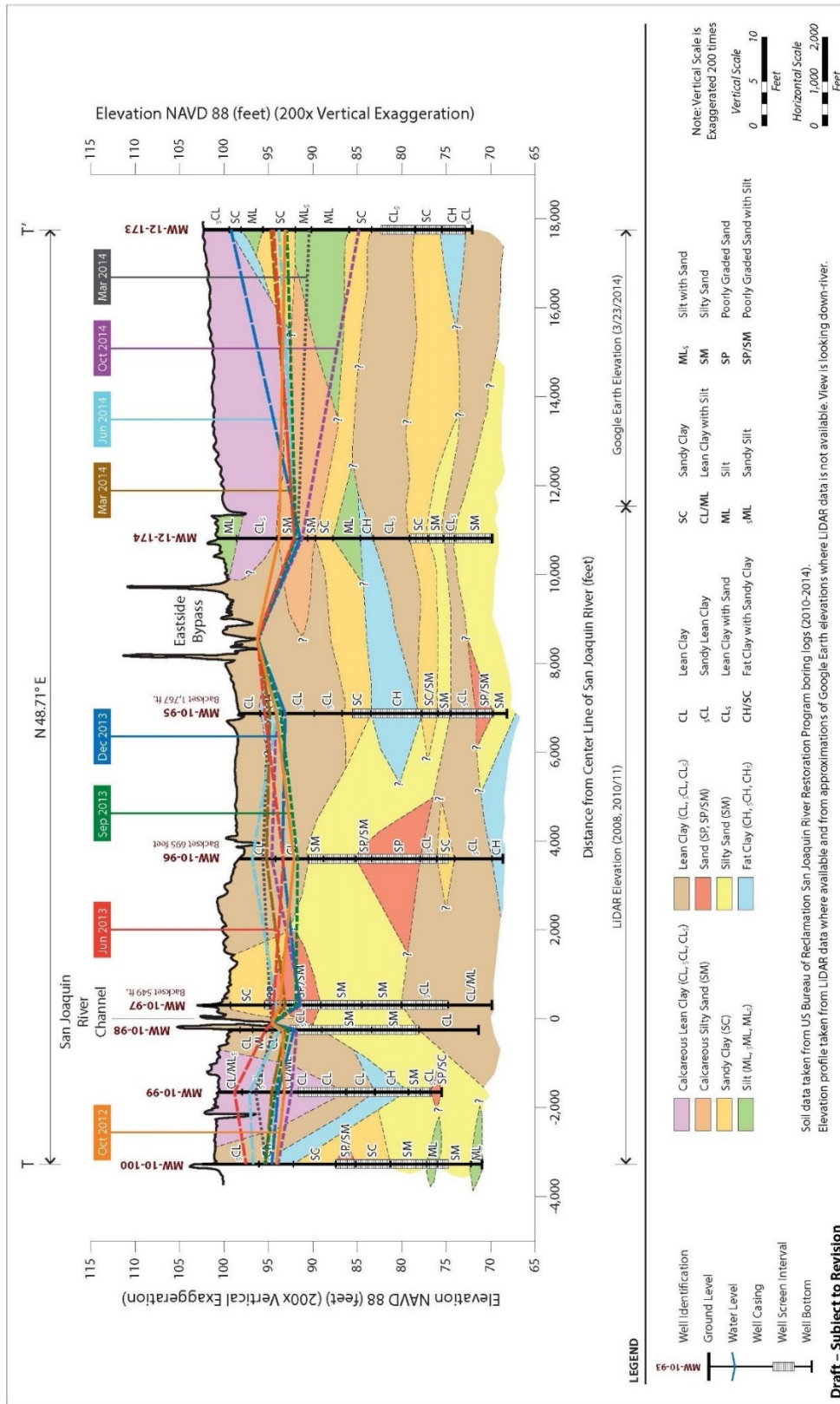
Figure 3.11-2. Location of Select Groundwater Monitoring Wells within the Project Area



Source: Esri, DigitalGlobe, GeoEye, iSatellite, USDA, USGS, AEX, Garmin, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

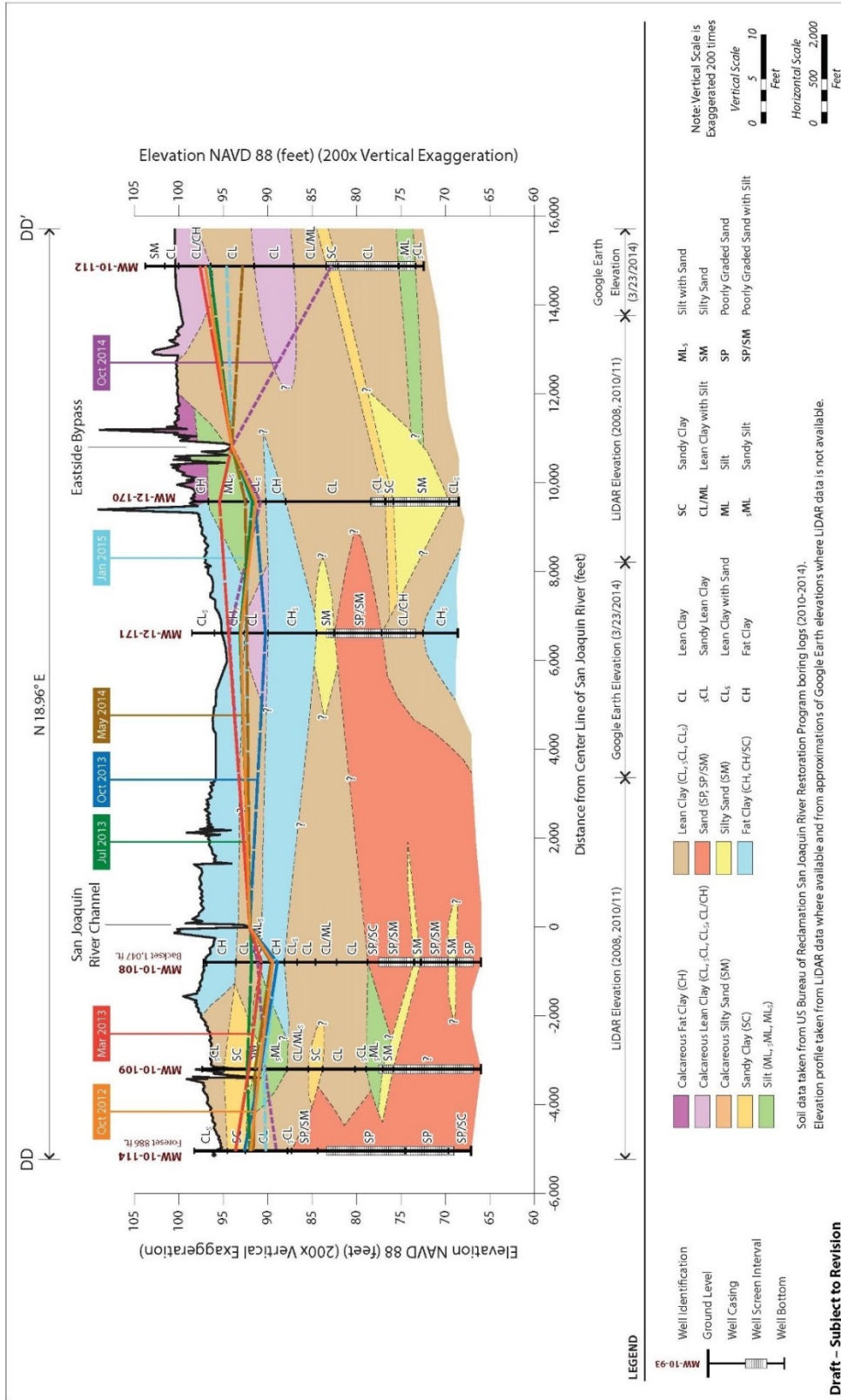
Source: CDM Smith 2017

Figure 3.11-3. Hydrogeologic Cross Section at Transect 166.5



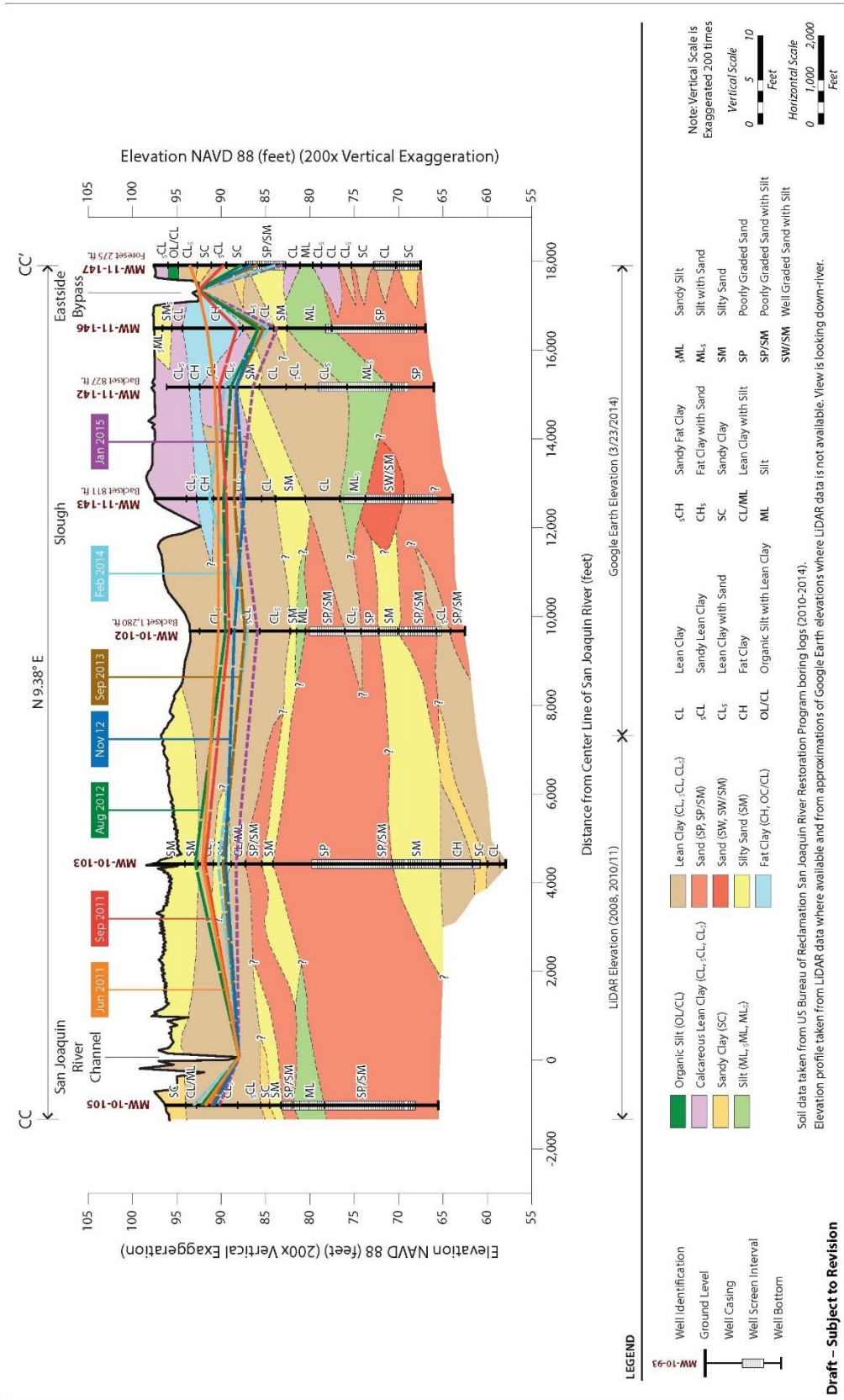
Source: CDM Smith 2017

Figure 3.11-4. Hydrogeologic Cross Section at Transect 161.3



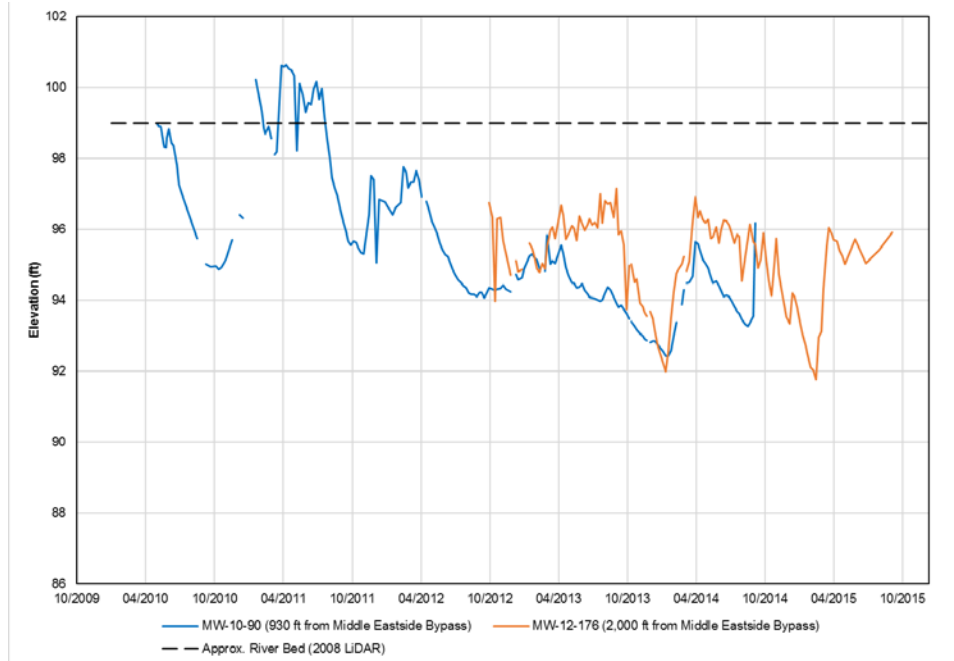
Source: CDM 2017

Figure 3.11-5. Hydrogeologic Cross Section at Transect 158.0



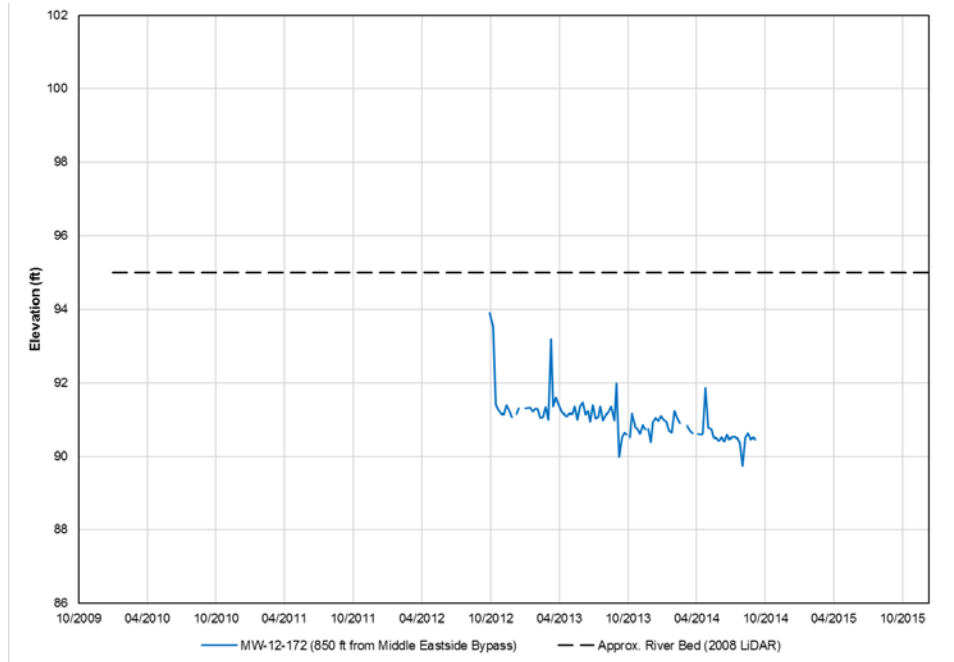
Source: CDM 2017

Figure 3.11-6. Groundwater Elevation and Ground Surface Elevation (Eastside Bypass, Right Bank)



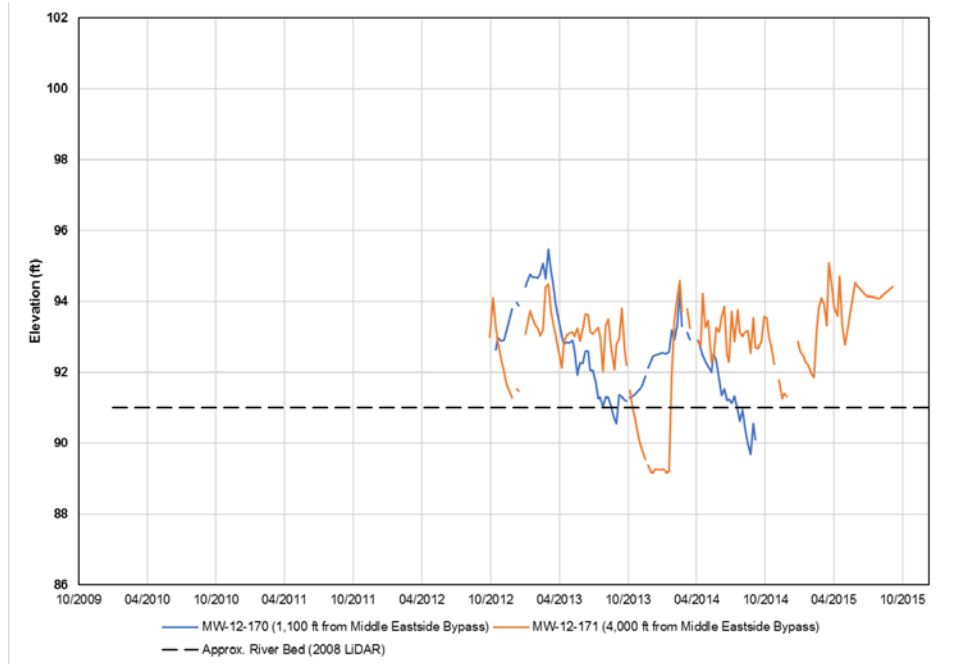
Source: CDM 2017

Figure 3.11-7. Groundwater Elevation and Ground Surface Elevation (Eastside Bypass, Left Bank)



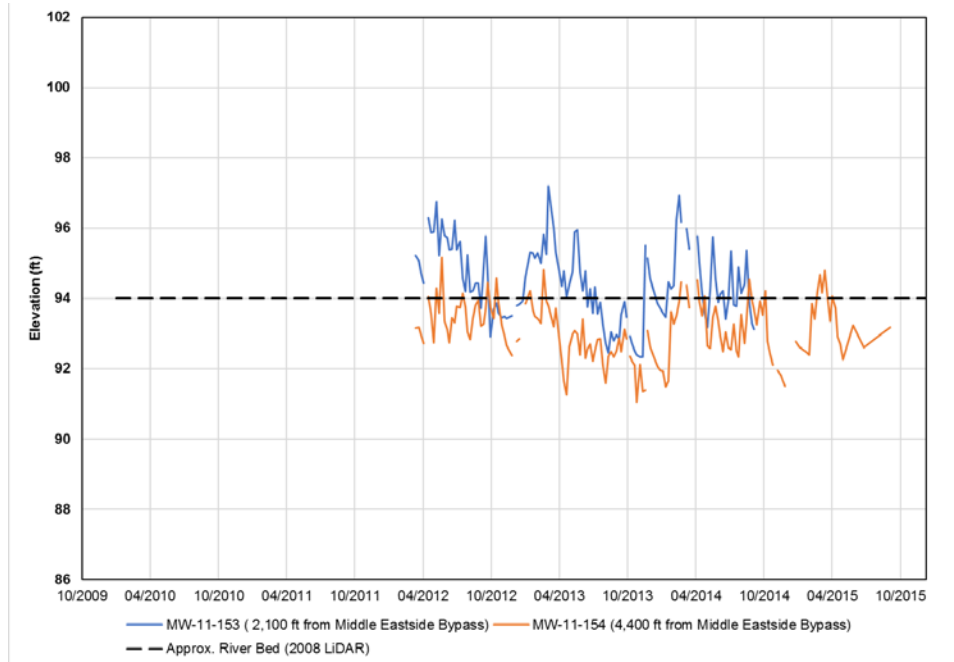
Source: CDM 2017

Figure 3.11-8. Groundwater Elevation and Ground Surface Elevation (Eastside Bypass, Left Bank)



Source: CDM 2017

Figure 3.11-9. Groundwater Elevation and Ground Surface Elevation (Eastside Bypass, Left Bank)



Source: CDM 2017

Regional and Local Groundwater Production

The Merced subbasin is estimated to be 21.1 million acre-feet (MAF) to a depth of 300 feet and 47,600,000 acre-feet (af) to the base of fresh groundwater (DWR 2004). The Delta-Mendota subbasin holds approximately 81.8 MAF to the base of fresh water, based on a study completed in 1995 (DWR 2006). There are no estimates on groundwater production in the project area, but not all the water purveyors in the project area hold surface water rights. Some users, particularly to the northwest of the project area, use groundwater as a water supply source.

Land Subsidence

During recent drought conditions, subsidence in and around the project area increased. Reclamation has been tracking recent subsidence in the area since 2011. **Figure 3.11-10** shows the subsidence rate ranges from approximately 0.45 feet/year at the upstream end of the Eastside Bypass to less than 0.15 feet/year in the downstream end of the bypass. Subsidence is changing the slopes of the San Joaquin River and bypasses. The steeper slope upstream of the project area creates more erosion, which increases sediment loads into the project area. At the same time, less subsidence at the downstream end of the project area has resulted in a more gradual slope. Flows slow down when they enter the project area, which increases sediment deposition. The result of ongoing subsidence within the project area is therefore expected to reduce freeboard (Reclamation 2016).

Groundwater Quality

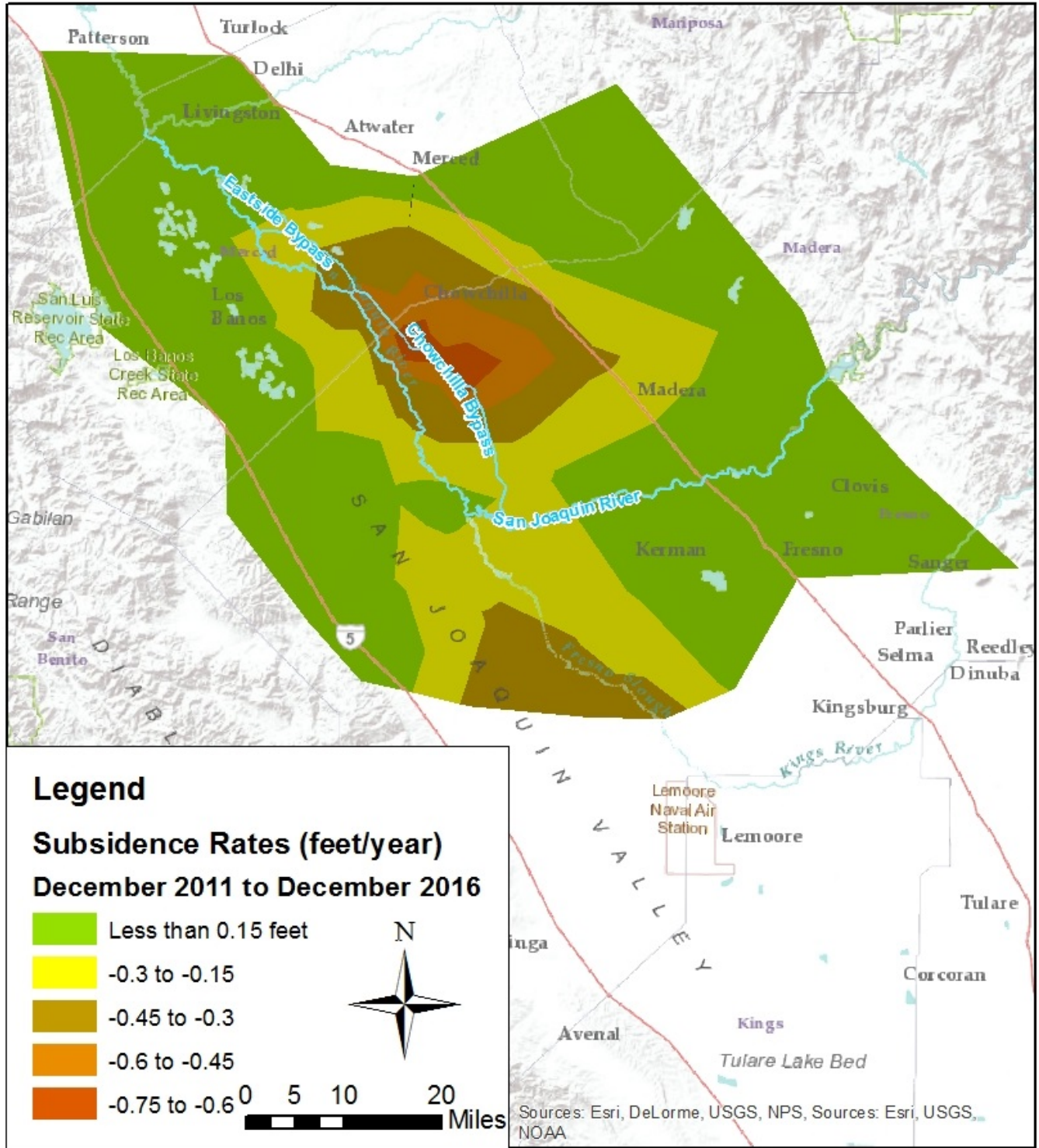
Reclamation conducted water quality monitoring in the project area to better understand the baseline quality of groundwater along the San Joaquin River (Reclamation 2012, 2013). **Table 3.11-4** shows the water quality results from the December 2012 and May 2013 sampling events within the project area and surrounding area. Groundwater development in the San Joaquin Valley in the last 80 years has changed groundwater quality. Irrigation of crops along the west side of the San Joaquin Valley has increased salts and trace metals in the localized shallow groundwater table. A few sites showed exceedances during the 2012/2013 monitoring events including aluminum, arsenic, electrical conductivity, molybdenum, selenium, and zinc. **Figure 3.11-11** shows the location of the monitoring wells.

Flood Management Facilities

Eastside Bypass and Control Structure

The Eastside Bypass extends from the confluence of the Fresno River and the Chowchilla Bypass to its confluence with the San Joaquin River. The Middle Eastside Bypass, with a design channel capacity of 16,500 cfs, receives flows from the San Joaquin River and Upper Eastside Bypass and extends from the Upper Eastside Bypass to the Eastside Bypass Control Structure near the head of the Mariposa Bypass. Based on a 4-foot freeboard criterion, the existing capacity of the Eastside Bypass is estimated at 12,000 cfs, which is substantially less than the design capacity of 16,500 cfs (DWR 2011). The gated Eastside Bypass Control Structure works in coordination with the Mariposa Bypass Control Structure to direct flows either to the Lower Eastside Bypass or to the Mariposa Bypass. LSJLD operates the Eastside Bypass such that the first 2,500 cfs of flows in the Middle Eastside Bypass continue into the Lower Eastside Bypass, then flows are split, with approximately 30 percent of flows to the Mariposa Bypass. If Bear, Owens, or Deadmans Creeks are flooding, LSJLD may close the gates at the Eastside Bypass Control Structure and route more flow to the Mariposa Bypass. Channel design capacity is based on 4 feet of freeboard along the bypasses, except along a portion of the left side of the Eastside Bypass, which has 3 feet of design freeboard (USACE 1993).

Figure 3.11-10. Measured Subsidence Rate between December 2011 and December 2016



Source: U.S. Bureau of Reclamation 2016

Table 3.11-4a. Water Quality Sampling Results

Compound	Alkalinity	Aluminum	Ammonia as N	Arsenic	Bicarbonate as CaCO ₃	Boron	Cadmium	Calcium	Carbonate as CaCO ₃	Chloride	Copper	Electrical Conductivity	Hardness	Lead	Magnesium	Mercury
units	mg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µS/cm	mg/L	µg/L	mg/L	ng/L
Water Quality Objective		87 ¹		10 ²		700 ³	0.21 ¹			106,000 ³	10 ²	150 ^{2,7}		1.9 ⁴		770 ¹

Water Quality Sampling Results (December 2012 above, May 2013 below)**Eastside Bypass – Right Bank (Groundwater Quality)**

MW-10-94	- 340	- 280	- < 0.5	- 12.0	- 340	69 73	< 0.10 < 0.5	59 77	< 2.0 < 2.0	270 -	3.0 0.78	- 2,506	328 427	0.49 < 0.2	44 57	3.0 < 2.0
MW-12-174	250 260	690 550	< 0.5 < 0.5	11.0 7.9	250 260	88 85	< 0.10 < 0.5	70 120	< 2.0 < 2.0	360 -	1.3 1.4	1,969 2,682	319 534	< 0.2 < 0.2	35 57	< 2.0 < 2.0
MW-10-90	280 280	3,600 2,000	< 0.5 < 0.5	15.0 14.0	280 280	150 150	< 0.20 < 0.5	150 150	< 2.0 < 2.0	870 -	5.3 3.1	4,375 4,608	716 704	0.64 0.40	83 80	24 35

Eastside Bypass – Left Bank (Groundwater Quality)

MW-12-170	- 380	- 870	- < 0.5	- 9.0	- 380	- 57	- < 0.5	- 62	- < 2.0	- -	- 1.6	- 2,021	- 381	- 0.22	- 55	- 4.8
MW-12-172	290 310	400 86	< 0.5 < 0.5	9.7 9.2	290 310	56 56	< 0.10 < 0.5	54 52	< 2.0 < 2.0	230 -	0.99 0.83	1,402 1,330	271 253	< 0.2 < 0.2	33 30	4.3 2.3

Notes:

¹ National Recommended Water Quality Criteria Aquatic Life Protection - Freshwater NRAWQC Continuous Concentration.² Basin Plan.³ Agricultural goals.⁴ Regional Water Quality Control Board (RWQCB) Aquatic Life Protection – Freshwater California Toxics Rule and/or National Toxics Rule Continuous Concentration.⁵ Irrigation Suitability.⁶ Toxicity threshold based on reproductive effects on fish and other wildlife.⁷ Applies to Reaches 1 and 2.

Key:

- = Not Sampled

mg/L = milligrams per liter

Bold cells represent measurements exceeding the listed water quality standard.

Source: U.S. Bureau of Reclamation 2012, 2013

Table 3.11-4b. Water Quality Sampling Results

Compound	Molybdenum	Nickel	Nitrate As NO ₃	Orthophosphate as PO ₄	pH	Potassium	Selenium	Sodium	Soil Absorption Ratio	Sulfate	Total Dissolved Solids	Temperature	Total Kjeldahl Nitrogen	Turbidity	Zinc
units	µg/L	µg/L	mg/L	mg/L	units	mg/L	µg/L	mg/L	-	mg/L	mg/L	°C	mg/L	NTU	µg/L
Water Quality Objective	19 ⁴	37 ⁴	5000 ⁵				2 ⁶	69,000 ^{3,5}			450,000 ^{3,5}				84 ⁴
Water Quality Sampling Results (December 2012 above, May 2013 below)															
Eastside Bypass – Right Bank (Groundwater Quality)															
MW-10-94	18 16	8.7 6.4	28 -	< 0.6 -	- 7.6	2.0 1.9	1.6 2.5	340 410	8.13 -	250 -	1,200 1,500	18.0 18.4	< 0.50 < 0.50	26.4 8.1	< 20 < 20
MW-12-174	15 9.0	1.7 3.3	63 -	< 3.0 -	7.8 7.7	1.6 1.5	2.1 3.1	330 380	8.01 -	140 -	1,200 1,500	16.5 17.9	< 0.50 < 0.50	16.5 11.4	< 20 < 20
MW-10-90	56 51	8.4 7.5	120 -	< 3.0 -	7.4 7.6	3.0 3.0	1.9 1.8	710 650	11.5 -	470 -	2,700 2,800	17.5 17.7	0.57 < 0.50	22.3 52.9	360 130
Eastside Bypass – Left Bank (Groundwater Quality)															
MW-12-170	- 6.3	- 2.1	- -	- -	- 7.4	- 0.94	- < 0.4	- 270	- -	- -	- 1,100	- 19.0	- < 0.50	- 16.1	- < 20
MW-12-172	19 22	1.3 < 0.5	8 -	< 0.6 -	7.7 7.4	0.72 0.65	< 0.4 < 0.4	210 190	5.53 -	51 -	810 760	17.6 18.4	< 0.50 < 0.50	6.8 1.5	< 20 34

Notes:

- ¹ National Recommended Water Quality Criteria Aquatic Life Protection - Freshwater NRAWQC Continuous Concentration.
- ² Basin Plan.
- ³ Agricultural goals.
- ⁴ Regional Water Quality Control Board (RWQCB) Aquatic Life Protection – Freshwater California Toxics Rule and/or National Toxics Rule Continuous Concentration.
- ⁵ Irrigation Suitability.
- ⁶ Toxicity threshold based on reproductive effects on fish and other wildlife.
- ⁷ Applies to Reaches 1 and 2.

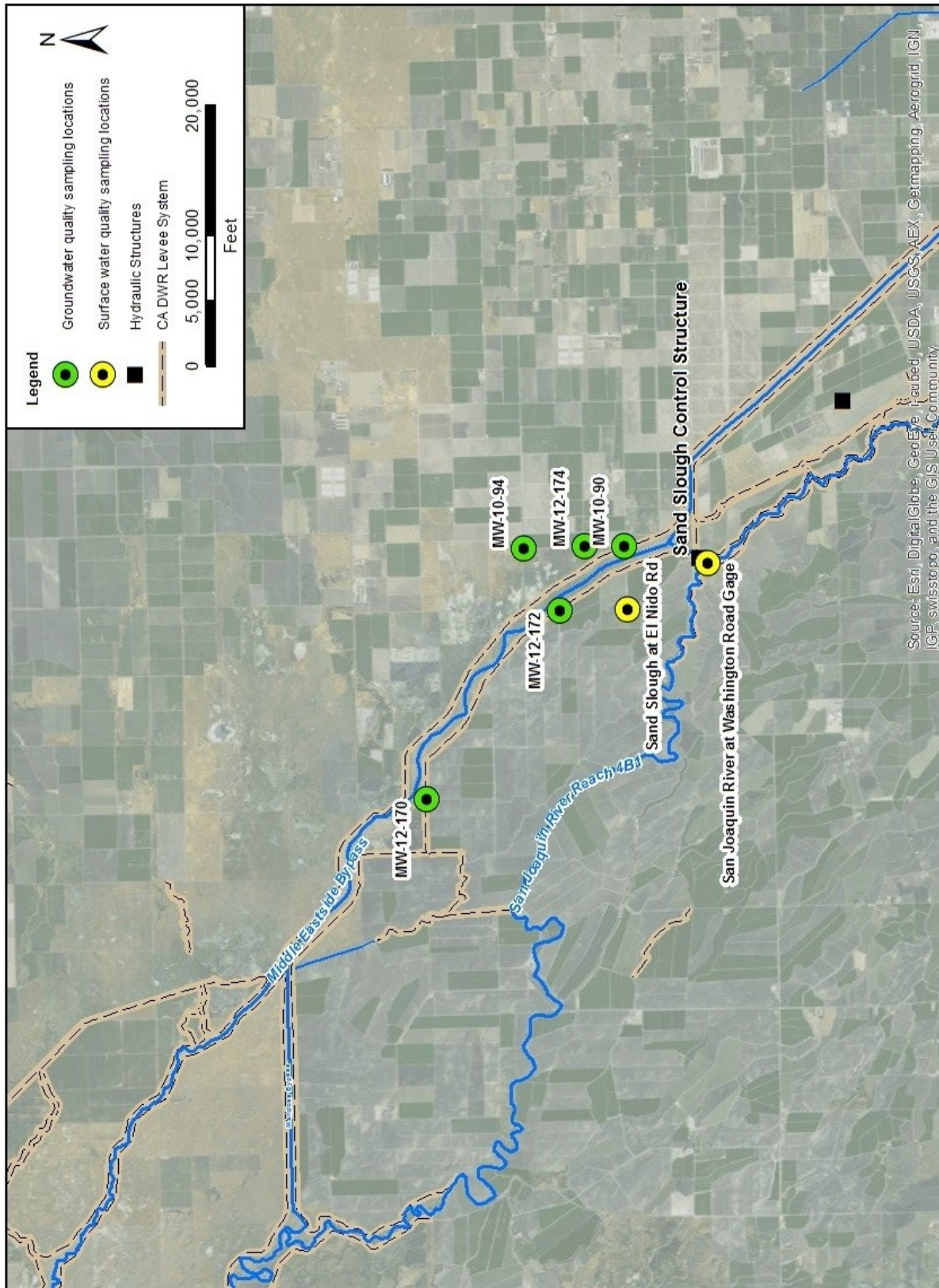
Key:

- = Not Sampled
 mg/L = milligrams per liter

Bold cells represent measurements exceeding the listed water quality standard.

Source: U.S. Bureau of Reclamation 2012, 2013

Figure 3.11-11. Water Quality Sampling Locations



Source: CDM Smith 2017

Mariposa Bypass and Control Structure

The Mariposa Bypass Control Structure regulates the proportion of flood flows that continue down the Eastside Bypass or return to the San Joaquin River. The *Lower San Joaquin River Flood Control Project Operation and Maintenance Manual* (O&M Manual) (Reclamation Board 1967) states that the operating rule for the Mariposa Bypass is to divert all flows to the San Joaquin River when flows in the Eastside Bypass above the Mariposa Bypass are less than 8,500 cfs; flows greater than 8,500 cfs remain in the Eastside Bypass, eventually discharging back into the San Joaquin River at the Bear Creek Confluence at the end of Reach 4B2 of the San Joaquin River. Historical operations deviate from this rule because of the elevation difference between the Eastside Bypass Control Structure and the Mariposa Bypass Control Structure. The Mariposa Bypass Control Structure is approximately 6 feet higher than the Eastside Bypass Control Structure. Flows enter the Mariposa Bypass and are conveyed to Reach 4B2 of the San Joaquin River starting at flows of about 2,500 cfs (reaching a stage of 84 feet mean sea level).

Levees

All levees that will be modified as part of the proposed project are classified as project levees and were constructed as part of the Lower San Joaquin River Flood Control Project or Lower San Joaquin River and Tributaries Project. According to the USACE National Levee Database, the project levees in the project area were inspected on April 7, 2011 and were given a rating of unacceptable (USACE 2013). LSJLD is responsible for operations and maintenance (O&M) of project levees within the project area. The O&M Manual provides guidance for project levees O&M. The O&M Manual calls for semiannual inspections by the LSJLD Superintendent and DWR. Periodic inspections throughout the year by each of these agencies are also described in the O&M Manual.

Restoration Flows and Flood Flows

As described in the SJRRP Record of Decision (ROD), Restoration Flows have a lower priority for downstream channel capacity than flood flows. If water releases from Friant Dam are required for flood control purposes, concurrent Restoration Flows are reduced by an amount equivalent to the required flood control release. If flood control releases from Friant Dam exceed the concurrent scheduled Restoration Flows, no additional Restoration Flow releases above those required for flood control are made for SJRRP purposes. Flood flows are routed in accordance with the O&M Manual to minimize loss of life and property.

Apart from some ponding in low-lying areas, the bypasses generally remain dry until flood flows or Restoration Flows are conveyed. The flood season for the LSJLD typically lasts from November 15 to June 15 of each water year, with rainfall contributing to higher flows during winter, and snowmelt contributing to higher flows in spring. Friant Dam flood releases occur on average once every 3-4 years. Restoration Flows up to a maximum of approximately 300 cfs in the Eastside Bypass could occur under existing conditions but drought and flood conditions have contributed to Restoration Flows not reaching that level in the Eastside Bypass yet. Restoration Flow releases from Friant Dam follow a complex release schedule that varies by restoration/water year type and month, ranging from 100 to 230 cfs during critical-low flow periods to 350 to 4,000 cfs during wet year periods [see Figure ES-4 on page 23 in SJRRP 2011].)

3.11.2 Regulatory Setting

Federal

Federal Safe Drinking Water Act

The Federal Safe Drinking Water Act (SDWA) was enacted in 1974 to protect the quality of drinking water in the United States. This law focuses on all waters actually or potentially designated for drinking use, whether from above ground or underground sources. The SDWA authorized EPA to establish safe standards of purity for specified contaminants and required all owners or operators of public water systems to comply with primary (health-related) standards. State governments, which assume this power from EPA, also encourage attainment of secondary standards (nuisance-related). Contaminants of concern in a domestic water supply are those that either pose a health threat or in some way alter the aesthetic acceptability of the water. These types of contaminants are currently regulated by EPA through primary and secondary maximum contaminant levels (MCLs). As directed by the SDWA amendments of 1986, EPA has been expanding its list of primary MCLs. MCLs have been proposed or established for approximately 100 contaminants.

Federal Clean Water Act

The Federal Clean Water Act (CWA) established the basic structure for regulating discharges of pollutants into the waters of the United States. It gave EPA the authority to implement pollution control programs such as setting wastewater standards for industrial and municipal dischargers. The CWA provides the legal framework for several water quality regulations, including the National Pollutant Discharge Elimination System (NPDES) permits, effluent limitations, water quality standards, pretreatment standards, antidegradation policy, nonpoint source discharge regulation, and wetlands protection. EPA has delegated the responsibility for administration of portions of the CWA to state and regional agencies. The CWA also continued requirements to set water quality standards for all known contaminants in surface waters. The CWA made it unlawful for any person to discharge any pollutant from a point source into waters of the United States unless a permit was obtained under its provisions (EPA 2012).

Section 303

Section 303(d) of the 1972 CWA requires states, territories, and authorized tribes to develop a list of water quality-impaired segments of waterways. The 303(d) list includes waterbodies that do not meet water quality standards for the specified beneficial uses of that waterway even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for waterbodies on their 303(d) lists and implement a process, called TMDLs to meet water quality standards (EPA 2013).

The TMDL process is a tool for implementing water quality standards and is based on the relationship between pollution sources and in-stream water quality conditions. TMDLs establish the maximum allowable loadings of a pollutant that can be assimilated by a waterbody while still meeting applicable water quality standards. TMDLs provide the basis for establishing water quality-based controls. These controls should provide the pollution reduction necessary for a waterbody to meet water quality standards. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The TMDL's allocation calculation for each waterbody must include a margin of safety to ensure that the waterbody can be used for the uses the state has designated. Additionally, the calculation also must account for seasonal variation in water quality (EPA 2013).

TMDLs are intended to address all significant stressors, which cause or threaten to cause waterbody beneficial use impairments, including point sources (e.g., sewage treatment plant discharges), nonpoint sources (e.g., runoff from fields, streets, range, or forest land), and naturally occurring sources (e.g., runoff from undisturbed lands). TMDLs are developed to provide an analytical basis for planning and implementing pollution controls, land management practices, and restoration projects needed to protect water quality. States are required to include approved TMDLs and associated implementation measures in state water quality management plans. Within California, TMDLs implementation is through regional Basin Plans.

The Federal Antidegradation Policy (40 CFR §131.12), established in 1968 and revised in 2005, is designed to protect existing uses and water quality and national water resources, as authorized by Section 303(c) of the CWA. Pursuant to the CFR, state antidegradation policies and implementation methods shall, at a minimum, protect and maintain: 1) existing in-stream water uses; 2) existing water quality where the quality of the waters exceeds levels necessary to support existing beneficial uses, unless the state finds that allowing lower water quality is necessary to accommodate economic and social development in the area; and 3) water quality in waters considered an outstanding national resource. State permitting actions must be consistent with the Federal Antidegradation Policy.

Section 401

Section 401 of the CWA requires that an applicant for a Federal license or permit to discharge into navigable waters must provide the Federal agency with a water quality certification, declaring that the discharge would comply with water quality standards requirements of the CWA. USACE issuance of a Section 404 permit triggers the requirement that a Section 401 certification also be obtained. In California, the RWQCBs issue this certification.

Section 402

Section 402 of the 1972 CWA creates the NPDES permit program. This program covers point sources of pollution discharging into a surface waterbody.

Section 404

Section 404 of the CWA requires a permit to be obtained from USACE for the discharge of dredged or fill material into “waters of the United States, including wetlands.” Waters of the United States include wetlands and lakes, rivers, streams, and their tributaries. Wetlands are defined for regulatory purposes as areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, vegetation typically adapted for life in saturated soil conditions.

Nutrient Guidelines

EPA has established nutrient water quality guidelines for various waterbodies based on ambient water quality conditions within defined ecoregions. The guidelines are not enforceable laws or regulations; they are Federal guidelines for establishing state water quality criteria for nutrients.

Rivers and Harbors Act

Sections 9 and 10 of the Rivers and Harbors Act of 1899 regulate alteration of, and prohibit construction in, any navigable water of the United States without Congressional approval. However, the Eastside

Bypass is not a navigable water according to USACE. Therefore, the Rivers and Harbors Act is not relevant.

Executive Order 11988 (Flood Hazard Policy)

EO 11988 is a flood hazard policy for all Federal agencies that manage Federal lands, sponsor Federal projects, or provide Federal funds to state or local projects. It requires that all Federal agencies take necessary action to reduce the risk of flood loss; restore and preserve the natural and beneficial values served by floodplains; and minimize the impacts of floods on human safety, health, and welfare. Specifically, EO 11988 dictates that all Federal agencies avoid construction or management practices that would adversely affect floodplains unless that agency finds no practical alternative, and the proposed action has been designed or modified to minimize harm to or within the floodplain.

Section 408 Permission

Approval for any modifications, alterations, or occupation of public works projects is granted through the USACE Section 408 program. Recently, USACE made a determination that the project area is not part of an authorized Federal flood control project and is not regulated under Section 408. DWR will work through the Central Valley Flood Protection Board (CVFPB) Encroachment Permit process to confirm this determination.

USACE Levee Design Criteria

Regardless of whether the levees at the project site are part of a Federally authorized flood control project, the proposed levee improvements would meet USACE engineering criteria, including EM 111—1913, *Design and Construction of Levees*; Engineering Technical Letter (ETL) 1110-2-569, *Design Guidance for Levee Underseepage*; and ETL 1110-2-555, *Design Guidance on Levees*.

State

Regional Water Quality Control Plans

The California Water Code (CWC, Section 13240) requires the preparation and adoption of water quality control plans (Basin Plans), and the Federal CWA (Section 303) supports this requirement. According to Section 13050 of the CWC, Basin Plans consist of a designation or establishment for the waters within a specified area of beneficial uses to be protected, water quality objectives to protect those uses, and an implementation program needed for achieving the objectives. State law also requires that Basin Plans conform to the policies set forth in the Water Code, beginning with Section 13000, and any State policy for water quality control. The Basin Plans are regulatory references for meeting the State and Federal requirements for water quality control (40 CFR 131.20). One significant difference between the State and Federal programs is that California's Basin Plans also establish standards for groundwater in addition to surface water (RWQCB 2016).

The regional water quality control plan that governs waterbodies within the project area is the Central Valley Basin Plan. The Central Valley Region Basin Plan covers an area, including the entire Sacramento and San Joaquin River basins, involving an area bound by the crests of the Sierra Nevada on the east and the Coast Range and Klamath Mountains on the west. The area covered in this WQCP extends some 400 miles, from the California-Oregon border to the headwaters of the San Joaquin River.

Irrigated Lands Regulatory Program

Central Valley RWQCB's Irrigated Lands Regulatory Program was initiated in 2003 to prevent agricultural runoff from impairing surface waters. The program defined irrigated lands as lands where water is applied for producing crops, including row, field, and tree crops, as well as commercial nurseries, nursery stock production, managed wetlands, and rice production.

New waste discharge requirements are being developed under the Long-term Irrigated Lands Regulatory Program that address irrigated agricultural discharges throughout the Central Valley. The Central Valley RWQCB adopted Order No. R5-2012-0116 for the Eastern San Joaquin River Watershed and developed draft requirements for the Western San Joaquin River Watershed as part of the Long-term Irrigated Lands Regulatory Program. Per a letter issued by the Central Valley RWQCB (RWQCB 2016), growers in the project area who own and operate interceptor lines will be covered under the Irrigated Lands Regulatory Program for potential water quality effects from seepage water discharge.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act was enacted in 1969 and established the SWRCB. The Porter-Cologne Act defines water quality objectives as the limits or levels of water constituents that are established for reasonable protection of beneficial uses. Unlike the CWA, the Porter-Cologne Act applies to both surface and groundwater. The Porter-Cologne Act requires that each of nine semi-autonomous RWQCB establish water quality objectives while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. The project area is located within the Central Valley Region, which is the jurisdiction of the Central Valley RWQCB. Beneficial uses, together with the corresponding water quality objectives, are defined as standards, per Federal CWA regulations. Therefore, the regional plans provide the regulatory framework for meeting State and Federal requirements for water quality control. Changes in water quality are only allowed if the change is consistent with the most restrictive beneficial use designation identified by the State, does not unreasonably affect the present or anticipated beneficial uses, and does not result in water quality less than that prescribed in the water quality control plans (RWQCB 2016). Any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State, other than into a community sewer system, must file a report of waste discharge with the appropriate regional board.

NPDES Statewide General Construction Stormwater Permit

SWRCB issues the Statewide NPDES general permit for stormwater discharges associated with construction activities (General Construction Permit). This permit requires monitoring for sediment and non-visible pollutants under specified circumstances. Any project that disturbs an area greater than 1 acre requires a Notice of Intent (NOI) to discharge under the General Construction Permit. The General Construction Permit includes measures to eliminate or reduce pollutant discharges through a Stormwater Pollution Prevention Plan (SWPPP), which describes the implementation and maintenance of best management practices (BMPs) to control stormwater and other runoff during and after construction. The General Construction Permit contains receiving water limitations, which require stormwater discharges to not cause or contribute to a violation of any applicable water quality standard.

California Toxic Rule

EPA has established water quality criteria for certain toxic substances via the California Toxic Rule (CTR). The CTR establishes acute and chronic surface water quality standards for waterbodies, such as

inland surface waters and enclosed bays and estuaries, that are designated by the RWQCBs as having beneficial uses protective of aquatic life or human health.

State's Antidegradation Policy

In accordance with the Federal Antidegradation Policy, SWRCB adopted Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality Waters in California (more commonly referred to as the State's Antidegradation Policy), which restricts the degradation of surface waters of the State and protects waterbodies where the existing water quality is higher than necessary for the protection of present and anticipated designated beneficial uses. The State Antidegradation Policy is implemented by the RWQCBs.

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

The General Order for Dewatering and Other Low Threat Discharges to Surface Waters, RWQCB Order No. R5-2008-0081, is a general permit covering discharges of construction dewatering. Individuals, public agencies, private businesses, and other legal entities discharging relatively pollutant-free wastewaters that pose little or no threat to the quality of surface waters, for a duration of either 4 months or less in duration or have an average dry weather flow less than 0.25 million gallons per day, may obtain authorization under this General Order to discharge.

Central Valley Flood Protection Board Standards

California Code of Regulations (CCR) Title 23, Division 1, Article 8, Sections 111–137 are the primary State standards applicable to the proposed levee improvements. These CVFPB standards govern the design and construction of encroachments that affect all flood control works and floodways, and are used by CVFPB for the regulation of encroachments. The standards apply to any work within the limits of, or which can affect, any authorized flood control project or any adopted plan of flood control. These standards also provide the public with information needed to prepare and submit encroachment applications. Article 8 contains a list of the regulated streams in California and dates of the allowable periods when work in the streams may occur, and contains regulations related to the types of structures that may and may not be placed in floodways, along with associated permit requirements. In addition to levees, Article 8 also covers borrow and spoil materials, borrow excavation activities, and dams and related structures that are located within floodways or could affect flood control works.

Senate Bill 1324

SB 1324 was passed by the State in 1955 to amend Section 8621 of the CWC to “provide that the CVFPB, with the approval of the Department of Finance, may execute in connection with any flood management project a substitute plan which includes provision for the State to construct works of the project when in lieu of acquiring all or any of the lands, easements, or ROW in connection therewith, a saving to the State will result.” The bill was also amended to state that in carrying out its provisions, CVFPB may adopt on behalf of the State any necessary revision of any flood management project authorized under Chapter 2, Part 6, Division 6, of the CWC, but that no money shall be expended to meet the requirements of the Federal Government for local cooperation in connection with such projects unless the Federal Government agrees to accept the substitute plan.

2012 Central Valley Flood Protection Plan and 2017 Update

The 2012 Central Valley Flood Protection Plan (CVFPP) and CVFPP 2017 Update apply to the project goals, objectives, design, implementation, and impact analysis, including guidance for improvements to rural-agricultural levees.

California Water Code and California Code of Regulations Title 23

These codes require permits for any project that may encroach upon, improve, alter or affect adopted plans of flood control (including Federal/State flood control systems, regulated streams, and designated floodways under CVFPP's jurisdiction). These codes apply to project design.

Water Code (Section 10750) or Assembly Bill 3030

Assembly Bill (AB) 3030 commonly referred to as the Groundwater Management Act, permits local agencies to develop groundwater management plans (GMP). Subsequent legislation has further amended the Water Code to make the adoption of a management program mandatory if an agency is to receive public funding for groundwater projects, creating an incentive for the development and implementation of plans.

Water Code (Section 10753.7) or Senate Bill 1938

Senate Bill (SB) 1938 requires local agencies, seeking State funds for groundwater construction or groundwater quality projects, to have the following: 1) a developed and implemented groundwater management plan that includes basin management objectives (BMOs) and addresses the monitoring and management of groundwater levels, groundwater quality degradation, inelastic land subsidence, and surface water/groundwater interaction; 2) a plan addressing cooperation and working relationships with other public entities; 3) a map showing the groundwater subbasin the project is in, neighboring local agencies, and the area subject to the groundwater management plan; 4) protocols for the monitoring of groundwater levels, groundwater quality, inelastic land subsidence, and groundwater/surface water interaction; and 5) groundwater management plans with the components listed above for local agencies outside the groundwater subbasins delineated by Bulletin 118 (DWR 2003).

Water Code (Sections 10920 to 10936 and 12924) or Senate Bill X7 6

SB X7 6 established a voluntary statewide groundwater monitoring program and requires that groundwater data collected be made readily available to the public. The bill requires DWR to 1) develop a Statewide groundwater level monitoring program to track seasonal and long-term trends in groundwater elevation; 2) conduct an investigation of the State's groundwater basins delineated by Bulletin 118 and report its findings to the Governor and Legislature no later than January 1, 2012 and thereafter in years ending in five or zero; and 3) work cooperatively with local monitoring entities to regularly and systematically monitor groundwater elevation to demonstrate seasonal and long-term trends. Assembly Bill 1152, Amendment to Water Code Sections 10927, 10932, and 10933, allows local Monitoring Entities to propose alternate monitoring techniques for basins meeting certain conditions and requires submittal of a monitoring plan to DWR for evaluation.

Fish and Game Code (Sections 1600–1603)

These sections require notifying CDFW prior to any project activity that would substantially divert or obstruct 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 or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or

lake. This includes ephemeral streams and watercourses with a subsurface flow. It may also apply to work undertaken within the floodplain of a body of water.

Sustainable Groundwater Management Act

SGMA requires establishment of groundwater sustainability agencies (GSAs) by June 30, 2017. GSAs are local entities tasked with the sustainable management of the groundwater basin(s) through the implementation of a groundwater sustainability plan. The following entities have been proposed to act as GSA for the Delta-Mendota and Merced subbasins, which have been designated as “high priority” by DWR:

- Delta-Mendota subbasin: Farmers Water District, Aliso Water District, Patterson Irrigation District, West Stanislaus Irrigation District, and San Joaquin River Exchange Contractors Water Authority (DWR 2016)
- Merced subbasin: Turner Island Water District (DWR 2016)

Regional and Local

Lower San Joaquin Levee District

The LSJLD was created in 1955 by a special act of the State Legislature to operate, maintain, and repair levees, bypasses, and other facilities built in connection with the Lower San Joaquin River Flood Control Project. The district encompasses approximately 468 square miles (300,000 acres) in Fresno, Madera, and Merced Counties.

Merced County Integrated Regional Water Management Plan

The Merced County Integrated Regional Water Management Plan (MIRWMP) addresses water supply, water quality, flood risk reduction, enhancement of aquatic and riparian habitat, and improvement of the County’s recreational opportunities (MIRWMP 2013).

Merced County 2030 General Plan

The Merced County 2030 General Plan’s Public Services and Facilities Element addresses storm drainage and flood control in Merced County and also identifies the policies that relate to Surface Water Quality:

- **Policy NR-3.2:** Require minimal disturbance of vegetation during construction to improve soil stability, reduce erosion, and improve stormwater quality.
- **Policy W-2.2:** Prepare updated development regulations, such as BMPs, that prevent adverse effects on water resources from construction and development activities.
- **Policy W-2.4:** Encourage agriculture and urban practices to comply with the requirements of the RWQCB for irrigated lands and confined animal facilities, which mandate agricultural practices that minimize erosion and the generation of contaminated runoff to ground or surface waters by providing assistance and incentives.

Pesticide Use Permits

In addition to Federal and State oversight, County Agricultural Commissioners in California also regulate the sale and use of pesticides and issue use permits for applications of pesticides that are

deemed as restricted materials by DPR. County Agricultural Commissioners collect pesticide use reports and investigate incidents and illnesses.

3.11.3 Environmental Effects

No Action Alternative

Under the no action alternative, no construction-related activities would occur and no existing facilities would be modified.

Restoration Flows are limited by seepage concerns to a maximum of approximately 300 cfs in the Eastside Bypass under existing conditions. Under the no action alternative, Restoration Flows would increase up to a maximum of approximately 580 cfs in the Eastside Bypass because it is reasonably foreseeable that seepage concerns would be alleviated by Reclamation in 2018 as described in Reclamation's Seepage Management Actions Environmental Assessment and Finding of No Significant Impact (reference https://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=27373); seepage easement acquisitions in 2017 and 2018 are anticipated that would allow Restoration Flows up to approximately 580 cfs in the Eastside Bypass *without the proposed project*. Other proposed Reclamation realty actions to address adverse seepage and allow up to approximately 1,300 cfs in the Eastside Bypass, and future subsequent projects to increase Restoration Flows in the Eastside Bypass up to the approximately 2,500 cfs, would not occur without the proposed project levee improvements increasing safe channel conveyance capacity to 1,300 cfs.

The Restoration Goal of the Settlement, including conveying up to 4,500 cfs throughout the Restoration Area, would not occur under the no action alternative. Compared to existing conditions, the no action alternative provides additional flows in the Eastside Bypass. Restoration Flow releases from Friant Dam would continue to follow a complex release schedule that varies by restoration/water year type and month, ranging from 100 to 230 cfs during critical-low flow periods to 350 to 4,000 cfs during wet year periods (see Figure ES-4 on page 23 in SJRRP 2011), with the caveat that Restoration Flows could not be released that exceed approximately 580 cfs in the Eastside Bypass.

Impacts to hydrology and flood management, groundwater, surface water supplies and facilities, and surface water quality from the increases in Restoration Flows from approximately 300 cfs under existing conditions to approximately 580 cfs under no action alternative conditions would be expected to be as described in the SJRRP Draft PEIS/R (SJRRP 2011). The program- and project-level impacts, including cumulative impacts, of flow-related actions related to the SJRRP were analyzed in detail in the SJRRP PEIS/R (Chapter 11.0, "Hydrology – Flood Management," Chapter 12.0, "Hydrology – Groundwater," Chapter 13.0 – "Hydrology – Surface Water Supplies and Facilities," Chapter 14.0, "Hydrology – Surface Water Quality," and Chapter 26.0, "Cumulative Impacts," in SJRRP 2012), which are all incorporated by reference. Hydrologic and water quality impacts relative to the Eastside Bypass would be mitigated to less-than-significant levels because Reclamation would carry out the following mitigation measures identified in the SJRRP PEIS/R as follows (full language of mitigation measures can be found in the chapters referenced above):

- Mitigation Measure FLD-1: Implement Design Standards to Minimize Risk of Loss, Injury, or Death Involving Flooding (program level);

- Mitigation Measure GRW-1a: Prepare and Implement a Stormwater Pollution Prevention Plan That Minimizes the Potential Contamination of Surface Waters, and Complies with Applicable Federal Regulations Concerning Construction Activities (program level);
- Mitigation Measure GRW-1b: Conduct Phase I Environmental Site Assessments (program level);
- Mitigation Measure SWS-1: Provide Alternate Temporary or Permanent River Access to Avoid Diversion Losses (program level);
- Mitigation Measure SWQ-1A: Prepare and Implement a Stormwater Pollution Prevention Plan that Minimizes the Potential Contamination of Surface Waters, and Complies with Applicable Federal Regulations Concerning Construction Activities (program level); and
- Mitigation Measure SWQ-1B: Conduct and Comply with Phase I Environmental Site Assessments in the Restoration Area (program level).

Hydrology and water quality impacts found to be potentially significant and unavoidable in SJRRP 2011) were as follows (full language of impact analysis can be found in SJRRP Draft EIS/R Chapter 12.0 (SJRRP 2011), “Hydrology – Groundwater,” and Chapter 26.0, “Cumulative Impacts”):

- Impact GRW-4: Changes in Groundwater Levels in CVP/SWP Water Service Areas (project level),
- Impact GRW-5: Changes in Groundwater Quality in CVP/SWP Water Service Areas (project level), and
- Cumulative Impact: Changes in Groundwater Levels and Groundwater Quality in CVP/SWP Water Service Areas.

Proposed Project

a) Violate any water quality standards or waste discharge requirements? (Less-than-Significant Impact with Mitigation Incorporated)

The proposed project would involve numerous activities in or near a water conveyance facility, the Eastside Bypass: removing the Merced NWR weirs, improving the Dan McNamara Road low-flow crossing of the Eastside Bypass, providing fish passage at the Eastside Bypass Control Structure, and improving Eastside Bypass levees near Sand Slough. These construction-related project activities and any related runoff could negatively affect surface water quality in the Eastside Bypass. Construction-related ground-disturbing activities could temporarily cause soil erosion and increased sedimentation in the Eastside Bypass and continue downstream into the San Joaquin River. Construction equipment could discharge waste (petroleum products and/or other construction-related waste) that could inadvertently be introduced into the waterways through onsite or offsite spills. These potential impacts could occur immediately if discharged into water during the construction activity, or could be mobilized in the future during flood flows or Restoration Flows in the Eastside Bypass if discharged under dry conditions. This impact would be potentially significant.

DWR and/or Reclamation would implement Mitigation Measure SWQ-1 prior to and during construction activities to reduce this impact.

Mitigation Measure SWQ-1: Develop and Implement a Stormwater Pollution Prevention Plan

Construction activities associated with the proposed project are subject to construction-related stormwater permit requirements of the Federal Clean Water Act's NPDES program. Reclamation and/or DWR will obtain any required permits through the Central Valley RWQCB before any ground-disturbing construction activity. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented to comply with applicable Federal regulations concerning construction activities.

The SWPPP will include BMPs that minimize the potential contamination of surface waters. The SWPPP will detail the construction-phase erosion and sediment control BMPs, housekeeping measures for control of contaminants other than sediment, and treatment measures and post-construction BMPs to be implemented to control pollutants once the project has been constructed. Erosion control BMPs will include source control measures such as scheduling construction activities with regard to the rainy season; wetting dry and dusty surfaces to prevent fugitive dust emissions; preserving existing vegetation; and providing effective soil cover (e.g., geotextiles, straw mulch, hydroseeding) for inactive areas and finished slopes to prevent sediments from being dislodged by wind, rain, or flowing water. Sediment-control BMPs will include measures such as street sweeping transportation corridors and installing fiber rolls and sediment basins to capture and remove particles already dislodged. The SWPPP will establish good housekeeping measures such as construction vehicle storage and maintenance, handling procedures for hazardous materials, and waste management BMPs. These BMPs include procedural and structural measures to prevent release of wastes and materials used at the site. BMPs associated with installing removable cofferdams and temporary flow diversions around the work area will be described.

In addition to site-specific and operation BMPs, the SWPPP will include measures to be implemented before any storm event, inspection and maintenance of BMPs, and monitoring of runoff quality by visual and/or analytical means. Implementing the SWPPP will avoid or mitigate runoff pollutants at the construction sites to the maximum extent practicable.

For levee modification work, DWR will develop and implement a Bentonite Slurry Spill Prevention and Clean-up Plan, and will ensure that all construction workers at the levee modification site understand and comply with it. The plan will include:

- Procedures for responding to any inadvertent release of the slurry into wetlands, waterbodies, or other sensitive areas;
- Procedures that will be used to contain, clean up, and dispose of any inadvertent releases of the slurry.
- Spill containment and clean-up supplies available on all vehicles, at staging areas and borrow sites where bentonite is present and are directly adjacent to wetlands, waterbodies, or other sensitive areas.
- Notification of NMFS and CDFW of any major releases of bentonite into any wetlands, waterbodies, or other sensitive areas.

Implementing Mitigation Measure SWQ-1 would reduce this impact to a less-than-significant level because DWR and/or Reclamation and the construction contractor(s) would be required to comply with BMPs that reduce the potential for construction-related erosion or contamination and meet strict RWQCB requirements.

- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?**
(Less-than-Significant Impact)

Project construction activities may result in a temporary decrease in groundwater levels. Excavation and trenching activities during construction may encounter groundwater in the shallow aquifer. The excavated area would need to be dewatered during construction and the resulting water would be contained and treated in accordance with all applicable State and Federal regulations before being discharged. Dewatering during construction could cause temporary groundwater level declines in the shallow aquifer in the project vicinity during construction activities; however, construction dewatering would not affect the deeper-confined aquifer used by most production wells in the area. These potential impacts would only occur during construction, and any dewatering activities would cease after construction is complete.

The proposed project includes construction of a discontinuous levee cutoff wall that would extend to a depth of 35 feet below the surrounding ground surface. In areas where the cutoff wall is constructed, the wall could act to reduce the localized flow of water between the Eastside Bypass and the adjacent shallow aquifer. In any gaining areas affected by the cutoff wall, the cutoff wall could increase groundwater levels on the landside of the wall as water that would otherwise discharge into the Eastside Bypass could backup underground behind the cutoff wall. The relationship between the Eastside Bypass and the underlying groundwater aquifer is dynamic, and varies depending on the location along the reach, the type of water year, and the season. Because of this variation, and because the cutoff wall would be discontinuous along the reach, any effect on groundwater would be localized. Flow around the cutoff wall in other portions of the bypass would continue to allow regional recharge and discharge to and from the river and there would be no substantial interruption to existing regional subsurface flow patterns. As discussed above in Section 3.11.1, "Environmental Setting," the Eastside Bypass is generally a losing stream in the project area; therefore, the flow increase in the Eastside Bypass could contribute to increased shallow groundwater levels along and adjacent to the bypass, as water infiltrates the bed and bank.

Any impacts resulting from infiltration or seepage would be avoided or substantially reduced by taking the appropriate actions Reclamation is already committed to in the SJRRP Physical Monitoring and Management Plan and/or the Seepage Management Plan included in the SJRRP Draft PEIS/R (SJRRP 2011) and already being implemented by Reclamation. More specifically, seepage concerns would be alleviated by Reclamation in 2018 as described in Reclamation's Seepage Management Actions Environmental Assessment and Finding of No Significant Impact (reference https://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=27373); seepage easement acquisitions in 2017 and 2018 should allow Restoration Flows up to approximately 580 cfs in the Eastside Bypass with increases to approximately 1,300 cfs and eventually approximately 2,500 cfs with the proposed project and other Reclamation seepage management actions. These plans provide a means to reduce or

avoid risk of seepage impacts through a combination of monitoring and analyses to better understand and predict system response to Restoration activities, development of thresholds and response actions designed to reduce or avoid undesirable outcomes, and projects to prevent future impacts while allowing increased flows. In addition, increased recharge along losing reaches of the Eastside Bypass that have depleted groundwater levels would be beneficial. Overall, the impact to localized surface groundwater levels could be beneficial because of the added Restoration Flows into the Eastside Bypass above approximately 580 cfs with the proposed project.

Removing the two Merced NWR weirs and installing a new groundwater well would change the way the refuge uses its surface water and groundwater supplies in the project vicinity. The refuge relies on surface water supplies from the Merced Irrigation District and has several groundwater wells that can be used for water supply to apply to its wetland areas within and adjacent to the Eastside Bypass. Removing the weirs would preclude the Refuge from using surface supplies in the Eastside Bypass.

The new well would have a capacity of 1,500 gallons per minute (gpm) and would be screened at about 150 to 200 feet below ground surface, making withdrawals from the shallow aquifer. Simulated future groundwater conditions for different year types show that water levels in the shallow aquifer slightly decrease considering both Restoration Flows and the addition of the new Merced NWR supply well. Design parameters of the new replacement well were determined based on a review of well completion reports of 35 wells drilled within a 3-mile radius of the proposed well site. While the new well would likely cause a very small decline in groundwater levels in the shallow aquifer, the current groundwater levels are very close to the surface (approximately 4-11 feet below ground surface for the past 5 years). The neighboring landowner currently operates a drainage system to maintain water levels suitable for agricultural uses. This drainage system was installed to reduce groundwater levels for agricultural purposes, which indicates that groundwater levels are (at times) too shallow to maintain agricultural production. Given that the neighboring landowner already takes steps to actively reduce groundwater levels, a small decline in groundwater levels in the shallow aquifer introduced by the new replacement well would not likely adversely affect conditions in the shallow aquifer. Therefore, impacts to groundwater levels would be less than significant.

The exact location of the well would be determined based on factors such as groundwater availability, the presence of salinity and boron, sodium-absorption ratio, and related parameters after conducting a hydrogeological assessment of the area by a qualified driller or professional consultant. Two sites are under consideration, and an exploratory well would be drilled as a near-term action. The assessment would include a location that would limit the impacts of subsidence. For the reasons described above, impacts to the deep-water aquifer would not occur, and changes to groundwater levels in the shallow aquifer in the project area would be less than significant.

**c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?
(Less-than-Significant Impact with Mitigation Incorporated)**

The proposed project would remove the two Merced NWR weirs, replace a groundwater well, modify the Dan McNamara Road low-flow crossing to improve fish passage at the Eastside Bypass, provide fish passage at the Eastside Bypass Control Structure, and improve levees in the Eastside Bypass near Sand Slough. These construction-related project activities and runoff from them could negatively affect surface water quality in the Eastside Bypass. Construction-related ground-disturbing activities could

temporarily cause soil erosion and increased sedimentation in the Eastside Bypass and continue downstream into the San Joaquin River. This impact would be potentially significant.

DWR and/or Reclamation would implement Mitigation Measures SWQ-1 and SWQ-2 before and during project construction to reduce this impact.

Mitigation Measure SWQ-1: Develop and Implement a Stormwater Pollution Prevention Plan.

Please refer to Impact SWQ-1 above for the full text of this mitigation measure.

Mitigation Measure SWQ-2: Develop and Implement a Turbidity Monitoring Program.

The Basin Plan for the Sacramento River and San Joaquin River Basins (RWQCB 2016) contains turbidity objectives. Specifically, the plan states that where natural turbidity is less than 1 nephelometric turbidity unit (NTU), controllable factors shall not cause downstream turbidity to exceed 2 NTUs; where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU; where natural turbidity is between 5 and 50 NTUs, turbidity levels may not be elevated by 20 percent above ambient conditions; where ambient conditions are between 50 and 100 NTUs, conditions may not be increased by more than 10 NTUs; and where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

During construction in the wetted channel when water is flowing through the project area, turbidity shall be monitored approximately 300 feet downstream of construction activities to determine whether turbidity is being affected by construction. Grab samples will be collected at a downstream location representative of the flow near the construction site, as well as upstream of project effects to serve as a control. If there is a visible sediment plume being created from construction, the sample shall represent this plume. A sampling plan shall be developed and implemented based on site-specific conditions and in consultation with RWQCB.

If sampled turbidity levels exceed basin plan standards, construction-related earth-disturbing activities shall immediately slow to a point that would alleviate the immediate problem. RWQCB shall be notified and consulted with, as well as agreed-to measures being implemented, prior to continuing the activity causing the increased turbidity.

Implementing Mitigation Measures SWQ-1 and SWQ-2 would reduce this impact to a less-than-significant level because BMPs would be used to reduce erosion during construction, and because DWR and/or Reclamation will implement a turbidity monitoring program to ensure that construction activities do not increase turbidity in the Eastside Bypass above standards identified in the Basin Plan and meet strict RWQCB requirements.

- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?
(Beneficial Impact)**

The proposed project includes weir removals and a new replacement well at the Merced NWR, fish passage improvements at the Dan McNamara Road crossing and Eastside Bypass Control Structure, and

Eastside Bypass levee improvements. These activities would have minor effects on Eastside Bypass bathymetry and operations, but are not expected to substantially alter existing local or regional drainage patterns or the rate or amount of surface runoff, since these changes would not reduce the ability of the Eastside Bypass to convey flood and Restoration Flows. Conversely, the ability of the Eastside Bypass to convey design flows and effectively act as a flood bypass facility would be improved by the proposed project, especially by improving key Eastside Bypass levee reaches with cutoff walls to current USACE standards. This impact would be a beneficial impact.

- e) 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?**
(No Impact)

The proposed project would not alter the capacity of existing or planned stormwater drainage systems. In addition, the proposed project would not provide substantial additional sources of polluted runoff (please see the discussion under a) and Mitigation Measures SWQ-1 and SWQ-2). Therefore, the proposed project would have no impact.

- f) Otherwise substantially degrade water quality?**
(Less-than-Significant Impact)

Surface water quality impacts are described above in subsections a) and c). Groundwater quality impacts are described herein. Due to the varying degrees of surface-groundwater interaction in the project area, it is possible that groundwater levels surrounding the Eastside Bypass may increase following project implementation due to Restoration Flows. Surface water quality is generally better than groundwater quality in the project area, and increased groundwater levels due to increased seepage of surface water into the shallow groundwater system could improve groundwater quality in the project area. Surface waters percolating into groundwater could also bring unknown contaminants into the groundwater through seepage. It is expected that no substantial changes would occur that degrade surface water such that groundwater quality would be significantly affected; therefore, impacts to groundwater quality in the project area from the proposed project would be less than significant.

- g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**
(No Impact)

The proposed project is located within the 100-year floodplain, designated Zone A, an area of special flood hazards designated by the Federal Emergency Management Agency. The proposed project would not directly or indirectly cause construction of any housing whatsoever. Therefore, no impact would occur.

- h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?**
(Beneficial Impact)

The project would place, modify, and remove several structures within the 100-year flood hazard area of the Eastside Bypass.

The existing Merced NWR weir system includes two individual weirs (upstream and downstream along the Eastside Bypass). The existing structures are 6- to 6.5-feet tall and span the Eastside Bypass channel. These structures currently restrict flows, including flood flows. Removing these structures would reduce existing flood-flow restrictions in the Eastside Bypass and, as a result, would slightly reduce flood risk. The new groundwater well within the Merced NWR would be within the Eastside Bypass and may affect flood flows. However, the design of the well would result in negligible effects on flood elevations, specifically with respect to CVFPB's 0.1-foot water level increase criterion.

Under existing conditions, Dan McNamara Road creates an obstruction to flows in the Eastside Bypass. During Restoration Flows and flood events, flows exceeding 25 cfs cannot pass through the existing culverts due to underdesign and siltation, and flood flows overtop the road at flows exceeding 25 cfs. Once overtopping of Dan McNamara Road occurs, the roadbed contributes to increased bottom roughness and partially obstructs flood flows. Replacing the undersized and silted-in culverts at the Dan McNamara Road crossing with box culverts designed to pass flood and Restoration Flows would therefore reduce existing restrictions on flood flows and Restoration Flows. To keep grazing cattle from crossing the road or getting into the culverts, break away fencing (or some other exclusion cattle barrier) would be added approximately 10 feet upstream and downstream of the culvert openings and at the edge of the ROW. Additional measures to keep cattle out of the culvert include installing metal piping at the openings of the culvert or floating gates; however, these measures would not interfere with flood flows, which would readily pass through the fence and piping. If DWR elects to remove the culvert without replacement, there would be no new structures that would impede or redirect flood flows.

Fish passage upgrades at the Eastside Bypass Control Structure would install a new channel through the existing control structure to support fish passage. The proposed channel upgrades upstream and downstream of the structure could add roughness to the Eastside Bypass; however, a one-dimensional model was developed to inform design features and ensure that the rock ramp meets criteria for passing flood and Restoration Flows. For the segment downstream of the proposed fish ramp, the water surface elevation at 8,000 cfs would be the same for both the existing condition and the condition after project construction. Over the length of the ramp, water surface changes would range from a 0.02-foot decrease to a 0.06-foot increase when compared to existing conditions. Decreases in water surface elevation were seen throughout most of the rest of the Eastside Bypass Control Structure with a water surface decrease of just over 1 foot upstream of the control structure after project construction.

Operating conditions at the modified Eastside Bypass Control Structure would influence how the flow is split between the Eastside Bypass and the Mariposa Bypass. Following project construction, nearly 800 cfs of additional flows would be diverted through the Eastside Bypass Control Structure during flood flows when compared to the existing condition. If needed, the gates could be operated or the boards could be placed back into the Eastside Bypass Control Structure during flood flows to divert additional flows into the Mariposa Bypass. Based on historical operations, this would likely only be needed during extraordinary flood conditions.

Levee improvements along the Eastside Bypass near Sand Slough would include the installation of a cutoff wall. A cutoff wall would strengthen levees and reduce potential for levee failure without interfering with flood flows. The Eastside Bypass levee improvements are designed to effectively pass additional Restoration Flows up to 2,500 cfs in the Eastside Bypass without significantly increasing flood risk. The improved levee reaches designed to meet current USACE standards could also improve flood conveyance in the Eastside Bypass. Strengthening the Eastside Bypass levees with cutoff walls and reducing the risk of levee failure at this location would potentially increase the risk of levee

overtopping or failure in downstream reaches. Changes in water level frequencies within the system would indicate a redirecting of flood flows due to the upstream channel capacity or floodplain modifications. However, SJRRP modeling of estimated annual damages (EAD) showed little to no change in water level frequencies downstream. Additionally, downstream from the overall SJRRP Restoration Area, the changes in water level frequencies and EAD are smaller than within the Restoration Area and separated by distance from the potential effects of redirected flows (this impact was addressed in the SJRRP Draft PEIS/R (SJRRP 2011) under Impact FLD-1 on pages 11-31 to 11-34 and was determined to be less than significant). Furthermore, impacts from redirected flows would not occur as channels downstream are capable of safely conveying the increased Restoration Flows from approximately 300/580 cfs up to approximately 2,500 cfs, which is the limit of Restoration Flows that can be safely conveyed in the Eastside Bypass with the proposed project. Ultimately, additional levee improvements would be needed under future projects to safely convey additional Restoration Flows up to 4,000 cfs.

Project construction will abide by levee design criteria developed by USACE in *Design and Construction of Levees Engineering and Design Manual* (Manual No. 1110-2-1913), *Engineering Manual: Slope Stability* (Manual No. 1110-2-1902), and *Design Guidance for Levee Underseepage* (Engineering Technical Letter No. 1110-2-569) and all project designs would have a minimum Factor of Safety Level of 1.4, as required by the SJRRP.

Additionally, under the SJRRP, Reclamation would implement three integrated measures that would collectively avoid a potentially significant increase in the risk of flood damage or levee failure during Restoration Flows due to underseepage, through-seepage, erosion, or landside slope stability issues within the Restoration Area, including the Eastside Bypass and downstream. All project elements would be subject to these same provisions, which include: (1) establishing a Channel Capacity Advisory Group and determining and updating estimates of then-existing channel capacities as needed; (2) maintaining Restoration flows below estimates of then-existing channel capacities; and (3) closely monitoring erosion and performing maintenance and/or reducing Restoration Flows as necessary to avoid erosion-related impacts. These provisions are addressed in greater detail in the SJRRP Draft PEIS/R under a section called, "Minimize Flood Risk from Interim and Restoration Flows," on pages 2-22 to 2-28, which are incorporated by reference (SJRRP 2012).

Consequently, the overall impacts from structures placed in the flood hazard area, as well as their effects on impeding or redirecting flood flows would not cause any significant impacts and would be beneficial.

**i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?
(Beneficial Impact)**

The project area is outside of any dam failure inundation zones (Merced County 2016).

The proposed project would improve Eastside Bypass levees and provide beneficial effects related to flooding as described in subsection h) immediately above. Therefore, this impact would be beneficial.

**j) Inundation by seiche, tsunami, or mudflow?
(No Impact)**

Since the project site is many miles inland from the coast and San Francisco Bay, the project site is not exposed to flooding risks from tsunamis. Additionally, the project site and surrounding areas are flat,

which eliminates the potential for mudflows on the project site. The project site does not contain large bodies of standing water that could be subject to a seiche. There would be no impact.

3.12 Land Use and Planning

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XII. LAND USE AND PLANNING – Would the project:					
k) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
l) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.12.1 Environmental Setting

Land Uses and Zoning

Land uses along the Eastside Bypass consist of agriculture and open space. Apart from some ponding in low-lying areas, the bypass generally remains dry until it is required to convey flood flows or Restoration Flows. The flood season typically lasts from November 15 to June 15 of each water year, with rainfall contributing to higher flows during the early part of the flood season, and snowmelt contributing to flows during the latter part of the flood season. In the Grasslands Wildlife Management Area, riparian trees and shrubs have a patchy distribution along the banks of the Eastside Bypass. The Lower Eastside Bypass has some side channels and sloughs that support remnant patches of riparian vegetation. The project area consists of annual and perennial grasslands, croplands, and managed wetlands. Croplands include irrigated hayfields, irrigated grain crops, and pasture.

The project area encompasses a portion of the Merced NWR and the Grasslands Wildlife Management Area. Established in 1951, the Merced NWR encompasses 10,258 acres of wetlands, native grasslands, vernal pools, and riparian areas. The Merced NWR hosts the largest wintering populations of lesser Sandhill cranes and Ross' geese along the Pacific Flyway, along with other visiting waterfowl, water birds, and shorebirds. Public access is provided from Sandy Mush Road, and there are wildlife viewing opportunities including three trails, an auto tour route, and wildlife observation platforms. Public waterfowl hunting opportunities are also available. In addition to managed natural habitats, the Merced NWR contains cultivated corn and winter wheat crops, as well as irrigated pasture for wildlife. It also incorporates a livestock grazing program in partnership with local ranchers and farmers. The Grasslands Wildlife Management Area contains 70,000 acres of private wetlands and 53,000 acres of State and Federal lands, all of which are held under conservation easements. General public access in the management area is not permitted, but there are private waterfowl hunting clubs.

DWR employs a land classification system that includes four general categories of land uses: Agriculture, Native Classes, Urban, and Not Surveyed. The most recent DWR land use survey for Merced County was conducted in 2002 (DWR 2002). Based on the results of that survey, there are two

DWR land use classifications in the project area—Agriculture and Native Classes—which are described below.

- **Agriculture**—This category consists of both agricultural and semi-agricultural classes. In mapping land uses, DWR groups agricultural land uses into a variety of subcategories and types. The subcategories consist of grain and hay crops (e.g., barley and oats); rice; field crops (e.g., cotton, corn, and beans); pasture (e.g., alfalfa); truck (e.g., onions and garlic), nursery, and berry crops; deciduous fruits and nuts (e.g., almonds and pistachios); citrus and subtropical (e.g., oranges); vineyards (e.g., table, wine, and raisin grapes); and idle areas (e.g., fallow fields). The “Agriculture” category, as defined by DWR, also includes semi-agricultural classes (e.g., dairies and livestock feed lots).
- **Native Classes**—This category consists of areas of native vegetation, surface water, and barren and wasteland areas. Vegetation includes forest land (e.g., oak woodland) and other types of native vegetation (e.g., grassland), riparian vegetation, surface water, and barren and wasteland areas (e.g., mine tailings).

The project area is designated by the *2030 Merced County General Plan* as Rural Agricultural and is zoned for agricultural use (Merced County 2013). Most of the Merced County land area within the San Joaquin Valley is designated as Rural Agricultural. The nearest urban centers are in Merced (approximately 10 miles to the northeast) and Los Banos (approximately 11 miles to the southwest).

3.12.2 Regulatory Setting

Federal

There are no Federal laws, regulations, plans, or ordinances related to land use and planning that apply to the proposed project elements outside of the Merced NWR. Within the Merced NWR, numerous Federal laws, regulations, and policies related to land use and planning apply:

Laws

- National Wildlife Refuge System Administration Act of 1966
- National Wildlife Refuge System Improvement Act of 1997

Regulations

- National Wildlife Refuge System regulations:
 - Administrative Provisions (50 C.F.R. 25)
 - Public Entry and Use (50 C.F.R. 26)
 - Land Use Management (50 C.F.R. 29)

Policies

- National Wildlife Refuge System Compatibility policy (603 FW 2)
- National Wildlife Refuge System Appropriate Refuge Uses policy (603 FW 1)
- National Wildlife Refuge System Mission, Goals, and Purposes policy (601 FW 1)

- National Wildlife Refuge System Biological Integrity, Diversity, and Environmental Health policy (601 FW 3)
- National Wildlife Refuge System Rights of Way & Road Closings policy (340 FW 3)
- Final Policy on the National Wildlife Refuge System and Compensatory Mitigation Under the Section 10/404 Program

State

Public Trust Doctrine

The common law Public Trust Doctrine protects sovereign lands, such as tide and submerged lands and the beds of navigable waterways, for the benefit, use, and enjoyment of the public. These lands are held in trust by the State of California for the statewide public and for uses that further the purposes of the trust. The foundational principle of the Public Trust Doctrine is that trust lands belong to the public and are to be used to promote publicly beneficial uses that connect the public to navigable waterways. However, the Eastside Bypass is not considered to be a navigable water (USACE 2017).

State Planning and Zoning Laws

California Government Code (CGC) Section 65300 et seq. establishes the obligation of cities and counties to adopt and implement general plans. A general plan is a comprehensive, long-term strategy document that sets forth the expected location and general type of physical development expected in the city or county developing the document. The plan also may consider land outside its boundaries that, in the city's or county's judgment, may affect land use activities within its borders. The general plan addresses a broad range of topics, including, at a minimum, land use, circulation, housing, conservation, open space, noise, and safety. In addressing these topics, the general plan identifies the goals, objectives, policies, principles, standards, and plan proposals that support the city's or county's vision for the area. The general plan is a long-range document that typically addresses development over a 20-year period. Although the general plan serves as a blueprint for future development and identifies the overall vision for the planning area, it remains general enough to allow flexibility in the approach taken to achieve the plan's goals.

The State Zoning Law (CGC Section 65800 et seq.) establishes that zoning ordinances, which are laws that define allowable land uses in a specific district, are required to be consistent with the general plan and any applicable specific plans. When amendments to the general plan are made, corresponding changes in the zoning ordinance may be required within a reasonable time to ensure that the land uses designated in the general plan also would be allowable by the zoning ordinance (CGC 65860[c]).

Local

Merced County General Plan

The *2030 Merced County General Plan* (General Plan) provides an inventory of land supply within the County, and projects the amount and location of land and density, and intensity of development that will be required to accommodate future populations and economic growth through 2030 (Merced County 2013). General Plan policies related to the proposed project are largely focused on maintaining and enhancing agriculture and open space throughout most of the County while directing urbanization to cities and existing rural population centers.

The project area is designated for rural agricultural (A) land uses. The General Plan states that this land use designation provides for cultivated agricultural practices which rely on good soil quality, adequate water availability, and minimal slopes (Merced County 2013).

Merced County Zoning Code

The Merced County Zoning Code regulates the location of land uses and the development standards to which new development must be built. The purpose of establishing zoning designations is to ensure that neighboring uses are compatible with each other and to regulate and protect the uses occupying the land. Each zoning designation contains specific regulations controlling the uses of the land; the density of population and structures; uses, location, and dimensions of structures; open space and setback requirements; and access considerations.

General descriptions of agricultural zoning in Merced County are provided in Zoning Code Chapter 18.02.010 as follows:

- The General Agricultural (A-1) Zone is intended for intensive farming that is dependent upon higher-quality soils, water availability, and relatively flat topography, and agricultural commercial and/or industrial uses dependent on proximity to urban areas or location in sparsely populated low traffic areas. Parcels smaller than 40 acres down to a minimum of 20 acres can be considered where agricultural productivity of the property will not be reduced.
- The General Agricultural (A-1-40) Zone allows for a wide variety of farming operations including agricultural commercial/industrial uses that are dependent on medium- to higher-quality soils and water availability on parcels of 40 acres or larger away from urban areas.
- The Exclusive Agricultural (A-2) Zone is intended to allow for considerably expanded agricultural enterprises, mainly due to the requirement of larger size land parcels which are more economically suitable to support farming activities occurring in the area. The 160-acre minimum parcel size of this zone allows for farming and ranching operations and a variety of open space functions that are typically less dependent on soil quality and water for irrigation and are often connected more with foothill and wetlands locations, grazing and pasture land, and wildlife habitat and recreational areas.

The Merced County Zoning Code Chapter 18.02.020 indicates that the following representative land uses (among others) are generally allowed within areas that are zoned agricultural, although some uses require a conditional use permit: agricultural processing plants, crop/orchard/vineyard production, animal confinement facilities, fertilizer plants, ranch/farm offices, museums, churches, parks and recreational facilities, wildlife management areas, energy generation facilities, mining and aggregate storage yards, oil/gas wells, wineries and breweries, limited rural residential housing primarily associated with agricultural uses (but also includes bed and breakfast inns), nurseries, produce stands, animal hospitals, cemeteries, kennels, airports, and transportation equipment yards.

3.12.3 Environmental Effects

No Action Alternative

Under the no action alternative, no construction-related activities would occur and no existing facilities would be modified. There would be no impact.

Proposed Project

**a) Physically divide an established community?
(No Impact)**

The project area is located in an unincorporated, rural agricultural area of Merced County that includes vast areas of open space. Housing in the project vicinity is very limited. There are no houses in the area where the project elements would be constructed; only a few, widely scattered rural residences are present to the east of the project area. Therefore, the proposed project would not physically divide an established community and there would be no impact.

**b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?
(No Impact)**

An evaluation of the proposed project's consistency with land use and zoning classification is presented below. However, it should be noted that any inconsistency of the proposed project with land use and zoning code designations is an issue related to land use regulation rather than a physical environmental consequence of the project. Where the project could conflict with a land use plan or policy that was adopted specifically for the purposes of preventing or reducing an adverse environmental effect, such potential conflicts are evaluated as stand-alone environmental impacts within each topic area of this IS/EA. For example, the potential for project-related noise to exceed Merced County General Plan standards is evaluated in Section 3.14, "Noise," the potential for project-related facilities to conflict with agricultural land uses and Williamson Act contracts is evaluated in Section 3.2, "Agriculture and Forestry Resources," potential conflicts with recreational policies established at the Merced NWR are evaluated in Section 3.18, "Recreation," and potential conflicts with an adopted natural communities conservation plan or habitat conservation plan are evaluated in Section 3.5, "Biological Resources: Vegetation and Wildlife." Impacts related to cultural resources (including Native American tribal concerns) are presented in Sections 3.6, "Cultural Resources," and 3.21, "Indian Trust Assets."

Project implementation would not alter the existing land uses in the project area. All of the project elements would be consistent with the existing agricultural and open space land uses and zoning. From a planning perspective, the proposed project would be consistent with policies in the *2030 Merced County General Plan* related to land use, open space, and natural resources. Therefore, the proposed project would not entail activities that would conflict with an applicable land use plan, policy, or regulation, and there would be no impact.

3.13 Mineral Resources

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XIII. MINERAL RESOURCES – Would the project:					
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.13.1 Environmental Setting

The Surface Mining and Reclamation Act of 1975 (SMARA) requires the State Geologist to classify land based on the known or inferred mineral resource potential of that land. The primary goal of mineral land classification is to help ensure that the land’s mineral resource potential is recognized and considered in the land-use planning process.

In compliance with SMARA, the California Geological Survey (CGS) has established the mineral resource zone (MRZ) classification system shown in **Table 3.13-1** to denote both the location and significance of key extractive resources.

Table 3.13-1. California Geological Survey Mineral Land Classification System

Classification	Description
MRZ-1	Areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources.
MRZ-2a	Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present.
MRZ-2b	Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present.
MRZ-3a	Areas containing known mineral occurrences of undetermined mineral resource significance.
MRZ-3b	Areas containing inferred mineral occurrences of undetermined mineral resource significance.
MRZ-4	Areas of no known mineral occurrences but where geologic information does not rule out either the presence or absence of significant mineral resources.

Notes: MRZ = Mineral Resource Zone
 Source: Clindenbeard 1999

Historic mineral production in Merced County has included gold, silver, platinum, mercury, copper, common clay, construction aggregate, and gypsum. However, for more than 50 years the primary mineral commodity produced in Merced County has been construction aggregate. Approximately 38 square miles of Merced County (divided by CGS into 10 resource areas), have been classified MRZ-2a

or MRZ-2b for concrete aggregate. The 10 resource areas contain an estimated 1.18 billion tons of concrete aggregate resources, with approximately 574 million tons in western Merced County and approximately 605 million tons in eastern Merced County. (Due to the cost of transporting aggregate, two distinct market regions exist in Merced County: one in the west and one in the east.) (Clinkenbeard 1999:VI.)

Most of the San Joaquin Valley within Merced County, including the project area, is classified as MRZ-1—areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources. Clinkenbeard (1999: Plate 3) notes that the MRZ-1 classification is generally applied to areas of the Dos Palos Alluvium, Modesto Formation, Valley Springs Formation, Kreyehagen Shale, and Moreno Shale. As discussed in Section 3.8, “Geology and Soils” and Section 3.15, “Paleontological Resources,” the project area is underlain by the Modesto Formation.

Based on a review of the Natural Resources Element of the *2030 Merced County General Plan* (Merced County 2013) and the *2030 Merced County General Plan Update Draft Program Environmental Impact Report* (Merced County 2012), the County-designated mineral resources are the same as those identified by CGS in the mineral land classification report prepared by Clinkenbeard (1999).

A review of California Division of Oil, Gas, and Geothermal Resources (DOGGR) data indicates that Noble Energy Corporation’s plugged oil well no. 04720088 is located immediately adjacent to, but outside of, the southernmost portion of the project area where levee improvements are proposed. There are no other oil or gas wells either within or adjacent to the project area. (DOGGR 2017.)

3.13.2 Regulatory Setting

Federal

No Federal plans, policies, regulations, or laws related to mineral resources apply to the proposed project.

State

California Surface Mining and Reclamation Act

SMARA (PRC Section 2710 et seq.) addresses surface mining of minerals and requires the prevention of adverse environmental effects caused by mining, the reclamation of mined lands for alternative uses, and the elimination of hazards to public health and safety from the effects of mining activities. SMARA is implemented through ordinances for permitting developed by local government “lead agencies” that provide the regulatory framework under which local mining and reclamation activities are conducted. The State Mining and Geology Board reviews the local ordinances to ensure that they meet the procedures established by SMARA. The general process consists of obtaining a permit to mine material, implementing a reclamation plan to return the land to a useable condition, and providing financial assurances to ensure the feasibility of the reclamation plan. The process of reclamation includes maintaining water and air quality and minimizing flooding, erosion, and damage to wildlife and aquatic habitats caused by surface mining. SMARA applies to an individual or entity that would disturb more than 1 acre or remove more than 1,000 cubic yards of material through surface mining activities. However, the provisions of PRC Section 2714(b) indicate that DWR is not required to obtain a SMARA permit or secure approval of a reclamation plan to conduct soil excavation from borrow pits for flood control projects, provided that soil borrow is obtained from lands owned or leased, or upon which

easements or ROW have been obtained, by DWR. Thus, PRC Section 2714(b) would not apply to the levee improvements under the proposed project.

Local

Merced County General Plan

The *2030 Merced County General Plan* Natural Resources Element (Merced County 2013) identifies the following policy related to minerals that is applicable to the proposed project.

- **Policy NR-3.4: New Development Compatibility.** Ensure that new development is compatible with existing and potential surface mining areas and operations as identified on the Mineral Resource Zone Maps prepared by the State Division of Mines and Geology and other mineral resource areas identified by the County. [...]

3.13.3 Environmental Effects

No Action Alternative

Under the no action alternative, no construction-related activities would occur and no existing facilities would be modified. There would be no impact.

Proposed Project

- a) **Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**
(No Impact)

The project area is classified as MRZ-1—areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources (Clinkenbeard 1999: Plate 3). Furthermore, DOGGR (2017) well data indicate there are no oil or gas wells within the project area. Thus, there would be no impact.

- b) **Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?**
(No Impact)

Individual counties retain the authority to designate locally important mineral resources within their general plans. However, based on a review of the Natural Resources Element of the *2030 Merced County General Plan* (Merced County 2013) and the *2030 Merced County General Plan Update Draft Program Environmental Impact Report* (Merced County 2012), the County designated mineral resources are the same as those identified by CGS in the mineral land classification report prepared by Clinkenbeard (1999). Thus, there is little likelihood for the presence of significant mineral resources in the project area, and there would be no impact.

3.14 Noise

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XIV. NOISE – Would the project:					
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.14.1 Environmental Setting

Noise

Noise generally can be defined as unwanted sound. Sound, traveling in the form of waves from a source, is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). The sound pressure level (referred to as sound level) is the most common descriptor used to characterize the loudness of an ambient sound level. It is measured in decibels (dB), with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

When assessing potential noise impacts, sound is measured in a manner corresponding to the human ear's greater sensitivity to mid-range frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted dB (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. **Table 3.14-1** summarizes some representative noise sources and their corresponding A-weighted noise levels.

Table 3.14-1. Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet flyover at 1,000 feet	110	Rock band
Gas lawnmower at 3 feet	100	
Diesel truck at 50 feet at 50 mph	90	Food blender at 3 feet
Noise urban area, daytime	80	Garbage disposal at 3 feet
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area	60	Normal speech at 3 feet
Heavy traffic at 300 feet	50	Large business office
Quiet urban daytime	40	Dishwasher in next room
Quiet urban nighttime	30	Theater, large conference room (background)
Quite suburban nighttime	20	Library
Quiet rural nighttime	10	Bedroom at night, concert hall (background)
	0	Broadcast/recording studio

Notes:

dBA = A-weighted decibel scale

mph = miles per hour

Source: California Department of Transportation 2013a

A key concept in evaluating potential noise impacts is the perceived effect of incremental increase in existing noise levels. **Table 3.14-2** presents the effect of increasing noise levels. For example, the table shows that an increase of 3 dBA is barely perceptible, an increase of 5 dBA is noticeable, and a 10 dBA increase would be perceived by someone to be a doubling of noise.

Table 3.14-2. Decibel Changes, Loudness, and Energy Loss

Sound Level Change (dBA)	Relative Loudness/Impact	Acoustical Energy Gain (%)
0	Reference	0
+3	Barely Perceptible Change	50
+5	Readily Perceptible Change	67
+10	Twice as Loud	90
+20	Four Times as Loud	99
+30	Eight times as Loud	99.9

Source: Federal Highway Administration 2011

Vibration

To assess the potential for structural damage associated with vibration, the vibratory ground motion in the vicinity of the affected structure is measured in terms of peak particle velocity (PPV) in the vertical and horizontal directions, typically in units of inches per second (in/sec). The PPV is defined as the maximum instantaneous peak of the vibration signal. Caltrans estimates that frequent generation of

vibration at levels exceeding 0.3 in/sec can damage older residential structures and cause annoyance to humans (Caltrans 2013b).

Existing Noise and Vibration Sources

The existing noise and vibration environment near the project area is influenced by various transportation and non-transportation sources. Vehicular traffic would be the predominant source of transportation-related noise, and agricultural-related activities would be primarily responsible for non-transportation noises.

Transportation Sources

Because the project site is more than 5 miles from the nearest State highway, mainline railroad, or airport, transportation is not a substantial source of noise in the project vicinity. However, construction-related haul trucks using West El Nido Road to access the levee and staging area would be traveling approximately 700 feet south of nearby residences.

Non-transportation Sources

This section describes noise levels from non-transportation sources within the project area. Noise sources, such as parks, school playgrounds, industrial facilities, and quarries, are not located near the project site and would not contribute to the existing noise environment.

The predominant land use near the project site is related to agricultural activities. Activities associated with land preparation, and harvesting and transporting crops, would contribute to the existing noise and vibration environment near the project area. Typical heavy off-road equipment used for agricultural activities include tractors, harvesters, bailers, tillers, and seeders. Overflights from crop spraying also would occur over agricultural land uses.

Noise-sensitive Receptors

Generally, any place where quiet is an essential element of a land use's intended purpose would qualify as a noise-sensitive receptor, such as concert pavilions and historic monuments with significant outdoor use. Places where people normally sleep, like residences, hotels, and hospitals, qualify as noise-sensitive receptors. Several residences are clustered together approximately 4,100 feet to the east of the levee improvements area and the 31-acre staging area. Construction-related haul trucks using West El Nido Road to access the levee and staging area would be traveling approximately 700 feet south of these residences. These are the only noise-sensitive receptors near the proposed project construction activities.

3.14.2 Regulatory Setting

Federal

There are no Federal laws, regulations, plans, or ordinances related to noise or vibration that apply to the proposed project.

State

There are no State laws, regulations, plans, or ordinances related to noise or vibration that apply to the proposed project.

Local

Merced County Code

Noise

The Merced County Code (Section 10.60.030) sets sound level limitations for the County. The noise control ordinance states that noise levels, when measured at or within the property line of the receiver, should not result in any of the following:

- Exceed the background noise level by at least 10 dBA during daytime hours (7 a.m. to 10 p.m.) and by at least 5 dBA during nighttime hours (10 p.m. to 7 a.m.)
- Exceed 65 dBA L_{dn} (day-night average noise level) on residential property or 70 dBA L_{dn} on nonresidential property
- Exceed 75 dBA L_{max} (maximum noise level) on residential property or 80 dBA L_{max} on nonresidential property

The County's ordinance exempts construction activities, "provided that all construction in or adjacent to urban areas shall be limited to the daytime hours between 7 a.m. and 6 p.m., and all construction equipment shall be properly muffled and maintained" (Section 10.60.030(B)(5)). Operation of construction equipment outside of these daytime hours or at any time on a weekend day or legal holiday is prohibited. (Merced County 2017a.)

Vibration

Section 18.41.090 of the Merced County Code states that no use shall create any disturbing ground vibration based on typical human reaction beyond the boundaries of the site (Merced County 2017b).

3.14.3 Environmental Effects

No Action Alternative

Under the no action alternative, no construction-related activities would occur and no existing facilities would be modified. There would be no impact.

Proposed Project

Construction noise was predicted using equations and guiding principles from the FHWA Roadway Construction Noise Model (RCNM), Version 1.1. The types of construction equipment that could be used during the construction of the project, the percentage of time that the equipment would operate at full power (usage factor) during an hour, and each piece's maximum noise level are presented in **Table 3.14-3**. Construction equipment is anticipated to operate primarily during weekdays and during daylight hours to the extent feasible.

In addition to noise, construction activities have the potential to produce vibration that may be annoying or disturbing to humans and may cause damage to structures. Highest levels of vibration from construction projects are caused by soil compacting, jack hammering, and demolition. **Table 3.14-4** presents the PPV in inches per second for typical construction equipment as published by the FTA (2006).

Table 3.14-3. Construction Equipment Types and Noise Levels

Equipment Type	Estimated Usage Factor	L _{max} at 50 Feet
All Other Equipment Greater than 5 hp	50%	85
Auger Drill Rig	20%	84
Backhoe	40%	78
Compactor (ground)	20%	83
Compressor (air)	40%	78
Concrete Mixer Truck	40%	79
Concrete Pump Truck	20%	81
Crane	16%	81
Dozer	40%	82
Dump Truck	40%	76
Excavator	40%	81
Flat Bed Truck	40%	74
Front End Loader	40%	79
Generator	50%	81
Grader	40%	85
Impact Pile Driver	20%	101
Paver	50%	77
Pickup Truck	40%	75
Pumps	50%	81
Tractor	40%	84
Vibratory Pile Driver	20%	101

Notes:

hp = horsepower

L_{max} = maximum noise level measured during a monitoring period

Source: Federal Highway Administration 2006

Table 3.14-4. Construction Equipment Types and Vibration Levels

Equipment Type	PPV at 25 feet (in/sec)
Pile Driver (impact)	0.644
Pile Driver (sonic)	0.17
Large Bulldozer	0.089
Loaded Trucks	0.076
Caisson Drilling	0.089

Source: Federal Highway Administration 2006

**a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?
(Less-than-Significant Impact with Mitigation Incorporated)**

The project would include removing Merced NWR weirs and rehabilitating a refuge groundwater well, modifying the Dan McNamara Road low-flow crossing, providing fish passage at the Eastside Bypass Control Structure, and improving levees in the Eastside Bypass near Sand Slough to improve channel capacity for Restoration Flows. Residences closest to project construction sites are approximately 4,100 feet east of the levee improvements area and the 31-acre staging area, and haul trucks would be traveling approximately 700 feet south of these residents. The Merced County noise ordinance exempts weekday construction activities between 7 a.m. and 6 p.m. from its sound level limitations. Additionally, all construction equipment would be properly muffled and maintained, Weekday construction activities would be consistent with the Merced County noise ordinance, and the impact would be less than significant.

Construction work times may be extended into the evening or weekend during key points of the construction phase, as needed. Several residences are clustered together approximately 4,100 feet to the east of the levee improvements area and the 31-acre staging area. Due to the intervening distance and vegetation, the staging area and levee improvements would have some noise attenuation from these residences. However, construction-related haul trucks using West El Nido Road to access the levee and staging area would be traveling approximately 700 feet south of these residences. If construction extends into the evening or weekend on a regular basis during the construction season, noise impacts could be potentially significant.

DWR and/or Reclamation would implement Mitigation Measure NOI-1 during project construction to reduce this potential construction-related noise impact.

Mitigation Measure NOI-1: Implement Measures during any Weekend and Night-time Construction to Reduce Temporary and Short-term Noise Levels from Construction-related Equipment Near Sensitive Receptors.

DWR and/or Reclamation will ensure that the following noise-reduction protocol measures (excerpted from the SJRRP PEIR) are implemented during any construction activities that occur on weekends or between the hours of 6 p.m. and 7 a.m. to reduce temporary and short-term construction-related noise impacts near sensitive receptors:

- Construction equipment will be used as far away as practical from noise-sensitive uses.
- Construction equipment will be properly maintained per manufacturers' specifications and fitted with the best available noise suppression devices (e.g., mufflers, silencers, wraps). All impact tools will be shrouded or shielded, and all intake and exhaust ports on power equipment will be muffled or shielded.
- Construction site and haul road speed limits will be established and enforced.
- The use of bells, whistles, alarms, and horns will be restricted to safety and warning purposes only.

- Construction equipment will not idle for extended periods of time when not being used during construction activities.
- When construction activities are conducted within 2,000 feet of noise sensitive uses, noise measurements will be taken at the nearest noise-sensitive land uses relative to construction activities with a sound-level meter that meets the standards of the American National Standards Institute (ANSI Section S14 1979, Type 1 or Type 2). This would allow that construction noise levels associated with the proposed project to comply with applicable daytime and nighttime noise standards. When construction noise exceeds applicable daytime and nighttime standards, berms, or stockpiles will be used in an attempt to lower noise levels to within acceptable nontransportation standards. If noise levels are still determined to exceed noise standards, temporary barriers will be erected as close to the construction activities as feasible, breaking the line of sight between the source and receptor where noise levels exceed applicable standards. All acoustical barriers would be constructed with material having a minimum surface weight of 2 pounds per square foot or greater and a demonstrated Sound Transmission Class (STC) rating of 25 or greater, as defined by Test Method E90 of the American Society for Testing and Materials. Placement, orientation, size, and density of acoustical barriers will be specified by a qualified acoustical consultant.
- A disturbance coordinator will be designated to post contact information in a conspicuous location near the construction site entrance so that it is clearly visible to nearby receivers most likely to be disturbed. The coordinator will manage complaints resulting from the construction noise. Reoccurring disturbances will be evaluated by a qualified acoustical consultant to ensure compliance with applicable standards. The disturbance coordinator will contact nearby noise-sensitive receptors, advising them of the construction schedule.

Implementing Mitigation Measure NOI-1 would reduce construction-related noise to a less-than-significant impact.

**b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?
(Less-than-Significant Impact)**

Construction equipment associated with the project, such as dozers and plate compactors, would generate vibrations that could result in groundborne noise or vibration that may affect nearby structures and sensitive receptors. *Merced County Code* (Section 18.41.090) states that no use shall create any disturbing ground vibration based on typical human reaction beyond the boundaries of the site.

Vibration levels during construction are estimated to be less than 0.3 in/sec at 140 feet or more from the vibration source. There are no anticipated receptors within 140 feet of the construction activities; therefore, PPV for construction activities would not exceed the significance threshold of 0.3 in/sec for sensitive receptors. No long-term project operations would occur that could generate vibrations or groundborne noise or otherwise expose persons to such impacts. Therefore, this impact would be less than significant.

- c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
(Less-than-Significant Impact)**

Construction impacts on ambient noise levels would be temporary and short term and would not result in permanent increases in ambient noise levels. Operation of the control gates or pumps for the groundwater well(s) would not generate substantial noise. Ambient noise levels in the project vicinity are not anticipated to substantially change with project operations and maintenance. The impact would be less than significant.

- d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?
(Less-than-Significant Impact)**

As noted previously, noise from construction activities during weekday daytime hours (between 7 a.m. and 6 p.m.) is exempt from the County noise control ordinance. However, construction-related noise may result in a substantial temporary or periodic increase in ambient noise levels. These noise levels would be located in areas that have some existing sources of noise, such as traffic, agricultural equipment, and overhead aircraft, although existing ambient noise levels are generally low. Project-related noise levels would vary, depending on the construction activity and specific pieces of equipment in use at any given time.

Daytime unmitigated construction noise is anticipated to be 89 to 91 dBA at 50 feet from the construction source. The existing ambient noise levels are estimated to be approximately 40 dBA during the day. Noise levels at a sensitive receptor would exceed the significance criterion of 10 dBA if the receptor is within 4,100 feet of the construction area. There are no anticipated receptors within 4,100 feet of the construction area; therefore, noise from construction activities would not exceed the significance threshold. The impact would be less than significant.

- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?
(No Impact)**

The project site is not located within 2 miles of a public or private airport. Therefore, there would be no exposure of people residing or working in the project area to excessive noise levels from aircraft activities. There would be no impact.

- f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?
(No Impact)**

The project site is not located within 2 miles of a public or private airport. Therefore, there would be no exposure of people residing or working in the project area to excessive noise levels from aircraft activities. There would be no impact.

3.15 Paleontological Resources

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XV. PALEONTOLOGICAL RESOURCES – Would the project:					
a) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.15.1 Environmental Setting

Regional Geographic Setting

The project area is located within the Great Valley geomorphic province, which is an elongated, northwest trending, nearly flat lowland that is located between the Coastal Ranges and the Sierra Nevada Mountains. The project area is in the San Joaquin Valley, which is a structural trough situated in the southwestern portion of the Great Valley. The Tertiary- to Quaternary-age sediments within the San Joaquin Valley record the transition from shallow marine environments to terrestrial environments, which is associated with the rise of the Coastal Ranges and Sierra Nevada and subsequent closure of the valley from the ocean.

Geological and Paleontological Context

A review of the geologic map of the San Francisco-San Jose Quadrangle (Wagner et al. 1991) shows that the project area is mapped as Late Pleistocene Modesto Formation. Holocene-age artificial fill is also present in locations where previous construction has occurred, such as the Eastside Bypass levees.

Artificial Fill

Artificial fill consists of surface materials that have been previously excavated from another location, dumped into haul trucks, transported to the new location, and then compacted by heavy equipment. Scientifically important fossils are not known in these units since any fossils that may have been present in the source material would have been destroyed during the excavation and subsequent compaction process. The Eastside Bypass levee is composed of artificial fill, as is the Dan McNamara Road crossing. These deposits are not paleontologically sensitive.

Modesto Formation

The Late Pleistocene Modesto Formation (Qm) has a type section in Stanislaus County within the Ceres (2012) 7.5-minute Quadrangle and is exposed along the Tuolumne River in eastern Modesto and east of Modesto and Turlock, almost to the San Joaquin River (Davis and Hall 1959). The Modesto Formation was deposited during the last major series of depositional events during the Pleistocene within the San Joaquin Valley. The Modesto Formation consists of a series of alluvial fans along the San Joaquin River that are comprised of arkosic sand, silt, and clay (Marchand and Allwardt 1977). The Modesto Formation is substantially more oxidized and weathered than younger Holocene-age deposits (Marchand and Allwardt 1977). It ranges in thickness from approximately 30 to 100 feet near its type section (Davis

and Hall 1959; Marchand and Allward 1977). The Modesto Formation is subdivided into two informally designated members: the lower (older) and upper (younger) (Marchand and Allwardt 1977). The Modesto Formation is mapped at the surface throughout the project area.

Fossils are well documented in scientific literature from the Modesto Formation. A literature search indicated there are no records of fossil localities within the project area (Jefferson 1991). However, seven vertebrate fossil localities have been recorded within Merced County in the Modesto Formation and other geologically correlative units. Recorded taxa include dog, horse, camel, deer, bison, pronghorn antelope, ground sloth, mammoth, and mastodon (Jefferson 1991). Pleistocene-age animals and plants have been collected from older alluvial deposits similar to the Modesto Formation throughout California's Central Valley and include mammoth, mastodon, camel, horse, bison, giant ground sloth, peccary, cheetah, lion, saber-toothed cat, capybara, dire wolf, and numerous taxa of smaller mammals (Jahns 1954; Jefferson 1991). Because of the large number of vertebrate fossils recovered from the Modesto Formation, it is considered to be of high paleontological sensitivity.

Paleontological Resources Assessment Criteria

A stratigraphic inventory and paleontological resource inventory was completed to develop a baseline paleontological resource inventory of the project site and surrounding area by rock unit and to assess the potential paleontological productivity of each rock unit. Research methods included a review of published and unpublished literature. These tasks complied with Society of Vertebrate Paleontology (SVP) (1995) guidelines.

Published geological and paleontological literature and maps were reviewed to document the number and locations of previously recorded fossil sites from rock units exposed in and near the project site and the surrounding region, as well as the types of fossil remains each rock unit has produced. The literature review was supplemented by an archival search by the University of California Museum of Paleontology (UCMP) in Berkeley, California, on November 8, 2016.

The potential paleontological importance of the project site can be assessed by identifying the paleontological importance of exposed rock units in and surrounding the project area. Because the aerial distribution of a rock unit can be easily delineated on a topographic map, this method is conducive to delineating parts of the project site that are of higher and lower sensitivity for paleontological resources.

A paleontologically important rock unit is one that (1) has a high potential paleontological productivity rating, and (2) is known to have produced unique, scientifically important fossils. The potential paleontological productivity rating of a rock unit refers to the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in the project area and in other locations in California.

An individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved, and it meets one of the following criteria:

- a type specimen (i.e., the individual from which a species or subspecies has been described);
- a member of a rare species;
- a species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;

- a skeletal element different from, or a specimen more complete than, those now available for its species; or
- a complete specimen (i.e., all or substantially all of the entire skeleton is present).

The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare. Marine invertebrates are generally common; the fossil record is well developed and well documented, and they would generally not be considered a unique paleontological resource.

In its standard guidelines for assessing and mitigating adverse impacts on paleontological resources, the SVP (SVP 1995) established three categories of sensitivity for paleontological resources: high, low, and undetermined. Areas where fossils have been previously found are considered to have a high sensitivity and a high potential to produce fossils. Areas that are not sedimentary in origin and that have not been known to produce fossils in the past typically are considered to have low sensitivity. Areas that have not had any previous paleontological resource surveys or fossil finds are considered to be of undetermined sensitivity until surveys and mapping are performed to determine their sensitivity. After reconnaissance surveys, observation of exposed cuts, and possibly subsurface testing, a qualified paleontologist can determine whether the area should be categorized as having high or low sensitivity.

Paleontological Record Search Results

The results of a UCMP record search on November 8, 2016 indicated there were no recorded fossil localities within a 10-mile radius of the project area (Finger 2016; Appendix B). Online database searches were also negative for fossils recorded within the project area; however, there are seven recorded vertebrate fossil localities within Merced County (Jefferson 1991; PaleoBiology Database 2017; UCMP 2017). Five localities were recorded in the Modesto Formation and other geologically correlative units in nearby Fresno and Stanislaus counties (**Table 3.15-1**). Recorded taxa include mammoth (*Mammuthus*, cf. *Mammuthus columbi*), camel (Camelidae, *Camelops*), bison (*Bison*, cf. *Bison latifrons*), horse (*Equus*), ground sloth (cf. *Megalonyx jeffersonii*), and unidentified mammal (UCMP 2017).

3.15.2 Regulatory Setting

Federal

American Antiquities Act of 1906

The American Antiquities Act of 1906 prohibits the collecting of any “object of antiquity” (including fossils) from Federal lands unless a permit is obtained for the purposes of scientific study.

Table 3.15-1. Paleontological Records and Literature Search Results

Institutional Locality Number	Taxon	Common Name	Location	Source
V99830	<i>Mammuthus</i>	mammoth	Fresno County	UCMP 2017
V99829	Camelidae Mammalia	camel mammal	Fresno County	UCMP 2017
V99464	<i>Bison</i> <i>Camelops</i> sp.	bison camel	Stanislaus County	UCMP 2017
V72186	cf. <i>Bison latifrons</i>	bison	Stanislaus County	UCMP 2017
V72007	cf. <i>Mammuthus columbi</i> cf. <i>Megalonyx jeffersonii</i> <i>Equus</i>	mammoth ground sloth horse	Stanislaus County	UCMP 2017
Unknown	<i>Equus</i> sp. <i>Camelops</i> sp. cf. <i>Odocoileus</i> sp.	horse camel deer	Merced County	Jefferson 1991
UCMP 2049	<i>Mammuthus</i> sp.	mammoth	Merced County	Jefferson 1991
UCMP V69172	<i>Mammut americanum</i>	mastodon	Merced County	Jefferson 1991
UCMP V68006	<i>Paramylodon harlani</i> <i>Equus</i> sp. <i>Camelops</i> sp. <i>Bison</i> sp.	ground sloth horse camel bison	Merced County	Jefferson 1991
Unknown	<i>Mammuthus</i> sp. <i>Camelops</i> sp.	mammoth camel	Merced County	Jefferson 1991
Unknown	Canidae <i>Mammuthus</i> sp. <i>Equus</i> sp. Antilocapridae <i>Bison</i> sp.	dog mammoth horse pronghorn bison	Merced County	Jefferson 1991
UCMP V37020	<i>Bison</i> sp.	bison	Merced County	Jefferson 1991
Unknown	<i>Mammuthus</i> <i>Mammut</i> Camelidae Equidae <i>Bison</i> <i>Megatherium</i> Tayassuidae <i>Acinonyx</i> <i>Panthera</i> <i>Smilodon</i> <i>Hydrochoerus</i> <i>Canis dirus</i> Rodentia	mammoth mastodon camel horse bison giant ground sloth peccary cheetah lion saber-toothed cat capybara dire wolf rodent	California	Jahns 1954, Jefferson 1991, Cooper and Eisentraut 2002

Notes: UCMP = University of California Museum of Paleontology
Source: Data compiled by Paleo Solutions, Inc. in 2016

Federal Land Policy and Management Act of 1976

In general, the Federal Land Policy and Management Act prohibits the collection of paleontological resources from Federal land without a permit. However, the Act allows casual collecting without a permit on Federal land controlled or administered by BLM, Reclamation, or the U.S. Forest Service where such collection is consistent with the laws governing the management of those Federal lands. The Act also requires that specimens receive proper curation, and sets forth criminal and civil penalties for illegal collection.

State

California Public Resources Code Section 5097

PRC Section 5097 defines the excavation, destruction, or removal of paleontological “sites” or “features” from public lands without the express permission of the jurisdictional agency as a misdemeanor. As used in Section 5097, “State lands” refer to lands owned by, or under the jurisdiction of, the State or any State agency. “Public lands” are defined as lands owned by, or under the jurisdiction of, the State, or any city, county, district, authority, or public corporation, or any agency thereof.

Local

Merced County General Plan

The *2030 Merced County General Plan* (County of Merced 2013) states that archeological, historical, architectural, paleontological, and Native American cultural resources and values must be considered in all phases of planning and subsequent development projects, including design, permitting, construction, and long-term maintenance.

3.15.3 Environmental Effects

No Action Alternative

Under the no action alternative, no construction-related or ground-breaking activities would occur. There would be no impact.

Proposed Project

- a) **Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**
(Less-than-Significant Impact with Mitigation Incorporated)

To be considered a unique paleontological resource, a fossil must be more than 11,700 years old. Holocene deposits contain only the remains of extant, modern taxa (if any resources are present), which are not considered “unique” paleontological resources. Furthermore, because of the nature of artificial fill material (which is of Holocene age), it generally does not contain intact fossil remains. Therefore, earthmoving activities for any of the project elements that would occur in Holocene-age deposits, including artificial fill, would have no impact on unique paleontological resources.

All project elements would be constructed in the Pleistocene-age Modesto Formation, which is considered to be paleontologically sensitive. Therefore, project-related earthmoving activities could result in inadvertent damage to or destruction of unique paleontological resources, and this impact would be potentially significant.

DWR and/or Reclamation would implement Mitigation Measure PAL-1 before and during project construction to reduce this potential impact on paleontological resources.

Mitigation Measure PAL-1: Implement Construction Worker Personnel Training, Stop Work if Paleontological Resources are Encountered during Earthmoving Activities, and Implement a Recovery Plan.

To minimize the potential for destruction of or damage to potentially unique, scientifically important paleontological resources during project-related earthmoving activities, the following measures shall be implemented:

- Before the start of any earthmoving activities in the project area, all construction personnel involved with earthmoving activities, including the site superintendent, will be trained regarding the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction, and proper notification procedures should fossils be encountered. The training program may be administered by a qualified archaeologist or paleontologist.
- If paleontological resources are discovered during earthmoving activities, the construction crew will immediately cease work in the vicinity of the find. A qualified paleontologist will be retained to evaluate the resource and prepare a recovery plan in accordance with SVP guidelines (SVP 1995). The recovery plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan will be implemented before construction activities can resume at the site where the paleontological resources are discovered.
- If any substantially complete fossil skeletons are recovered from the project site, DWR and/or Reclamation (as appropriate) will consider donating the fossil remains for public display at the Fossil Discovery Center in Chowchilla.

This impact would be less than significant after mitigation because construction workers would be alerted to the possibility of encountering paleontological resources and, in the event that resources were discovered, work would stop immediately and fossil specimens would be recovered and recorded, and would undergo appropriate curation.

3.16 Population and Housing

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XVI. POPULATION AND HOUSING – Would the project:					
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.16.1 Environmental Setting

Demographic Data

California Department of Finance (DOF) population forecasts from 2016 through 2030 and the percent change are shown in **Table 3.16-1**. The unincorporated areas of Merced County (including the project area) are primarily agricultural, and since the *2030 Merced County General Plan* (Merced County 2013) indicates that agricultural land uses will continue through the foreseeable future, growth is primarily projected to occur in the incorporated cities and specific, defined unincorporated community areas. Thus, the projected rate of population change is considerably greater for the Cities of Merced and Los Banos, as compared to Merced County as a whole (**Table 3.16-1**).

Table 3.16-1. Estimated Population Growth in the Project Region, 2016–2030

Demographic Area	2016 Population	Projected 2030 Population	Projected Population Change	Projected Percent Change
Merced County	271,547	326,574	+ 55,027	+ 17
City of Los Banos	39,354	90,400	+ 51,046	+ 57
City of Merced	83,955	155,000	+ 71,045	+ 46

Sources: California Department of Finance 2017a and 2017b, City of Merced 2012, City of Los Banos 2009

Housing Data

Table 3.16-2 presents housing data for Merced County and the Cities of Merced and Los Banos. According to the U.S. Census Bureau, in 2014 Merced County had 83,903 housing units, of which approximately 91.2 percent were occupied. Renters occupied 36,206 units, while owners occupied 40,310 units (U.S. Census Bureau 2015).

Table 3.16-2. Housing Estimates for the Project Region, 2014

	Merced County		City of Merced		City of Los Banos	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Occupied Housing Units	76,516	91.2%	24,950	91.2%	10,303	91.7%
Owner-Occupied	40,310	52.7%	10,533	42.2%	5,450	52.9%
Renter-Occupied	36,206	47.3%	14,417	57.8%	4,853	47.1%
Vacant Housing Units	7,387	8.8%	2,399	8.8%	927	8.3%
Median Monthly Rent	\$870	-	\$830	-	\$1,087	-

Source: U.S. Census Bureau 2015

In addition to permanent residential housing units, there are eight hotels in Los Banos and 16 hotels in Merced.

3.16.2 Regulatory Setting

Federal

No Federal plans, policies, regulations, or laws related to population, housing, and employment apply to the proposed project.

State

No State plans, policies, regulations, or laws related to population and housing apply to the proposed project.

Local

No regional or local plans, policies, regulations, or ordinances related to population and housing apply to the proposed project.

3.16.3 Environmental Effects

No Action Alternative

Under the no action alternative, no construction-related activities would occur and no existing facilities would be modified. There would be no impact.

Proposed Project

- a) **Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**
(No Impact)

As discussed in Chapter 2, “Description of the Proposed Project and No Action Alternative,” peak construction periods would require up to 50 total workers. As indicated in **Table 3.16-1** (see Section 3.19, “Socioeconomics”), there were approximately 3,494 construction workers in Merced County in 2014 (MIG Inc. 2016). These existing residents who are employed in the construction industry would likely be sufficient to meet the demand for construction workers that would be generated by the

proposed project. Furthermore, the California Employment Development Department (EDD) estimates that between 2014 and 2024, the various construction trades will experience a greater than 73 percent increase in employment opportunities (EDD 2016). If some non-local construction workers were employed for the project, the temporary and short-term nature of the work supports the conclusion that these workers would not typically change residences when assigned to a new construction site. Therefore, it is likely that an adequate number of construction workers for project construction could be found within the local area.

In addition to the permanent residential housing units shown in **Table 3.16-1**, there are eight hotels in Los Banos and 16 hotels in Merced available to support the needs for short-term temporary construction worker housing. Because workers serving the project could be expected to come from nearby communities and cities in Merced County, neither substantial population growth nor an increase in housing demand in the region is anticipated as a result of these jobs. Therefore, temporary and short-term impacts from direct increases in population and housing demand from construction of the project elements would not occur. There would be no impact.

The proposed project would not entail the construction of new housing or commercial development, would not create long-term permanent new jobs from project operation, or directly induce substantial population growth. The project would benefit areas identified for future growth anticipated in the vicinity of urban areas downstream. However, local land use decisions are within the jurisdiction of the individual cities and the County, which have adopted general plans consistent with State law. The project would not allow additional growth to occur other than what has already been planned, nor would it change the locations where this growth is planned to occur. Consequently, project implementation would not affect current and/or projected population growth patterns as already evaluated and planned for in any city or county general plan (**Table 3.16-2**), and therefore would not indirectly induce substantial population growth. The project would reduce flood risks by improving the Eastside Bypass levee to meet engineering standards associated with the National Flood Insurance Program; it would not alter protection for the 100-year event nor does it transfer any such risk to other areas. The project would not directly or indirectly support development in the base floodplain. Thus, permanent and long-term impacts from increases in population and housing demand from project operations would be less than significant.

b), c) Displace substantial numbers of existing homes or people, necessitating the construction of replacement housing elsewhere?
(No Impact)

The project area is located in a rural agricultural area of Merced County. Implementing the proposed project would not displace any homes or people, and would not require the construction of replacement housing. Thus, there would be no impact.

3.17 Public Services

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XVII. PUBLIC SERVICES – Would the project:					
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:					
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.17.1 Environmental Setting

Fire Protection

Fire protection services in the project area are provided by the Merced County Fire Department. The Merced County Fire Department provides emergency services to unincorporated areas of the County through a network of fire stations, personnel, and equipment. Fire suppression personnel are provided through a contract with the California Department of Forestry and Fire Protection, and support personnel are Merced County employees. Fire stations are staffed 24 hours a day by a full-time fire captain or fire apparatus engineer and augmented by over 300 paid or volunteer on-call firefighters. The on-call firefighters are organized into engine companies according to the station’s response area. The closest fire station to the majority of the project site is Fire Station #61 located at 961 South Gurr Road (at the State Route 140 intersection). El Nido Fire Station #83 located at 10537 Highway 59 in El Nido is closest to the proposed levee improvements. From both of these locations, emergency services can be quickly provided to the project area with no increase in distance or time with Dan McNamara Road open or closed by flooding at the Eastside Bypass.

In addition to fire protection, the Merced County Fire Department provides first response emergency medical services, control and mitigation of hazardous material spills, and mutual aid fire/rescue/Emergency Medical Services (EMS) services to cooperating agencies. The department participates in statewide fire and rescue mutual aid systems and other non-fire emergencies such as floods, earthquakes, and other disasters (Merced County 2016).

Law Enforcement

Law enforcement services in the project area are provided by the Merced County Sheriff's Department. The Merced County Sheriff's Department coverage area includes all unincorporated areas of the County. The department maintains stations and smaller Community Law Enforcement Office stations in locations spread throughout the County. The Merced County Sheriff's Department maintained as of 2013, a ratio of approximately one officer per 1,000 residents in unincorporated areas of the County, with an average response time of less than 10 minutes on emergency calls, increasing to approximately 30 minutes for non-emergency calls. The California Highway Patrol handles all traffic enforcement and automobile accident investigations for the unincorporated parts of the County (Merced County 2013).

Emergency Response

The Merced County Office of Emergency Services is operated under the direction of the Merced County Fire Department. The coverage area encompasses all of Merced County and involves the support of Federal, State, and local law enforcement agencies; fire departments; hospitals; ambulance services; and the Merced County Health Department.

Schools

The areas surrounding the project area are served by multiple school districts within Merced County; however, there are no schools near the project site. The nearest school, Merced County Juvenile Court School (at 2840 W Sandy Mush Road), which is administered by the Merced County Office of Education, is 13 miles east of the project area.

3.17.2 Regulatory Setting

Federal

There are no Federal regulations pertaining to public services in the project area.

State

California Fire Code

In accordance with CCR, Title 8 Section 3221 Fire Prevention and Section 6773 Fire Protection and Fire Equipment, the California Division of Occupational Safety and Health has established minimum standards for fire suppression and emergency medical services.

California Uniform Fire Code

The Uniform Fire Code contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards, safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other fire-safety requirements for new and existing buildings.

Local

There are no local regulations pertaining to public services in the project area.

3.17.3 Environmental Effects

No Action Alternative

Under the no action alternative, no construction-related activities would occur and no existing facilities would be modified. There would be no impact.

Proposed Project

- a) **Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:**

Fire and police protection? (*Less-than-Significant Impact*)

Construction activities required for project implementation could increase short-term demands on emergency services, including fire protection and law enforcement to respond to potential construction accidents. However, this increase would not be expected to require new or altered emergency services facilities in the project area given that fire protection, law enforcement, and other emergency services currently are provided at acceptable levels in the project area. In addition, construction activities in the project area would comply with industry safety regulations required by the California Labor Code (Title 8, California Code of Regulations), which would help to reduce the likelihood of construction accidents. This impact would be less than significant.

Schools? (*No Impact*)

The proposed project would not provide any new housing or employment opportunities. Therefore, the proposed project would not generate new students or increase the demand on the local school systems. Additionally, the nearest school, Merced County Juvenile Court School (at 2840 W Sandy Mush Road) is 13 miles east of the project. Therefore, construction and operations and maintenance of the proposed project would have no impact on an existing or proposed school.

Parks? (*No Impact*)

The proposed project would not provide any new housing or employment opportunities that would generate new residents who would require new or expanded park facilities. Thus, there would be no impact.

Other public facilities? (*No Impact*)

No other public facilities would be affected by construction or operation of the proposed project. Therefore, there would be no impact.

3.18 Recreation

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XVIII. RECREATION – Would the project:					
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially restrict or reduce the availability, access, or quality of existing recreational opportunities in the project site or vicinity?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Conflict with any goals or policies related to recreation in an applicable HCP or NCCP?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.18.1 Environmental Setting

The Eastside Bypass provides minimal developed recreation facilities. The bypass is dry except during winter flood flows and recent Restoration Flows, thus there are no existing water-based recreation activities such as swimming, fishing, or boating. Existing recreation opportunities in the project area consist of private waterfowl hunting clubs in the Grasslands Wildlife Management Area, public waterfowl hunting within the Merced NWR from designated blinds, and wildlife viewing opportunities within the Merced NWR (via three hiking trails and an auto tour route). Lands in the project area are primarily managed for agricultural use or are included in the Merced NWR and the Grasslands Wildlife Management Area. USFWS administers and manages the San Luis NWR Refuge Complex, which is composed of the San Luis NWR, San Joaquin River NWR, Merced NWR, and Grasslands Wildlife Management Area. Recreation opportunities in the project area within the Merced NWR and Grasslands Wildlife Management Area are described below.

Merced National Wildlife Refuge

The Merced NWR is composed of approximately 10,258 acres of wetlands, native grasslands, vernal pools, and riparian habitat. The refuge is located east of the San Joaquin River along the Eastside Bypass. Public access consists of a single entrance along Sandy Mush Road. The refuge's primary function is to provide migratory and wintering bird habitat and to host various threatened and endangered species. The refuge provides wildlife viewing opportunities for various bird and terrestrial species. There are several nature viewpoints, most of which are accessible by automobile, along with nature photography stations and waterfowl observation decks. The refuge also offers an auto tour on the east side of the Eastside Bypass near the refuge entrance. The tour consists of a kiosk and various interpretive panels along the route, providing visitors with educational information about the refuge and the wildlife. The refuge also includes three designated nature trails—the Meadowlark Trail

(approximately 1.5 miles), and the Kestrel and Bittern Marsh Trails (approximately 0.5 mile each)—all of which are adjacent to the auto tour route on the east side of the Eastside Bypass. (USFWS 2016b.)

CDFW and USFWS allow licensed hunting for geese, ducks, coots, and moorhens within designated areas of the refuge. There are six hunting blinds within the Mariposa Creek Hunting Unit on the south side of Sandy Mush Road west of the Eastside Bypass, and nine blinds within the West Marsh Hunting Unit on the south side of Sandy Mush Road east of the Eastside Bypass (USFWS 2016c). Waterfowl hunting is also allowed in the Lone Tree Unit on the east side of the Eastside Bypass throughout most of the area where levee improvements are proposed (USFWS 2016d). Hunting dates are determined by CDFW and may change each year depending on population status; however, the waterfowl hunting season generally runs from the third weekend in October until the last weekend in January for adults, followed by a junior hunt the first weekend in February. Waterfowl hunting in all three of the above areas within the Merced NWR is only allowed on Wednesdays and Saturdays.

Grasslands Wildlife Management Area

A portion of the project area is located within the Grasslands Wildlife Management Area, which supports the largest remaining block of wetlands in the Central Valley. The management area contains 70,000 acres of private wetlands and 53,000 acres of State and Federal lands, all of which are held under conservation easements. General public access in the management area is not permitted. However, recreation opportunities are present in the form of private waterfowl hunting clubs.

3.18.2 Regulatory Setting

Federal

Federal Wildlife Refuges

Management goals and objectives for the Federal wildlife refuges in the San Luis NWR Complex include providing compatible education/interpretation and wildlife-based recreational programs, which may include wildlife/nature observation, photography, fishing, and hunting (USFWS 2016a). This goal is addressed within the context of priority wildlife habitat goals and objectives described in the *Draft San Luis and Merced NWR Comprehensive Conservation Plan* (USFWS 2017b).

Federal Water Project Recreation Act

The Federal Water Project Recreation Act requires Federal agencies with authority to approve water projects to include recreation development as a condition of approving permits. Recreation development must be considered along with any navigation, flood control, reclamation, hydroelectric, or multipurpose water resources project. The act indicates that consideration should be given to opportunities for outdoor recreation and fish and wildlife enhancement whenever any such project can reasonably serve either or both purposes consistently.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act of 1946 requires Federal agencies to provide for protection and supply of wildlife and wildlife resources, including the provision of public shooting and fishing recreation resources. The premise of the act is that wildlife resources should receive equal consideration as other features of water resource projects. Federal agencies are charged with the responsibility to prevent loss or damage to wildlife resources during the development and management of water resources projects.

State

Public Trust Doctrine

The common law Public Trust Doctrine protects sovereign lands, such as tide and submerged lands and the beds of navigable waterways, for the benefit, use, and enjoyment of the public. These lands are held in trust by the State of California for the statewide public and for uses that further the purposes of the trust. The foundational principle of the Public Trust Doctrine is that trust lands belong to the public and are to be used to promote publicly beneficial uses that connect the public to navigable waterways.

Local

Merced County General Plan

The *2030 Merced County General Plan* (Merced County 2013) identifies the following policies related to recreation that are applicable to the proposed project:

- **Policy RCR-1.1:** Encourage the continuation and expansion of existing public recreation land uses, including, but not limited to, public beaches, parks, recreation areas, wild areas, and trails.
- **Policy RCR-1.7:** Require buffering between non-recreational land uses and sensitive public recreation lands through site design and other techniques when the non-recreational land use may significantly impact recreational lands.
- **Policy RCR-1.7:** Consider agriculture as a compatible land use and appropriate buffer for public and private recreation areas.
- **Policy RCR-1.11:** Encourage the use of regional parks and open space areas as a mechanism to preserve the County's natural scenic beauty and protect land for public purposes.
- **Policy RCR-1.12:** Support recreation services to promote the full use of recreation facilities within their design capacity and improve connections and access to a wide range of recreation opportunities in order to improve the quality of life for residents and visitors.

3.18.3 Environmental Effects

No Action Alternative

Under the no action alternative, no construction-related activities would occur and no existing facilities would be modified. There would be no impact.

Proposed Project

- 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?**
(Less-than-Significant Impact)

The proposed project does not involve the construction of any new housing that would generate new residents who would increase the use of existing recreational facilities. As discussed in item c) below, project construction could displace existing recreational facility users to other locations during the last 2 weeks of hunting season. However, because construction would only overlap with up to 4 days of the

hunting season, the proposed project would not be likely to increase the use of other recreational facilities such that substantial physical deterioration of any facilities would occur or be accelerated. This impact would be less than significant.

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?
(No Impact)

The proposed project does not include or require the construction of new recreational facilities; thus, there would be no impact.

c) Substantially restrict or reduce the availability, access, or quality of existing recreational opportunities in the project site or vicinity?
(Less-than-Significant Impact with Mitigation Incorporated)

The proposed project includes improvements to fish passage at the Eastside Bypass Control Structure, which would generally improve the health of the aquatic ecosystem within the project area, potentially leading to an improvement in the quality of recreational fishing in the surrounding area. In addition, the removal of the Merced NWR weirs and installing culverts underneath the Dan McNamara Road crossing to remove fish passage barriers would facilitate better access in the river system for fish. With the ongoing release of Restoration Flows under the SJRRP, the proposed project would increase fish passage in the bypass system and the San Joaquin River. Therefore, a beneficial impact on permanent recreational angling would occur.

The proposed project includes the removal of the Merced NWR weirs, which were originally constructed to facilitate water diversions to support seasonal wetlands and ponds for migratory birds. While removing the weirs would facilitate better fish passage through the Eastside Bypass, it would also require an alternative water source to ensure that sufficient water is available in the Merced NWR to maintain aquatic habitats for migratory birds. Therefore, an existing well that is no longer operational in the Merced NWR would be replaced with a deep well, which would provide the water required to meet the irrigation needs of the Merced NWR. The well would maintain the seasonal ponds for migratory birds. The proposed project would have no long-term, permanent impacts on private or public waterfowl hunting, or the wildlife viewing opportunities afforded by the three nature trails or the auto tour route in the Merced NWR. Thus, the proposed project would have a less-than-significant impact on permanent wildlife-based recreation opportunities.

There are no officially designated recreational opportunities in proximity to the area where the proposed levee improvements would occur. Therefore, the proposed levee improvements would have a less-than-significant impact on permanent wildlife-based recreation opportunities.

Construction of the culverts underneath Dan McNamara Road would occur immediately adjacent to, but north of, West Sandy Mush Road, which provides public entry into the Merced NWR. Although construction associated with the road culverts would be visible to recreationists using West Sandy Mush Road for access to the refuge, the construction would be short-term in nature (approximately 8 months) and would not substantially detract from any wildlife viewing activities.

Removing the lower Merced NWR weir and drilling the new well would occur approximately 0.75 mile south of West Sandy Mush Road and would be barely visible in the background. West Sandy Mush

Road would be used for transport of construction materials, equipment, and personnel; however, closure of West Sandy Mush Road would not be required. Removing the upper Merced NWR weir would occur approximately 1,800 feet west of the southwestern corner of the refuge's auto tour route. However, views of construction activities associated with the upper Merced NWR weir from the auto tour route would be blocked by the height of the intervening Eastside Bypass levee, and access to this weir for construction crews and equipment would occur only on the west side of the Eastside Bypass. Construction associated with the upper Merced NWR weir would also be located approximately 1 mile southwest of the nearest trail (the Meadowlark Trail), and approximately 1.5 miles southwest of the other two trails (Kestrel and Bittern Marsh). At these distances, project-related construction would not be visible and there would be little to no effect from noise, dust, or traffic on the quality of the recreational experience for hikers on any of the three trails. Furthermore, recreational use of the Merced NWR during June through September, the primary construction period, is extremely limited as the area has high temperatures, limited shade, and few waterfowl or wildlife observation opportunities.

Information about the location of privately-owned waterfowl hunting blinds in the Grasslands Wildlife Management Area is not available. Based on a review of aerial photography, a waterfowl hunting blind may be located approximately 1,200 feet northwest of the proposed Dan McNamara Road fish passage improvements. Other privately owned hunting blinds may be in proximity to the construction work that would occur on the Eastside Bypass Control Structure. There are 15 public use hunting blinds in the Merced NWR: six blinds in the Mariposa Creek Hunting Unit on the south side of Sandy Mush Road west of the Eastside Bypass, and nine blinds in the West Marsh Hunting Unit on the south side of Sandy Mush Road east of the Eastside Bypass (USFWS 2016c). Waterfowl hunting is also allowed in the Lone Tree Unit on the east side of the Eastside Bypass throughout most of the area where levee improvements are proposed (USFWS 2016d).

Hunting dates are determined by CDFW and may change each year depending on population status; however, the waterfowl hunting season generally runs from the third weekend in October until the last weekend in January for adults, followed by a junior hunt the first weekend in February. Waterfowl hunting in all three of the above areas within the Merced NWR is only allowed on Wednesdays and Saturdays. As stated in Chapter 2, "Description of the Proposed Project and No Action Alternative," project-related construction would occur between April 1 and November 15, and therefore would not occur during most of the waterfowl hunting season or during the bulk of the period when migratory waterfowl would be present at the refuge (i.e., late fall and winter). However, construction would be necessary during the first 2 weeks of waterfowl hunting season, which could adversely affect public recreational hunting in the Merced NWR and privately owned hunting clubs in the project vicinity. Therefore, the proposed project would have a short-term temporary significant impact.

DWR and/or Reclamation would implement Mitigation Measure REC-1 before and during project construction to reduce this potential impact.

Mitigation Measure REC-1: Implement Construction and Hunting Closures during Waterfowl Hunting Season.

Project-related construction activities are currently planned from April 1 through November 15. To provide for continued waterfowl hunting activities on both public and private lands, and to ensure the safety of project-related construction workers, project-related construction activities on the Merced NWR weir removal element and the levee improvements element will not be allowed on Saturdays during waterfowl hunting season. However, as determined in consultation with Merced NWR, hunting during Wednesdays may be closed at the Merced NWR at specific

units adjacent to ongoing construction activities. The exact date of the start of waterfowl hunting may vary and is determined by CDFW, but it generally begins the last weekend in October. In addition, if any project-related construction is planned to occur in close proximity to privately-owned waterfowl hunting clubs such that construction worker safety would be an issue, agreements with each club will be negotiated to facilitate both construction and private hunting during the waterfowl hunting season.

Implementation of Mitigation Measure REC-1 would reduce the significant impact on waterfowl hunting to a less-than-significant level because project construction will only overlap hunting season by 2 weeks and impacts to hunting minimized to two weekdays during the waterfowl hunting season.

**d) Conflict with any goals or policies related to recreation in an applicable HCP or NCCP?
(No Impact)**

Goals and policies for the Merced NWR are part of the *Draft San Luis and Merced NWR Comprehensive Conservation Plan* (USFWS 2017b). The goals relate primarily to wildlife habitat management, but also include the provision of public recreation based on wildlife viewing. The conservation plan's recreational goal discusses provision of nature trails, auto tour routes, and wildlife viewing platforms in all the units that comprise the San Joaquin River NWR. These facilities have already been constructed in the Merced NWR. The proposed weir removals to improve fish passage and well drilling to ensure sufficient water to maintain wildlife habitat in the Merced NWR would be consistent with goals and policies of the conservation plan. Modifications to the existing Eastside Bypass levee are intended to improve flood protection and would occur primarily within the footprint of the existing levee. The proposed levee improvements, Dan McNamara Road crossing fish passage improvements, and Eastside Bypass Control Structure fish passage improvements would not conflict with any goals or policies contained in the conservation plan. Thus, the proposed project would result in no impact.

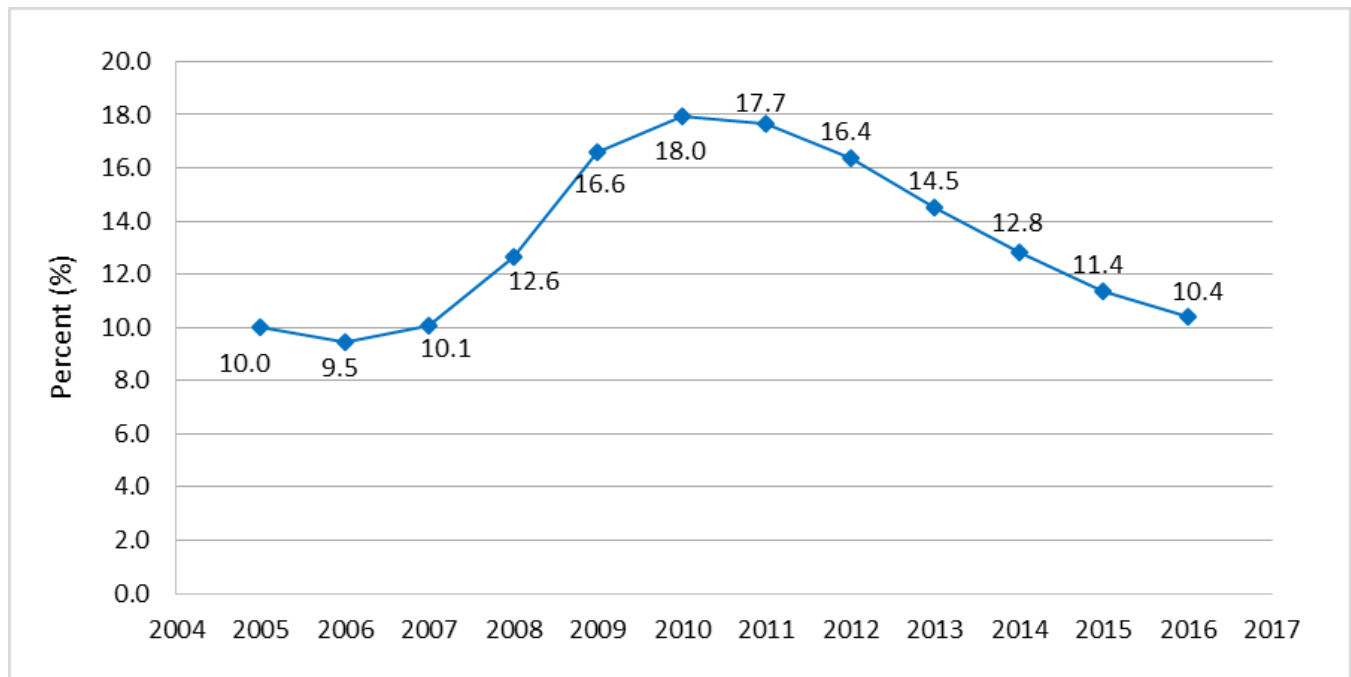
3.19 Socioeconomics

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XIX. SOCIOECONOMICS – Would the project:					
a) Cause changes to employment, income, or output of the regional economy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.19.1 Environmental Setting

Figure 3.19-1 shows the unemployment rate trends for Merced County as a whole between 2005 and 2016. Merced County unemployment rate increased from 2006 through 2010 and decreased from 2011 through 2016.

Figure 3.19-1. Unemployment Rate Profile for Merced County (2005-2016)



Source: California Economic Development Department 2017

3.19.2 Regulatory Setting

There are no Federal, State, or local regulations applicable to the analysis of socioeconomic impacts.

3.19.3 Environmental Effects

a) **Cause changes to employment, income, or output of the regional economy?
(Beneficial Impact)**

Project construction would occur during less than a 1-year period and would cost approximately \$20.5 million. Direct labor would be 252 jobs, generating an estimated 22 indirect and 26 induced jobs, for a total effect of 300 jobs. However, a portion of these jobs may come from workers outside of Merced County, and these jobs would potentially only last for a portion of the year, and would potentially not be full-time jobs. **Table 3.19-1** summarizes total direct, indirect, and induced economic impacts resulting from project construction. Construction would temporarily increase employment, labor income, and revenue in Merced County. This would be a beneficial impact on the Merced County regional economy.

Table 3.19-1. Direct, Indirect, Induced, and Total Regional Economic Effects of Project Construction

Impact Type	Employment (# jobs)	Labor Income (Million \$)	Revenue (Million \$)
Direct Effect	252	\$6.9	\$20.5
Indirect Effect ¹	22	\$0.8	\$2.5
Induced Effect ¹	26	\$1.0	\$3.4
Total Effect	300	\$8.7	\$26.3

Note:

¹ MIG Inc., 2016

3.20 Transportation and Traffic

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XX. TRANSPORTATION AND TRAFFIC – Would the project:					
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.20.1 Environmental Setting

Regional access to the project area is provided from the north and south via State Route (SR) 99 (six lanes, identified on the Merced County General Plan’s Circulation Diagram as a freeway [Merced County 2013]), SR 59 (a two-lane principal arterial), SR 165 (a two-lane principal arterial), and Interstate 5 (I-5) (a four-lane freeway), and to the east and west via SR 140 (a two-lane principal arterial) and SR 152 (a four-lane principal arterial).

Local access to the project site includes the following undivided, two-lane roadways:

- Nickel Road (Major Collector)
- Sand Slough Road (Major Collector)

- Sandy Mush Road (Major Collector)
- South Gurr Road (Major Collector)
- Turner Island Road (Major Collector)
- West Washington Road (Minor Collector)
- Dan McNamara Road
- Lone Tree Road
- South Burt Crane Road
- West Chamberlain Road
- West El Nido Road

There are no pedestrian or bicycle facilities in the project area. Public buses travel along SR 152 and SR 59, with stops in Dos Palos and El Nido.

Table 3.20-1 presents traffic volume data for State highways near the project site, and **Table 3.20-2** presents traffic volumes for local roadways.

Table 3.20-1. Highway Segment Operations – 2015 Conditions

Highway	Location	Roadway Classification	Area	Number of Lanes	AADT ¹
SR 59	North of Sandy Mush Road	Principal Arterial	Rural	2	6,900
SR 140	East of Buhach Road	Principal Arterial	Rural	2	6,400
SR 152	West of SR 59	Principal Arterial	Rural	4	15,800
SR 165	North of SR 152	Principal Arterial	Rural	2	16,000

Notes:

AADT – Annual Average Daily Traffic; SR – State Route

Source: Caltrans 2015

Table 3.20-2. Local Roadway Operations –2006 Conditions

Roadway	Location	Roadway Classification	Area	ADT ¹
South Gurr Road	South of SR 140	Minor Collector	Rural	1,293
Turner Island Road	South of Sand Slough Road	Major Collector	Rural	1,292

Notes:

ADT –Average Daily Traffic; SR – State Route

Source: Merced County 2012a

The project includes the replacement of Dan McNamara Road’s existing culverted low-flow crossing of the Eastside Bypass with larger concrete box culverts. The current culvert has a maximum capacity of approximately 25 cfs. When Restoration Flows exceed approximately 25 cfs in the Eastside Bypass, the flows spread over the road and make it impassable at higher flows. When the road becomes impassable, traffic is required to detour on public roads; the 1.5-mile detour permitted during flood flows through agreement between LSJLD and the County of Merced is not permitted during Restoration Flows (see **Figure 2-7**).

Restoration Flows up to a maximum of approximately 300 cfs in the Eastside Bypass occur under existing conditions, but Restoration Flows since January 2014 have been interrupted extensively because

of either drought or flood conditions, so Dan McNamara Road has experienced reduced flooding from Restoration Flows.

During high flood flows, Merced County closes Dan McNamara Road between Sandy Mush Road and Green House Road and posts the closure on its website. There are permanent “flooding” signs on Dan McNamara Road on either side of the Eastside Bypass. When the road is closed for flood flows, an existing approximately 1.5-mile detour is used. When the road is closed for Restoration Flows, however, traffic is required to detour on public roads, a distance of up to approximately 24 miles. **Figure 3.20-1** illustrates the approximately 1.5-mile detour used during flood flows, as well as the likeliest potential detour used when Restoration Flows are high enough to close Dan McNamara Road, estimated to be approximately 25 cfs, without the project.

Emergency services in the area are provided primarily from Fire Station #61 located at 961 Gurr Road (at the SR 140 intersection). From this location, emergency services can be provided on Dan McNamara Road and adjacent areas on either side of the Eastside Bypass with no increase in distance or time with Dan McNamara Road closures at the Eastside Bypass. Emergency vehicle drivers (as well as other drivers) are familiar or would quickly gain familiarity with the frequent road closures and alternative routes. Furthermore, emergency access to the south (Sandy Mush Road) end of Dan McNamara Road is not substantially affected because alternate routes of similar distance and travel time are available from all of the nearby communities (Merced, El Nido, Dos Palos Y, Los Banos) in which emergency trips originate (i.e., locations with fire stations, sheriff stations, or emergency medical facilities). Closure of Dan McNamara Road at the Eastside Bypass does not substantially affect access or travel times for emergency vehicles traveling to the north (Green House Road) end of Dan McNamara Road because emergency vehicles generally originate in Merced or Atwater to serve this area; the distance and the low speed possible on Dan McNamara Road due to the road surface make emergency trips originating in El Nido, Dos Palos Y, or Los Banos highly unlikely even during periods when the road is open. Because of these expected points of origin and routes, the impact related to emergency access is substantially less for emergency vehicle drivers aware of the seasonal closures posted on Merced County’s website and knowledgeable of alternative routes as shown on **Figure 3.20-1**.

3.20.2 Regulatory Setting

There are no Federal, State, or local regulations applicable to the analysis of transportation impacts.

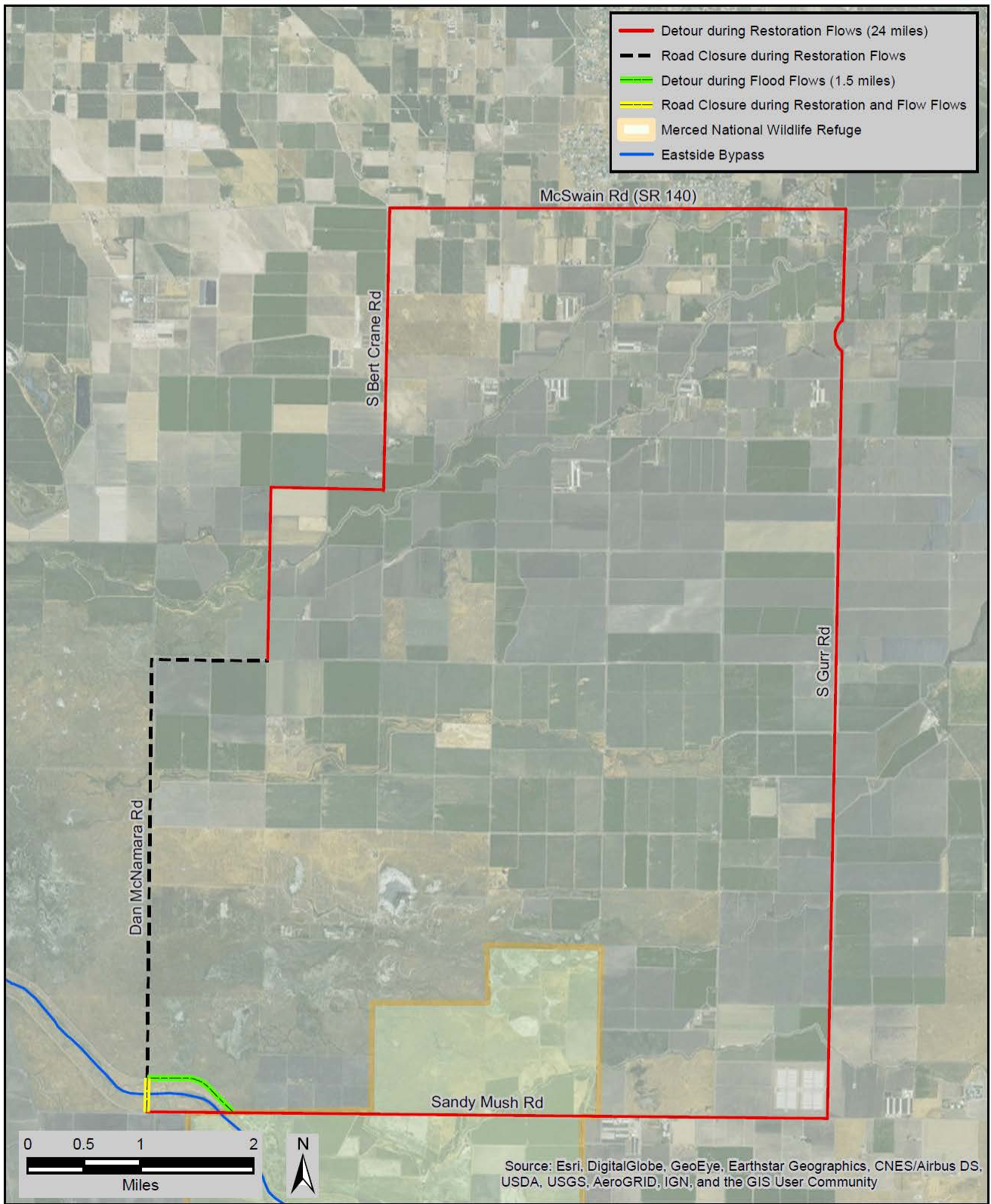
3.20.3 Environmental Effects

No Action Alternative

Under the no action alternative, no construction-related activities would occur and no existing facilities would be modified. However, Restoration Flows up to a maximum of approximately 300 cfs in the Eastside Bypass occur under existing conditions, and would increase to a maximum of approximately 580 cfs in the Eastside Bypass under the no action alternative when seepage concerns are alleviated by Reclamation, anticipated to occur in 2018.

Merced County would close the road more frequently and post the closures on its website, detours would be available (see **Figure 3.20-1**), and local travelers familiar with the frequent road closures would likely drive mostly about 5-15 additional miles, but on a much better road system (South Gurr and Sandy Mush Roads vs. the rough Dan McNamara Road) depending on where they are coming from and where they are going.

Figure 3.20-1. Dan McNamara Road Crossing Detours during Flood and Restoration Flows



Source: California Department of Water Resources 2017, adapted by GEI Consultants, Inc., 2017

Few if any travelers would drive the maximum 27-mile, 40-minute detour from the Eastside Bypass on Dan McNamara Road to the other side of Eastside Bypass on Dan McNamara Road (see **Figure 3.20-1**). Very few residences (less than 15) are located along the 9 miles of Dan McNamara Road from the Eastside Bypass to SR 140 (McSwain Road). The longest detour for the majority of travelers going east on SR 140 would detour an additional 18 miles and 22 minutes down South Gurr Road and Sandy Mush Road. Travelers going west on SR140, however, would detour down South Gurr Road and Sandy Mush Road as well, but without any additional distance and in less time. The majority of residents are located along SR 140 toward South Gurr Road and would drive about 3 miles farther, 2 minutes faster, and over a substantially better paved road system to reach Sandy Mush Road and Dan McNamara Road intersection if taking the South Gurr Road and Sandy Mush Road alternative, as compared to taking Dan McNamara Road from the North.

The predominance of businesses and residents affected are located along SR 140 between Bert Crane Road and South Gurr Road, and most would not have any longer travel distance or travel time because the South Gurr Road and Sandy Mush Road alternative route is a substantially better 2-lane paved road with 55 mph speed limits compared to the rough paved and gravel Bert Crane Road and Dan McNamara Road route crossing the Eastside Bypass. Given that Dan McNamara Road already is subject to infrequent flood closures and closures at Restoration Flows up to 300 cfs in the Eastside Bypass under existing conditions, the increase in Restoration Flows in the Eastside Bypass up to 580 cfs would not likely cause additional closures. Furthermore, given Merced County's posting of closures on its website, and the availability of an alternative route that adds no-to-little additional time or distance for a majority of residents in the area, this impact is less than significant.

Proposed Project

Available literature, including documents published by Federal, State, and County agencies that document traffic conditions, were reviewed for this analysis. California Department of Transportation (Caltrans) and Merced County evaluate traffic performance based on a level of service (LOS) standard. LOS standards are typically used to evaluate long-term (operational) traffic effects resulting from residential, employment-generating, industrial, and institutional development projects. The proposed project is not a land use development project. Long-term operation of the proposed project would require a similar level of maintenance and monitoring as under current conditions and the no action alternative. Because the project would result in only marginal operational changes, LOS standards were not used in this analysis. Instead, this analysis focuses on construction-related traffic effects on existing roadways.

Based on the information in, "Description of the Proposed Project and No Action Alternative," this analysis conservatively assumes a maximum of 53 workers on the proposed improvements at any one time. The analysis also assumes up to 10 heavy trucks would be operating on roadways in the vicinity of the project site on a daily basis.

To assess the effect of truck trips generated by construction of these project components, a heavy-vehicle factor known as a passenger car equivalent (PCE) value was applied to the project-generated truck traffic. This heavy-vehicle factor was used to account for the additional space occupied, reduced speed, and reduced maneuverability associated with having these vehicles, rather than standard automobiles, on the roadway. A PCE value of 2.0 was applied to the construction equipment truck trip generation estimates as recommended by the *Highway Capacity Manual 2000* (Transportation Research Board 2000).

This analysis used the recommended screening criterion from the Institute of Transportation Engineers (ITE) (1988) for assessing the effects of construction projects that create temporary traffic increases. To account for the large percentage of heavy trucks associated with typical construction projects, ITE recommends a threshold level of 50 or more new peak-direction trips during the peak-hour. Therefore, the project would cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system, and result in a significant effect related to traffic, if they would result in 50 or more new truck trips (100 PCE) during the a.m. or p.m. peak hours. This is considered an “industry standard” and is the most current guidance.

- a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?**
(Less-than-Significant Impact)

The project would involve a maximum of approximately 53 workers and 10 trucks accessing the project site daily, resulting in 126 construction-related trips (106 worker trips and 20 truck trips). Assuming that half of the worker trips would occur during the morning peak hour, and half during the evening peak hour, the 10 trucks operating at the project site would not exceed the ITE screening criterion of 50 trucks (100 PCE) during an hour for construction traffic impacts. This temporary impact would be less than significant.

- b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?**
(No Impact)

No congestion management program has been established for Merced County (Merced County 2012b). There would be no impact.

- c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?**
(No Impact)

The project site is not located within 2 miles of a public or private airport, and the project does not include any activities or changes in land use that would affect air traffic patterns. There would be no impact.

- d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**
(Less-than-Significant Impact)

Project construction would result in temporary traffic (temporary daily commute traffic for 53 construction workers, plus trips by 10 trucks operating daily) on local and regional roadways. With the exception of a replacement crossing of the low-flow channel on Dan McNamara Road, the project would not change any existing roadways, and the adjustments to Dan McNamara Road would not create new

curves, intersections, or changes to visibility. Furthermore, roadways in the project vicinity already carry truck traffic associated with agricultural operations. The temporary construction-related impacts related to increases in roadway hazards would be less than significant.

**e) Result in inadequate emergency access?
(Less-than-Significant Impact)**

The project includes the replacement of Dan McNamara Road's existing culverted low-flow crossing of the Eastside Bypass with larger concrete box culverts. The road will need to be closed during construction activities, expected to take approximately 6 months. During this time, emergency vehicles would likely have access to use the shorter 1.5-mile detour typically used when the road is closed during flood flows. Even if they did not, emergency services in the area would be provided primarily from Fire Station #61 located at 961 Gurr Road (at the SR 140 intersection). From this location, emergency services can be provided on Dan McNamara Road and adjacent areas on either side of the Eastside Bypass with no increase in distance or time with Dan McNamara Road closures at the Eastside Bypass. Consequently, there would be no impact to emergency access on Dan McNamara Road at the Eastside Bypass crossing during temporary construction activities. Construction of other project elements would not close any roads, but there would be slightly higher truck traffic from haul trucks. This temporary construction-related impact to emergency access would be less than significant.

The proposed project levee improvements would allow increased flows from approximately 580 cfs to approximately 2,500 cfs, but only with additional future Reclamation projects. Therefore, there is no impact to traffic and transportation from changes in flow conditions resulting from proposed project operations. Further information is provided in Section 4.1, "Cumulative Impacts."

One potential simpler and cost-effective option still under consideration is to remove the culvert without replacement and grade the streambed after culvert removal. Under this option, Dan McNamara Road at the Eastside Bypass would begin to be inundated at any flow, compared to current inundation at flows above the existing culvert capacity of about 25 cfs. This would have no impact during flood flows and an approximate 25 cfs increase in Restoration Flows overtopping the road (i.e., the current culvert capacity). Given that significantly larger Restoration Flows already cross the road (up to approximately 300 cfs) and much larger Restoration Flows up to 580 cfs in the near future when Reclamation expects to obtain seepage agreements would occur, this increase in road closures would be small and primarily occur at low flows during drought years when Restoration Flows are reduced. As described above, even with additional road closures with this option, the available alternative emergency routes would result in minimal, if any, delays to emergency vehicles. Therefore, the culvert removal without replacement option would have a less-than-significant impact on emergency access, both during project construction and operations.

**f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?
(No Impact)**

There are no public transit, bicycle, or pedestrian facilities in the project vicinity. There would be no impact related to conflict with policies or plans, and no decrease in the performance or safety of these facilities caused by implementing the proposed project.

3.21 Indian Trust Assets

Indian Trust Assets (ITAs) are defined as legal interests in property held in trust by the United States government for Indian tribes or individuals or property protected under United States law for Indian tribes or individuals. An Indian trust has three components: 1) the trustee, 2) the beneficiary, and 3) the trust asset. ITAs can include land, minerals, Federally reserved hunting and fishing rights, Federally reserved water rights, and in-stream flows associated with a reservation or Rancheria. Beneficiaries of the Indian trust relationship are Federally recognized Indian tribes with trust land. By definition, ITAs cannot be sold, leased, or otherwise encumbered without approval of the United States. The characterization and application of the United States trust relationship have been defined by case law that supports Congressional acts, executive orders, and historic treaty provisions.

Existing ITA conditions are determined by their existence and proximity to the project area, within Merced County. There are no ITAs within Merced County. The ITAs in closest proximity to the study area are northeast and slightly southeast of Merced County in Madera and Tuolumne Counties. There would be no direct, indirect, or cumulative impacts to ITAs from the proposed project.

3.22 Utilities and Service Systems

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XXI. UTILITIES AND SERVICE SYSTEMS – Would the project:					
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h) Affect power and energy facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.22.1 Environmental Setting

Solid Waste Management

Within Merced County, there are two active solid waste disposal-landfill facilities owned by Merced County and operated by the Merced County Association of Governments Regional Waste Management Authority. The Merced County Department of Public Works Solid Waste Division is under contract to operate the Highway 59 Landfill, which serves the eastern end of the County, and the Billy Wright Landfill, which serves the western end of the County. Both the Highway 59 Landfill and Billy Wright Landfill are defined as Class III landfills and accept mixed municipal, green materials, wood waste, tires, and other hazardous materials (Merced County 2013a).

The Highway 59 Landfill is permitted to accept a maximum of 1,500 tons per day of solid waste. The site has a permitted maximum capacity of approximately 30 million cubic yards and when last reported in 2005 had a remaining capacity of 28 million cubic yards and a projected closure date in 2030. The Billy Wright Landfill is permitted to accept a maximum of 1,500 tons per day of solid waste. The site has a permitted capacity of approximately 14 million cubic yards and when last reported in 2010 had a remaining capacity of 11 million cubic yards and a projected closure date in 2054 (California Department of Resources Recycling and Recovery 2016).

Water Supply

Merced Irrigation District

The Merced Irrigation District's (MID) service area is situated to the east of the Eastside Bypass, north of the Chowchilla River, and south of the Merced River. Water from Lake McClure along Merced River is the primary MID water source. Within the project area, MID provides water to the Merced NWR.

Turner Island Water District

The Turner Island Water District (TIWD) provides agricultural irrigation services to four customers during the summer irrigation season. The TIWD owns and operates various infrastructure, including 47 lift pumps, 13 wells, and 16 miles of canals.

Lone Tree Mutual Water Company

The Lone Tree Mutual Water Company (LTMWC) manages San Joaquin River water rights and supplies for many agricultural landowners primarily east of the Eastside Bypass to the north and west of El Nido, but also between the Eastside Bypass and the San Joaquin River in the vicinity of the Sand Slough inlet. LTMWC owns and maintains infrastructure including pipes underneath the San Joaquin River to the north of Sand Slough.

Merced National Wildlife Refuge

The Merced NWR receives water from MID, which delivers water into the Eastside Bypass. The Merced NWR diverts this water from the Eastside Bypass using two weirs and primarily uses the downstream weir for diversions because the crest elevation is higher and it creates a pool for use by a temporary, trailer-mounted pump. Diversions vary based on water year type and volume of water available but the approximate schedule is below:

- Flood up: September 1 to October 15 – flooding to create waterfowl habitat
- Draw down: March 1 to May 15 – draining of the refuge area
- Irrigation: April 1 to July 1 – managing water to produce forage for waterfowl.

Power Distribution and Generation Facilities

Power supplies within the project area are primarily provided by Pacific Gas & Electric Company (PG&E) from the regional power grid for residential, commercial, industrial, and agricultural uses. Power supplies delivered within the MID service area are provided by MID, although PG&E is responsible for maintaining the MID delivery system (Merced County 2013a).

The California Independent Service Operator (ISO) manages the flow and distribution of electricity through high-voltage, long-distance power lines to 80 percent of California's total power grid. California ISO delivers high voltage electricity to PG&E substations near the project area where it is distributed by

PG&E on lower voltage primary and secondary power lines (PG&E 2016). PG&E records indicate that high voltage (≤ 750 kilovolts) electrical transmission lines do not occur in the project area.

In addition to power from the Statewide grid, an important part of the Statewide grid's reliability is locally produced base power load. There are 11 power plants in the region providing base power load; however, none of these facilities are within the project area and would be affected by the proposed project.

Other Utilities

Natural gas services are provided to the developed areas surrounding the project vicinity by PG&E gas transmission pipelines (Merced County 2013a). Smaller rural settlements in the project vicinity are primarily served by imported propane stored on site. No natural gas lines have been documented within the project area.

In addition to natural gas and local propane distribution systems, there is the potential for unmapped pipelines serving individual or community septic systems in the project area (Merced County 2013a). However, due to the extent and nature of these septic systems and the lack of residences within the project area, it is highly unlikely that any septic pipelines fall within the project area. Also, agricultural water purveyors may maintain pipelines for irrigation water delivery in the project vicinity. The project is located in a rural-agricultural portion of Merced County and there are no documented stormwater management facilities that would be affected by the proposed project.

3.22.2 Regulatory Setting

Federal

Power and energy production and distribution are regulated by the Federal Government. The Federal Energy Regulatory Commission regulates both Federal and non-Federal power projects.

Central Valley Project Improvement Act

The Central Valley Project Improvement Act (CVPIA) was enacted in 1992 to protect, restore, and enhance habitat in Central Valley river basins, address impacts of the CVP on biological resources, improve CVP operational flexibility, support water transfers and water conservation, support protection of the Delta, and manage Central Valley Project (CVP) competing uses and demands. The following sections affect the proposed project area:

- **Section 3406(b)(2)** authorized and directed the Secretary of the Interior (Secretary), among other actions, to dedicate and manage 800 thousand acre-feet (TAF) of CVP yield annually for the primary purpose of implementing the fish, wildlife, and habitat restoration purposes and measures authorized in the CVPIA; assist the State of California in its efforts to protect the Delta; and help meet obligations legally imposed on the CVP under Federal or State law following the date of enactment of the CVPIA.
- **Section 3406(d)(1)** required that the Secretary immediately provide specific quantities of water to the refuges, referred to as "Level 2" supplies. The CVPIA requires delivery of Level 2 water in all year types, except critically dry water year conditions when Level 2 water can be reduced by 25 percent.

- **Section 3406(d)(2)** of the CVPIA refers to “Level 4” refuge water supplies, which are the quantities required for optimum habitat management of the existing refuge lands. Level 4 water supplies amount to about 163 TAF above Level 2 water supplies. The availability of Level 4 refuge water supplies is influenced by the availability of water for transfer from willing sellers.
- **Section 3406(c)(1)** mandated development of a comprehensive plan that is reasonably prudent and feasible to be presented to Congress to address fish, wildlife, and habitat concerns on the San Joaquin River. However, Public Law 111-11 declared that “the Settlement satisfies and discharges all of the obligations of the Secretary contained in Section 3406(c)(1).”

San Joaquin River Agreement

The San Joaquin River Agreement (SJRA), adopted in 2000, is a water supply program to provide increased instream flows in the San Joaquin River. The water available under the SJRA provides protective measures for fall-run Chinook salmon in the San Joaquin River under the Vernalis Adaptive Management Plan (VAMP). Though VAMP was discontinued, the NMFS 2009 Biological Opinion (BO) for Long-term Operations of the CVP/SWP included continuation of VAMP-like flows in the Reasonable and Prudent Alternatives.

State

California Integrated Waste Management Act

To minimize the amount of solid waste that must be disposed of by transformation and land disposal, the California Legislature passed the California Integrated Waste Management Act (CIWMA) of 1989 (AB 939), effective January 1990. According to the CIWMA, all cities and counties were required to divert 25 percent of all solid waste from landfill facilities by January 1, 1995 and 50 percent by January 1, 2000. Each city is required to develop solid waste plans demonstrating integration of the CIWMA plan with the county plan. The plans must promote (in order of priority) source reduction, recycling and composting, and environmentally safe transformation and land disposal.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The California ISO is an impartial operator of the Statewide wholesale power grid with responsibility for system reliability through scheduling available transmission capacity.

California Public Resources Code

Under the California Public Resources Code, agencies of the State government that regulate activities of private individuals, corporations, and public agencies found to affect the quality of the environment shall regulate such activities, with major consideration given to preventing environmental damage, while providing a satisfying living environment for every Californian.

California Water Rights

Water rights in California are managed by the State Water Resources Control Board (SWRCB). A water right is a legally protected right, granted by law, to take possession of water and put it to beneficial use. SWRCB is responsible for allocating surface water rights and permitting diversion and use of water, including the water rights of users within the project area, as applicable.

Local

As described under “Solid Waste Management” above, each solid waste management provider with jurisdiction in the project area implements solid waste plans and recycling programs consistent with the requirements of AB 939.

The Merced County General Plan outlines policies guiding the placement of new and interaction with existing electrical services for projects proposed within Merced County (Merced County 2013b).

The project area is within the Merced Integrated Regional Water Management (IRWM) Region and the boundaries of the IRWM were developed by local agencies and approved by DWR; the area includes Merced County east of the San Joaquin River and is almost entirely within the Merced Groundwater Basin. Portions of the Merced River watershed contiguous with the Merced Groundwater Basin are also a part of the region. The City of Merced, County of Merced, and MID are currently in the process of preparing an Integrated Regional Water Management Plan.

3.22.3 Environmental Effects

No Action Alternative

Under the no action alternative, no construction-related activities would occur and no existing facilities would be modified. There would be no impact.

Proposed Project

- a) **Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?**
(No Impact)

The project area is not served by any municipal wastewater collection systems. Project implementation would not produce any new wastewater or result in the need to expand existing private wastewater facilities. On-site portable restrooms would be available for the construction workforce during project construction. Therefore, there would be no impact.

- b) **Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**
(No Impact)

See item a). There would be no impact.

- c) **Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**
(No Impact)

Implementation of the proposed project would not create additional impervious surface or stormwater runoff in excess of current conditions and would not require the construction of new or expansion of existing stormwater drainage facilities. There would be no impact.