

**d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?
(Less-than-Significant Impact)**

The proposed fish passage modifications at the Eastside Bypass Control Structure would be near an existing siphon that conveys water in the Eastside Canal from the north side to the south side of the Mariposa and Eastside Bypasses. Construction of the proposed fish passage system is designed to avoid interference with the underground siphon; the design does not include improvements that overlie the siphon. Therefore, the proposed project would not affect the existing siphon or its operation.

The proposed project would also involve the removal of the existing Merced NWR weirs to facilitate fish passage. Under current operations, the weirs allow Merced NWR to divert water from the Eastside Bypass during low-flow conditions, including water supplies from MID, into portions of the refuge within the Eastside Bypass or areas to the west. Adequate water supplies during diversion periods is critical to refuge operations. An existing groundwater well on the refuge site would be replaced to provide an alternative water source. The updated well would pump approximately 240 acre-feet per year of water to the refuge, which is anticipated to be sufficient to maintain refuge operations consistent with existing conditions. MID water supplies could be used on the portion of the refuge east of the Eastside Bypass. The groundwater well would be constructed prior to weir removal. The well would provide an uninterrupted water supply to the refuge during project construction. Project construction would not interfere with agricultural water conveyance or operations supporting agricultural water users of the NWR. Therefore, this impact would be less than significant.

**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?
(No Impact)**

See item a). The proposed project would not generate demand for wastewater treatment. There would be no impact.

**f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?
(Less-than-Significant Impact)**

The construction activities associated with the levee stability improvements, Merced NWR weir removals, and the Dan McNamara Road crossing modifications may result in a short-term increase in solid waste (construction waste from culvert replacement and associated road work). However, this solid waste would not exceed the permitted capacity at receiving landfills in the project area given current available landfill capacity. This impact would be less than significant.

**g) Comply with federal, state, and local statutes and regulations related to solid waste?
(No Impact)**

See item f). The transportation and disposal of solid waste would be in accordance with applicable Federal, State, and local statutes and regulations. There would be no impact.

h) Affect power and energy facilities?
(Less-than-Significant Impact with Mitigation Incorporated)

Construction activities associated with the project would rely primarily on diesel- and gas-powered construction equipment and would cause little to no increase in local power demands. The project area is located in a rural agricultural area of Merced County and there are no nearby homes or businesses that would experience power or energy interruptions during project construction. Additionally, construction activities associated with the project would not affect power generation at local power plants. However, construction activities could encounter or require the relocation of both known and unknown local power distribution infrastructure and other existing subsurface utilities, including currently mapped and potentially unmapped pipelines associated with individual and community natural gas and propane systems. This impact is potentially significant.

DWR and/or Reclamation would implement Mitigation Measure UTIL-1 before construction to reduce this potentially significant impact.

Mitigation Measure UTIL-1: Conduct Mandatory Utility Surveys and Avoid Existing Utility Infrastructure.

A power line investigation will be completed during project design and before project construction to reduce the likelihood of construction equipment encountering unknown utility infrastructure. Also, the construction contractor will coordinate with local utilities before and during construction to ensure completion of mandatory underground service alert surveys. Existing utilities will be avoided or relocated as needed prior to ground-disturbing activities that could affect these utilities. These mandatory actions would eliminate the potential for any local service interruptions.

By surveying for and avoiding or relocating existing utility infrastructure prior to construction activities, Implementation of Mitigation Measure UTIL-1 would reduce the potentially significant impact on utility infrastructure to a less-than-significant level.

3.23 Mandatory Findings of Significance

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Beneficial Impact
XXII. MANDATORY FINDINGS OF SIGNIFICANCE – Would the project:					
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.23.1 Discussion

- a) **Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?**
(Less-than-Significant Impact with Mitigation Incorporated)

As discussed in Section 3.4, “Biological Resources – Fisheries,” Section 3.5, “Biological Resources – Vegetation and Wildlife,” and Section 3.6, “Cultural Resources,” any potentially significant impacts related to plant, fish, or wildlife habitat or populations, special-status species, and important historical or cultural resources would be reduced to a less-than-significant level through implementation of avoidance and minimization measures and by incorporating mitigation measures. No known cultural resources would be affected by the proposed project and if unidentified resources are encountered during construction, mitigation measures are in place to ensure that impacts would be less than significant.

For many fish and wildlife species, including target SJRRP species, the proposed project would increase fish and wildlife populations and habitats, and provide opportunities for additional future Restoration Flow increases to meet the Restoration Goal throughout the Restoration Area. Beneficial impacts would result from the proposed project both in the short-term and long-term. As explained in more detail in Section 3.4, “Biological Resources – Fisheries,” Section 3.5, “Biological Resources – Vegetation and Wildlife,” and Section 3.6, “Cultural Resources,” the proposed project would have a less-than-significant impact with mitigation incorporated, as well as overall beneficial impacts to fish and wildlife resources in and adjacent to the Eastside Bypass.

- b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)**
(Less-than-Significant Impact with Mitigation Incorporated)

Please refer to Section 4.1, “Cumulative Impacts,” in Chapter 4, “Other Required Analyses,” for a discussion of cumulative impacts and the project’s potential to contribute to these impacts. As discussed in Section 4.1, the proposed project with mitigation incorporated would not result in any impacts that would cause a cumulatively considerable incremental contribution to a significant cumulative impact. The project results in a less-than-significant impact with mitigation incorporated.

- c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?**
(Less-than-Significant Impact)

As discussed in the individual topic sections throughout Chapter 3, “Environmental Setting, Impacts, and Mitigation Measures,” any potentially significant impacts with the potential to adversely affect human beings (including aesthetics, air quality, greenhouse gas emissions, hazards and hazardous materials, land use and planning, noise, population and housing, public services, recreation, transportation and traffic, and utilities and service systems) would be reduced to a less-than-significant level by incorporating mitigation measures that would avoid, minimize, rectify, reduce or eliminate, or compensate for potentially significant impacts. These sections consider both direct and indirect impacts. None of the project impacts would cause substantial adverse effects on human beings, either directly or indirectly, but could potentially benefit human beings living in or near the floodplain by improving critical Eastside Bypass levee sections to current USACE standards and reducing potential flood risks in the local vicinity of the levee improvements. Overall, this impact would be a less-than-significant impact.

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Chapter 4. Other Required Analyses

This chapter includes a discussion of cumulative impacts, as well as other analyses required under NEPA and/or CEQA.

4.1 Cumulative Impacts

4.1.1 Past, Present, and Future Related Projects and Plans

The following past, present, and future related projects and plans have been identified as having the potential to affect the same resources as the proposed project. The future projects and plans are considered to be probable and reasonably foreseeable. The projects included in this cumulative impact analysis include flood management and restoration projects affecting the San Joaquin River that could result in adverse or beneficial effects similar to those of the proposed project in the Eastside Bypass or downstream in the San Joaquin River: San Joaquin River Restoration Program. The SJRRP has been summarized in Chapter 1, “Introduction.” Cumulative impacts of the entire program were evaluated in Chapter 26, “Cumulative Impacts,” in the SJRRP Draft PEIS/R (SJRRP 2012); this chapter is incorporated by reference. The PEIS/R concluded that the following impacts had the potential to result in an incremental contribution to a significant cumulative impact:

- Air Quality: Construction-related emissions of criteria air pollutants and precursors.
- Biological Resources – Fisheries: Potential direct mortality or reduced fecundity of wild fall-run Chinook salmon in San Joaquin River tributaries resulting from disease outbreak.
- Climate Change: Construction-related emissions of greenhouse gases (program level); operational-related emissions of greenhouse gases (project level).
- Cultural Resources: Disturbance or destruction of cultural resources.
- Hydrology: Groundwater changes in groundwater levels and groundwater quality in Central Valley Project/State Water Project water service areas.
- Land Use Planning and Agriculture: Conversion of important farmland to nonagricultural uses and cancellation of Williamson Act contracts; substantial diminishment of agricultural land resource quality and importance because of altered inundation and/or soil saturation, and altered water deliveries.
- Noise: Exposure of sensitive receptors to generation of temporary and short-term construction noise, and increased off-site traffic noise levels.
- Utilities and Service Systems: Reduced water supplies for Friant Division water contractors.
- Visual Resources: Long-term changes in scenic vistas, scenic resources, and existing visual character.

Descriptions of Related Projects

- The Reach 4B, Eastside Bypass, and Mariposa Bypass Channel and Structural Improvements Project (Reach 4B/ESB Project) is a high-priority SJRRP project that proposes to implement specific channel and structural modifications required by the Settlement in the area of Reach 4B of the San Joaquin River. The project includes the construction, operation, and maintenance of improvements in Reach 4B of the San Joaquin River and the flood bypass system to achieve the Restoration Goal. The Reach 4B/ESB Project addresses key elements in Paragraph 11(a) and 11(b) of the Settlement: Phase 1 improvements refer to the improvements specified in Paragraph 11(a) of the Settlement, whereas Phase 2 improvements refer to the improvements specified in Paragraph 11(b). Specifically, Paragraph 11(a) of the Settlement stipulates:
 - Modifications in San Joaquin River channel capacity to the extent necessary to ensure conveyance of at least 475 cfs through Reach 4B
 - Modifications at the Reach 4B Headgate on the San Joaquin River channel to ensure fish passage and enable flow routing of between 500 cfs and 4,500 cfs into Reach 4B, consistent with any determination made in Paragraph 11(b)(1)
 - Modifications to the Sand Slough Control Structure to ensure fish passage
 - Modifications to structures in the Mariposa bypass channel to the extent needed to provide anadromous fish passage on an interim basis until completion of the Phase 2 improvements (*Note: the proposed project analyzed in this IS/EA addresses modifications to structures in the Eastside Bypass channel to the extent needed to provide anadromous fish passage on an interim basis until completion of the Phase 2 improvements*)
 - Modifications in the Eastside and Mariposa bypass channels to establish a suitable low-flow channel if the Secretary of the Interior (Secretary), in consultation with the Regional Administrator (RA), determines such modifications are necessary to support anadromous fish migration through these channels
- Paragraph 11(b)(1) of the Settlement includes additional language on long-term flows in Reach 4B of the San Joaquin River:
 - Modifications in the San Joaquin River channel capacity (incorporating new floodplain and related riparian habitat) to ensure conveyance of at least 4,500 cfs through Reach 4B unless the Secretary of the Interior, in consultation with the RA and with the concurrence of NMFS and USFWS, determines that such modifications would not substantially enhance achievement of the Restoration Goal
- Eastside Bypass Conveyance Project. Reclamation proposes to excavate accumulated sand in the low-flow channel of the Mariposa Slough/Eastside Bypass, remove inoperable concrete culverts currently impeding flows at the low-flow El Nido Road crossing, and remove the low-flow crossing to improve hydraulic conditions at this location (Reclamation 2016).
- San Luis and Merced NWR Comprehensive Conservation Plan. The San Luis and Merced NWR Comprehensive Conservation Plan (CCP) is in preparation by USFWS and will help guide management of these refuges for 15 years; describe significant refuge resources and their importance; identify how these refuges can best protect these resources; clarify what public uses are,

and are not, compatible with managing significant resources; and identify the role of these refuges within the local community and as a national resource.

- Arroyo Canal Fish Screen and Sack Dam Fish Passage Project. Reclamation proposes to replace Sack Dam and install a new fish screen structure in Arroyo Canal to accommodate fish passage in the San Joaquin River.
- Central Valley Flood Management Planning Program. DWR launched the Central Valley Flood Management Planning (CVFMP) Program in 2008 to improve integrated flood management in California's Central Valley. The CVFMP Program efforts include the preparation of the Central Valley Flood Protection Plan (CVFPP) to fulfill the requirements of the Central Valley Flood Protection Act of 2008 (DWR 2016a).
 - Central Valley Flood Protection Plan. The CVFPP was prepared by DWR in coordination with local flood management agencies, the Central Valley Flood Protection Board (CVFPB), United States Army Corps of Engineers (USACE), Federal Emergency Management Agency (FEMA), and Reclamation (DWR 2012). The CVFPP is a guidance document that proposed a State system-wide investment approach for improving integrated flood management and flood risk-reduction for areas protected by State Plan of Flood Control (SPFC) facilities along the Sacramento River and San Joaquin River systems. The SPFC represents the portion of the Central Valley flood management system for which the State has provided assurances of non-federal cooperation to the United States. SPFC facilities include levees, weirs, bypass channels, pumps, and dams. The CVFPP provides general planning and guidance for flood management system improvements over the next 20–25 years. The CVFPP was adopted in 2012 by the CVFPB and will be updated every five years. The draft CVFPP 2017 Update and the Supplemental Program Final EIR have been released (DWR 2017). The CVFPP and associated studies and plans from the contributing planning efforts mentioned after this point are all in the feasibility study and planning stages; CEQA and NEPA documents have not been completed for those plans.

The preferred method for improving flood management is called the State Systemwide Improvement Approach (SSIA). The SSIA identifies several opportunities for improving flood control and ecosystem restoration in the Eastside Bypass project area, including:

- Removing (either physically or administratively) intermittent SPFC levees that are no longer functioning along the Mariposa Bypass,
- Upgrades to structures in upper San Joaquin bypasses (Mariposa Bypass Control Structure and Mariposa Drop Structure), and
- Fish passage improvements at Sand Slough Control Structure.

The planning efforts that contribute to the 2017 CVFPP recommendations include the Central Valley Flood System Conservation Strategy.

- Central Valley Flood System Conservation Strategy. The Central Valley Flood System Conservation Strategy (Conservation Strategy) is integral to implementing the 2012 CVFPP SSIA. The Conservation Strategy focuses on the integration and improvement of ecosystem functions with flood risk reduction projects and identifies specific tools and approaches to restore natural areas to benefit fish and wildlife (DWR 2016b).

- FloodSAFE California. In 2007, DWR developed FloodSAFE California, a comprehensive program to address the State of California’s flood management challenges. The four main elements of the program include improving emergency response, improving flood management systems, improving operations and maintenance, and informing and assisting the public.

DWR, with Federal and State agencies, local sponsors, and other stakeholders, have developed a draft FloodSAFE Strategic Plan, which was released to the public in June 2008. The plan identifies objectives intended to eliminate unacceptable risks of flood damage statewide. These objectives include providing at least a 200-year level of flood protection to all urban and urbanizing areas in the Sacramento-San Joaquin Valley by 2025, establishing an interagency mitigation banking program by 2013, designing and implementing a computer-assisted decision support system based on advanced forecasts for reservoirs by 2014, completing an emergency operations plan for the Sacramento-San Joaquin Delta (Delta) by December 31, 2009, and developing a Central Valley Flood Protection Plan (DWR 2008).

- San Joaquin River Salinity Management Plan. This plan describes actions taken by Reclamation to reduce or mitigate salinity and boron total maximum daily loads transferred from the Delta to the San Joaquin River basin.

Salt load reduction actions include the Grassland Bypass Project, which is designed to improve water quality in the channels used to deliver water to wetland areas and the San Joaquin River, and the development of a Wetlands Best Management Practices Plan with the United States Fish and Wildlife Service (USFWS), California Department Fish and Wildlife (CDFW), and Grasslands Conservation District to reduce the impacts of discharges from managed wetlands into the San Joaquin River (Reclamation 2010).

- Central Valley Joint Venture. The Central Valley Joint Venture (CVJV) is made up of representatives from various agencies and organizations that are working together to protect, restore, and enhance wetlands and associated habitats for waterfowl, shorebirds, waterbirds, and riparian songbirds. The CVJV was formed to provide overall leadership, guidance, resources, and support for bird habitat conservation in the Central Valley of California.

The CVJV’s 2006 Implementation Plan outlines habitat goals for six bird groups, including breeding and non-breeding waterfowl, breeding and non-breeding shorebirds, riparian dependent songbirds, and waterbirds. The CVJV accomplishes its habitat goals through land protection, restoration, and enhancement. In the 2006 Implementation Plan, the San Joaquin Basin (which includes the Reach 4B/ESB Project area) has a wetland restoration goal of 20,000 acres and a goal of 5,084 acres per year for enhancing existing wetlands and states that agricultural easements are necessary to buffer residential and urban growth in many areas (CVJV 2006).

- 2030 Merced County General Plan. The 2030 Merced County General Plan was adopted in December 2013 (Merced County 2013). The general plan includes a plan for the comprehensive and long-range management, preservation, and conservation of “open-space lands” and contains provisions for managing and conserving Merced County’s natural resources and protecting life, health, and property from natural hazards.
- Riparian Habitat Joint Venture. The Riparian Habitat Joint Venture (RHJV) project was initiated in 1994 and involves 18 Federal, State, and private organizations that have signed a Cooperative Agreement to protect and enhance habitats for native landbirds throughout California. The RHJV

reinforces other collaborative efforts currently underway that protect biodiversity and enhance natural resources and the human element they support. The RHJV's 2004 Riparian Bird Conservation Plan outlines a variety of objectives to protect and enhance habitat for riparian birds (RHJV 2004).

- Sustainable Groundwater Management Act. The State enacted SGMA in 2014 that establishes a framework for groundwater-dependent areas to be operated in a sustainable manner. SGMA requires that Groundwater Sustainability Agencies (GSA) be created and act as the governing body with respect to groundwater management. The GSA is charged with developing a Groundwater Sustainability Plan to outline the regions plans to reach a condition where any overdraft is halted and groundwater is managed sustainably.

4.1.2 Cumulative Impact Analysis

The proposed project is a component of the SJRRP. The 2012 SJRRP Draft PEIS/R contains a comprehensive analysis of the cumulative impacts of the SJRRP considered in the context of a variety of other water resources, restoration, and physically proximate projects (please refer to Chapter 26, "Cumulative Impacts," in the SJRRP Draft PEIS/R). The PEIS/R identified potential cumulative impacts as summarized above under Section 4.1.1, "Past, Present, and Future Related Projects and Plans." As discussed below, the proposed project with mitigation incorporated would not result in any impacts that would cause a cumulatively considerable incremental contribution to a significant cumulative impact.

As described in Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures," construction of the proposed project would result in potentially adverse less-than-significant effects (before or after mitigation) on air quality, biological resources (fisheries), biological resources (vegetation and wildlife), geology and soils, hazards and hazardous materials, hydrology and water quality, noise, and recreation, but would not result in significant impacts. For air quality, which is always evaluated in a cumulative impact context, construction emissions of the proposed project with Mitigation Measure AQ-1 would be below SJVAPCD significance thresholds. Most adverse impacts of the proposed project that could make a cumulatively considerable incremental contribution to a significant cumulative impact would be temporary and related to construction activities. If construction of one or more of the related projects described above were to occur during the same time frame as the proposed project and in the vicinity of the proposed project, a significant cumulative impact could result from overlapping construction-related impacts. However, there are no known construction projects proposed in the vicinity of the proposed project elements during the proposed project's 2019-2020 construction seasons. Therefore, the proposed project would not make any cumulatively considerable incremental contributions to significant, construction-related cumulative impacts.

The proposed project would have minor operations and maintenance requirements and, therefore, minor impacts that would not make a cumulatively considerable incremental contribution to any significant cumulative impacts. The primary site-specific flow-related cumulative impacts in the Eastside Bypass includes the proposed project, the increases in flows to approximately 580 cfs resulting from Reclamation's seepage easements expected to be implemented in 2018, the increase in flows to approximately 2,500 cfs due to the increased conveyance capacity from long-term project-related levee improvements and additional seepage and system improvements in other SJRRP reaches, and ultimately an increase in flows to approximately 4,500 cfs with additional SJRRP levee improvements. Flow-related impacts from the proposed project in conjunction with these other future actions that increase flows in the Eastside Bypass up to approximately 2,500 cfs would be less than significant, and flows could not increase to that level until seepage concerns are addressed by Reclamation as described in the

SJRRP PEIS/R (SJRRP 2011a). Furthermore, flow-related impacts represent SJRRP actions for which the potential impacts have been fully analyzed and disclosed, and mitigated to the extent feasible, as described in the SJRRP PEIS/R (SJRRP 2011a). Additional operations-related cumulative impact analyses are presented below.

Flood-Related Cumulative Impacts

Several key SJRRP programs are in place to mitigate potential seepage-, erosion-, and flood-related impacts (especially the Physical Monitoring and Management Plan that includes a Flow Monitoring and Management Component Plan, Seepage Monitoring and Management Component Plan, and Channel Capacity Monitoring and Management Component Plan). Consequently, the proposed project's operations and maintenance impacts would not make a cumulatively considerable incremental contribution to any significant cumulative impacts. The "Cumulative Impacts" chapter and Appendix D, "Physical Monitoring and Management Plan," of the SJRRP PEIS/R (2012) are hereby incorporated by reference as they fully evaluate, at a project- and program-level, the flow-related cumulative impacts.

Flow-Related Cumulative Impacts to Fisheries

The proposed project, combined with additional seepage and system improvements in other SJRRP reaches, would indirectly allow for increased maximum flows in the Eastside Bypass. Adult salmon migrating upstream would enter the bypass system through the Lower Eastside Bypass through a modified Eastside Bypass Control Structure to allow fish passage and would pass up the Middle Eastside Bypass before rejoining the San Joaquin River channel at the junction of Reach 4B1 and Reach 4A. Juvenile anadromous fish migrating downstream would enter the system from the San Joaquin River Reach 4A or the Upper Eastside Bypass and move downstream through the Middle Eastside Bypass and Lower Eastside Bypass.

During high flow periods, adult fish could potentially stray into Bear Creek or Owens Creek, which are tributaries to the Lower Eastside Bypass and historically to the San Joaquin River. If Bear or Owens Creeks are flowing, adult spring and fall-run Chinook salmon may be attracted and stray into the creeks and experience reduced reproductive success due to delays, metabolic expenditure, or possible failure in reaching spawning areas. However, historical flow gauge data for Bear and Owens Creeks show they only flow during large rain events in January through May during the wettest years. Therefore, straying spring-run Chinook salmon would have ample time to reorient and return to the mainstem San Joaquin River prior to spawning in fall and before flows in Bear Creek and Owens Creek recede; however, the metabolic cost of straying could still reduce reproductive fitness even after reorientation. Both Bear and Owens Creeks historically flowed into the San Joaquin River which would have created similar conditions in which straying would have been possible, but when the cost of straying was much less costly due to significantly higher population sizes. The proposed project would contribute to restoring habitat connectivity to the San Joaquin River, which reestablishes the potential for Chinook salmon to naturally migrate and repopulate an area which once consisted of robust populations of fall-run and spring-run Chinook salmon.

Although there may be an increased straying risk for adult Chinook salmon into Bear and Owens Creeks at higher flow rates, the stray rate and habitat availability would more closely resemble that of historic and natural conditions. The additional fish passage benefits from increased flows and fish barrier removal under the proposed project would be much greater than the potential straying risk. Therefore, the incremental contribution from the proposed project to a cumulative impact from changes in flow conditions on fish would be a beneficial cumulative impact.

The long distance (100 miles) between Friant Dam and the project area results in significant warming of Restoration Flows prior to arriving at the project area. Upon reaching the project area, water temperatures would be driven primarily, and many times exclusively, by ambient conditions. During certain times of the year, groundwater seepage may also impact water temperatures. Implementation of the proposed project and additional seepage and system improvements in other SJRRP reaches would increase Restoration Flows in the Eastside Bypass which could potentially have a positive effect for salmonids through decreased water temperature under certain conditions, which would be beneficial to target fish species. Therefore, the proposed project would not have a cumulatively considerable incremental contribution to a significant cumulative impact on water temperatures and associated effects on fish.

The existing Eastside Bypass channel would be enhanced to provide fish passage under variable flow conditions by removing the Merced NWR weirs and modifying the Dan McNamara Road crossing and Eastside Bypass Control Structure. Compared to existing conditions and the no action alternative, all passage limitations for adult and juvenile anadromous fish species would be removed in the Eastside Bypass. Likewise, the proposed project and additional SJRRP projects would increase flows from approximately 580 cfs to approximately 2,500 cfs in the Eastside Bypass, and coupled with fish barrier removal and modifications, would provide greater habitat availability and connectivity for anadromous as well as resident fish species. Therefore, changes in habitat conditions would be a beneficial impact and the proposed project would not result in a cumulatively considerable incremental contribution to a significant cumulative impact related to fish passage.

Transportation and Traffic Cumulative Impacts

Section 3.20, "Transportation and Traffic," discusses these construction-related impacts and determines that the direct and indirect impacts would be less than significant for a variety of reasons. Once project construction is completed, there are no further increases in truck traffic in the area, and Fire Station #61, as the first responder, can still provide emergency response times to all areas affected by the intermittent closure of Dan McNamara Road at the Eastside Bypass; alternative routes are easily available. The proposed project would not make a cumulatively considerable incremental contribution to any significant cumulative impacts related to temporary, construction-related actions.

Restoration Flows up to 580 cfs without the proposed project, and then up to 2,500 cfs with the proposed project and other future SJRRP projects, would result in greater frequency of Dan McNamara Road closures at the Eastside Bypass as discussed below.

North of Sandy Mush Road, Dan McNamara Road is an unpaved, two-lane road with narrow lanes and no points of interest in either direction. As such, traffic disruption caused by closure of Dan McNamara Road during Restoration Flows would be expected to be minimal, and would not change substantially from existing conditions or the no action alternative. However, any closures due to increased Restoration Flows would result in vehicles being routed on South Gurr Road, SR 59, or SR 165 to SR 140 instead of using local roadways and Dan McNamara Road. Traffic demand on Dan McNamara Road is currently low and would be expected to stay low as the road is rough and subject to flooding under existing conditions and into the future. Ongoing traffic detours would be less than significant, with no substantial physical or traffic effects.

Increased Restoration Flows at Dan McNamara Road resulting from increased conveyance capacity in the Eastside Bypass from the proposed project and in combination with additional SJRRP projects would not substantially affect vehicular passage compared to existing conditions or the no action

alternative. This is because Restoration Flows would increase from a maximum of approximately 300 cfs under existing conditions to approximately 580 cfs under the no action alternative, but the proposed project would improve and allow road passage at flows between 25 cfs and approximately 200-400 cfs because the new culverts with increased flow capacity would contain these flows that currently inundate the road and prevent vehicle passage. Furthermore, at Restoration Flows above 200-400 cfs that would exceed the capacity of the new culvert, there would be no measurable change in road closure frequency or duration because whether under existing conditions, no action alternative conditions, or conditions with the proposed project and other SJRRP projects as flows more than 200-400 cfs would preclude vehicle passage on Dan McNamara Road at the Eastside Bypass. As explained in Section 3.20, “Transportation and Traffic,” alternative routes are easily available. Consequently, impacts to transportation routes or emergency access, particularly at Dan McNamara Road, from the proposed levee modifications in combination with other SJRRP projects facilitating Restoration Flows up to 2,500 cfs would not result in a significant cumulative impact.

One 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 increase in road closure at low flows would occur primarily during drought years when Restoration Flows are reduced. As described above, even with additional road closures with this option combined with future SJRRP projects that would facilitate increased Restoration Flows at Dan McNamara Road up to 2,500 cfs and ultimately to 4,500 cfs, the available alternative emergency routes would result in minimal, if any, delays to emergency vehicles. Therefore, the culvert removal without replacement option would not have a cumulatively considerable incremental contribution to a significant cumulative impact on transportation routes or emergency access at Dan McNamara Road, or with respect to any other significant cumulative impact.

Subsidence-Related Cumulative Impacts

Subsidence is a long-term concern in the region. The proposed project would have minimal, if any, effects on subsidence. Modifying the existing structures would have no effect on subsidence. The small amount of groundwater replacement water that would be used by the Merced NWR would not be a cumulatively considerable incremental contribution to the significant cumulative impact of subsidence. Moreover, the proposed project has been designed to minimize the effects of subsidence on the modified structures to the extent practicable. It is also expected that SGMA would minimize future subsidence in the region over the long-term by requiring sustainable groundwater management. For these reasons, the proposed project would not cause a cumulatively considerable incremental contribution to the significant cumulative impact on subsidence.

4.2 Growth-inducing Impacts

Constructing the project would not remove an obstacle to population or economic growth. No utility (i.e., domestic water, wastewater treatment, sewer, or stormwater treatment) expansion is proposed. No new, additional transportation facilities are proposed, nor is there any proposal to increase the capacity of existing facilities. Although construction of the project would directly generate temporary construction jobs in addition to providing indirect and induced temporary employment, this temporary increase would not induce growth because the construction workforce would be relatively small; if this workforce could not be obtained from the local construction labor pool, workers would potentially come from other areas on a temporary basis, and increased economic activity would not be of a magnitude that

would drive demand for new housing. Because service systems would not be constructed or expanded, the project would not remove an impediment to growth.

The project would not remove obstacles to growth or require construction of additional community service facilities that could cause significant environmental effects. Although the project includes improvements to levees, these non-urban levees provide flood risk reduction only to agricultural areas. The improved levees would provide flood risk reduction to areas that are zoned for agricultural use, and additional barriers (i.e., lack of utilities and urban services, distance to existing developed areas) would preclude residential or commercial development in the areas which would receive improved flood risk reduction.

4.3 Relationship between Short-Term Uses and Long-Term Productivity

Construction activities would include short-term uses of capital, labor, fuels, and construction materials as well as habitats, agricultural areas, and recreation areas. General commitments of construction materials are largely irreversible because most of the construction materials are unsalvageable (see Section 4.4, “Irreversible and Irrecoverable Commitments of Resources”). Construction would also result in short-term, construction-related effects such as interference with local traffic and circulation and increased air emissions, ambient noise levels, dust generation, and disturbance of wildlife. These effects would be temporary, occurring primarily during construction, and are not expected to alter the long-term productivity of the natural environment.

In the short term, implementing the proposed project would directly increase demand for construction and technical services on a relatively small scale. The additional economic activity in these sectors could create jobs for construction contractors and workers; consulting engineers and designers; environmental consultants, such as biologists, botanists, and ecologists; and other personnel. It also would indirectly result in a minor increase in economic activity in industries that provide construction materials and industries providing goods and services to construction workers. In turn, the demand for these services could result in a minor increase in new jobs.

Grazing lands would be reduced in the short term as staging areas are used temporarily during construction. This impact would be minor and have negligible effects on employment and economic activity.

In summary, the short-term uses would generate some local, short-term economic activity that would decrease over the long term as construction activities are completed. The benefits to self-sustaining salmon and other fish populations would continue into the long term.

Long-term productivity would be maintained or increased, and there would be a short-term increase in construction-related economic activity. No identified adverse effects would pose a long-term risk to human health and safety.

4.4 Irreversible and Irrecoverable Commitments of Resources

NEPA requires a discussion of the irreversible and irretrievable commitments of resources that may be involved should an action be implemented. An irreversible and irretrievable commitment of resources is

the permanent loss of resources for future or alternative purposes. Irreversible and irretrievable resources are those that cannot be recovered or recycled or those that are consumed or reduced to unrecoverable forms. The proposed action would result in the irreversible and irretrievable commitment of the following:

- Construction materials
- Nonrenewable energy
- Land area

Project activities would commit material resources to the construction of modified facilities. The proposed project involves the use of construction materials committed to a variety of actions that would construct and modify existing facilities. The proposed project would commit a relatively small quantity of these material resources.

A large amount of material resources committed as a result of the proposed project would be fill material (soil, and to a much lesser extent, rock aggregate) primarily for earthen levee construction. The Merced County area is projected to have 21 to 40 years of permitted aggregate resources remaining (California Geological Survey 2012).

The proposed project would commit nonrenewable energy in the form of electricity, gasoline, diesel fuel, and oil for equipment and transportation vehicles that would be needed for the construction, operation, and maintenance of actions. However, these commitments of nonrenewable energy resources used for implementing the proposed project are not expected to adversely affect other activities that require electricity, gasoline, diesel fuel, and oil.

Grazing lands would be reduced in the short term as construction staging areas and would be used temporarily during construction. This conversion would be short term and not irreversible or irretrievable.

Chapter 5. Consultation, Coordination, and Compliance

This chapter summarizes the activities undertaken by DWR and Reclamation to satisfy CEQA, NEPA, and related regulatory requirements regarding consultation, coordination, and compliance for the Eastside Bypass Improvements Project. In addition, this chapter lists permits, petitions, and compliance documents potentially needed to implement the proposed project. This chapter also summarizes the public scoping process used to involve the public and agencies in the development of the proposed project as part of the larger Reach 4B investigations that were initiated in 2010.

5.1 Public Outreach and Agency Involvement

DWR and Reclamation jointly conducted initial public outreach and agency involvement efforts related to development of the Reach 4B Project EIS/R starting in 2009; the Reach 4B Project EIS/R initially included the four early implementation actions that are the subject of this IS/EA. A revised notice of intent (NOI) and notice of preparation (NOP) to prepare a joint EIS/R was released to the public for the entire Reach 4B Project on November 16, 2010. (Since then, Reclamation and DWR have decided to separate the near-term [to be completed by 2020] and long-term [to be completed by 2029] elements of the Reach 4B Project [now called the Reach 4B/ESB Project] for environmental review to meet the SJRRP's Framework for Implementation (SJRRP 2012) schedule, and because of the independent utility of the four early implementation actions and the "ripeness" of these actions for project-level environmental analyses, given the current level of planning and design.)

These public outreach and agency involvement efforts assisted DWR and Reclamation in determining the scope of this IS/EA for the Eastside Bypass Improvements Project, developing the project components, defining potential environmental impacts and the significance of those impacts, and identifying appropriate mitigation measures. DWR and Reclamation will continue to solicit public and agency input on the proposed project through public review of this IS/EA.

The following sections describe the public outreach and agency involvement efforts addressing the proposed project.

5.1.1 Reach 4B/ESB Project Scoping

Relevant portions of the scoping conducted for the original 4B Project by DWR and Reclamation are briefly summarized below because the proposed project analyzed in this IS/EA was a portion of the larger project addressed during previous DWR and Reclamation scoping activities for the Reach 4B/ESB Project.

Public Scoping Meetings

DWR and Reclamation extensively publicized and held three public scoping meetings in 2009 and 2010 (two in Los Banos and one in Merced), regarding preparation of an EIS/R for the Reach 4B/ESB Project, which included the four early implementation actions of the proposed project. Approximately 820 interested parties in Reclamation's project mailing database were contacted, including Federal,

State, and local agencies; elected officials; irrigation districts; county planning departments; landowners; academics; and other individuals that showed an interest in the Reach 4B/ESB Project. Each public meeting included an overview of key Reach 4B components, including the four early implementation actions of the proposed project.

Approximately 70 people attended the three meetings, including members of the public, landowners, elected officials, and representatives from public agencies. Public agencies providing comments were the Federal Emergency Management Agency, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Native American Heritage Commission, Central Valley Flood Protection Board, San Joaquin Valley Air Pollution Control District, CalTrans, Merced County Department of Public Works, San Luis Canal Company, Madera Irrigation District, San Joaquin River Exchange Contractors and Water Authority and San Joaquin River Resource Management Coalition, Grasslands Water District, and Lower San Joaquin Levee District. Individuals and others providing comments were Carolyn Butts, John Cameron, Michael Cannon, Norman Cedarquist, Gough Federighi, Jacqueline Elaine Lawrence, D. McNamara, James L. Nickel, Ernie Nosio, Julie Rentner (River Partners).

Other Public Outreach

Reclamation conducted the following additional public outreach activities since the public scoping meetings:

- Issued an initial public scoping report in January 2010 (SJRRP 2010).
- Issued a revised public scoping report in July 2011 (SJRRP 2011).
- Participated in Technical Work Groups and Sub-Groups to provide support for the development, evaluation, and refinement of Reach 4B alternatives.
- Facilitated regular SJRRP stakeholder meetings.
- Hosted bi-weekly or as-needed meetings during the alternative formulation process.
- Organized two Value Planning sessions in November and December 2011.
- Held an Alternatives Evaluation Workshop in December 2011.
- Held multiple landowner and stakeholder meetings regarding alternatives formulation.
- Exchanged many calls and emails with individual landowners to discuss specific issues.

5.1.2 Agencies and Organizations Consulted

In addition to the agencies and organizations consulted above, DWR and Reclamation have coordinated with the other Implementing Agencies (NMFS, USFWS, and CDFW), the Settlement Parties (include Departments of the Interior and Commerce, Natural Resources Defense Council, and Friant Water Users Association), CEQA Responsible Agencies, NEPA Cooperating Agencies (EPA, NMFS, CSLC, CVFPB, and CDFW), and Native American Tribes identified in Section 5.1.3, “Native American Consultation,” below.

5.1.3 Native American Consultation

On behalf of Reclamation, Davis-King & Associates contacted the NAHC in 2009 to request a Sacred Lands File search for sacred sites within the Reach 4B/ESB Project area, which includes the proposed project action area. NAHC responded that its records show an absence of sacred sites but provided an extensive contact list of Native American groups that potentially would be interested in the Reach 4B/ESB Project actions. These Native American groups were notified of the public scoping meetings held for the Reach 4B/ESB Project. Reaching out to Native American groups, including the groups that were provided an opportunity to review this IS/EA, demonstrates compliance with EO B-10-11.

As part of cultural resources identification efforts, the NAHC was contacted by Reclamation on March 14, 2013. A request was made of the NAHC to conduct a search of their Sacred Lands File as well as to provide a list of Native American representatives who might have knowledge of cultural resources within the project area. The NAHC responded on March 25, 2013 that a search of their Sacred Lands File had failed to indicate the presence of Native American sacred sites in the project area. Letters to all seven Native American representatives from the list provided by NAHC were sent by Reclamation in March 2013. Reclamation contacted the NAHC again in 2017 specifically with respect to the proposed project. The NAHC responded that a search of their Sacred Lands File had failed to indicate the presence of Native American sacred lands in the project area.

Reclamation sent requests for contact to representatives from the California Valley Miwok Tribe, the Dumna Wo-Wah Tribal Government, the North Fork Mono Tribe, the North Fork Rancheria of Mono Indians, the North Valley Yokuts Tribe, Picayune Rancheria of Chukchansi, the Santa Rosa Rancheria Tachi Yokut Tribe, the Southern Sierra Miwuk Nation, the Table Mountain Rancheria, the Tejon Indian Tribe, the Tule River Indian Tribe, and the Wuksache Indian Tribe/Eshorn Valley Band in July 2017. Only one response to these requests for contact has been received to date. The Dumna Wo-Wah Tribal Government requested further consultation regarding the project. As the lead Federal agency for the project, Reclamation will continue to consult with Indian Tribes and Native American tribal representatives who may have knowledge of or an interest in the project area.

In compliance with AB 52, DWR sent a request dated August 14, 2017, to NAHC requesting a search of the Sacred Lands file and a Native American contact list for the proposed project. NAHC responded on August 18, 2017 that a search of its Sacred Lands File had failed to indicate the presence of Native American sacred sites in the project area and provided the following Native American contacts: Amah Mutsun Tribal Band, Dumna Wo-Wah Tribal Government, North Valley Yokuts Tribe, Picayune Rancheria of Chukchansi Indians, and Southern Sierra Miwuk Nation. On August 22, 2017, DWR sent project notification letters and invitations by certified mail to these tribes to consult under AB 52 on the project by certified mail on August 22, 2017 to all five Native American representatives listed in the NAHC letter. On November 2, 2017, DWR sent follow-up project notification letters and invitations to consult under DWR's policy by certified mail. No tribes have accepted the invitation to consult under AB 52.

DWR and Reclamation will continue to consult with interested tribes through further project review and coordination as required.

5.1.4 Future Public Involvement

In accordance with CEQA and NEPA review requirements, this IS/EA is being circulated for a 30-day public review period to Federal, State, and local agencies, as well as interested organizations and

individuals, who may wish to review the document and provide written comments. The 30-day public review period will begin on December 11, 2017.

Written comments on this IS/EA can be addressed to either of the following agency leads or sent to their email addresses or fax numbers but must be received by 5:00p.m. on January 9, 2018:

Karen Dulik
 California Department of Water Resources
 South Central Region Office
 3374 E. Shields Avenue
 Fresno, CA 93726
Karen.Dulik@water.ca.gov
 Fax: (559) 230-3301
 Phone: (559) 230-3361

Becky Victorine
 Bureau of Reclamation
 San Joaquin River Restoration Program
 2800 Cottage Way
 Sacramento, CA 95825
rvictorine@usbr.gov
 Fax: (916) 978-5469
 Phone: (916) 978-4624

The draft document was sent to the State Clearinghouse and is available online on the Reclamation website: https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=30741

A printed copy of the IS/EA, including all documents referenced therein, is available for review from Karen Dulik or Becky Victorine at their respective offices above during normal business hours, as well as at the Merced County Library, 2100 O Street, Merced, CA 95340 (209-385-7484).

5.2 Regulatory Compliance

The proposed project would comply with the environmental laws and regulations described in the individual resource sections in Chapter 3, “Environmental Setting, Impacts, and Mitigation Measures.” DWR and Reclamation, as applicable, will obtain the required permits and approvals for the proposed project prior to project implementation. Permits and approvals that may be required for the proposed project are presented in **Table 5-1**.

Table 5-1. Permits and Approvals that May Be Required for the Eastside Bypass Improvements Project

Coordinated Agency	Required Permit/Approval	Required For
Federal Agencies		
U.S. Bureau of Reclamation	Project Approval/NEPA Compliance	Funding and project implementation
U.S. Army Corps of Engineers	Federal Clean Water Act Section 404 Permit	Discharge of dredged or fill material into water of the United States, including wetlands
National Marine Fisheries Service	Magnuson-Stevens Fishery Conservation and Management Act Compliance	Potential impacts on Essential Fish Habitat of species covered by the act
	Federal Endangered Species Act Section 7 Consultation	Potential impacts on Federally listed anadromous fish species or critical habitat
	Fish and Wildlife Coordination Act Report	Potential impacts on preservation, conservation, and enhancement of anadromous fish and wildlife habitat
U.S. Fish and Wildlife Service	Federal Endangered Species Act Section 7	Potential impacts on Federally listed species

Table 5-1. Permits and Approvals that May Be Required for the Eastside Bypass Improvements Project

Coordinated Agency	Required Permit/Approval	Required For
	Consultation	or critical habitat
	Migratory Bird Treaty Act Compliance	Potential impacts on migratory birds
	Fish and Wildlife Coordination Act Report	Potential impacts on preservation, conservation, and enhancement of fish and wildlife habitat and embodied in the original SJRRP Coordination Act Report
	Merced National Wildlife Refuge Special Use Permit	Consistency with numerous NWR requirements (see Section 3.12, "Land Use and Planning")
State Agencies		
California Department of Water Resources	Project Approval/CEQA Compliance	Funding and project implementation
Central Valley Flood Protection Board	Encroachment Permit (CCR Title 23)	Activities that may affect a regulated floodway
California Department of Fish and Wildlife	California Endangered Species Act Consultation (Section 2081)	Incidental take or otherwise lawful activities that may adversely affect State-listed species
	Lake and Streambed Alteration Agreement (Section 1602 of the California Fish and Game Code)	Any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake
California Office of Historic Preservation	National Historic Preservation Act Section 106 Authorization	Any actions that may have an adverse impact on historical resources
Central Valley Regional Water Quality Control Board	Clean Water Act Section 401 Certification	Discharge of pollutants into navigable waters or their tributaries
	Federal Clean Water Act Section 402 General Construction Activity Stormwater Permit	Stormwater discharges to navigable waters associated with construction activity for greater than 1 acre of land disturbance
Local Agencies		
San Joaquin Valley Air Pollution Control District	Authority to Construct/Permit to Operate	For construction or replacement of emission sources

Notes: CCR = California Code of Regulations, CEQA = California Environmental Quality Act, NEPA = National Environmental Policy Act, USACE = United States Army Corps of Engineers, USC = United States Code

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Chapter 6. List of Preparers

The following is a list of individuals who authored chapters or sections of this IS/EA, provided significant technical advice in their area of expertise, provided project description engineering details, and/or participated in document review.

Lead CEQA Agency: California Department of Water Resources

Name	Title/Role	Qualifications and Experience
Paul Romero, P.E.	Supervising Engineer, Water Resources / Project Manager	B.S Civil Engineering; 28 years of experience
Karen Dulik	Environmental Program Manager / Environmental Compliance Manager	M.S. Soil Science; 19 years of experience
Alexis Phillips-Dowell, P.E.	Senior Engineer, Water Resources / Project Manager: near-term fish passage actions; hydraulics modeling	B.S. Environmental Engineering; 9 years of experience
Christa J. Collin	Senior Environmental Scientist / Environmental Compliance Support	B.S. General Biology; 11 years of experience
Laurence Kerckhoff	Senior Legal Counsel	J.D.; 17 years of experience

Lead NEPA Agency: Bureau of Reclamation

Name	Title/Role	Qualifications and Experience
Elizabeth A. Vasquez	Deputy Program Manager, San Joaquin River Restoration Program / Project Manager	M.S. Environmental Science and Management; 13 years of experience
Rebecca Victorine	Natural Resource Specialist	B.S. Agricultural Systems and the Environment; 20 years of experience
Regina Story	Civil Engineer, Water Resources / Construction estimate	B.S. Civil Engineering; 2 years of experience
Blair Greimann	River Hydraulics and Sedimentation / Technical analysis and design	Ph.D. Civil Engineer, Profession Engineer; 18 years of experience
Don Portz	Lead Fish Biologist, San Joaquin River Restoration Program / Fisheries, fish passage	Ph.D. Fish Ecology/Physiology; 20 years of experience

Consultant: GEI Consultants, Inc.

Name	Qualifications and Experience	Participation
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Consultant: GEI Consultants, Inc.

Name	Qualifications and Experience	Participation
Phil Dunn	B.S. Zoology, M.S. Fisheries Biology; 36 years of experience	Project Director/Project Manager; NEPA/CEQA Compliance and Document QA/QC; Introduction; Statement of Purpose and Need, and Project Objectives; Project Description; Cumulative Impacts
Wendy Copeland	B.S. Plant Science, M.S. Plant Pathology; 17 years of experience	Aesthetics; Agriculture and Forestry Resources; Environmental Justice; Geology and Soils; Land Use and Planning; Paleontology; Recreation; Population and Housing
Irene Ramirez	B.S. Mathematics; 5 years of experience	Air Quality; Greenhouse Gas Emissions
Martha Moore, PE	B.S. Environmental Resources Engineering; 30 years of experience	Air Quality Senior Reviewer; Greenhouse Gas Emissions Senior Reviewer
Mark Ashenfelter	B.S. Zoology (Zoology and Marine Biology), M.S. Natural Resources (Fisheries); 12 years of experience	Biological Resources – Fisheries; Hydrology and Water Quality – Surface Water Resources, Surface Water Quality
Kelly Fitzgerald-Holland	B.A. Environmental Studies, M.S. Environmental Science; 20 years of experience	Biological Resources – Vegetation and Wildlife
Jesse Martinez, R.P.A.	B.A. Anthropology, M.A. Anthropology; 18 years of experience	Cultural Resources – Archaeology, Indian Trust Assets, Tribal Cultural Resources
Barry Scott, R.P.A.	B.A. Anthropology, M.A. Anthropology; 30 years of experience	Cultural Resources Senior Reviewer
Patricia Ambacher	B.A. History, M.A. History with emphasis in Public History; 13 years of experience	Cultural Resources – Built Environment Resources
Erica Bishop	B.S. Geography, M.A. Water Resources; 13 years of experience	Hazards and Hazardous Materials; Hydrology and Water Quality – Groundwater Resources, Groundwater Quality, Hydrology, Flooding; Public Services; Utilities and Service Systems
Drew Sutton	B.A. Geosciences, M.C.R.P, City and Regional Planning; 17 years of experience	Noise; Transportation/Traffic; Growth-Inducing Impacts; Socioeconomics
Andrea Shephard, PhD	B.S. Marine Biology/Biology, Ph.D. Biological Oceanography; 22 years of experience	Consultation, Coordination and Compliance, List of Preparers
Siyong Chen	B.S. Geographic Information Sciences, M. Eng Transportation Engineering; 5 years of experience	Geographic Information Systems
Maria Pascoal	B.A. Graphic Design; 13 years of experience	Document Graphics
Charisse Case	Certificate of Completion, Business Administration; 29 years of experience	Document Production

Key:

B.A. = Bachelor of Arts
 B.S. = Bachelor of Sciences
 J.D. = Juris Doctor
 M.A. = Master of Arts
 M.Eng = Master of Engineering
 M.C.R.P. = Master of City and Regional Planning
 M.S. = Master of Sciences
 P.E. = Professional Engineer
 Ph.D = Doctor of Philosophy
 R.P.A. = Registered Professional Archaeologist

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