

## 3.4 Flood Protection

This supplemental environmental impact report (SEIR) addresses proposed modifications to the B.F. Sisk Dam Safety of Dams Modification Project, which was previously evaluated in the B.F. Sisk Dam Safety of Dams Modification Project Environmental Impact Statement/Environmental Impact Report (2019 EIS/EIR). The project addressed in the 2019 EIS/EIR is referred to herein as the Approved Project; the Approved Project with proposed modifications identified since certification of the 2019 EIS/EIR is referred to herein as the Modified Project.

This section describes the existing flood protection conditions of the additional impact areas of the previously certified Approved Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies any applicable mitigation measures related to the implementation of the Modified Project.

### Public Scoping and Review Comments Received on 2019 EIS/EIR

The SEIR must consider comments received during public scoping and public review of the 2019 EIS/EIR prepared for the Approved Project. Comments received on the 2019 EIS/EIR relative to flood protection include the following:

- Scoping period comment from the Holiday Inn Express Santa Nella: The commenter expressed concerns over flooding due to a major earthquake.

### 3.4.1 Existing Conditions

#### 3.4.1.1 Regional Watershed

The Modified Project site is located within the San Joaquin River watershed, an approximately 15,600-square-mile region that is bordered to the north by the Sacramento River watershed, the south by the Tulare Basin watershed, to the east by the Sierra Nevada, and to the west by the Pacific Coast Ranges (EPA 2020).

The primary tributary for the San Joaquin River watershed is the San Joaquin River, which originates in the Sierra Nevada and generally flows north through the Central Valley before merging with the Sacramento River. Tributary rivers that flow into the San Joaquin River include (from south to north) the Fresno, Chowchilla, Merced, Tuolumne, Stanislaus, Calaveras, Mokelumne, and Cosumnes Rivers (see Figure 3.1-1, San Joaquin River watershed, in Section 3.1, Water Quality and Groundwater Resources) (EPA 2020).

Water flows in the San Joaquin River have been substantially modified by dams and diversions that collectively remove 95% of the water from the river. These diversions cause the San Joaquin River to be dry for more than 60 miles. However, water diversion structures, such as the Delta–Mendota Canal, have been constructed to replenish some of the water diverted from the San Joaquin River by transporting Sacramento River water to the depleted river channel and agricultural users within the watershed (EPA 2020).

The land area in the San Joaquin River watershed is diverse, ranging from snow-covered peaks to sub-sea level agricultural areas. Extensive forest areas cover the mountain slopes; more than 3,000 square miles of agriculture are present in the Central Valley; and 2 million people live in the major urban centers of Stockton and Fresno, small towns, and rural communities within the watershed (EPA 2020).

### 3.4.1.2 Site Topography and Drainage

The additional impact areas of the Modified Project are located (1) immediately downstream of the central and southern base of the dam (i.e., the additional staging and stockpiling areas); (2) within approximately 0.5 miles downstream of the southern portion of the dam (i.e., Borrow Areas 12 and 14); and (3) on the west shore of O’Neill Forebay (i.e., the proposed campground and existing San Luis Creek Day Use Area) (see Figures 2-4A and 2-4B, Modified Project Detail, in Chapter 2, Project Description). The embankment of the dam is steeply to moderately sloped, undulated, and sparsely vegetated. A concrete-lined spillway conduit of the dam is located within the northern portion of the embankment, immediately east of the Gianelli Pumping-Generating Plant.

Near the southern shoreline of San Luis Reservoir, south of Basalt Road, the Modified Project site consists of moderately to steeply sloped, undulated, and sparsely vegetated hillsides. North of Basalt Road, near the southeastern shoreline of the reservoir, the Modified Project site consists of low-lying flat topography (Figure 2-4B). Runoff in this region infiltrates into the underlying sediment and/or sheet flows directly into San Luis Reservoir.

Southeast of the dam embankment, Borrow Area 12 (Figure 2-4B) consists of an approximately 28-acre grassland hillside that is about 100 feet higher than the surrounding lower-lying area. The top of Borrow Area 12 is relatively flat, having been used in the past as a borrow area for the initial construction of the dam. The adjoining (to the south) 200-acre Borrow Area 14 encompasses four low grassland hills, which are up to 400 feet higher than the downstream base of the dam. Runoff within this area infiltrates into the underlying, pervious soils and/or sheet flows into the low-lying alluvial areas before infiltrating or being transported in drainages toward O’Neill Forebay to the north.

The northwestern and western shoreline of O’Neill Forebay, in the vicinity of the proposed campground and existing San Luis Creek Day Use Area, consists of relatively flat-lying areas adjacent to the shoreline, with east-facing, gentle to moderately sloping hillsides along the western portions of these additional impact areas. Except for a paved road traversing the site, the proposed campground area is unpaved and undeveloped. The existing San Luis Creek Day Use Area includes paved parking lots, boat ramps, roadways, and recreational structures (e.g., gazebos, public restrooms, campsites). However, pervious unpaved areas are present throughout the day use area. This portion of the Modified Project site is moderately vegetated with trees, brush, and grasses (Figure 2-4A). Stormwater from paved areas either sheet flows directly into O’Neill Forebay or flows into unpaved areas within the day use area. Stormwater runoff from these pervious unpaved areas infiltrates into the underlying sediments and/or sheet flows into the forebay.

### 3.4.1.3 Flood Hazards

The San Joaquin River watershed topography and surrounding terrain create flood intensities unseen elsewhere in the United States. Two flood types occur in the Central Valley—widespread rainfall floods in the late fall and winter, and snowmelt floods in the late spring and early summer. However, most floods are produced by extended periods of precipitation during the winter months. Floods can also occur when large amounts of water (due to rapid snowmelt) enter upstream storage reservoirs and require increased releases from dams. Despite construction of many flood control facilities, major floods have continued to occur, and much of today’s urban growth is in those flood-prone areas (Merced County 2012).

Channel capacity in rivers downstream of dams is often exceeded due to dam water releases, resulting in damage to adjacent agricultural and urban areas. These issues are especially severe along streams where erosion and

sediment have exacerbated flooding conditions. Historic surface water diversions on the San Joaquin River have contributed to sedimentation and vegetation encroachment that reduces channel capacities. Under present system conditions, the combined discharges from upstream dams regularly exceed the flood system capacity. Major flooding events occurred in February and June of 1969, and four times since 1980. The most recent major flooding event occurred in January 1997, when levees failed in 27 locations throughout the valley floor. The 1997 flood provided the impetus for a new comprehensive evaluation of flood management systems in the Central Valley, although the need for change had been growing for some years (Merced County 2012).

To mitigate the potential damage caused by flooding, Merced County (County) requires the construction of individual stormwater detention basins for new development to limit peak flows to pre-project conditions. On a regional scale, extensive flood control improvements have been undertaken in the county to reduce the percentage of land subject to flooding. As effective as the existing flood control measures have been, flood problems persist in some areas of Merced County (Merced County 2012). Flood control policies and improvements continue to be implemented throughout the county that should reduce future flood considerably, but will not eliminate the problem entirely (Merced County 2014a).

The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps for most of the Central Valley. These maps delineate the areas of known special flood hazards and associated applicable risks to the community. According to FEMA Flood Map No. 06047C0800G, effective December 2, 2008, the Modified Project site is located within Zone D, Area of Undetermined Flood Hazard (FEMA 2020). Flood Zone D designation is used for areas where there are possible but undetermined flood hazards, as no analysis of flood hazards has been conducted. The designation of Zone D is also used when a community incorporates portions of another area where no map has been prepared (FEMA 2011).

Senate Bill (SB) 5, which was enacted in 2007, authorized the California Department of Water Resources (DWR) to develop the Best Available Maps (BAMs) displaying 100- and 200-year floodplains for areas located within the Sacramento–San Joaquin Valley watershed. The BAMs do not replace existing FEMA regulatory floodplains shown on Flood Insurance Rate Maps, but rather identify potential flood risks that may warrant further studies or analyses for land-use decision making (See Section 3.4.2, Relevant Plans, Policies, and Ordinances, for additional information related to SB 5). The floodplains shown in BAMs delineate areas with potential exposure to flooding for three different storm events, including storm flows that have a 1% chance of being equaled or exceeded in any year (100-year flood), storm flows that have a 0.5% chance of being equaled or exceeded in any year (200-year flood), and storms flows that have a 0.2% chance of being equaled or exceeded in any year (500-year flood). These flows and resulting flooded areas are based on the best available floodplain information and may not identify all areas subject to flooding. According to the BAM floodplain map, San Luis Reservoir and O’Neill Forebay are located within a DWR-designated 100-year floodplain. However, no portion of the Modified Project site is located within the 100-year floodplain. As such, the potential for on-site flooding due to a 100-year flood is low (DWR 2020; Merced County 2012).

### 3.4.1.4 Dam Inundation

Protection against dam and levee failures is critical to the safety and well-being of Merced County residents. Dams and levees can be made of soil, concrete, or rockfill. Their failure can occur due to natural and humanmade causes, including poor construction, extensive hydraulic head pressure, and earthquakes. The extensive canal system in Merced County is vulnerable to failure, especially during extreme rainfall events. There are 11 dams within or adjacent to Merced County that pose a significant hazard in the event of a dam failure. For instance, B.F.

Sisk Dam, located near the Ortigalita Fault (see Section 3.13, Geology, Seismicity, and Soils), was built to withstand an earthquake magnitude of 8.3; however, this does not eliminate the possibility of dam failure with resulting floods (Merced County 2012).

Seiches may occur in the event of a major earthquake near San Luis Reservoir and O’Neill Forebay. Seiches are waves occurring in confined bodies of water such as lakes, reservoirs, or bays, and can be initiated by winds, seismic events, or landsliding. Such waves can rapidly erode an earthen dam. Seiches can be expected to occur not only on the reservoirs and lakes within Merced County, but also on those located in adjacent counties, which could flood large areas in the county. Because of the proximity to the extremely active San Andreas and Calaveras Faults, and the less active Ortigalita Fault, San Luis Reservoir likely poses the greatest threat to Merced County (Merced County 2012), including the Modified Project site.

Flooding associated with dam failure on one of the local or upstream dams, while unlikely, would create inundation areas that affect virtually every urban area of Merced County. According to Figure 10-15, Potential Dam Failure Inundation Areas: Los Banos Creek Detention Reservoir, O’Neill Forebay, and San Luis Reservoir, of the 2030 Merced County General Plan Background Report (Merced County 2013a), portions of the Modified Project site—including the southern tip of the existing San Luis Creek Day Use Area, an additional staging/stockpiling area at the south end of the dam, and the northern portions of Borrow Areas 12 and 14 (Figures 2-4A and 2-4B)—are located with the B.F. Sisk Dam inundation area (Figure 3.4-1, Potential Dam Inundation Areas) (Merced County 2012). As such, portions of the Modified Project could be inundated in the unlikely event of dam failure.

### 3.4.2 Relevant Plans, Policies, and Ordinances

#### 3.4.2.1 Federal

##### **National Flood Insurance Program**

The National Flood Insurance Act of 1968 established the National Flood Insurance Program to provide flood insurance within communities that were willing to adopt floodplain management programs to mitigate future flood losses. The act also required the identification of all floodplain areas within the United States and the establishment of flood-risk zones within those areas. FEMA is the primary agency responsible for administering programs and coordinating with communities to establish effective floodplain management standards. FEMA is responsible for preparing Flood Insurance Rate Maps that delineate the areas of known special flood hazards and the risk they pose to the community. The program encourages the adoption and enforcement by local communities of floodplain management ordinances that reduce flood risks.

##### **Floodplain Management: Executive Orders 11988, 12148, and 13690**

Executive Orders (EOs) 11988, 12148, and 13690 encompass a set of requirements to ensure that federal agencies act to reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. Before acting, each agency is required to determine whether a project would occur in a designated floodplain. If an agency determines or proposes to conduct, support, or allow a project to be developed in a floodplain, the agency must consider alternatives to avoid adverse effects and incompatible development in the floodplains. Whenever possible, a

project’s design and construction should take natural systems, ecosystem processes, and nature-based approaches into consideration when planning to construct within a floodplain.

### **Reclamation Safety of Dams Act**

The 1978 Reclamation Safety of Dams Act (Public Law 95-578, as amended) was enacted to mandate that dams are operated and maintained in a safe manner, ensured through inspections for safety deficiencies, analyses utilizing current technologies, and corrective actions if needed based on current engineering practices. The Safety of Dams program focuses on evaluating and implementing actions to resolve safety concerns at Bureau of Reclamation (Reclamation) dams. Under this program, Reclamation will complete studies and identify and perform needed corrective action on Reclamation dams. The selected course of action relies on assessments of risks and liabilities with environmental and public involvement input to the decision-making process.

### **Federal Guidelines for Emergency Action, FEMA Publication No. 64**

These guidelines provide guidance to help dam owners, in coordination with emergency management authorities, effectively develop and exercise Emergency Action Plans for dams. The guidelines encourage (1) the development of comprehensive and consistent emergency action planning to protect lives and reduce property damage and (2) the participation of emergency management authorities and dam owners in emergency action planning.

### **Federal Guidelines for Dam Safety Risk Management, FEMA Publication No. 1025**

These guidelines enable federal agencies to use the general principles of risk management to make risk-informed decisions. The agencies work to develop and maintain consistent application of risk analysis, risk assessment, risk management, and risk communication, using equivalent procedures and tools. Risk estimates typically reflect the risk at a given dam at the snapshot in time when the risk analysis is performed. Risk management includes structural and nonstructural actions on a given dam, as well as activities such as routine and special inspections, instrumented monitoring, structural analyses, site investigations, development and testing of emergency action plans, and other activities.

## 3.4.2.2 State

### **California Water Code, Division 3. Dams and Reservoirs, Sections 6101–6102**

These regulations require dam owners to maintain records of, and to report on, maintenance, operation, staffing, and engineering and geologic investigations and to issue orders as necessary to secure maintenance and operations to safeguard life and property. The owner of a dam, or their agent, shall fully and promptly advise DWR of any sudden or unprecedented flood or unusual or alarming circumstance or occurrence affecting the dam or reservoir. These regulations require DWR to periodically inspect dams and reservoirs for the purpose of determining their safety. If required, the dam owner shall perform work necessary to secure maintenance and operation that will safeguard life and property.

### **Governor’s Office of Emergency Services, California Code of Regulations, Title 19 - Public Safety, Division 2 – Office of Emergency Services, Chapter 2 – Emergencies and Major Disaster, Subchapter 4 – Dam Inundation Mapping Procedures.**

These regulations were adopted to implement the provisions of Government Code Section 8589.5, which provide the standards for producing and submitting an inundation map, acquiring a waiver from the inundation mapping requirement, and administering the program. These regulations are not applicable to those structures identified as Debris Basins in DWR’s Division of Safety and Dams Bulletin 17-00, dated July 2000. However, these regulations are not intended to limit the authority of the Governor’s Office of Emergency Services, or any appropriate public agency, to act under the police power of the state, when necessary, to protect life and property from a threatened or actual dam failure.

### **California Department of Water Resources, Division of Safety and Dams**

This division of DWR enforces dam safety requirements, assists with the evaluation of risks posed by existing and proposed dams, and implements inspection programs to ensure that dams are properly maintained and operated. Division engineers and engineering geologists review and approve plans and specifications for the design of dams and oversee construction to ensure compliance with the approved plans and specifications. Reviews include site geology, seismic setting, site investigations, construction material evaluation, dam stability, hydrology, hydraulics, and structural review of appurtenant structures. In addition, Division of Safety and Dams engineers inspect over 1,200 dams on a yearly schedule to ensure those dams are performing and being maintained in a safe manner.

### **Senate Bill 5**

As discussed in Section 3.4.1, Existing Conditions, SB 5 authorized DWR to develop BAMs displaying 100- and 200-year floodplains for areas located within the Sacramento–San Joaquin Valley watershed. DWR has expanded the BAMs to cover all counties in the state and to include 500-year floodplains. SB 5 required each city and county within the Sacramento–San Joaquin Valley, within 24 months of the adoption of a specified flood protection plan by the Central Valley Flood Protection Board, to amend its general plan to include (1) data and analysis contained in that flood protection plan, (2) goals and policies for the protection of lives and property that will reduce the risk of flood damage, and (3) related feasible implementation measures.

### **Central Valley Flood Protection Act**

As mandated by the Central Valley Flood Protection Act of 2008 (Water Code Division 5 – Flood Control, Part 6 – Central Valley Flood Protection, Section 9600–9603), DWR prepared the Central Valley Flood Protection Plan (CVFPP) and established the Central Valley Flood Protection Board (CVFPB), formerly known as the Reclamation Board. AB 5 reconfigured the membership of the CVFPB and required it to be independent of DWR. The mission of the CVFPB is to control flooding along the Sacramento and San Joaquin Rivers, in cooperation with various agencies, and maintain the integrity of the existing flood control system and designated floodways via authority over encroachment permits. Regulations for this agency are found in California Code of Regulations Title 23, Division 1. In the Merced County region, the CVFPB is responsible for operation and maintenance of the Lower San Joaquin River Flood Control Project. The CVFPB has designated floodways on portions of the Merced, Chowchilla, and San Joaquin Rivers in Merced County and has delegated much of the maintenance responsibility to local levee and reclamation districts. A permit from the CVFPB is required for any work that interferes with the operation, integrity, and function of an adopted flood control plan.

The 2012 CVFPP provided a comprehensive framework for system-wide management and flood risk reduction planning for the Sacramento and San Joaquin River Basins (DWR 2012). The adopted CVFPP must be updated every 5 years beginning in 2017. The 2017 CVFPP Update refined the overall near-term and long-term investment needs established in the 2012 CVFPP and included recommendations on policies and financing that aim to support comprehensive flood risk management actions locally, regionally, and system wide (DWR 2017). The 2017 CVFPP Update also initiated a State Systemwide Investment Approach, which included 200-year level of protection for urban and urbanizing areas, as well as 100-year level of protection for small communities, rural-agricultural levee improvements, weir and bypass expansions, flood structure improvements, and ecosystem restoration (DWR 2017). The State Systemwide Investment Approach also encourages further exploring actions such as floodplain transitory storage, groundwater recharge opportunities, reservoir management, and residual risk management.

### **San Luis Reservoir State Recreation Area Resource Management Plan/General Plan**

The San Luis Reservoir State Recreation Area Resource Management Plan/General Plan (San Luis Reservoir SRA RMP/GP) was prepared to set forth goals and guidelines for management of the San Luis Reservoir State Recreation Area (SRA) and adjacent lands (known as the Plan Area) for the next 25 years. The 27,000-acre Plan Area includes the water surfaces of San Luis Reservoir, O’Neill Forebay, and Los Banos Creek Reservoir, as well as adjacent recreation lands. The California Department of Parks and Recreation (CDPR), DWR, and the California Department of Fish and Wildlife manage the Plan Area lands, which are owned by Reclamation. The San Luis Reservoir SRA RMP/GP was developed through an agreement between Reclamation and CDPR to provide coordinated direction for recreation and resource management of the Plan Area lands, while continuing to serve the primary purpose of water storage, water distribution, and power generation. The San Luis Reservoir SRA RMP/GP sets forth Plan Area-wide management goals and guidelines that will be used to implement Plan Area use and future actions and to measure its success.

The following goal and guidelines would apply to the Modified Project (Reclamation and CDPR 2013):

**Goal RES-WQ4:** Design, construct, and maintain buildings, roads, trails, campsites, boat launches, and associated infrastructure to minimize stormwater runoff, promote groundwater recharge, and prevent soil erosion.

#### **Guidelines:**

- Limit impervious surfaces to minimize runoff; consider the use of permeable materials for new or expanded pedestrian and vehicular surfaces.
- Use silt fences, sedimentation basins, and other control measures to reduce erosion, surface scouring, and discharge to water bodies.

### 3.4.2.3 Local

#### **Merced County Multi-Jurisdictional Local Hazard Mitigation Plan**

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) legally requires state, local, tribal, and territorial governments to develop and adopt FEMA-approved hazard mitigation plans as a condition of receiving certain types of non-emergency disaster assistance. The regulations, under Title 44, Chapter 1, Part 201 of the Code of Federal Regulations contain requirements and procedures to implement the hazard mitigation planning provisions of the Stafford Act. The purpose of the Merced County Multi-Jurisdictional Local Hazard

Mitigation Plan is to identify hazards within Merced County, review and assess past disaster occurrences, estimate the probability of future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term risk to people and property from natural and human-made disasters.

### **Merced Vision 2030 General Plan**

As required by state law, Merced County has adopted a general plan to guide land use decisions within the county. The general plan provides goals, policies, standards, and implementation programs to guide the physical development of a county. At a minimum, the general plan must address the topics of land use, transportation, housing, conservation, open space, noise, and safety. The Merced Vision 2030 General Plan (Merced County General Plan), adopted in 2013, has established the year 2030 as the plan's time horizon. The Public Facility and Services Element of the Merced County General Plan contains goals and policies related to stormwater facilities. Moreover, the Hazard and Safety Element contains goals and policies related to flood protection. The following goal and policies would apply to the Modified Project (Merced County 2013b):

#### ***Public Facilities and Services Element***

**Goal PFS-3:** Ensure the management of stormwater in a safe and environmentally sensitive manner through the provision of adequate storm drainage facilities that protect people, property, and the environment.

- **Policy PFS-3.1:** Stormwater Management Plans. Require stormwater management plans for all Urban Communities to reduce flood risk, protect soils from erosion, control stormwater runoff, and minimize impacts on existing drainage facilities.
- **Policy PFS-3.2:** Stormwater Facilities in New Development. Require that new development in unincorporated communities includes adequate stormwater drainage systems. This includes adequate capture, transport, and detention/retention of stormwater.
- **Policy PFS-3.3:** Community Drainage Systems. Encourage the development of community drainage systems rather than individual project level systems, in order to use land more efficiently and protect people, property and the environment in a more comprehensive manner.
- **Policy PFS-3.4:** Agency Coordination. Coordinate with the U.S. Army Corps of Engineers and other appropriate agencies to develop stormwater detention/retention facilities and recharge facilities that enhance flood protection and improve groundwater recharge.
- **Policy PFS-3.5:** Pre-Development Storm Flows. Require on-site detention/retention facilities and velocity reducers when necessary to maintain pre-development storm flows and velocities in natural drainage systems.
- **Policy PFS-3.6:** Retention/Detention Facility. Encourage stormwater detention/retention project designs that minimize drainage concentrations and impervious coverage, avoid floodplain areas, are visually unobtrusive and, where feasible, provide a natural watercourse appearance and a secondary use, such as recreation.

#### ***Hazard and Safety Element***

- **Policy HS-2.1:** Floodplain Management Priorities. Prepare and adopt a floodplain management program in flood hazard areas that gives priority to regulation of land uses over development of structural controls as a method of reducing flood damage.
- **Policy HS-2.2:** Countywide Flood Emergency Plan. Coordinate with the cities in Merced County to develop a Countywide flood emergency plan that is consistent with city general plans.



- **Policy HS-2.3:** Countywide Flood Control Authority. Work with the cities in Merced County to establish a Countywide flood control authority to coordinate efforts and develop opportunities for expanded Federal funding.
- **Policy HS-2.4:** Coordination to Improve Flood Control. Coordinate with State and local flood management agencies to develop funding mechanisms to finance the design and construction of flood facilities.
- **Policy HS-2.5:** Flood Control Project Funding. Support the efforts of local districts and communities in obtaining funding for local flood control projects.
- **Policy HS-2.6:** Flood Risk Consideration. Prohibit new development in existing undeveloped areas (i.e., area devoted to agriculture or open space that is not designated for development) protected by a State flood control project without appropriately considering significant known flooding risks and taking reasonable and feasible action to mitigate the potential property damage to the new development resulting from a flood.
- **Policy HS-2.7:** Finding of Flood Protection for New Development. The County shall not enter into a development agreement, approve any building permit or entitlement, or approve a tentative or parcel map unless it finds one of the following:
  - The flood control facilities provides 200-year level of protection in urban and non-urban areas consistent with the current Central Valley Flood Protection Plan;
  - Conditions imposed on the development will protect the property at a 200-year level of protection in urban and non-urban areas consistent with the current Central Valley Flood Protection Plan; or
  - The local flood management agency has made “adequate progress” on the construction of a flood protection system which will result in protection equal or greater than the 200-year flood event in urban and non-urban areas consistent with the current Central Valley Flood Protection Plan.
- **Policy HS-2.8:** Floodwater Diversion. Require new flood control projects or developments within areas subject to 100- and 200-year frequency floods are done in a manner that will not cause floodwaters to be diverted onto adjacent property or increase flood hazards to property located elsewhere.
- **Policy HS-2.9:** Minimize Public Facility Impacts. Encourage all agencies that operate public facilities, such as roads, structures, wastewater treatment plants, gas, electrical, and water systems within areas subject to 100- and 200-year frequency floods to locate and construct facilities to minimize or eliminate potential flood damage.
- **Policy HS-2.10:** Essential Facility Location. Prohibit the construction of essential facilities (including hospitals, healthcare facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities) in the 100- and 200-year floodplain, unless it can be demonstrated that the structural and operational integrity of the facility can be maintained during flood events.
- **Policy HS-2.11:** National Flood Insurance Program. Continue to participate in the National Flood Insurance Program (NFIP).
- **Policy HS-2.12:** Relocation Assistance. Support State and local flood management agencies to provide relocation assistance or other cost-effective strategies for reducing flood risk to existing economically disadvantaged communities located in non-urbanized areas.
- **Policy HS-2.13:** Open Space Use. Encourage open space uses in flood hazard areas.
- **Policy HS-2.14:** Multi-Purpose Flood Control Projects. Encourage multi-purpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the County’s streams, creeks, and lakes.
- **Policy HS-2.15:** Flood Control Design. Encourage flood control designs that respect the natural topography and vegetation of waterways while retaining dynamic flow and functional integrity.

- **Policy HS-2.16:** Adapting Infrastructure to Climate Change. Encourage increased stormwater and flood protection infrastructure capacity in order to accommodate changes in precipitation and extreme weather events.
- **Policy HS-2.17:** Flood Control Facility Construction. Permit the construction of County flood control facilities in existing developments located within flood hazard areas to proceed only after a complete review of the environmental effects and project costs and benefits.
- **Policy HS-2.18:** Public Awareness Programs. Prepare public awareness programs to inform the general public and potentially affected property owners of flood hazards, potential dam failure inundation, and evacuation plans.
- **Policy HS-2.19:** Mutual Aid Resource. Coordinate and use mutual aid resources to augment local resources in order to perform rescue operations, secure utilities and inundated areas, and control traffic in event of dam failure.
- **Policy HS-2.20:** Multi-Hazard Functional Plan Update. Prepare and include provisions for mutual aid efforts within the County Multi-Hazard Functional Plan.

3.4.3 Thresholds of Significance

The following significance criteria from the 2019 EIS/EIR are used for the purposes of analysis in this SEIR. These criteria, which have not changed from the 2019 EIS/EIR, are identified in Chapter 9, Flood Protection of the 2019 EIS/EIR. A significant impact related to flooding and hydrology would occur if the Modified Project would result in:

1. Placement within a 100-year flood hazard area structures which would impede or redirect flood flows;
2. Unaddressed exposure of people or structures to unacceptable risk of loss, injury or death involving flooding, including flooding because of increase in the potential for the failure of a levee or dam;
3. Substantial alteration of 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 flooding on- or off-site; or
4. Creation or contribution of runoff water, which would exceed the capacity of existing or planned stormwater drainage systems.

3.4.4 Impacts Analysis

Threshold 1

***Would the Modified Project result in placement within a 100-year flood hazard area structures that would impede or redirect flood flows?***

2019 EIS/EIR Impact Determination	Modified Project Impact Determination	New Significant Increase in Impact Severity?
No Impact	No Impact	No

### Campground Construction and Day Use Area Improvements

According to FEMA Flood Map No. 06047C0800G, effective December 2, 2008, the Modified Project site, including the proposed campground and San Luis Creek Day Use Area, is located within Zone D, Area of Undetermined Flood Hazard (FEMA 2020). However, according to DWR BAMs, no portion of the Modified Project site is located within a 100-year floodplain. Moreover, the construction and operation of the proposed campground and improvements to the day use area would not result in the impediment or redirection of flood flows. As such, this element of the Modified Project would not result in the placement of structures within a 100-year flood hazard area and would not impede or redirect flood flows. Similar to the Approved Project, **no impacts** would occur with respect to the Modified Project.

### Changes in Borrow Area Location

The Modified Project has identified two additional borrow areas, Borrow Areas 12 and 14, in addition to Borrow Area 6 and the Basalt Hill Borrow Area, which were identified as part of the Approved Project in the 2019 EIS/EIR. Borrow Areas 12 and 14 are within the overall construction footprint identified by the 2019 EIS/EIR, but were identified in that document and analyzed as anticipated contractor staging areas. Near the Basalt Hill Borrow Area, the Modified Project also includes the addition of a new work area proposed for stockpiling extracted materials prior to transporting the materials to the dam construction zone. Like the larger Basalt Hill Borrow Area, this area, shown in Figure 2-4B, was used to extract materials for the original dam construction. An existing access road from Basalt Road would be widened and improved for hauling use as part of the Modified Project. In addition, a remediation plan would be prepared and implemented for these borrow areas, including measures to revegetate and perform final grading to achieve a naturalized appearance and topography. Once construction activities have ceased, use of Borrow Area 12, Borrow Area 14, and the new staging area would be similar to existing conditions.

No portion of Borrow Area 12, Borrow Area 14, or the proposed stockpiling areas are located within a FEMA or DWR 100-year floodplain. Moreover, no structures are proposed to be developed in Borrow Area 12, Borrow Area 14, or the proposed staging area. As such, this element of the Modified Project would not result in the placement of structures within a 100-year flood hazard area and would not impede or redirect flood flows. Similar to the Approved Project, **no impacts** would occur with respect to the Modified Project.

### Minor Additions to Contractor Work Area

The Modified Project includes minor temporary and permanent expansions of contractor work areas downstream of the dam that were not part of the original study area addressed in the Approved Project. These areas include several staging/soil stockpiling areas downstream of B.F. Sisk Dam, which would later be covered by the stability berms and expanded dam embankment, as well as another small area of less than 1 acre immediately west of the dam's right abutment, where a haul road would be widened (Figures 2-4A and 2-4B).

As previously discussed, no portion of the Modified Project site is located within a FEMA or DWR 100-year floodplain. Moreover, contractor work areas would be used for soil stockpiling and overnight parking, fueling, and maintenance of heavy equipment, and would not require the development of permanent structures. As such, this element of the Modified Project would not result in the placement of structures within a 100-year flood hazard area and would not impede or redirect flood flows. Similar to the Approved Project, **no impacts** would occur with respect to the Modified Project.

**Additional Construction Assumptions**

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These components of the Modified Project would have no relevance to flooding. As such, this element of the Modified Project would not result in the placement of structures within a 100-year flood hazard area and would not impede or redirect flood flows. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project flooding conditions.

**Cumulative Impacts**

Although portions of the California High-Speed Rail Project would be constructed across floodplains, proposed structures would not be placed such that flooding would be impeded or redirected. Bridges and culverts associated with the project would be constructed to allow flood flows to pass beneath the rail line unimpeded. The San Luis Reservoir SRA RMP/GP would include new trails and facilities at San Luis Reservoir. None of these facilities would be placed in a 100-year floodplain. The San Luis Transmission Project would include construction of new transmission lines near San Luis Reservoir to connect the San Luis Substation to a new transmission line, which would be developed between the Tracy Substation and the Dos Amigos Substation. The foundation legs of transmission towers are not of sufficient size to impede or redirect any potential flood flows. The San Luis Solar Project, which began construction in 2018, would not place structures within 100-year flood zone, such that those structures would impede or redirect flood flows. The San Luis Reservoir Low Point Improvement Project includes construction of a new dam and reservoir on Pacheco Creek. The proposed dam would be designed to impede flood flows and create a reservoir. Similarly, the B.F. Sisk Dam Raise and Reservoir Expansion Project would be designed to impede flood flows and increase the capacity of the reservoir.

As discussed, the Modified Project would not include construction of structures in a 100-year flood plain. As a result, the Modified Project, in combination with cumulative projects described herein, would not result in cumulatively considerable impacts with respect to placement of structures within a 100-year flood plain. Similar to the Approved Project, cumulative Modified Project impacts would be **less than significant**.

**Comparison to 2019 EIS/EIR**

The additional project components analyzed above would result in no impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. The Modified Project would continue to result in no impacts.

Threshold 2

*Would the Modified Project result in unaddressed exposure of people or structures to an unacceptable risk of loss, injury or death involving flooding, including flooding because of increase in the potential for the failure of a levee or dam?*

2019 EIS/EIR Impact Determination	Modified Project Impact Determination	New Significant Increase in Impact Severity?
Less than Significant	Less than Significant	No

### Campground Construction and Day Use Area Improvements

As previously discussed under Threshold 1, no portion of the Modified Project, including the proposed campground and San Luis Creek Day Use Area, would be located in, impede, or redirect flood flows of the FEMA- or DWR-designated 100-year flood zones. As discussed in Section 3.4.1, the southern tip of the San Luis Creek Day Use Area is within the B.F. Sisk Dam Inundation Zone (Figure 3.4-1). While studies have indicated that the probability of partial or total dam failure is exceedingly low, studies prepared by Reclamation indicate that there is some risk that a strong seismic event could result in dam failure. The primary purpose of the Approved Project is to address deficiencies in the seismic design of the existing dam, thus reducing the potential for dam failure and increasing protection from inundation for areas downstream of the dam. The Modified Project has no bearing on the seismic safety improvements proposed as part of the Approved Project.

As discussed in the 2019 EIS/EIR, modifications to the dam as part of the Approved Project would require the temporary removal of portions of the dam embankment on the downstream slope and excavation to the dam foundation to support the anchoring of downstream stability berms to bedrock. This temporary removal of embankment material and excavation of portions of the embankment down to bedrock would temporarily reduce the dam capacity until the fill material is replaced. However, final design of the Approved Project would include the development of a construction schedule that calls for embankment removal to occur during periods of the year when reservoir levels are lower to avoid storage capacity conflicts. With the timing of construction to avoid reservoir capacity conflicts, no increases in flooding would be anticipated. As a result, this element of the Modified Project would not result in unaddressed exposure of people or structures in the San Luis Creek Day Use Area to an unacceptable risk of loss, injury, or death involving flooding, including flooding because of an increase in the potential for the failure of a levee or dam. Similar to the Approved Project, flooding impacts associated with the Modified Project would be **less than significant**.

### Changes in Borrow Area Location

As previously discussed under Threshold 1, Borrow Area 12, Borrow Area 14, and the newly proposed stockpiling area would not be in, impede, or redirect flood flows of the FEMA- or DWR-designated 100-year flood zones. Moreover, once construction activities have ceased, Borrow Areas 12 and 14 would be graded and revegetated back to natural landform, and temporary stockpiling areas would be restored to existing conditions. No structures are proposed to be developed within Borrow Area 12, Borrow Area 14, or the temporary staging/stockpiling area.

As discussed in Section 3.4.1, the northern portions of Borrow Areas 12 and 14 (Figure 2-4B), are in the B.F. Sisk Dam Inundation Zone (Figure 3.4-1). However, because these areas are temporary construction-related sites, potential flood inundation of these sites as a result of dam failure would result in no adverse impacts to people or structures. The Approved Project assumed contractor use of these areas; the Modified Project's use of these areas for materials extraction does not represent a change that affects temporary impacts with respect to flood risk. In addition, as described under Campground Construction and Day Use Area Improvements for Threshold 2, temporary removal of embankment material and excavation of portions of the embankment down to bedrock would temporarily reduce the dam capacity until the fill material is replaced. However, final design of the Modified Project would include the development of a construction schedule to time embankment removal during periods of the year when reservoir levels are lower to avoid storage capacity conflicts. With the timing of construction to avoid reservoir capacity conflicts, no increases in flooding would be anticipated. As a result, this element of the Modified Project would not expose people or structures in Borrow Area 12, Borrow Area 14, and the newly proposed stockpiling area to an unacceptable risk of loss, injury, or death involving flooding, including flooding because of an increase in the potential for the failure of a levee or dam. Similar to the Approved Project, flooding impacts associated with the Modified Project would be **less than significant**.

### Minor Additions to Contractor Work Area

As previously discussed under Threshold 1, minor additions to contractor work areas would not be in, impede, or redirect flood flows of the FEMA- or DWR-designated 100-year flood zones. Moreover, contractor work areas would predominately be used for soil stockpiling and overnight parking, fueling, and heavy equipment maintenance, and would not require the development of permanent structures. As discussed in Section 3.4.1, one of the additional impact areas at the south end of the dam is in the B.F. Sisk Dam Inundation Zone (Figure 3.4-1). However, because this additional impact area is a temporary construction-related site, potential flood inundation of these sites as a result of dam failure would result in no adverse impacts to people or structures. As described under Campground Construction and Day Use Area Improvements for Threshold 2, temporary removal of embankment material and excavation of portions of the embankment down to bedrock would temporarily reduce the dam capacity until the fill material is replaced. However, final design of the Modified Project would include the development of a construction schedule to time embankment removal during periods of the year when reservoir levels are lower to avoid storage capacity conflicts. With the timing of construction to avoid reservoir capacity conflicts, no increases in flooding would be anticipated. In addition, proposed stability berms and the expanded dam embankment would be constructed over this work area as part of the Approved Project. As a result, this element of the Modified Project would not expose people or structures in additional contractor work areas to an unacceptable risk of loss, injury, or death involving flooding, including flooding because of an increase in the potential for the failure of a levee or dam. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project flooding conditions.

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These components of the Modified Project would have no relevance to flooding. As such, this element of the Modified Project would not expose people or structures to an unacceptable risk of loss, injury, or death involving flooding, including flooding because of an increase in the potential for the failure of a levee or dam. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project flooding conditions.

### Cumulative Impacts

Portions of the San Luis Transmission Project and the San Luis Solar Project would be constructed within the potential inundation area of San Luis Reservoir. Similarly, the southern tip of the Modified Project's San Luis Creek Day Use Area is in the potential dam inundation zone. While exceedingly rare, partial or total dam failure could occur due to a strong seismic event. However, the Approved Project would address deficiencies in the seismic design of the existing dam, thus reducing dam failure potential and increasing protection from inundation for areas downstream of the dam. This is considered a beneficial impact.

The northern portions of Borrow Areas 12 and 14 are in the dam inundation zones. However, because these additional impact areas are temporary construction-related sites and construction would be timed such that embankment removal would occur during periods of the year when reservoir levels are lower, potential flood inundation of these sites as a result of dam failure would result in no adverse impacts to people or structures. As a result, similar to the Approved Project, the Modified Project, in combination with the cumulative projects, would not result in cumulatively considerable impacts with respect to unaddressed exposure of people or structures to an unacceptable risk of loss, injury, or death involving flooding, including flooding because of an increase in the potential for the failure of a levee or dam. Cumulative Modified Project flooding impacts would be **less than significant**.

**Comparison to 2019 EIS/EIR**

The additional project components analyzed above would result in less-than-significant or no impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

Threshold 3

*Would the Modified Project result in substantial alteration of 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 flooding on- or off-site?*

2019 EIS/EIR Impact Determination	Modified Project Impact Determination	New Significant Increase in Impact Severity?
Less than Significant	Less than Significant	No

**Campground Construction and Day Use Area Improvements**

Runoff from the undeveloped campground area infiltrates directly into the underlying permeable soils or sheet flows into O’Neill Forebay. Runoff from the San Luis Creek Day Use Area is conveyed through drainages and as sheetflow directly into O’Neill Forebay, or is conveyed into undeveloped portions of land where stormwater is infiltrated. Improvements to the San Luis Creek Day Use Area would not substantially alter the existing drainage pattern of the site. Construction of an additional boat launch lane, six restroom stalls, and a fish cleaning station would not result in additional impervious surfaces sufficient to cause a substantial increase in the rate or amount of surface runoff. Grading for the proposed campground would result in minor changes to internal drainage patterns as a result of grading. Substantial alteration of the existing drainage pattern would not occur. However, campground construction on the currently undeveloped, pervious area would result in an increase in impervious area. Because the existing day use area and proposed campground area are located on east-sloping topography immediately adjacent to the forebay, most stormwater runoff from these additional impact areas would be directed into the forebay, preventing any off-site flooding associated with an increase in impervious surfaces and associated increased runoff. The proposed campground and day use area would continue to include abundant areas of unpaved, pervious areas and the amount of increased runoff would be inconsequential in comparison to the size of the receiving waters (i.e., O’Neill Forebay).

In addition, as discussed in Section 3.1, incorporating Low Impact Development (LID) features and best management practices (BMPs) consistent with CDPR goals and guidelines, including CDPR’s Standard Project Requirements and the San Luis Reservoir SRA RMP/GP, would reduce stormwater runoff volumes and flow rates from the proposed campground area during and following construction. Specifically, Goal RES-WQ4 from the San Luis Reservoir SRA RMP/GP requires that CDPR design, construct, and maintain buildings, roads, trails, campsites, boat launches, and associated infrastructure to minimize stormwater runoff, promote groundwater recharge, and prevent soil erosion. The guidelines include limiting impervious surfaces to minimize runoff; considering the use of permeable materials for new or expanded pedestrian and vehicular surfaces; and using silt fences, sedimentation basins, and other control measures to reduce erosion, surface scouring, and discharge to water bodies (Reclamation and CDPR 2013). Similarly, CDPR’s Standard Project Requirements requires construction phase and permanent best management practices to reduce or eliminate surface runoff from developed sites (CDPR 2015).

As the Modified Project is still within the project development design phase, CDPR stormwater runoff guidelines and CDPR Standard Project Requirements have not been incorporated into the project design. However, because an increase in impervious surfaces at the proposed campground site would result in increased stormwater runoff that would flow directly into the forebay, and because the campground and day use area would incorporate standard CDPR LID features and BMPs in project design, on- or off-site flooding would not occur. Therefore, this element of the Modified Project would not result in substantial alteration of 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 that would result in flooding on or off site. Similar to the Approved Project, drainage impacts associated with the Modified Project would be **less than significant**.

### Changes in Borrow Area Location

Currently, runoff from Borrow Area 12, Borrow Area 14, and the newly identified staging/stockpiling area near Basalt Hill directly infiltrates into the underlying permeable soils. Precipitation that does not infiltrate into on-site soils generates sheet flow runoff into adjacent areas and eventually drains into O'Neill Forebay or San Luis Reservoir. Borrow Area 12 is approximately 28 acres and Borrow Area 14 is approximately 200 acres. Although no impervious surfaces are proposed within Borrow Area 12, Borrow Area 14, or the staging area as part of the Modified Project, removal of vegetation in these large areas would result in an increase in stormwater runoff during the construction period. However, as discussed in more detail in Section 3.1, state and federal National Pollutant Discharge Elimination System requirements include preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) for projects with cumulative ground disturbance more than 1 acre. In compliance with Construction General Permit requirements, the SWPPP would establish erosion and sediment control BMPs for construction activities. In addition to erosion and sediment control, these BMPs would reduce stormwater runoff velocities, which in turn would minimize the potential for off-site flooding during the construction period. Typical examples of velocity-inhibiting BMPs include silt fences, gravel bags, and fiber rolls installed around the perimeter and downslope of work areas. These measures would reduce stormwater runoff velocities to the maximum extent practical.

In addition, as part of the Modified Project, a remediation plan would be prepared and implemented for these borrow areas, including measures to revegetate and perform final grading to achieve a naturalized appearance and topography. Revegetation and restoration of the topography similar to the existing slope gradients would result in stormwater runoff velocities and volumes similar to existing conditions. While this element of the Modified Project would temporarily (i.e., during construction) alter the internal drainage patterns of Borrow Areas 12 and 14 as a result of removal of large quantities of soil and bedrock, such activities would not result in a substantial increase in the rate or amount of runoff, such that on- or off-site flooding would occur. Similar to the Approved Project, drainage impacts associated with the Modified Project would be **less than significant**.

### Minor Additions to Contractor Work Area

These additional impact areas are unpaved, pervious areas. Precipitation that does not infiltrate into on-site soils generates stormwater runoff that sheet flows into adjacent areas and eventually drains toward O'Neill Forebay. These areas include several staging/soil stockpiling areas downstream of B.F. Sisk Dam, which would later be covered by the stability berms and expanded dam embankment, as well as another small area of less than 1 acre immediately west of the dam right abutment, where a haul road would be widened (Figures 2-4A and 2-4B).



Creation of staging/stockpiling areas involves minimal grading and no paving. However, as described for Borrow Areas 12 and 14, removal of existing vegetation would result in an increase in runoff during the construction period. In compliance with Construction General Permit requirements, a SWPPP would establish erosion and sediment control BMPs, which would also reduce stormwater runoff velocities to the maximum extent practical and minimize the potential for off-site flooding during the construction period. Revegetation following construction would not be required, as proposed stability berms would be constructed over these additional impact areas. This element of the Modified Project would not substantially alter the drainage patterns of these staging/stockpiling areas and would not result in a substantial increase in the rate or amount of runoff such that on- or off-site flooding would occur. Similar to the Approved Project, drainage impacts associated with the Modified Project would be **less than significant**.

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These components of the Modified Project would have no relevance to increased runoff and flooding. As such, this element of the Modified Project would not substantially alter the drainage patterns of the Modified Project site or area, or result in a substantial increase in the rate or amount of runoff, such that on- or off-site flooding would occur. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project drainage conditions.

### Cumulative Impacts

Removal of vegetation, grading, and paving at each of the cumulative project sites could potentially alter the site drainage patterns or result in an increase in the rate or amount of runoff. However, similar to that described above for the Modified Project, National Pollutant Discharge Elimination System requirements include preparation and implementation of a SWPPP for projects with cumulative ground disturbance more than 1 acre. In compliance with Construction General Permit requirements, the SWPPP would establish erosion and sediment control BMPs for construction activities. In addition to erosion and sediment control, these BMPs would reduce stormwater runoff velocities, which in turn would minimize the potential for off-site flooding during the construction period. Typical examples of velocity-inhibiting BMPs include silt fences, gravel bags, and fiber rolls installed around the perimeter and downslope of work areas. These measures would reduce stormwater runoff velocities to the maximum extent practical.

In addition, individual counties and municipalities are cooperating agencies in local MS4 permits, which require implementation of LID features to reduce post-construction, long-term increased stormwater runoff. Permit requirements require all new development to incorporate structural and non-structural BMPs to improve water quality and reduce on- and off-site runoff potential. Cumulative projects within Merced County jurisdiction would be required to incorporate LID BMPs that would evapotranspire, infiltrate, harvest and use, and/or biotreat stormwater to satisfy the point source, volumetric, and flow-based specifications outlined in Ordinance No. 1923 (Merced County 2014b). In addition, cumulative projects within the San Luis Reservoir SRA, as well as adjacent lands owned by Reclamation and managed by CDPR, would be designed and operated in accordance with CDPR goals and guidelines regarding post-construction stormwater runoff rates. Implementation of these guidelines would minimize downstream flooding associated with increased impervious surfaces. As a result, the Modified Project, in combination with cumulative projects, would not result in cumulatively considerable impacts related to increased runoff and associated on- or off-site flooding. Similar to the Approved Project, cumulative Modified Project impacts related to drainage and water quality would be **less than significant**.

**Comparison to 2019 EIS/EIR**

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

Threshold 4

***Would the Modified Project result in the creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems?***

2019 EIS/EIR Impact Determination	Modified Project Impact Determination	New Significant Increase in Impact Severity?
Less than Significant	Less than Significant	No

**Campground Construction and Day Use Area Improvements**

As previously discussed under Threshold 3, construction of an additional boat launch lane, six restroom stalls, and a fish cleaning station at the existing day use area would not result in additional impervious surfaces sufficient to cause a substantial increase in the rate or amount of surface runoff. Campground construction on the currently undeveloped, pervious site would result in an increase in impervious area. Because the existing day use area and proposed campground area are located on east-sloping topography immediately adjacent to the forebay, stormwater runoff from these additional impact areas would be directed into the forebay rather than being directed into a planned stormwater drainage system. The proposed campground and day use area would continue to include abundant areas of unpaved, pervious areas and the amount of increased runoff would be inconsequential in comparison to the size of the receiving waters (i.e., O’Neill Forebay).

Because an increase in impervious surfaces at the proposed campground would result in increased stormwater runoff that would flow directly into the forebay, off-site planned storm drains would not be affected. Therefore, this element of the Modified Project would not result in the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems. Similar to the Approved Project, Modified Project impacts related to drainage would be **less than significant**.

**Changes in Borrow Area Location**

As discussed under Threshold 3, although no impervious surfaces are proposed within Borrow Area 12, Borrow Area 14, or the staging area as part of the Modified Project, removal of vegetation in these large areas would result in an increase in stormwater runoff during the construction period. However, in compliance with Construction General Permit requirements, a SWPPP would reduce stormwater runoff velocities to the maximum extent practical, which in turn would minimize the potential for impacts to downstream planned stormwater drainage systems during the construction period, between the borrow areas and O’Neill Forebay.

In addition, as part of the Modified Project, a remediation plan would be prepared and implemented for these borrow areas, including measures to revegetate and perform final grading to achieve a naturalized appearance and topography. Revegetation and restoration of the topography similar to the existing slope gradients would result in stormwater runoff velocities and volumes similar to existing conditions. While this element of the

Modified Project would temporarily (i.e., during construction) alter the drainage patterns of the borrow areas as a result of removal of large quantities of soil and bedrock, such activities would not result in the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems. Similar to the Approved Project, Modified Project impacts related to drainage would be **less than significant**.

### Minor Additions to Contractor Work Area

As discussed under Threshold 3, these additional impact areas are unpaved, pervious areas. Creation of staging/stockpiling areas involves minimal grading and no paving. However, as described for Borrow Areas 12 and 14, removal of existing vegetation would result in an increase in runoff during the construction period. In compliance with Construction General Permit requirements, a SWPPP would establish erosion and sediment control BMPs, which would also reduce stormwater runoff velocities and minimize the potential for adverse impacts to downstream stormwater drainage systems during the construction period, between the borrow areas and O'Neill Forebay. Revegetation following construction would not be required, as proposed stability berms and the expanded dam embankment would be constructed over these additional impact areas. Therefore, this element of the Modified Project would not result in the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems. As a result, similar to the Approved Project, Modified Project impacts related to drainage would be **less than significant**.

### Additional Construction Assumptions

Additional construction assumptions include changes to the construction schedule, equipment and personnel specifications, and dewatering specifications for proposed excavations at the base of the dam. These components of the Modified Project would have no relevance to increased runoff and impacts to downstream storm drains. As such, this element of the Modified Project would not result in the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems. These additional construction assumptions, which were not included in the Approved Project, would result in **no impacts** related to Modified Project drainage conditions.

### Cumulative Impacts

As discussed for Threshold 3, individual counties and municipalities are cooperating agencies in local MS4 permits, which require implementation of LID features to reduce post-construction, long-term increased stormwater runoff. Permit requirements require all new development to incorporate structural and non-structural BMPs to improve water quality and reduce on- and off-site runoff potential. In addition, local jurisdictions typically include stormwater regulations requiring that post-construction stormwater runoff rates be equal or less than preconstruction rates. Cumulative projects within Merced County jurisdiction would be required to incorporate LID BMPs that would evapotranspire, infiltrate, harvest and use, and/or biotreat stormwater to satisfy the point source, volumetric, and flow-based specifications outlined in Ordinance No. 1923. In addition, cumulative projects within the San Luis Reservoir SRA, as well as adjacent lands owned by Reclamation and managed by CDPR, would be designed and operated in accordance with CDPR goals and guidelines, including CDPR's Standard Project Requirements and the San Luis Reservoir SRA RMP/GP that would contribute to reducing stormwater runoff during and following construction. Implementation of these guidelines and requirements would minimize downstream flooding associated with increased impervious surfaces. As a result, the Modified Project, in combination with cumulative projects, would not result in cumulatively considerable impacts related to exceedance of the capacity of existing or planned stormwater drainage systems. Similar to the Approved Project, cumulative Modified Project impacts related to drainage would be **less than significant**.

### Comparison to 2019 EIS/EIR

The additional project components analyzed above would result in less-than-significant impacts and therefore impacts of the Modified Project would not result in a significant increase in the severity of impacts as determined in the 2019 EIS/EIR. Impacts of the Modified Project would remain less than significant.

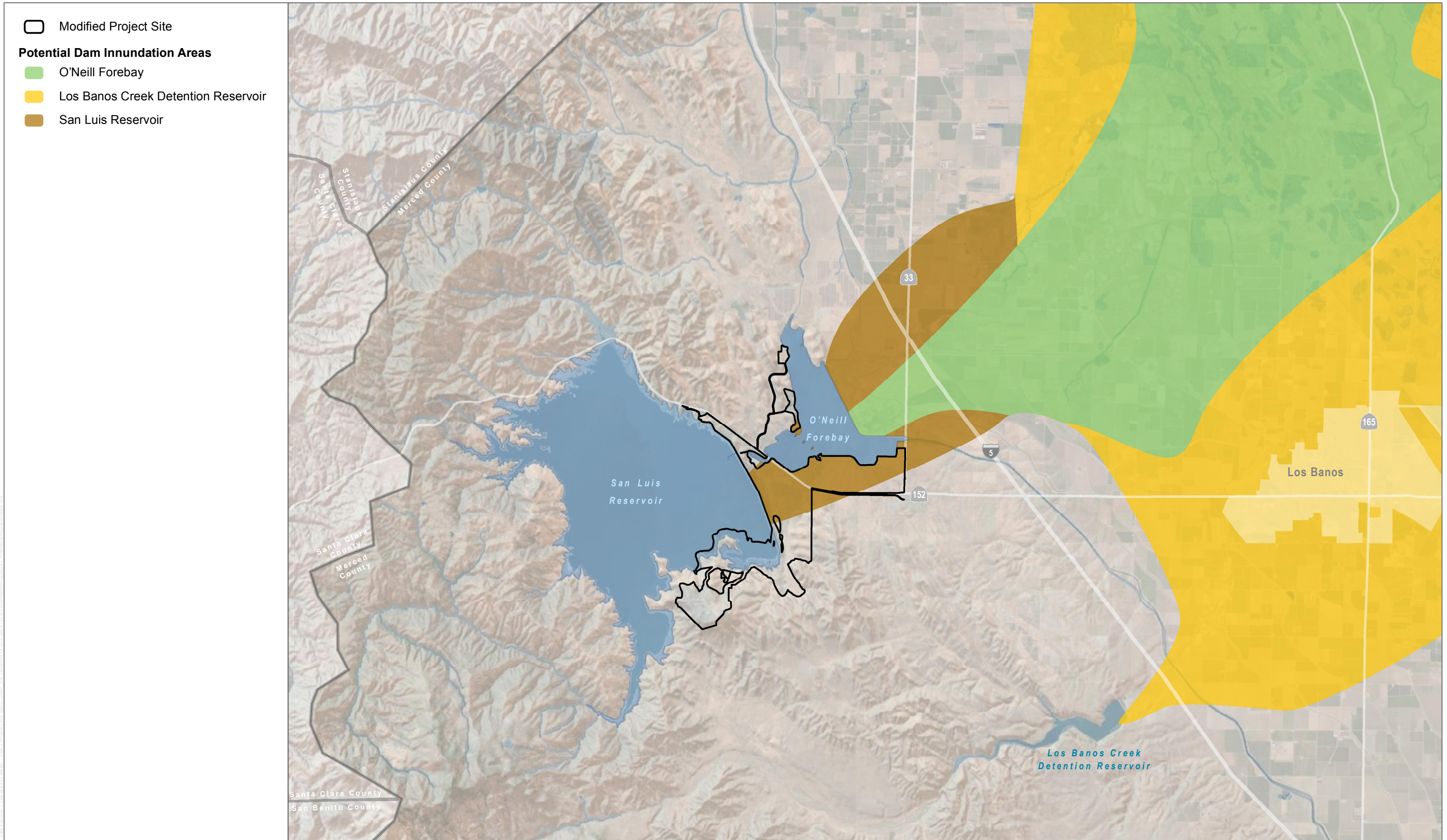
### 3.4.5 Mitigation Measures

Impacts regarding alteration of drainages and flooding from the Modified Project were determined to be less than significant without mitigation. Therefore, no mitigation measures are required, and impacts for the Modified Project remain less than significant.

### 3.4.6 Level of Significance After Mitigation

Flood protection impacts would be less than significant.





☐ Modified Project Site

**Potential Dam Inundation Areas**

🟢 O'Neill Forebay

🟡 Los Banos Creek Detention Reservoir

🟠 San Luis Reservoir

SOURCE: County of Merced 2012



**FIGURE 3.4-1**

**Potential Dam Inundation Areas**

B.F. Sisk Dam Safety of Dams Modification Project SEIR

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