

24.0 Visual Resources

This chapter evaluates the potential effects of the Project on visual resources in the Project area. First, information is presented on existing visual resources and activities known to occur in proximity to Reach 2B of the San Joaquin River. The information is based on site visits, technical documents, and local and regional plans in the area. Using this information as context, the analysis of visual-related impacts of the Project is presented based on the characteristics of the Project alternatives including the character, Project exposure, and existing visual conditions.

24.1 Environmental Setting

The visual resources of an area include the features of its landforms, vegetation, water surfaces, and cultural modifications (physical changes caused by human activities) that give the landscape its inherent visual qualities. Landscape features, natural appearing or otherwise, form the overall impression of an area. This impression is referred to as “visual character.” Visual character is studied as a point of reference to assess whether a given project/action would appear compatible with the established features of the setting or would contrast noticeably and unfavorably with them.

Visual resources also have a social setting, which includes public expectations, values, goals, awareness, and concern regarding visual quality. This social setting is addressed as “visual sensitivity,” the relative degree of public interest in visual resources and concern over adverse changes in the quality of that resource. As applied to visual impact analyses, sensitivity refers to public attitudes about specific views, or interrelated views, and is of key importance to identifying critical public views, assessing how important a visual impact may be, and whether or not it represents a significant impact.

24.1.1 Critical Public Views

Critical public views are sensitive public views that would be most affected by Project actions (e.g., views with the greatest intensity of potential impact due to viewer proximity to the Project, Project visibility, and duration of the affected view). Identifying critical public views relies on the concept that sensitivity is a function of the viewer’s expectations, activities, awareness, values, and goals. Public sensitivity is not always related to obvious aesthetic appeal. The public may confer visual significance on landscape components and areas that would otherwise appear unexceptional (Federal Highway Administration [FHWA] 1981); therefore, the visual resource setting is not described in terms of aesthetic appeal. Instead, the importance of the affected landscape is inferred from the indicators of sensitivity. The degree of visual sensitivity is treated as occurring at one of four levels as follows:

- *High Sensitivity.* High sensitivity indicates a great potential for the public to react strongly to any lessening of visual quality. Concern is expected to be great

because the affected views are rare, unique, or are special to the region or locale in other ways. Also, high visual sensitivity is assumed to exist where landscapes, particular views, or the visual characteristics of certain features are protected through policies, goals, objectives, and design controls in public planning documents.

- *Moderate Sensitivity.* Moderate sensitivity indicates a substantial potential for the public to voice some concern over visual impacts of moderate to high intensity. Often, the affected views are secondary in importance or are similar to others commonly available to the public. Noticeably adverse changes would probably be tolerated if the essential character of the views remains dominant.
- *Low Sensitivity.* Low sensitivity indicates that a small minority of the public may have a concern over scenic/visual resource impacts on the affected area. Only the greatest intensity of adverse change in the condition of aesthetics/visual resources would have the potential to register with the public as a substantial reduction in visual quality.
- *No Sensitivity.* No sensitivity indicates that the views are not available to the public, there are no identifiable indications of public interest in the quality of scenic/visual resources within potentially affected public views, or there's no concern over adverse impacts to those scenic/visual resources.

The range of sensitive views was considered and several representative views in which the Project features would be most noticeable were selected for detailed analysis. The selection was based primarily on proximity to Project features and the degree and duration of exposure within sensitive public views. Consideration was also given to having the views be representative of the public experience (i.e., that they be from viewing positions frequently used by the public and readily located).

Within the Project area, public access is extremely limited and there are few public viewing positions from which any of the features of the Project may be seen. Land along the river reach is predominantly in private ownership and used for agricultural production. Public access is limited to the San Mateo Avenue crossing from the north along Road 13, which is a Madera County-maintained road up to, but not crossing the river. Access to the crossing from the south along San Mateo Avenue is unauthorized, as the road passes through private land. Public access to the Project area elsewhere is limited to Mendota Pool via a public park, a short stretch of the San Joaquin River below Mendota Dam, and at a few areas along the west shore of Mendota Pool immediately upstream of the dam. Public access to Mendota Dam itself is restricted. Additionally, there are four homes at the north end of Bass Avenue, and the residents would have visual access to features of two of the Project alternatives from the road approaching or leaving these homes.

Concerning existing public access to the San Joaquin River, see Section 20.1.3. Also see Section 16.1.1 for a description of the public trust easement under the California State Lands Commission (CSLC). To access the easement, legal access is required – the public is not entitled to cross private lands to use a public trust easement.

San Mateo Avenue Crossing

The San Mateo Avenue crossing is a dip crossing consisting of a culvert to convey low flows and an earthen embankment supporting the roadbed. During higher flows the road is overtopped and may be impassable to vehicles. Prior to Interim Flows, the river bed here was dry for most of the year and informally used for off-highway vehicle use. When flows are present, the public access the river at this location to swim (field observation) and to launch non-motorized watercraft for fishing and other purposes (see Chapter 20.0, “Recreation”). Recreation uses imply variable sensitivity to the potential for adverse impacts on the quality of the visual resources.

It is unknown how many people access the river from the south along San Mateo Avenue compared to the north along Road 13. As noted, San Mateo Avenue is not a public road 2.5 miles north of Highway 180 and access to the river using this road is unauthorized. It is assumed that people using the southern approach are predominately coming from Mendota (7.3 miles from the center of town to the crossing), while those using the northern route are coming from Firebaugh (11.6 miles away from the river crossing starting at Highway 33).

The volume of recreation use here is not known, but there are indications that the number of recreationists using the river crossing is small compared to the number enjoying the river near Mendota (discussed below) and Firebaugh. For example, there are a number of recreation opportunities along the river in Firebaugh that are close at hand, and access to fishing opportunities below Mendota Dam and in Mendota Pool are closer to Firebaugh than those at or near the river crossing. These recreation opportunities in Firebaugh or nearby, coupled with a circuitous and lengthy route to the river crossing, suggests that the crossing receives little public use compared to the sites at and near Firebaugh and Mendota. Additionally, public parking at or near the river crossing is limited, and there appear to be no turnouts in the public right-of-way along Road 13 (the closest public road), limiting the number of recreationists. Also, parking along the private dirt road on the Madera County side of the river is not authorized.

Sensitivity: Low. Anecdotal evidence for fishing, watercraft put-in, and off-highway vehicle opportunities suggest that there is some recreation at the river crossing; therefore, there may be some public sensitivity to potential visual impacts to the views of and from the river crossing. Undesignated but popularly used or appreciated recreation sites are treated as having moderate sensitivity; however, this site is of comparatively low popularity as compared to other river recreation sites in the vicinity (California Department of Fish and Wildlife [DFW] 2013). As a result, sensitivity for the potentially affected views at the river crossing is expected to be low.

Project Exposure: High. Under all Project alternatives, the San Mateo Avenue crossing would be modified. It would either be removed or improved to maintain vehicular access and accommodate increased flow magnitudes, durations, and frequencies associated with Restoration Flows. The improved crossing would entail a low flow or dip crossing with five 24-foot-span by 9-foot-rise concrete box culverts. Additionally, armoring would be installed along the entrance and exit of the structure and along the channel banks near the structure. These proposed structures would be in the foreground of views from the

vicinity of the river crossing. As a result, these views are considered to be critical public views.

Mendota Pool Park

Mendota Pool Park is about 0.75 mile from the northern city limits of Mendota, along Bass Avenue, and is the only public recreation facility in the Project area (see Chapter 20.0, “Recreation”). This 85-acre park is the largest of three in Mendota, providing active recreation facilities as well as areas for passive pursuits such as picnicking. Mendota Pool Park offers: a ball field; picnic tables; a playground; a stage; open space; access to Mendota Pool; and vehicular access at the park’s southeast and northeast corners. From there, informal paths lead directly to and along over 1,000 feet of shoreline. A limited number of trash receptacles and picnic tables are provided close to the shore at the park’s southeast and northeast corner, and pole-mounted directional lighting provides for evening use of some of the park’s facilities.

While there are no boat launch facilities at the park, a paved boat launch is located off the gravel road leading to Mowry Bridge just north of Mendota Pool Park and the Delta-Mendota Canal (DMC). This facility primarily provides access to Fresno Slough and the part of Mendota Pool adjacent to the park. In addition to passive recreation occurring within the central part of the park, fishing from shore is a major park activity, as is boating and fishing out on the water.

Sensitivity: High. For this assessment, boating and fishing opportunities in this part of Mendota Pool are treated together with the public use of the park due to the proximity of these recreation uses (note that the Mendota Dam area is not accessible to boaters from Mendota Pool Park since Mowry Bridge serves as a barrier to downstream access). Because Mendota Pool Park is the only public recreation facility in the Project vicinity and views of and from developed recreation sites are treated as highly sensitive, sensitivity for the potentially affected views at Mendota Pool Park is expected to be high.

Project Exposure: Low to High. It is unlikely that Project features would be visible from public viewing positions within the park under two of the Project alternatives (Alternatives A and B); however, under the two Fresno Slough Dam alternatives (Alternatives C and D), a dam and new surface water canals constructed near Mowry Bridge would be visible from shore (970 to 1,238 feet away) or by boat. For example, exposure is expected to be low for users in the park because of the existing levees that obscure views of Fresno Slough, but moderate for users along informal paths near the existing levees (Fresno Slough Dam would be in the background of the view). Also, since boaters may be closer to the dam than users in the park or on informal paths near the levees, exposure may be expected to be high (with Fresno Slough Dam in the foreground of the view). Therefore, Project exposure is expected to be low to high depending on the viewer’s distance to the potential Fresno Slough Dam. As a result, these views are considered to be critical public views.

Mendota Dam Area

The “Mendota Dam area” comprises part of Mendota Pool (above Mendota Dam and north of Mowry Bridge), Mendota Dam, and the area along the river immediately

downstream of Mendota Dam. There is a relatively high informal recreation use in this area (DFW 2013), including recreation on private property upstream and downstream of Mendota Dam along the shore. Activities along the shore include fishing, picnicking, and swimming. The use area includes more than 425 feet of the river's left bank, starting at a point immediately downstream of the dam. This area of the river is important to the residents of Mendota, given that it is their only proximate access to the river. Additionally, an unpaved watercraft put-in site is located here (see Figure 24-11), which serves DFW patrols, kayakers, and hunters wishing to access downstream portions of the river. This site is readily accessed via Bass Avenue, a public road, and there is substantial parking in an unpaved area adjacent to the road.

Because Mendota Dam and the areas upstream and downstream of the dam are privately-owned by Central California Irrigation District (CCID), fishing and boat launching activities are considered unauthorized uses in this area. There are signs and barriers restricting access at Mendota Dam, but there are none located upstream and downstream of the dam. The CCID, however, has no enforcement capabilities. Given the overtly restricted access, views from the dam are not addressed as public views.

Sensitivity: Moderate. The views from the areas downstream of the dam, along the river, and along Mendota Pool's west shore are addressed, as they are associated with obvious and documented recreation use that, though unauthorized, is unrestricted. Views of, and from, undesignated but popularly used areas of recreational significance to a local population are treated as moderately sensitive. Additionally, views from Bass Avenue, which is the primary access to these recreation sites, are also moderately sensitive where they occur from points within less than 0.5 mile from them. As a result, sensitivity for the potentially affected views at the Mendota Dam area is expected to be moderate.

Project Exposure: Low to High. Under the two Compact Bypass alternatives (Alternatives A and B), no construction would occur near the Mendota Dam area. However, under the two Fresno Slough Dam alternatives (Alternatives C and D), a fish ladder would be constructed at Mendota Dam, flashboards would be removed, and the dam's sill would be notched. Associated construction activities (truck traffic, presence and movement of a work force, and heavy equipment) would be within the foreground of shore-based views in the Mendota Dam area and from Bass Avenue, just west of the dam. Additionally, the implementation of Alternatives C and D would lower the water surface elevation in the San Joaquin River arm of Mendota Pool, a change which would be within the immediate foreground of views from the west bank of this area, where some fishing occurs. Additionally, views from the fishing area and from Bass Avenue are moderately sensitive for the reasons stated above. Therefore, Project exposure is expected to be low to high depending on the viewer's distance to Project features.

Bass Avenue and Bass Avenue Residences

At the north end of Bass Avenue there is a group of four homes, which constitute a minor aggregation of rural residences.

Sensitivity: Low. Views from these residences, together with the views from the proximate stretch of Bass Avenue, their only access route, are of low sensitivity.

Project Exposure: Low. With the exception of the levee along Reach 3 adjacent the Bass Avenue residential area, which would be improved in two of the Project alternatives, views of Project features from the homes would not occur due to complete screening afforded by riparian vegetation along the west bank of the river. From Bass Avenue there would be limited views of the river and Mendota Dam and broad views of the area behind Mendota Dam. Changes to Mendota Dam and associated construction activity would be nearly ¼-mile distant for road-based views, as would changes to the Mendota Dam area due to the construction of Fresno Slough near Mowry Bridge. Therefore, Project exposure is expected to be low.

24.1.2 Existing Visual Conditions

The existing visual condition of the landscape is the point of reference for evaluating the intensity of potentially adverse changes to the landscape. This attribute is defined by the prevailing character of the setting and the degree to which past actions have adversely affected that character and its quality. It is assessed only for critical public views. Both the existing daytime visual conditions of the critical public view and the existing night lighting conditions are considered. Visual condition is addressed as the degree to which features of the setting and sources of lighting are *congruent* with the established, dominant character of the setting, and in terms of the *coherence* of the pattern in which these features and lighting sources are distributed. Visual condition is also addressed relative to “visual access”: the extent to which historically available scenic views have become blocked or have become less accessible to the public.¹

Visual character is defined in terms of the physical features that have become accepted over time as inherent to the area, those reflecting how the landscape was formed (e.g., ecological processes versus human activities), how it functions (e.g., serving land uses or ecological relationships), and how it is structured.

- Congruence (Intactness). Where past actions have noticeably and unfavorably changed landscape features, or introduced incompatible features, results appear incongruent with the inherent character of the area. In terms of the FHWA (1981) methodology, congruence is the landscape’s state of “intactness,” the integrity of the character type in terms of the degree to which “encroaching elements” may be present.
- Coherence (Unity). Where internal consistency and harmony of landscape features have been affected by past actions, results can lack coherence. A landscape may be “intact” relative to the type of features within view, yet past actions may have resulted in there being little to no discernible pattern, composition and/or harmony associated with those features. In terms of the FHWA (1981) methodology, this is the landscape’s degree of “unity.”
- Visual Access. Apart from its physical features, the affected landscape is also described in terms of the physical conditions under which it is viewed. These include the public’s physical access to views, the breadth of available views (panoramic or narrowly focal), their duration and timing. Past actions may have

¹ The attribute of Visual Access is relevant to two of the six visual impact categories described in Section 24.3.1: Impact AES-1 and Impact AES-2.

limited physical access to formerly available viewing positions or partially or totally blocked visual resources from public view, shortened view duration, or altered when the views are available.

Regarding night lighting conditions, “light” refers to artificial light emissions, or the degree of brightness, generated by a given source, and “glare” occurs when light adversely affects a viewer. The existing condition of light and glare is defined by the following characteristics:

- Lighting Character. The character of lighting is defined in terms of the types of lighting present and their pattern of illumination. Illumination may be described in terms of: (1) *Ambient Lighting*, the general overall level of lighting in a given area; (2) *Corona*, which is the diffuse halo of light that exists above a lit area; and (3) *Glare*, as defined above. Glare is an adverse effect of past actions.
- Congruence (Intactness). As with daytime visual conditions, this attribute is the degree to which past actions have noticeably and unfavorably changed the type and/or intensity of lighting in an area such that the result appears incongruent with the inherent character of lighting there.
- Coherence (Unity). As it pertains to lighting, coherence is the internal consistency of scale, pattern and organization of the sources and effect of lighting relative to the potentially affected area.

The visual modification class (VMC) approach reflects the concepts and principles of the Visual Resource Management methodologies in use by the following Federal agencies: U.S. Department of Agriculture, Forest Service (USFS 1974, 1995); U.S. Department of Interior, Bureau of Land Management (BLM 1984); and U.S. Department of Transportation Federal Highway Administration (FHWA 1981). Existing visual conditions are evaluated as being within one of four VMCs, as summarized below. Note that the anticipated future condition of a landscape expected as a result of implementing a proposed project is also described in terms of VMCs.

- *VMC 1: Not Noticeable*. VMC 1 conditions occur when all features and sources of lighting appear congruent with the prevailing landscape character and are coherently arrayed. In VMC 1 landscapes, recognized and valued scenic views have not been, or would not be, noticeably blocked or screened by past or planned activities and physical access to recognized and valued viewing positions has not been, or would not be, noticeably affected by such activities.
- *VMC 2: Noticeable, Visually Subordinate*. VMC 2 conditions occur where landscape features and sources of light and glare have been noticeably affected by past actions, or would be so affected in the future. (The changes are expected to attract some attention but not compete for it with the established features in the field of view.) Or where recognized and valued scenic views have become, or would become, partially blocked by past or planned activities, and/or access to recognized and valued viewing positions has been, or would be, partially diminished.

- *VMC 3: Distracting, Visually Co-dominant.* VMC 3 conditions occur where changes in landscape features, their distribution, or sources of lighting have occurred, or may occur in the future, such that the changes compete, or would compete, for attention with the features and lighting inherent to that setting. Or where historically available and scenic views have become, or would become, substantially blocked by past or planned activities, and/or access to recognized and valued viewing positions has been, or would be, substantially diminished.
- *VMC 4: Visually Dominant.* VMC 4 conditions occur when incongruous changes in landscape features, sources of light and glare, and/or their distribution are, or would be, the focus of attention. Or where historically available and scenic views have become, or would become, totally, or nearly totally, blocked by past or planned activities, and/or recognized and valued viewing positions have become, or would become, inaccessible.

In the Project area, the existing visual conditions of importance are limited to the critical public viewing positions identified in Section 24.1.1. As noted, these are located at the San Mateo Avenue crossing, Mendota Pool Park, the Mendota Dam area and the Bass Avenue residential area (Figure 24-1). An overview of the character of the landscape is as follows.

Topographic Features. Reach 2B is a sandy, meandering river channel flanked by agricultural lands and ending to the west at Mendota Dam. The topography of the Project area and environs contributes little to its character, being flat and presenting no notable natural variations in landforms. The primary effect of the flat terrain is that views can be readily interrupted by even modest vertical features, mostly vegetation, constraining views to the foreground.

Vegetative Features. Vegetation features are described in Chapter 6.0, “Biological Resources – Vegetation.” From the Chowchilla Bifurcation Structure to the San Mateo Avenue crossing, there is little to no in-channel vegetation. Existing vegetation along the banks of the channel along this stretch consists mostly of riparian scrub and willow scrub communities. The San Joaquin arm of Mendota Pool (from the San Mateo Avenue crossing to Mendota Dam) supports perennial riparian vegetation, mostly willow riparian and cottonwood riparian forest communities with emergent wetland communities. These communities also occur along the banks near Mendota Dam and along the river below the Dam. The forest communities are the most pronounced, visually.

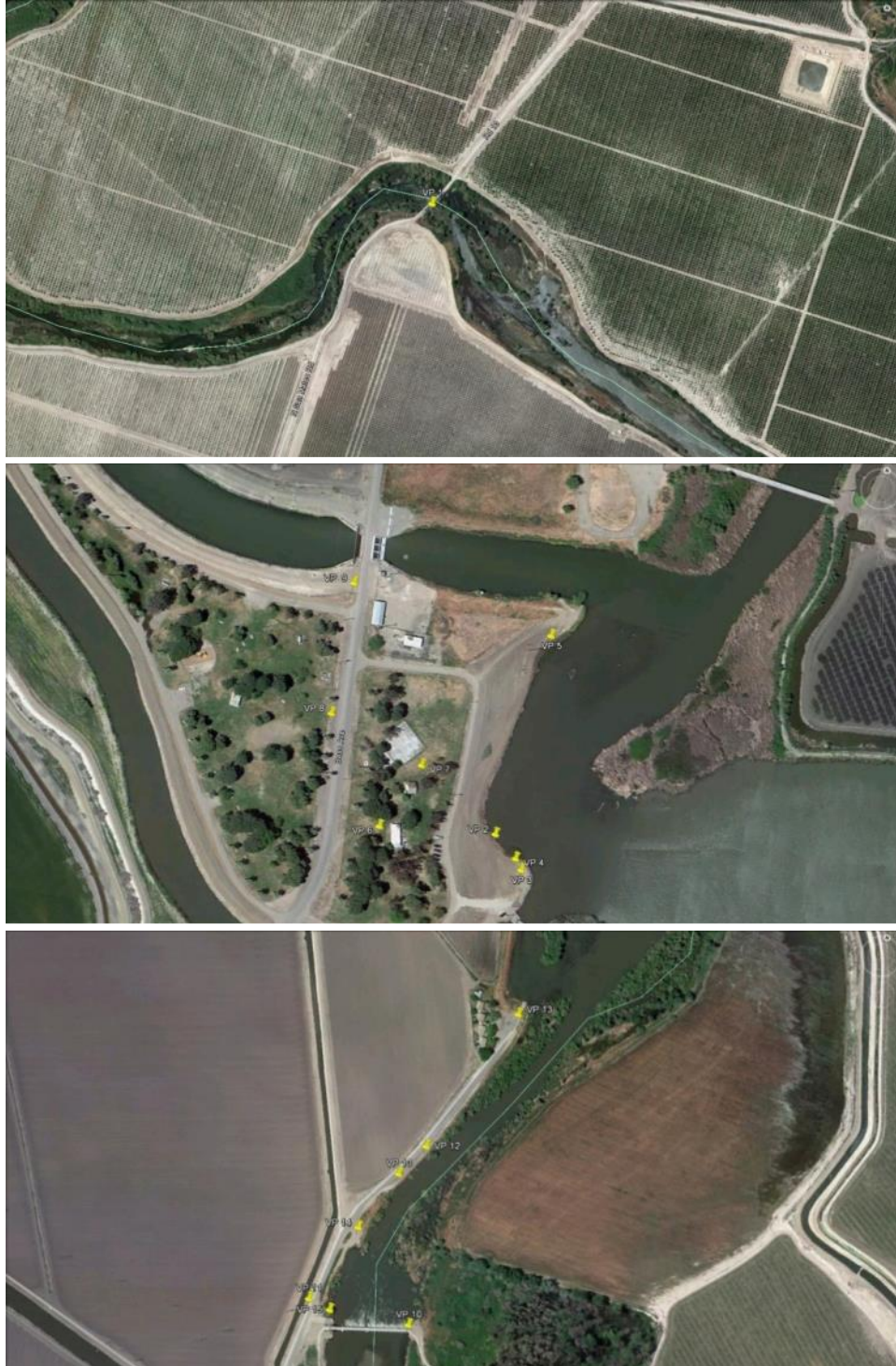


Figure 24-1.
Viewing Positions at the San Mateo Avenue Crossing (Top), Mendota Pool Park and Vicinity (Middle), and Mendota Dam Area (Bottom)

Water Features. The Mendota Pool, Mendota Dam, the San Joaquin River below the dam are the most memorable features within the critical public views identified. Mendota Dam and the reservoir it creates, located at the confluence of the San Joaquin River and Fresno Slough, have been features of the landscape for almost 100 years. The first water works in the area, the main canal conveying irrigation water to Los Banos Creek, was built in 1871. Mendota Dam was built in 1917 (San Joaquin River Restoration Program [SJRRP] 2011a). Today, Mendota Dam and Mendota Pool remain an important key to irrigation in the San Joaquin Valley. Associated features of Mendota Dam and Pool include the DMC, which conveys water from the Delta south to Mendota Pool, and several canals which divert water from the Pool for agricultural use.

Cultural Modifications. The primary features of the landscape—Mendota Dam, Mendota Pool, and the San Joaquin River below the Dam—appear today largely as they have since the original dam was constructed. However, since 1942 when Friant Dam was constructed, up to the beginning of Interim Flows, the San Joaquin River within Reach 2B was dry for most of the year. Interim Flows started in October 2009 and Restoration Flows started in January 2014. The existing visual conditions, including Mendota Dam, Mendota Pool, sloughs, canals, and the largely dry river bed, are modifications of the landscape dating as far back as 1871. These features, as well as supporting infrastructure such as roads and utilities, are inherent to a landscape managed for the purposes of agricultural irrigation. They reflect how it was formed, how it functions, and how it is structured. That is, they are not adverse changes to an otherwise natural-appearing landscape.

San Mateo Avenue Crossing

Access to the crossing is via San Mateo Avenue from the south, across private lands, and from the north via Road 13 and other public roads. Features of the crossing are visible from a limited stretch of Road 13 near the crossing and the crossing itself from public access routes. Views of and from the crossing do not extend far, being constrained by vegetation in the foreground, as shown in the photographs taken from Viewing Position (VP) 1 (Figure 24-2).

Prior to Interim Flows (fall 2009), Reach 2B was dry most of the year from the Chowchilla Bifurcation Structure to the San Mateo Crossing, flowing only in response to flood releases from Friant Dam. The crossing, however, marks the approximate limits of the backwater effects of Mendota Pool. From here to points downstream, the river channel is typically inundated. Note that the photograph in Figure 24-2 was taken in August 2010, during a period of Interim Flow.



Figure 24-2.
Views of the Riparian Vegetation within the San Joaquin River Channel Looking to the Northwest (Top) and to the East (Bottom), VP 1

Existing Visual Condition: VMC 1, Features Appear Congruent with the Prevailing Landscape Character and are Coherently Arrayed. The visual conditions, as of July 2009, are rated as having been VMC 1. As of this date, the area of the immediate crossing was entirely characteristic of a riparian setting along a river the flow regime of which was being managed for sustained deliveries of agricultural irrigation (largely dry river bed). No noticeable adverse changes to this character were in the potentially affected views (no incongruous features). The vegetative types occurred in a natural, random distribution and the river channel evinced a characteristically meandering course (coherently arrayed features). Visual access had been provided by a system of public roads; there was no indication that it had been impaired to any degree due to previous actions. No light sources were observed, nor were there any indications that any had ever been installed in the vicinity; the absence of night lighting is characteristic of the setting, as management of the river for agricultural irrigation requires none.

Mendota Pool Park

The critical public views are those that would include features of the Project or the indirect effects of those features. Within the park, such views occur along a levee that abuts the west shore of the nearby part of Mendota Pool. Figure 24-3 shows views from VPs 2 and 3, both located on or near the levee. For two of the Project alternatives (Alternatives C and D), a dam would be constructed near where Mowry Bridge is today, which is visible from the levee (at VP 2). That view is representative of those from points along approximately 560 feet of the levee between VP 2 and the northeast corner of Mendota Pool Park (VP 5). Just 100 feet to the southeast along Mendota Pool's edge is an area showing obvious signs of use for picnics and fishing (Figure 24-3, lower image, VP 3). Mowry Bridge is not visible from here, so the dam proposed under Alternatives C and D would also not be seen. The view from VP 3 is included to demonstrate the limit to the potential dam's visibility along Mendota Pool's edge.

The other views of Mendota Pool Park (shown in Figures 24-4 to 24-7) show the context for the critical public views, including lands to the southeast between the park and Mendota, recreation facilities within the park, and various structures and facilities along its northern edge unrelated to park activities. This context is integral to considerations of the inherent character of the landscape associated with the critical public views directed to the northeast across Mendota Pool. In Figure 24-4 there are two views from VP 4. In the upper image, the outskirts of Mendota are visible at a distance of more than a mile, as is a canal running along the south edge of the park, just visible beyond its bordering levee. The lower image is a view into the interior of the park, showing a covered picnic area and a restroom. Note that both images show that there is directional area lighting attached to the utility poles. It is therefore assumed that there is evening use of the park facilities.

Figure 24-5 is a panorama, the lower image continuing the left-to-right view started in the upper image; it discloses the proximity of Mendota Pool to the park facilities. Additionally, the lower image includes a pink building to the right, owned by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) and utilized by the San Luis Delta Mendota Water Authority. It serves for storage and occasional staging of equipment. The green building to the left is on CCID land leased to the city of Mendota.

It is assumed that it is used for equipment storage associated with maintenance of Mendota Pool Park. The radio tower in view and a 10' by 10' control room building just visible in line with it are next to the radial gates on the DMC. Together they serve to remotely operate the adjoining check structure. These structures also appear in Figures 24-6 and 24-7.

In Figure 24-6, the upper image (VP 6) shows a close view of the covered picnic facility and the restroom. More importantly it shows how the levee along Mendota Pool (seen in the distance beyond the picnic area) blocks sight of Mendota Pool, demonstrating why views from within the interior of the Park are not directly affected. As noted, though, they are important as context for views that would disclose Project features.

Figure 24-7 shows the views from VP 8 (top image) and VP 9 (bottom image), located along Bass Avenue from points within and at the edge of the park. The images indicate the proximity of structures associated with the operation of the DMC noted and how visible these are from the main access road serving the park.

Existing Visual Condition: VMC 1, Features Appear Congruent with the Prevailing Landscape Character and are Coherently Arrayed. The existing visual conditions, as of July 2009, are rated as having been VMC 1. The character of views from points within the park is defined by features of Mendota Pool, the park itself, and features associated with the operation of the nearby canals. No noticeable adverse changes to this character were in the potentially affected views (no incongruous features). As has been noted, Mendota Pool, sloughs, canals and their related structures (dam, sluice gates, flow controls) are features created by the management of the San Joaquin River for agricultural irrigation.

In the views shown from VPs 2 and 3 (Figure 24-3) during August 2010, Mendota Pool was at its normal water surface elevation. Mendota Pool is dewatered by the CCID to allow standard inspections and maintenance of Mendota Dam.² The CCID has dewatered Mendota Pool seven times in the last 12 years, typically starting in mid- or late November. Mendota Pool is typically refilled starting mid-January. Therefore, the views of Mendota Pool in Figure 24-3 represent its characteristic appearance from early winter to late fall. A dewatered pool during the interim is also characteristic of Mendota Pool.

Features interior to Mendota Pool Park are typical of developed public parks serving passive and active recreation (Figures 24-4 and 24-6, VPs 4 and 7). They include playground equipment, picnic tables, a ball field, stage and open areas of lawn, and storage sheds. However, structures associated with the management of the San Joaquin River for agricultural purposes—notably those controlling the flow of the nearby canals—were also in view (Figures 24-5, 24-6 and 24-7, VPs 5, 7 – 9).

² Although recent repairs at Mendota Dam have reduced the need to dewater Mendota Pool for dam inspections



Figure 24-3.
Views to Northeast across Mendota Pool of Mowry Bridge from VP 2 (Top) and from Picnic Site at VP 3 (Bottom)



Figure 24-4.
Views from VP4: Looking Southwest across Mendota Pool Park toward Mendota (Top); Looking Northwest into Center of Park (Bottom)



**Figure 24-5.
Panoramic View Left (Top) to Right (Bottom), Looking Southwest to West from VP 5, at Northeast Corner of Mendota Pool Park**



Figure 24-6.
View to Northeast from VP 6 Showing Picnic Area, Restroom, and Levee Blocking View of Mendota Pool (Top); View to Northwest from VP 7 of Ball Field, Night Lighting, and Various Utilities in Background (Bottom)



Figure 24-7.
Two Views Looking North from Bass Ave. (Top): VP 8, within Mendota Pool Park and (Bottom): VP 9 at North Edge of Park along DMC

In summary, types of features ordinarily not congruent with one another are, in the case of Mendota Pool Park, all inherent to how this landscape was formed, how it functions, and how it is structured. Because no noticeable adverse changes to the established character were within the potentially affected views and those related to them (interior park views) the landscape was “intact” (no incongruous features) as of July 2009. As well, the park is functionally organized and the shoreline vegetation around Mendota Pool is arrayed in an expected and natural distribution (coherent distribution of features). Visual access has been provided by Bass Avenue, a public road, and there are no indications that access has been impaired to any degree due to past actions.

Sources of directional night lighting were evident around the playing fields, roads and parking area, these being characteristic of a park serving active recreation. Their operation in the evening was not observed during field observations, so the quality of lighting was not recorded. However, the lighting, in function, is related to park use and appeared appropriately sited; it is therefore judged to be both congruent and coherently arrayed.

Mendota Dam Area

The Mendota Dam area includes the part of Mendota Pool north of Mowry Bridge, Mendota Dam, and the area along the river immediately downstream of the dam. Critical public views occur from Bass Avenue in the vicinity of these features, from along the west shore north of Mendota Dam, and from along part of the river’s left bank, the latter starting at a point immediately below the dam at its west end and ending about 425 feet to the north in unincorporated Fresno County. Sensitivity for these views is treated as moderate, as noted in Section 24.1.1.

Mendota Pool is in the foreground of shore-based views and partially in view from a ¼-mile of Bass Avenue, starting from a point about 300 feet north of the Helm Canal crossing and extending 450 feet to a point opposite the west end of Mendota Dam. Figure 24-8 shows the panorama from the east end of Mendota Dam, looking southeast across part of Mendota Pool, to a stretch of Bass Avenue and a part of the shoreline north of the dam. A part of Mendota Pool is readily seen from the road and shoreline. From the west shore of Mendota Pool near Mendota Dam, views extend unimpeded across the water from the northeast to the south. However, given that Bass Avenue is close in elevation to Mendota Pool and separated from it by 150 to 250 feet of land, the low oblique views do not disclose as much of the Pool’s surface as do views from the shore.

Mendota Pool is not visible from Bass Avenue north of Mendota Dam’s west end. From this point, though, Mendota Dam and the San Joaquin River come into view from the road for about 1,000 feet. These are mobile views lasting cumulatively for about 22 seconds at a driving speed of 45 miles per hour. Note that for recreationists these views are repetitive, occurring numerous times during the year; for the residents at the end of Bass Avenue, the views occur daily. Those from the west bank of Mendota Pool and the west bank of the river below Mendota Dam, however, are stationary, affording a maximum degree of attention to detail.

Figures 24-9 and 24-10 present views from three points along Bass Avenue. The panorama in Figure 24-9 is directed northwest to northeast along the road from VP 11, close to Mendota Dam's west end. Agricultural lands typical of the Project area flank the road along its west-northwest side, while the San Joaquin River lines the road on its east-northeast side. This view occurs for those travelling north on Bass Avenue. Figure 24-10 shows the views from VP 12 (top) and VP 13 (bottom), both of which include the river and the part of Mendota Dam which would be modified under the two Fresno Slough Dam alternatives (Alternative C and D). These views represent those along about 220 feet of the road for residents driving south from the group of four homes at the road's north end.

Figure 24-11 presents the views from VPs 14 and 15, located along the west shore of the river below the Mendota Dam in an area on private property that experiences some recreation use including fishing, picnicking, swimming, boating, and, downstream from here, hunting. The upper image shows a close view of the potentially modified part of Mendota Dam (VP 14). The lower image is the downstream view from VP 15 (the location for potential fish passage facilities); Mendota Dam is a few feet from this point and readily in view, as well.

Existing Visual Condition: VMC 1, Features Appear Congruent with the Prevailing Landscape Character and are Coherently Arrayed. The existing visual conditions, as of July 2009, are rated as having been VMC 1. As of that date, Mendota Pool and the San Joaquin River below Mendota Dam would have been similar in appearance to views from August 2011 (Figures 24-8 to 24-11).

The Project area in view from Bass Avenue is at the interface between two character types—an agricultural landscape to the west, and abutting it to the east a river system engineered for agricultural irrigation resulting in an artificial body of water (Mendota Pool), Mendota Dam, canals, and supporting infrastructure. Because of the dependence of agricultural production on the delivery of irrigation water, the function, structure and patterns of development of one are interrelated with those of the other, and the two character types are therefore compatible.

The character of the potentially affected views is defined primarily by Mendota Dam, and the water surfaces of Mendota Pool and the San Joaquin River. Tall riparian vegetation along the river defines the skyline and clearly marks the river's course, even at a distance, as shown in the upper image in Figure 24-9. Also important visually are the canals and levees in the foreground of views from Bass Avenue, laid out in angular counterpoint to the sinuous river course nearby (Figure 24-9). The character of the potentially affected lands and that of the nearby agricultural area have remained intact for many decades; no adverse changes to the features of the landscape due to past actions were apparent during field investigations (no changes incongruous with the established setting). The features within the agricultural lands and their distribution—fields, barns, silos, farm houses, windbreaks—exactly express their function and structure and pattern of development.



Figure 24-8.
Panoramic View Looking Southeast, Left (Top) Continuing to Right (Bottom), across Mendota Pool from Mendota Dam,
VP 10



Figure 24-9.
Panoramic View Looking Northwest to Northeast, Left (Top) Continuing to Right (Bottom), along Bass Ave. from VP 11



Figure 24-10.
Views of the San Joaquin River Looking South from Bass Ave., VP 12 (Top) and VP 13 (Bottom)



Figure 24-11.
Views across San Joaquin River from Area below Mendota Dam: Facing Southeast toward Dam, VP 14 (Top); Facing Northeast Downstream, VP 15 (Bottom)

Bass Avenue Residential Area

The Bass Avenue residential area comprises four homes at the north end of Bass Avenue. Views from these residences include screening vegetation lining the southeast side of Bass Avenue, opposite these homes (Figure 24-12). There is a limited view of the river from the north end of Bass Avenue at a point less than 200 feet from the homes. At flood stage, the San Joaquin River would be readily seen from here. As of the July 2009, though, the river would have been at a much lower level, similar to what is shown in Figure 24-13, lower image, and not appreciably visible.

Views from Bass Avenue are important to the residents of the four homes since this road provides their only access route. They have repetitive—if short-duration—views that include Mendota Dam, the river, and Mendota Pool. The road-based views have low sensitivity, due to the limited number of homes in the area—and the low exposure to the features of the river. Changes to the dam and associated construction activity would be in the background, as would changes to Mendota Pool area behind the dam due to the potential construction of a dam near Mowry Bridge.

Existing Visual Condition: VMC 1, Features Appear Congruent with the Prevailing Landscape Character and are Coherently Arrayed. The existing visual conditions of views from Bass Avenue, as of July 2009, are rated as having been VMC 1. Refer to the assessment of the Mendota Dam area views for the details of the assessment of these visual conditions.



Figure 24-12.

Panoramic View of Bass Ave. Residences from VP 13, Looking Southwest to West, Left (Top) Continuing to Right (Bottom)



Figure 24-13.
Views from and near Gate at North End of Bass Ave., Looking North (Top) and Northeast (Bottom)

24.2 Regulatory Setting

The regulatory setting, as it pertains to visual resources, is comprised of public policies, objectives, and supporting laws, ordinances, regulations, or standards which serve to protect and preserve the quality of visual resources and/or physical access to views of those resources. Of importance is whether potential impacts would be inconsistent with the regulatory setting.

24.2.1 Federal

The National Scenic Byways Program was established under the Intermodal Surface Transportation Efficiency Act of 1991 and reauthorized in 1998 under the Transportation Equity Act for the 21st Century. Under the program, the U.S. Secretary of Transportation recognizes certain roads as National Scenic Byways or All-American Roads based on their archaeological, cultural, historic, natural, recreational, and scenic qualities. However, the National Scenic Byways Program highlights no roads within or near the Project area.

24.2.2 State of California

California's Scenic Highway Program was created by the California Legislature in 1963. Its purpose is to protect and enhance the natural scenic beauty of California highways and adjacent corridors through special conservation treatment. No officially designated State scenic highways are located in the Project area.

24.2.3 Regional and Local

This section discusses regional and local plans and policies relating to visual resources.

Madera County General Plan

Policies relating to scenic/visual resources are found in the Madera County General Plan (1995). Three policies are potentially applicable to the Project or its alternatives as follows:

- *Section 1, Land Use, Subsection H. Visual and Scenic Resources, Policy 1.H.1:* The County shall require new development in scenic rural areas to avoid locating structures along ridgelines, on steep slopes, or in other highly visible locations except if the location is required to avoid hazards or design and screening measures are incorporated to minimize the visibility of the structures and graded areas.
- *Section 5, Agricultural and Natural Resources, Sub-section C. Water Resources, Policy 5.C.6:* This policy requires that natural watercourses be integrated into new development such that they are accessible to the public and provide a positive visual element.
- *Section 6, Health and Safety, Subsection B. Flood Hazards, Policy 6.8.5:* Policy 6.8.5 requires flood control structures, facilities and improvements to be designed to preserve scenic values.

Fresno County Master Plan

Policies relating to scenic/visual resources are found in the Fresno County General Plan (Fresno County 2000). Of these visual/scenic resource-related policies, one is potentially applicable to the Project or its alternatives as follows:

- *Open Space and Conservation Element, Water Resources, Policy OS-A.18*: This policy is the same as the Madera County General Plan Water Resources Policy 5.C.6, which requires that natural watercourses be integrated into new development such that they are accessible to the public and provide a positive visual element.

Other policies of the Madera and Fresno County General Plans reference scenic/visual resource protection but are not included in the Regulatory Setting because the policies:

- Apply to land uses, such as rangelands, industrial, commercial and residential development, either not occurring within the Project area or not occurring within critical public views that include the Project area.
- Apply to plans not pertaining to the immediate Project area.
- Apply to resources, conditions, geographical features, or facilities not found within the Project area or, if within the area, are not within critical public views of the Project or its alternatives. These would include, for instance, forest and mineral resources; oak woodlands; hillsides and ridges; designated scenic drives, roads, highways or their corridors; and designated scenic views, panoramas and vistas.
- Are general statements of the County's intentions to preserve/protect visual/scenic resources and what the County *should* do, methods to be applied, studies to be conducted, resource maps to be developed, and priorities established. These include statements such as: "The County should require development adjacent to scenic areas...to incorporate natural features of the site...to minimize impacts to the scenic qualities of the site (Fresno County General Plan Open Space and Conservation Element, Subsection K. Scenic Resources: Policy OS-K.4).

San Joaquin River Parkway Master Plan

The Program Environmental Impact Statement/Report (PEIS/R) references the San Joaquin River Parkway Master Plan as a relevant part of the regulatory setting (SJRRP 2011b, page 25-6). This is a conceptual, long-range planning document intended to help preserve, enhance, and provide for enjoyment of the natural landscape of the San Joaquin River corridor. As proposed in 1992, the parkway would include the San Joaquin River and approximately 5,900 acres of land on both sides of the river between Friant Dam and the State Route (SR) 99 crossing, as well as the existing 17-acre Skaggs Bridge Park at the SR 145 crossing. This park, however, is more than 13 miles east of the Chowchilla Bifurcation Structure, the easternmost part of the Project area. The Plan, therefore, does not apply to the Project or its alternatives.

24.3 Environmental Consequences and Mitigation Measures

24.3.1 Impact Assessment Methodology

The aesthetic and visual resources assessment compares public views of the existing condition of aesthetics resources to the conditions anticipated from implementing any of the Project alternatives. A review of literature and maps, an inspection of the Project site and the potentially affected environs served to identify these public views. The analysis uses information contained in the PEIS/R and site visit information to determine whether construction and operation of the Project alternatives would directly impact aesthetics and visual resources.

The visual resources assessment focused on identifying visual impacts, their intensity, and whether they would be significant. The VMC approach conforms to the documentation requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) and closely follows the concepts and principles of Federal visual analysis methodologies. Steps in the VMC approach to visual impact assessment are summarized as follows:

- Identify critical public views potentially affected by the Project (e.g., legally protected views, designated areas of interest, sites of cultural/religious importance, scenic highways, and residential areas).
- Identify any Federal, State, county, and local laws, ordinances, regulations, and standards, as well as planning policies and objectives, that expressly protect or recognize the value of specific public views or view corridors.
- Describe the existing visual conditions of those potentially affected critical public views.
- Estimate the intensity of possible adverse visual impacts on those views.
- Evaluate the significance of the possible impacts (the relationship of impact intensity to public sensitivity).
- As applicable, consider possible mitigation measures that could lessen the impacts to a level of intensity that is less than significant.

24.3.2 Significance Criteria

The Project is evaluated in accordance with the aesthetics section of Appendix G of the State CEQA Guidelines. Under NEPA Council on Environmental Quality regulations, effects must be evaluated in terms of their context and intensity. These factors were considered when applying State CEQA guidelines Appendix G. Implementation of the Project could result in potentially significant impacts to visual quality and aesthetics if the Project would result in any of the following:

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.

- Substantially degrade the existing visual character or quality of the site and its surroundings.
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

A perceptible reduction in visual quality generally must persist for a year or more before being treated as a significant impact. Also, an adverse visual impact may be significant if it is inconsistent with laws, ordinances, regulations, and standards, whether or not it meets other significance criteria; the impact, however, generally must be estimated to last more than 1 year.

24.3.3 Impacts and Mitigation Measures

This section provides an evaluation of direct and indirect effects of the Project Alternatives on visual resources. It includes analysis of potential effects relative to the No-Action Alternative in accordance with NEPA and potential impacts compared to existing conditions to meet CEQA requirements. The analysis is organized by Project alternative with specific impact topics numbered sequentially under each alternative. With respect to visual resources, the environmental impact issues and concerns are:

1. Construction Related Effects on the Visual Quality of the Project Site and Its Surroundings.
2. Long-term Changes in the Visual Character or Quality of the San Mateo Avenue Crossing.
3. Long-term Changes in the Visual Character or Quality of the Mendota Pool Park Area.
4. Long-term Changes in the Visual Character or Quality of the Mendota Dam Area.
5. Long-term Changes in the Visual Character or Quality of the Bass Avenue Residential Area.
6. Substantial Changes in Light or Glare.

Other visual resources related issues covered in the PEIS/R are not covered here because they are programmatic in nature and/or are not relevant to the Project area.

Issues Eliminated from Further Analysis

There are no scenic highways or designated scenic vistas in the Project area, therefore views from scenic highways and scenic vistas would not be affected by the Project alternatives and will not be discussed further.

No-Action Alternative

Under the No-Action Alternative the Project would not be implemented and none of the Project features would be developed in Reach 2B of the San Joaquin River. However, other proposed actions under the SJRRP would be implemented including habitat restoration, augmentation of river flows, and reintroduction of salmon. Without the Project in Reach 2B, however, these activities would not achieve the Settlement goals.

The potential effects of the No-Action Alternative are described below. The analysis is a comparison to existing conditions, and no mitigation is required for No-Action.

Impact VIS-1 (No-Action Alternative): *Construction Related Effects on the Visual Quality of the Project Site and Its Surroundings.* Under the No-Action Alternative, no construction related activities would take place in the Project area, as the Project would not be implemented. As a result there would be **no impact** on existing visual resources resulting from construction of the Project.

Impact VIS-2 (No-Action Alternative): *Long-term Changes in the Visual Character or Quality of the San Mateo Avenue Crossing.* Under the No-Action Alternative, none of the proposed facilities that are part of the Project would be developed. However, Program-level improvements would still occur that could lead to improvements in riverine habitat, and as such an improvement in existing visual conditions as compared to existing conditions. Increased flows in the San Joaquin River would improve the health of the aquatic ecosystem that would potentially improve visual conditions in the San Mateo Avenue area by increasing riparian habitat. Therefore, the No-Action Alternative would create a **beneficial** effect on the existing visual character.

Impact VIS-3 (No-Action Alternative): *Long-term Changes in the Visual Character or Quality of the Mendota Pool Park Area.* Under the No-Action Alternative, the timing and/or duration of Restoration Flows would increase through Mendota Pool; however the visual characteristics of the Pool including water surface elevation and habitat would likely remain the same as compared to existing conditions. Furthermore, there would be little, if any, changes to visual resources in the Fresno Slough arm of Mendota Pool. Therefore there would be **no impact** to the visual character of the Mendota Pool Park area.

Impact VIS-4 (No-Action Alternative): *Long-term Changes in the Visual Character or Quality of the Mendota Dam Area.* Refer to VIS-3 (No-Action Alternative); the same impacts would occur here. There would be more flow over the dam, but effects to visual resources would be consistent with existing conditions. Therefore there would be **no impact** to the visual character of the Mendota Dam area.

Impact VIS-5 (No-Action Alternative): *Long-term Changes in the Visual Character or Quality of the Bass Avenue Residential Area.* Refer to VIS-3 (No-Action Alternative); the same impacts would occur here. There would be more flow below the dam, but effects to visual resources would be consistent with existing conditions. Therefore there would be **no impact** to the visual character of the Bass Avenue residential area.

Impact VIS-6 (Alternative): *Substantial Changes in Light or Glare.* The No-Action Alternative would not create a new source of substantial light or glare that would affect daytime or nighttime views in the Project area. As a result there would be **no impact** on existing visual resources resulting from changes in light or glare.

Alternative A (Compact Bypass with Narrow Floodplain and South Canal)

Alternative A would include construction of Project facilities including a Compact Bypass channel, a levee system encompassing the river channel with a narrow floodplain, and the South Canal. Other key features include construction of the Mendota Pool Dike (separating the San Joaquin River and Mendota Pool), a fish barrier below Mendota Dam, and the South Canal bifurcation structure with fish passage facility and fish screen, modification of the San Mateo crossing, and the removal of the San Joaquin River control structure at the Chowchilla Bifurcation Structure. Construction activity is expected to occur intermittently over an approximate 132-month timeframe.

Impact VIS-1 (Alternative A): Construction Related Effects on the Visual Quality of the Project Site and Its Surroundings. Compared to the No-Action Alternative, implementation of Alternative A has the potential to result in short-term impacts on visual resources from construction activities from nearby public view points.

As previously discussed in Section 24.1.1, visual access to the Project area is limited. The majority of the Project area is bordered by private lands and roads. The existing visual conditions of importance are limited to the critical public viewing positions identified in Section 24.1.1. As noted, these are located at the San Mateo Avenue crossing, Mendota Pool Park, the Mendota Dam area, and Bass Avenue (Figure 24-1). Public views of the San Joaquin River portion of the Project area upstream of Mendota Pool are only available from the San Mateo Avenue crossing.

Downstream of Mendota Dam, the river is seen from public viewing positions along the river and near Mendota Dam. These include the below-Dam informal recreation site and points along Bass Avenue. Part of Mendota Pool can be seen from Mendota Pool Park, although it is more visible from public viewpoints along Bass Avenue and in the vicinity of Mendota Dam. Sensitive receptors are recreationist users of Mendota Pool, Mendota Pool Park, as well as motorists traveling along Bass Avenue.

Construction activities under Alternative A could take place at any time during the year and could reduce the aesthetic qualities of views in the Project area by introducing earth moving equipment and other construction equipment, materials and work crews into the viewshed. General construction activities may include excavation, earth movement, construction of a new road crossing, construction of new levees, water diversion for building of in-stream facilities, construction of new canals, and construction of control structures, fish passage facilities, and fish screens. Further, the presence and movement of heavy construction equipment and potential construction-related generation of dust could temporarily degrade the existing visual character of the area. Recreationists' views of construction would largely be blocked by intervening vegetation and topography. Agricultural workers would have longer views of construction areas than recreationists because they are present longer, but this group is not considered a sensitive viewer group. Motorists would have limited and short duration views of the area while traveling along Bass Avenue. Construction activities would impact the visual character from sensitive viewpoints, as construction schedule dictates, on a periodic and limited basis over the 132-month construction period.

When comparing Alternative A to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraphs (i.e., the comparison of Alternative A to No-Action). Due to construction activities, the visual quality and character of the Project area vistas would diminish. Based on the sensitivity of viewpoints, high exposure to the Project, and the multi-year time frame of construction, impacts on visual resources would be **potentially significant**.

Mitigation Measure VIS-1 (Alternative A): *Minimize Visual Disruption from Construction Activities*. The construction contractor will be required to adhere to the following construction requirements regarding construction-related visual/aesthetic disruption. The impact would be **less than significant** after mitigation.

Implementation Action: Minimize construction related impacts on visual resources by including requirements in the contract with the construction company. In order to minimize visual disruption, the construction contractor will be required to implement the following:

- When possible, preserve existing vegetation, particularly vegetation along the edge of construction areas that may help screen views.
- After construction, regrade areas located outside of the floodplain that were disturbed by construction, staging, and storage to original contours where feasible, and revegetate with plant material similar in replacement numbers and types to that which was removed based upon local jurisdictional requirements. If there are no local jurisdictional requirements, replace removed vegetation at a 1:1 replacement ratio for shrubs and small trees, and 2:1 replacement ratio for mature trees.
- To the extent feasible, do not locate construction staging sites within the immediate foreground distance (0 to 500 feet) of existing residential, recreational, or other high-sensitivity receptors. Where such siting is unavoidable, staging sites will be screened from sensitive receptors using appropriate solid screening materials such as temporary fencing and walls.

Location: The location of proposed construction area modifications will vary as construction activities move throughout the Project area but will be focused primarily at Mendota Pool Park and San Mateo Avenue. Fencing will be implemented where topography and Project area activities allow.

Effectiveness Criteria: Effectiveness will be based on public complaints to the SJRRP.

Responsible Agency: Reclamation, CSLC, and the contractor.

Monitoring/Reporting Action: Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.

Timing: Mitigation will be ongoing over the construction timeframe.

Impact VIS-2 (Alternative A): Long-term Changes in the Visual Character or Quality of the San Mateo Avenue Crossing. Compared with the No-Action Alternative, Alternative A proposes new facilities that would impact the existing visual character and quality of the Project area at critical public viewpoints including the San Mateo Avenue crossing. Potential visual impacts for the public viewpoint at the San Mateo Avenue crossing are described below based on their sensitivity, Project exposure and visual modification class.

- *Sensitivity: Low.*
- *Project Exposure: High.*
- *Existing Visual Condition: VMC 1, Features Appear Congruent with the Prevailing Landscape Character and are Coherently Arrayed.*

In contrast to the No-Action Alternative, improvements to the San Mateo River crossing under Alternative A include installing a low flow or dip crossing with multiple, counter-sunk concrete box culverts designed for highway loading. Armoring is included along the entrance and exit of the structure as well as along the channel banks in the immediate vicinity of the structure. Culverts would be embedded below the existing channel bed. Grouted riprap would be placed in the culvert below the existing channel bed to prevent channel scour reaching the floor of the culvert and to create a roughened boundary layer for fish passage. Native bed material would be placed above the grouted riprap up to the existing channel bed elevation to provide passage conditions similar to that which exists in the adjacent natural stream (see Section 2.2.5). These improvements would be congruent with the existing character and quality of the San Mateo crossing. At certain flows the crossing would be overtopped, and it would mirror existing conditions. Improvements in the crossing, the placement of native bed material above grouted riprap, and the improvements to the channel bed and riparian vegetation would have a beneficial effect on visual resources at the San Mateo Avenue crossing.

When comparing Alternative A to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraphs (i.e., the comparison of Alternative A to No-Action). Based on the existing conditions and the proposed improvements the effects on visual resources are considered **beneficial**.

Impact VIS-3 (Alternative A): Long-term Changes in the Visual Character or Quality of the Mendota Pool Park Area. Potential visual impacts for the public viewpoint at Mendota Pool Park are described below based on sensitivity, Project exposure and visual modification class.

- *Sensitivity: High.*
- *Project Exposure: Low.*
- *Existing Visual Condition: VMC 1, Features Appear Congruent with the Prevailing Landscape Character and are Coherently Arrayed.*

Under Alternative A, no construction would occur near Mendota Pool Park. As noted in Section 24.1.1, the park users would regularly experience views of existing levees and

water infrastructure, and expect views of agricultural and rural character. Compared to the No-Action Alternative, these views in the Fresno Slough arm of Mendota Pool would be unchanged.

When comparing Alternative A to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraphs (i.e., the comparison of Alternative A to No-Action). There would be **no impact** on visual resources at Mendota Pool Park.

Impact VIS-4 (Alternative A): *Long-term Changes in the Visual Character or Quality of the Mendota Dam Area.* Potential visual impacts for the public viewpoints in the Mendota Dam area are described below based on sensitivity, Project exposure and visual modification class.

- *Sensitivity: Moderate.*
- *Project Exposure: Low.*
- *Existing Visual Condition: VMCI, Features Appear Congruent with the Prevailing Landscape Character and are Coherently Arrayed.*

Under Alternative A, no construction would occur at or near the Mendota Dam area. The character of the potentially affected views in the Mendota dam area is defined primarily by Mendota Dam, the water surfaces of Mendota Pool and the San Joaquin River. Critical public views of Mendota Dam or from Mendota Dam are not changed by Alternative A; therefore the visual character of the Mendota Pool area would remain congruent in terms of mass, color, line and form. Compared to the No-Action Alternative, critical public views in the Mendota Dam area would be unchanged.

When comparing Alternative A to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraphs (i.e., the comparison of Alternative A to No-Action). There would be **no impact** on visual resources in the Mendota Dam area.

Impact VIS-5 (Alternative A): *Long-term Changes in the Visual Character or Quality of the Bass Avenue Residential Area.* Potential visual impacts for the public viewpoint at the Bass Avenue residential area are described below based on sensitivity, Project exposure and visual modification class.

- *Sensitivity: Low.*
- *Project Exposure: Low.*
- *Existing Visual Condition: VMCI, Features Appear Congruent with the Prevailing Landscape Character and are Coherently Arrayed.*

In contrast to the No-Action Alternative, the levee along Reach 3 adjacent the Bass Avenue residential area would be improved. The character of the potentially affected views in the Bass Avenue residential area is defined primarily by the existing levee and vegetation along the San Joaquin River. Existing vegetation may be removed to make the

levee improvements and large woody vegetation, such as trees and shrubs, on the levee itself would not be replaced after the improvements due to implementation of more rigorous maintenance standards for new levees. However, trees and shrubs within the San Joaquin River floodplain inside the levee is expected to remain and improve with increased flows; therefore the visual character of the Bass Avenue residential area would only slightly modify the color, line and form of the visual resources, as it would replace or enhance the existing levee and trees and shrubs located within the new levees are expected to improve under Alternative A.

When comparing Alternative A to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraphs (i.e., the comparison of Alternative A to No-Action). Based on the existing conditions and the proposed improvements, the impacts on visual resources are considered **less than significant** in the Bass Avenue residential area.

Impact VIS-6 (Alternative A): *Substantial Changes in Light or Glare.* Compared to the No-Action Alternative, construction activities may introduce new sources of nighttime light or glare under Alternative A. For example, equipment staging areas and construction areas may be temporarily lit at night during the construction period. Although views of the construction areas from nearby residences would be largely obscured by intervening distance, topography, and/or vegetation, construction activities could cause a noticeable change light or glare at some locations. Nighttime lighting related to construction would be temporary or short term.

When comparing Alternative A to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraph (i.e., the comparison of Alternative A to No-Action). Impacts on visual resources from changes in light and glare are considered **potentially significant**.

Mitigation Measure VIS-6 (Alternative A): *Require Conformance to Lighting Standards.* Project proponents will conform to the guidelines described below to reduce impacts associated with light and glare during the construction phase. The impact after mitigation would be **less than significant**.

Implementation Action: Minimize construction related impacts on visual resources by including requirements in the contract with the construction contractor.

- If construction lighting is needed, contractors will be required to shield lighting and direct lights downward onto the work site.
- Meet the minimum county lighting standards for all Project-related lighting. All lighting fixtures will be designed to be consistent with the guidelines contained in the applicable county general plan.
- Shield or screen lighting fixtures to direct the light downward and prevent light from spilling on adjacent properties.

- Prohibit the use of harsh mercury vapor, low-pressure sodium, or fluorescent bulbs.
- Consider design features, namely directional shielding for all substantial light sources, that will reduce effects of nighttime lighting. In addition, consider the use of automatic shutoffs or motion sensors for lighting features to further reduce excess nighttime light. All nighttime lighting will be shielded to prevent the light from shining off the surface intended to be illuminated.

Location: The location of proposed construction area modifications will vary as construction activities move throughout the Project area but will be focused primarily at the Mendota Dam area and the Bass Avenue residential area.

Effectiveness Criteria: Effectiveness will be based on public complaints to the SJRRP.

Responsible Agency: Reclamation, CSLC, and the contractor.

Monitoring/Reporting Action: Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.

Timing: Mitigation will be ongoing over the construction timeframe.

Alternative B (Compact Bypass with Consensus-Based Floodplain and Bifurcation Structure), the Preferred Alternative

Alternative B would include construction of Project features including a Compact Bypass channel, a levee system with a wide, consensus-based floodplain encompassing the river channel, the Mendota Pool Control Structure, and the Compact Bypass Control Structure with fish passage facility and fish screen. Other key features include construction of a fish passage facility at the Chowchilla Bifurcation Structure, the re-route of Drive 10 ½ (across the Compact Bypass Control Structure), and removal of San Mateo crossing. Construction activity is expected to occur intermittently over an approximate 157-month timeframe.

Impact VIS-1 (Alternative B): *Construction Related Effects on the Visual Quality of the Project Site and Its Surroundings.* Compared to the No-Action Alternative, implementation of Alternative B has the potential to result in short and long-term impacts on visual resources near construction activities from public view points. Under Alternative B construction related effects on visual impacts would generally be the same as those described for Alternative A with one exception. Project construction would take place over a longer time frame, 157 months; therefore construction would impact visual resources in these areas for a longer duration. Construction activities would be similar in scope and impacts as the ones discussed in Impact VIS-1 (Alternative A).

When comparing Alternative B to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraph (i.e., the comparison of Alternative B to No-Action). Because these impacts would occur intermittently within the

overall construction time frame for the entire project, they are considered **potentially significant**.

Mitigation Measure VIS-1 (Alternative B): *Minimize Visual Disruption from Construction Activities*. Refer to Mitigation Measure VIS-1 (Alternative A). The same mitigation measure would be used under Alternative B as under Alternative A. The impact after mitigation would be **less than significant**.

Impact VIS-2 (Alternative B): *Long-term Changes in the Visual Character or Quality of the San Mateo Avenue Crossing*. Compared with No-Action Alternative, Alternative B would remove the existing culvert at the San Mateo Avenue crossing, which would change the visual character and quality at the crossing by restoring a continuous river channel and improving the overall natural character. The wider floodplain would not substantially affect the quality and character of visual conditions at this public view point.

When comparing Alternative B to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraph (i.e., the comparison of Alternative B to No-Action). Based on the existing conditions and the proposed removal of the culvert, the effects on visual resources are considered **beneficial**.

Impact VIS-3 (Alternative B): *Long-term Changes in the Visual Character or Quality of the Mendota Pool Park Area*. Refer to Impact VIS-3 (Alternative A). Potential impacts of Alternative B would be the same as potential impacts of Alternative A. There would be **no impact** on visual resources at Mendota Pool Park.

Impact VIS-4 (Alternative B): *Long-term Changes in the Visual Character or Quality of the Mendota Dam Area*. Refer to Impact VIS-4 (Alternative A). Potential impacts of Alternative B would be the same as potential impacts of Alternative A. There would be **no impact** on visual resources in the Mendota Dam area.

Impact VIS-5 (Alternative B): *Long-term Changes in the Visual Character or Quality of the Bass Avenue Residential Area*. Refer to Impact VIS-5 (Alternative A). Potential impacts of Alternative B would be the same as potential impacts of Alternative A. Impacts on visual resources are considered **less than significant** in the Bass Avenue residential area.

Impact VIS-6 (Alternative B): *Substantial Changes in Light or Glare*. Refer to Impact VIS-6 (Alternative A). Potential impacts of Alternative B would be the same as potential impacts of Alternative A. Impacts on visual resources from changes in light and glare are considered **potentially significant**.

Mitigation Measure VIS-6 (Alternative B): *Require Conformance to Lighting Standards*. Refer to Mitigation Measure VIS-6 (Alternative A). The same mitigation measures would be used under Alternative B as under Alternative A. The impact after mitigation would be **less than significant**.

Alternative C (Fresno Slough Dam with Narrow Floodplain and Short Canal)

Alternative C would include construction of Project features including Fresno Slough Dam, a levee system with a narrow floodplain encompassing the river channel, and the Short Canal. Other key features include construction of the Mendota Dam fish passage facility, the Fresno Slough fish barrier, the Short Canal control structure and fish screen, the Chowchilla Bifurcation Structure fish passage facility, modification of San Mateo crossing, and Main Canal and Helm Ditch relocations. Construction activity is expected to occur intermittently over an approximate 133-month timeframe.

Impact VIS-1 (Alternative C): Construction Related Effects on the Visual Quality of the Project Site and Its Surroundings. Compared to the No-Action Alternative, implementation of Alternative C has the potential to result in short-term impacts on visual resources near construction activities from public view points. Construction related activities would generally be the same as those described for Alternative A, with several exceptions. Unlike Alternative A, construction activities in Alternative C would be more concentrated in the Mendota Pool and Fresno Slough areas, where new fish passage and dam facilities are proposed. As a result impacts to viewpoints like the informal paths on the levee tops, bordering Mendota Pool Park would be greater under Alternative C than Alternative A. The construction impacts related to building Fresno Slough Dam would adversely affect viewsheds of informal paths users at Mendota Pool Park. Construction equipment, workers and activities would be part of the background of views in Mendota Pool Park levee areas. Direct and indirect construction activities would impact viewsheds in the Project area under Alternative C on and off for 133 months.

When comparing Alternative C to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraph (i.e., the comparison of Alternative C to No-Action) and as discussed under Impact VIS-1 (Alternative A). The visual quality and character of Project area vistas would be impacted during the construction period. Based on viewshed sensitivity, exposure to the Project and the multi-year time frame of construction, impacts on visual resources are considered **potentially significant** under Alternative C.

Mitigation Measure VIS-1 (Alternative C): Minimize Visual Disruption from Construction Activities. Refer to Mitigation Measure VIS-1 (Alternative A). The same mitigation measures would be used under Alternative C as under Alternative A. The impact after mitigation would be **less than significant**.

Impact VIS-2 (Alternative C): Long-term Changes in the Visual Character or Quality of the San Mateo Avenue Crossing. Compared with No-Action Alternative, Alternative C impacts at the San Mateo Avenue crossing are similar in scope and scale with impacts of Alternative A. The Project would not substantially impact the quality and character of visual conditions at this public view point. As discussed in Impact VIS-2 (Alternative A), proposed facilities are congruent with existing line, form, mass and color of the visual resources in the Project area, and maintain the character of the Project area. The enhancement of color and mass of existing visual conditions improvements through channel bed and riparian vegetation improvements would have a beneficial effect on the visual resources in the Project area.

When comparing Alternative C to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraph (i.e., the comparison of Alternative C to No-Action). Based on the existing conditions and the proposed improvements, the effects on visual resources are considered **beneficial**.

Impact VIS-3 (Alternative C): *Long-term Changes in the Visual Character or Quality of the Mendota Pool Park Area.* Potential visual impacts for the public viewpoint at Mendota Pool Park are described below based on sensitivity, Project exposure and visual modification class.

- *Sensitivity: High.*
- *Project Exposure: Moderate to High.*
- *Existing Visual Condition: VMC 1, Features Appear Congruent with the Prevailing Landscape Character and are Coherently Arrayed.*

Under Alternative C, Fresno Slough Dam and new surface water canals would be constructed near Mowry Bridge. From the closest points along the west shore in the park, these Project features would be from 970 to 1,240 feet away, placing them in the background of the closest affected shore-based views. Boaters and recreational users of Mendota Pool waters could, at their choice, be closer. Users of the park recreational facilities views would not be impacted by the construction of a new dam or surface water canals, as the structures would not be visible from the various facilities (picnic tables, picnic areas).

The introduction of a new dam at Mowry Bridge and surface water canals would impact the color, mass, line and form of views from the levee top of Mendota Pool Park. The views from the informal paths would be impacted by the new cement dam structure. Under Alternative C, the new dam would be constructed in the vicinity of Mowry Bridge, thus blocking views of the bridge. Although viewers expect water infrastructure and agricultural uses as part of their views, Fresno Slough Dam and the surface water canals would be new structures that would degrade the quality of the visual resources for users of informal levee paths. The visual resources currently include Mowry Bridge, and the addition of a new dam and surface water canals would modify viewers' experiences.

Nonetheless, the dam and proposed infrastructure are in keeping with the overall character of the Project area. The area is composed of water infrastructure, irrigation facilities and other structures like Mendota Dam and Mowry Bridge. Over time Fresno Slough Dam and the surface water canals would become part of the character of the area, as it is defined by agricultural uses and water control infrastructure. The new structures would represent an interruption in the visual coherence of the site, but only for a limited number of viewers. The users of Mendota Pool Park recreational facilities would not experience views of the new dam or new canals. The new dam would impact views of informal path users by introducing a new cement structure in their view path. Nonetheless, the new structures would be congruent with the character of the site, and only slightly modify the color, line and form of the visual resources, as it would replace or enhance Mowry Bridge.

When comparing Alternative C to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraphs (i.e., the comparison of Alternative C to No-Action). Based on the existing conditions and the proposed improvements, the impacts on visual resources are considered **less than significant** in the Mendota Pool Park area.

Impact VIS-4 (Alternative C): *Long-term Changes in the Visual Character or Quality of the Mendota Dam Area.* Potential visual impacts for the public viewpoint at Mendota Dam area are described below based on sensitivity, Project exposure and visual modification class.

- *Sensitivity: Moderate.*
- *Project Exposure: High.*
- *Existing Visual Condition: VMC 1, Features Appear Congruent with the Prevailing Landscape Character and are Coherently Arrayed.*

In contrast to the No-Action Alternative, levees would be constructed under Alternative C to increase the river capacity in the Mendota Dam area. These levees would be within critical public views from the west shore near the Dam (and possibly from the Bass Avenue residential area). A fish ladder would also be constructed at Mendota Dam to provide fish passage, flashboards at Mendota Dam would generally be removed, and the dam's sill may be notched (see Section 2.2.7). The removal of the flashboards would lower water surface elevations in the San Joaquin River arm of Mendota Pool. This change in water surface elevations could have an adverse effect on visual resources. Changes proposed by Alternative C would be within the foreground of views from the west bank of the Mendota Dam area, where some fishing occurs. The introduction of Fresno Slough Dam would not have an adverse effect on visual resources in the Mendota Dam area due to distance and screening from Mowry Bridge. Nonetheless, modifications to Mendota Dam would be required under Alternative C that could affect critical public views. The Dam is highly visible in the immediate foreground of shore-based views in the Mendota Dam area. Therefore, the activities proposed under Alternative C would have an adverse effect on visual resources in the Mendota Dam area.

Nonetheless, the changes to the dam, the proposed infrastructure, and changes to water surface elevations are in keeping with the overall character of the Project area. The area is composed of water infrastructure, irrigation facilities, dams, bridges and other water control facilities. Over time changes that would occur under Alternative C would become part of the character of the area, as it is defined by agricultural uses and water control infrastructure.

When comparing Alternative C to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraphs (i.e., the comparison of Alternative C to No-Action). Based on the existing conditions and the proposed improvements, the impacts on visual resources are considered **less than significant** in the Mendota Dam area.

Impact VIS-5 (Alternative C): *Long-term Changes in the Visual Character or Quality of the Bass Avenue Residential Area.* Potential visual impacts for the public viewpoint at the Bass Avenue residential area are described below based on sensitivity, Project exposure and visual modification class.

- *Sensitivity: Low.*
- *Project Exposure: Low.*
- *Existing Visual Condition: VMCI, Features Appear Congruent with the Prevailing Landscape Character and are Coherently Arrayed.*

Under Alternative C, construction of grade control structures in the river channel would occur near Bass Avenue residential area; however, the structures would only be exposed at low flows, and would be screened from view from the Bass Avenue residential area by existing vegetation along the left bank of the river. Compared to the No-Action Alternative, these views from the Bass Avenue residential area would be unchanged.

When comparing Alternative C to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraphs (i.e., the comparison of Alternative C to No-Action). There would be **no impact** on visual resources at the Bass Avenue residential area.

Impact VIS-6 (Alternative C): *Substantial Changes in Light or Glare.* Refer to Impact VIS-6 (Alternative A). Potential impacts of Alternative C would be the same as potential impacts of Alternative A. Impacts on visual resources from changes in light and glare are considered **potentially significant**.

Mitigation Measure VIS-6 (Alternative C): *Require Conformance to Lighting Standards.* Refer to Mitigation Measure VIS-6 (Alternative A). The same mitigation measures would be used under Alternative C as under Alternative A. The impact after mitigation would be **less than significant**.

Alternative D (Fresno Slough Dam with Wide Floodplain and North Canal)

Alternative D would include construction of Project features including Fresno Slough Dam, a levee system with a wide floodplain encompassing the river channel, and the North Canal. Other key features include construction of the Mendota Dam fish passage facility, the Fresno Slough fish barrier, the North Canal bifurcation structure with fish passage facility and fish screen, removal of the Chowchilla Bifurcation Structure, removal of San Mateo Avenue crossing, and Main Canal and Helm Ditch relocations. Construction activity is expected to occur intermittently over an approximate 158-month timeframe.

Impact VIS-1 (Alternative D): *Construction Related Effects on the Visual Quality of the Project Site and Its Surroundings.* Compared to the No-Action Alternative, implementation of Alternative D has the potential to result in short and long-term impacts on visual resources near construction activities from public view points. Under Alternative D, construction related effects on visual impacts would generally be the same as those described in Impact VIS-1 (Alternative C) with several exceptions. Unlike

Alternative C, this alternative includes a North Canal structure and a wider floodplain, which would result in potentially more construction related activities and degradation of visual resources. Further, Project construction would take place over a longer time frame, 158 months; therefore construction would impact visual resources at the Project area for a longer duration.

When comparing Alternative D to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraph (i.e., the comparison of Alternative D to No-Action). Construction activities would impact the color, line, form and mass of visual resources in sensitive viewsheds. Although visual resources would not be permanently impacted during construction, due to their sensitivity, high exposure to the Project and the multi-year time frame of construction, impacts on visual resources are considered **potentially significant**.

Mitigation Measure VIS-1 (Alternative D): *Minimize Visual Disruption from Construction Activities*. Refer to Mitigation Measure VIS-1 (Alternative A). The same mitigation measures would be used under Alternative D as under Alternative A. The impact after mitigation would be **less than significant**.

Impact VIS-2 (Alternative D): *Long-term Changes in the Visual Character or Quality of the San Mateo Avenue Crossing*. Compared with the No-Action Alternative, Alternative D would remove existing facilities that would change the visual character and quality of the Project area at the San Mateo Avenue crossing. Alternative D impacts are similar in scope and scale with impacts of Alternative B, discussed above. The removal of the crossing would restore a continuous river channel in this vicinity and improve the overall natural character.

When comparing Alternative D to existing conditions, impacts to visual resources would be similar to those discussed in the preceding paragraph (i.e., the comparison of Alternative D to No-Action). Based on the existing conditions and the proposed improvements, the effects on visual resources are considered **beneficial**.

Impact VIS-3 (Alternative D): *Long-term Changes in the Visual Character or Quality of the Mendota Pool Park Area*. Refer to Impact VIS-3 (Alternative C). Potential impacts of Alternative D would be the same as potential impacts of Alternative C. The impacts on visual resources are **less than significant** in the Mendota Pool Park area.

Impact VIS-4 (Alternative D): *Long-term Changes in the Visual Character or Quality of the Mendota Dam Area*. Refer to Impact VIS-4 (Alternative C). Potential impacts of Alternative D would be the same as potential impacts of Alternative C. Impacts on visual resources are **less than significant** in the Mendota Dam area.

Impact VIS-5 (Alternative D): *Long-term Changes in the Visual Character or Quality of the Bass Avenue Residential Area*. Refer to Impact VIS-5 (Alternative C). Potential impacts of Alternative D would be the same as potential impacts of Alternative C. There would be **no impact** on visual resources at the Bass Avenue residential area.

Impact VIS-6 (Alternative D): *Substantial Changes in Light or Glare.* Refer to Impact VIS-6 (Alternative A). Potential impacts of Alternative D would be the same as potential impacts of Alternative A. Impacts on visual resources from changes in light and glare are considered **potentially significant**.

Mitigation Measure VIS-6 (Alternative D): *Require Conformance to Lighting Standards.* Refer to Mitigation Measure VIS-6 (Alternative A). The same mitigation measures would be used under Alternative D as under Alternative A. The impact after mitigation would be **less than significant**.

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25.0 Cumulative Impacts

This chapter provides an analysis of cumulative effects of the Project alternatives taken together with other past, present, and reasonably foreseeable probable future projects (or actions), as required by National Environmental Policy Act (NEPA) implementing regulations (40 Code of Federal Regulations [CFR] Section 1508.7) and California Environmental Quality Act (CEQA) Guidelines (Cal. Code Regs., tit. 14, § 15130). This analysis follows applicable guidance provided by the Council on Environmental Quality (CEQ) in *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ 1997) and *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis* (CEQ 2005) and is consistent with the cumulative impact analysis in the Program Environmental Impact Statement/Report (PEIS/R) (San Joaquin River Restoration Program [SJRRP] 2011, pages 26-1 to 26-33). Direct and indirect impacts of implementing the Project are presented in greater detail in the resource-specific chapters, including Chapter 4.0, “Air Quality,” through Chapter 24.0, “Visual Resources.”

25.1 Definitions of Cumulative Effects

The CEQ regulations that implement NEPA provisions define cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR Section 1508.7). Individual effects from different activities may add up or interact to cause additional effects not apparent when considering the individual effects one at a time. Additional effects contributed by actions unrelated to the proposed action must be included in the analysis of cumulative effects. These effects can be either adverse or beneficial.

Cumulative impacts are defined in State CEQA Guidelines section 15355 as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” A cumulative impact occurs from “the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time” (Cal. Code Regs., tit. 14, § 15355, subd. (b)).

State CEQA Guidelines section 15130 requires that an Environmental Impact Report (EIR) determine whether the project’s incremental effect is “cumulatively considerable.” The definition of cumulatively considerable is provided in California Code of Regulations, Title 14, section 15065, subdivision (a)(3):

“Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

Consistent with State CEQA Guidelines section 15130, subdivision (a), the discussion of cumulative impacts in this chapter focuses on significant and potentially significant cumulative impacts. The State CEQA Guidelines (Cal. Code Regs., tit. 14, § 15130, subd. (b)) state the following:

The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

25.2 Methods and Assumptions

Although NEPA guidelines do not provide specific guidance on how to conduct a cumulative impact analysis, associated actions (past, present, or future) that, when viewed with the proposed or alternative actions, may have significant cumulative impacts were identified. Cumulative impacts should not be speculative, but should be based on known long-range plans, regulations, or operating agreements. Cumulative impacts consider Project-level actions together with other past, present, and reasonably foreseeable probable future actions.

The State CEQA Guidelines identify two basic methods for establishing the cumulative environment in which a project is to be considered: the use of a list of past, present, and probable future projects (the “list approach”) or the use of adopted projections from a general plan, other regional planning document, or certified EIR for such a planning document (the “plan approach”). For this cumulative effects analysis, the list approach and the plan approach have been combined in qualitative assessments of cumulative effects to generate the most comprehensive future projections possible, consistent with the SJRRP PEIS/R (SJRRP 2011, page 26-2).

Effects of past, present, and reasonably foreseeable probable future actions were assessed qualitatively for all resource areas. Existing information on current and historical conditions was used to evaluate the combined effects of past actions on each resource area. For present and reasonably foreseeable probable future actions, a list of related actions was compiled. The combined effects of these past, present, and reasonably foreseeable probable future actions, and of the actions that were evaluated quantitatively, were then evaluated together with those of the Project alternatives. The combined effects

of past actions and the list of related present and reasonably foreseeable probable future projects are described below.

For purposes of this Environmental Impact Statement/Report (EIS/R), the Project would have a significant cumulative effect if:

1. The cumulative effect of related projects (past, current, and probable future projects) without the project are not significant and the project's incremental impact is substantial enough, when added to the cumulative effects, to result in a significant impact.
2. The cumulative effects of related projects (past, current, and probable future projects) without the project are already significant and the project contributes considerably to the effect. The standards used herein to determine considerability are either that the impact must be substantial or must exceed an established threshold of significance.

25.2.1 Past and Present Actions

A large number of past and present actions have occurred in the Restoration Area. The effects of these past and present actions have strongly influenced existing conditions, and some past actions created "legacies" that are still affecting resources. The following are the most important of these past and present actions:

- Population growth and associated development of socioeconomic resources and infrastructure.
- Water development actions.
- Conversion of natural vegetation to agricultural and developed land uses.
- Introduction of nonnative plant and animal species.
- Resource extraction (e.g., mining and timber harvest).

25.2.2 Reasonably Foreseeable Probable Future Actions

Reasonably foreseeable probable future actions are actions that are currently under construction, approved for construction, or in final stages of formal planning at the time of preparation of this EIS/R.

The reasonably foreseeable probable future actions considered in this cumulative effects analysis are actions located within the Restoration Area that have been identified as potentially having an effect on resources that also may be affected by the Project. These actions were identified by the list of plans and projects included in the Draft PEIS/R for each resource (SJRRP 2011, Table 26-1), included here in Table 25-1, and by compiling and then considering a preliminary list of additional actions within 5 miles of Reach 2B and Mendota Pool Bypass through reviewing available information regarding planned projects in the vicinity of the Project area.

**Table 25-1.
Reasonably Foreseeable Future Actions Included in the Qualitative Analysis of Cumulative Resource Area Effects in the PEIS/R**

Project	Surface Water Supplies and Facilities Operations	Surface Water Quality	Flood Management	Groundwater	Fisheries	Vegetation and Wildlife	Geology and Soils	Paleontological Resources	Cultural Resources	Indian Trust Assets	Land Use Planning and Agricultural Resources	Recreation	Power and Energy	Visual Resources	Utilities and Service Systems	Public Health and Hazardous Materials	Transportation and Infrastructure	Air Quality	Climate Change	Noise	Socioeconomics
Conveyance Programs																					
Bay-Delta Conservation Plan and Alternative Delta Conveyance Facilities	√	√			√																√
Delta-Mendota Canal/California Aqueduct Intertie		√															√				√
Delta-Mendota Canal Project Recirculation		√															√				√
Lower San Joaquin Flood Improvement Project			√		√												√				
North Delta Flood Control and Ecosystem Restoration Project					√																
South Delta Improvements Program	√	√			√																
Franks Tract Project		√			√								√								
Two Gates Fish Protection Demonstration Project	√	√			√	√	√		√		√	√		√		√	√	√		√	√
Drinking Water Quality Programs																					
Bay Area Water Quality and Supply Reliability Program																					√
North Bay Aqueduct Alternative Intake Project					√																
San Luis Reservoir Low Point Improvement Project		√																			
South Bay Aqueduct Improvement and Enlargement Project																	√				√
In-Delta Storage Program (Delta Wetlands Project)		√			√																

**Table 25-1.
Reasonably Foreseeable Future Actions Included in the Qualitative Analysis of Cumulative Resource Area Effects in the
PEIS/R**

Project	Surface Water Supplies and Facilities Operations	Surface Water Quality	Flood Management	Groundwater	Fisheries	Vegetation and Wildlife	Geology and Soils	Paleontological Resources	Cultural Resources	Indian Trust Assets	Land Use Planning and Agricultural Resources	Recreation	Power and Energy	Visual Resources	Utilities and Service Systems	Public Health and Hazardous Materials	Transportation and Infrastructure	Air Quality	Climate Change	Noise	Socioeconomics
Los Vaqueros Reservoir Expansion Project		√											√								
North-of-the-Delta Offstream Storage Investigation (Sites Reservoir)	√				√								√								
Shasta Lake Water Resources Investigation (Shasta Reservoir Enlargement)	√				√								√								
Upper San Joaquin River Basin Storage Investigation	√	√		√	√								√	√							
Other Water Resources Projects																					
California Water Plan	√	√		√															√		
Conditional Waiver of Waste Discharge Requirements for Irrigated Lands		√									√										
Conveyance of Refuge Water Supply, South San Joaquin Valley Study Area, Mendota Wildlife Area						√								√		√					
FloodSAFE California			√																		
Folsom Dam Safety and Flood Damage Reduction Project			√																		
Long-Term CVP and SWP Operations	√	√			√																
Red Bluff Diversion Dam Pumping Plant					√																
Sacramento River Water Reliability Study					√									√							
San Joaquin River Salinity Management Plan		√				√															
San Joaquin River Water Quality Improvement Project		√			√	√									√		√				

**Table 25-1.
Reasonably Foreseeable Future Actions Included in the Qualitative Analysis of Cumulative Resource Area Effects in the PEIS/R**

Project	Surface Water Supplies and Facilities Operations	Surface Water Quality	Flood Management	Groundwater	Fisheries	Vegetation and Wildlife	Geology and Soils	Paleontological Resources	Cultural Resources	Indian Trust Assets	Land Use Planning and Agricultural Resources	Recreation	Power and Energy	Visual Resources	Utilities and Service Systems	Public Health and Hazardous Materials	Transportation and Infrastructure	Air Quality	Climate Change	Noise	Socioeconomics
South Delta Flood Bypass		√	√												√						
Tracy Fish Collection Facility and Tracy Fish Facility Improvement Program					√										√						
Resource Management Plans and Programs																					
Central Valley Joint Venture						√															
Central Valley Project Improvement Act		√			√									√							
Ecosystem Restoration Program					√	√								√		√					
Comprehensive Conservation Management Plans for National Wildlife Refuges						√					√			√		√					
Habitat Management Preservation, and Restoration Plan for Suisun Marsh						√								√		√					
Jensen River Ranch Habitat Enhancement and Public Access Project		√				√								√		√					
Lost Lake Park Master Plan						√						√			√		√				
Millerton Lake Resource Management Plan/General Plan						√								√							
Peoria Wildlife Management Area						√								√		√					
Riparian Habitat Joint Venture						√								√							
San Joaquin River Parkway Plan											√	√		√			√				
Vernalis Adaptive Management Program	√	√			√																
New Friant River Outlet Powerhouse													√		√						

**Table 25-1.
Reasonably Foreseeable Future Actions Included in the Qualitative Analysis of Cumulative Resource Area Effects in the PEIS/R**

Project	Surface Water Supplies and Facilities Operations	Surface Water Quality	Flood Management	Groundwater	Fisheries	Vegetation and Wildlife	Geology and Soils	Paleontological Resources	Cultural Resources	Indian Trust Assets	Land Use Planning and Agricultural Resources	Recreation	Power and Energy	Visual Resources	Utilities and Service Systems	Public Health and Hazardous Materials	Transportation and Infrastructure	Air Quality	Climate Change	Noise	Socioeconomics
Development Projects																					
Fresno County General Plan		√				√	√				√			√	√	√	√	√		√	
Madera County General Plan Policy Document		√				√	√				√			√	√	√	√	√		√	
Merced County General Plan		√				√	√				√			√	√	√	√	√		√	
City of Fresno General Plan		√				√	√				√			√	√	√	√	√		√	
Brighton Crest		√					√				√			√		√	√	√			
Gunner Ranch West Specific Plan		√					√				√			√		√	√	√			
Ventana Annexation		√					√				√			√		√	√	√			
Gateway Village Specific Plan		√					√				√			√		√	√	√			

Key:
 CVP = Central Valley Project
 Delta = Sacramento-San Joaquin Delta
 SWP = State Water Project

Additional actions within 5 miles of Reach 2B were evaluated for inclusion in the cumulative effects analysis based on three criteria that all must be met to be considered to be reasonably foreseeable:

- The action has an identified sponsor actively pursuing project development, has completed or issued NEPA and/or CEQA compliance documents such as a Draft or final EIS or EIR, and appears to be “reasonably foreseeable” given other considerations such as site suitability, funding and economic viability, and regulatory limitations.
- Available information defines the action in sufficient detail to allow meaningful analysis.
- The action could affect resources potentially affected by the Project.

Based on this review, the effects of the actions listed in Table 25-1 and additional actions described below were qualitatively considered in the assessment of the cumulative effects of the Project. The list in Table 25-1 is organized into three categories of actions, all of which were considered together when determining potential cumulative effects: water resources projects, resource management plans and programs, and development projects. (See PEIS/R [SJRRP 2011, pages 26-9 to 26-33] for a description of the projects listed in Table 25-1.)

Central Valley Power Connect, Segment 24

Pacific Gas and Electric (PG&E) is considering route options for the Central Valley Power Connect project, including options that cross the San Joaquin River north of the city of San Joaquin. The Central Valley Power Connect would include construction of a new 230,000 volt electric transmission line connecting the Gates substation east of Coalinga and the Gregg substation northwest of Fresno. The transmission line would span about 70 miles through portions of Fresno, Kings and Madera counties. Route options near the city of Mendota (Segment 24) are no longer proposed at this time.

Long-Term Water Transfers, Central Valley and Bay Area, California

The Department of Interior, Bureau of Reclamation (Reclamation) and the San Luis & Delta-Mendota Water Authority have issued, in August 2014, a draft EIS/R analyzing water transfers to the Central Valley Project (CVP) contractors south of the Delta and in the San Francisco Bay area from CVP and non-CVP sources from north of the Delta using Delta pumps (both CVP and State Water Project (SWP) facilities). Water transfers would occur through various methods such as groundwater substitution, cropland idling, reservoir release, and conservation, and would include individual and multiyear transfers from 2015 through 2024.

Mendota General Plan Update

The City of Mendota has issued a final EIR that describes the potentially significant environmental impacts associated with buildout of the City's 2005-2025 General Plan Update. The General Plan Update contains a comprehensive update to the City's land use, circulation, open space and conservation, noise, and safety elements. A notice of determination (NOD) was filed in August 2009.

2030 Firebaugh General Plan

The Final EIR for the 2030 Firebaugh General Plan was adopted by Firebaugh's city council in January 2010. The 2030 Firebaugh General Plan is a comprehensive update of six elements of the Firebaugh General Plan, including land use, circulation, conservation, open space, noise and safety. The planning time frame is through the year 2030.

SR 180 Westside Expressway Route Adoption Study

The California Department of Transportation adopted a new expressway corridor for SR 180 between Interstate 5 and Valentine Avenue in west Fresno. The Final EIR was certified and a NOD was filed in March 2013. California Department of Transportation finalized the route adoption process in May 2013.

Gill Ranch Gas Storage Project

The Gill Ranch Gas Storage project would develop approximately 20 acres of surface facilities including a 10-acre central compressor station, gas injected withdrawal wells, fields gathering lines, observation wells, a 26.7-mile 30-inch-diameter gas transmission pipeline, and 9.3-mile electric power line. There are five locations where the 30-inch gas pipeline crosses water features. These locations are: Fresno Slough Overflow "Feature 16," Fresno Slough Overflow "Feature 16A," Fresno Slough "Feature 17," San Joaquin River, and Lone Willow Slough-Chowchilla Canal Bypass. A Mitigated Negative Declaration (MND) was certified in 2009. Construction began in January 2010. Post-construction restoration in areas of natural habitat disturbance, as well as facility operations compliance activity, is underway.

San Joaquin River Bank Repair Project

The City of Firebaugh is proposing to repair an approximate 300-foot-long portion of the west bank of the San Joaquin River that was damaged by flooding in 2006. The repair strategy consists of installation of a sheet pile/Reno Mattress system. A NOD was filed in February 2010.

Grassland Bypass Project

The continuation of Grassland Bypass Project 2010–2019, as described in the final EIS/R, allows the Grassland Area Farmers additional time to complete agricultural drainage collection and treatment from the 97,400-acre Grassland Drainage Area with discharges of a portion of the drainage to the San Luis Drain. This drainwater must meet increasingly stringent selenium load requirements for discharges to Mud Slough. At present, Reclamation is assisting with implementation of a pilot project for the final treatment component. Construction of the pilot plant is underway. In addition, the Grassland Area Farmers will continue to test various treatment processes for management of the final fraction of the drainage from the drainage reuse facility, which is needed to comply with the waste discharge requirements.

20-Year Extension of the 2005 Mendota Pool Exchange Agreement

The Mendota Pool 10-year Exchange Agreements that are currently in place span the years 2005 to 2014, and an extension of the agreements is necessary for Mendota Pool Group farmers to continue this exchange after 2014. The proposed extension would allow Mendota Pool Group farmers in the Mendota Pool area to continue to pump up to 26,250

acre-feet per year of groundwater of suitable quality into the Mendota Pool for exchange of up to 25,000 acre-feet per year CVP water delivered to the San Luis Canal for use by Mendota Pool Group farmers in the San Luis Canal service area of San Luis Water District and Westlands Water District when the existing agreements expire.

San Joaquin River National Blueway

The America's Outdoor Initiative was launched in 2010 and calls for multiple Federal agencies, including the Department of Interior, to implement projects that would promote conservation and recreation on public lands. One of the proposed projects under this initiative is the San Joaquin River National Blueway. The San Joaquin River National Blueway is an integrated system of "parks, wildlife refuges, and other publicly accessible places that provides the public an opportunity to explore and enjoy the San Joaquin River from its headwaters to the Delta" (San Joaquin River Partnership 2011). Recreation opportunities offered by the San Joaquin River National Blueway include boating, swimming, picnicking, walking and jogging, cycling, hiking, interpretive trails, wildlife viewing, bird watching, fishing and hunting. The San Joaquin River National Blueway plan identifies Fresno Slough (near the Mendota Wildlife Area) as an existing access site.

25.3 Significance Criteria

Two significance criteria must be met for an environmental consequence to have a significant cumulative impact: 1) the effect must make a cumulatively considerable incremental contribution to an overall cumulative impact, and 2) the overall cumulative impact (considering past, present, and reasonably foreseeable probable future projects) must be significant. These criteria are based on the State CEQA Guidelines as amended and the 1997 guidelines prepared by the CEQ, *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ 1997).

25.4 Mitigation Measures for Significant Cumulative Impacts

To reduce any cumulatively considerable incremental contributions from Project alternatives to an overall cumulative impact, feasible mitigation measures were proposed for all potentially significant and significant direct and indirect effects; these measures are presented in the individual resource sections. It was not feasible to reduce any of the overall significant cumulative impacts (in no case was a Project alternative's incremental contribution the reason for an overall significant cumulative impact). Therefore, no further feasible mitigation could be applied to reduce significant, or potentially significant, overall cumulative impacts to less-than-significant levels. In this case, the cumulative impacts are considered to be significant and unavoidable.

25.5 Cumulative Effects Analysis

The cumulative effects analysis is described below for each resource area. The analysis of cumulative impacts for all resource areas is based on effects of past, present, and

reasonably foreseeable probable future actions in the Restoration Area. The concern is whether small incremental effects from the Project when combined with the other approved future plans and projects in the Project area and vicinity would lead to a significant cumulative impact in the region.

Given the number of actions that are common to all Project alternatives and that the actions in the Settlement are relatively fixed, there would be minimal differences between Project alternatives with respect to cumulative effects. Therefore, the cumulative effects analysis applies to all Project alternatives. Several impacts were determined to have the potential to result in a cumulatively considerable incremental contribution to a significant cumulative impact.

Table 25-2 presents a summary of impacts where the impact was determined to make a cumulatively considerable incremental contribution to an overall significant cumulative impact.

**Table 25-2.
Project Impacts with the Potential to Result in Cumulatively Considerable
Incremental Contributions to Significant Cumulative Impacts**

Resource Area	Impact
Cultural Resources	Disturbance or destruction of cultural resources
Environmental Justice	Regional economic factors that are adversely affecting minority and/or low-income populations
Land Use Planning and Agriculture	Conversion of designated Farmland to nonagricultural uses
Socioeconomics and Economics	Substantial short term economic impacts associated with losses in agricultural production
Transportation and Traffic	Temporary or permanent road closure(s) that could affect emergency access or emergency response times

25.5.1 Air Quality

Cumulative effects on air quality could occur at the local, regional, and global scales. The cumulative effects at the local and regional scales are discussed in this section; cumulative effects at the global scale are discussed separately in Section 25.5.5.

In the context of air quality, applicable plans and projects for the cumulative effects analysis include several roadway improvement projects (including the SR 180 Westside Expressway Route Adoption Study), General Plan or Specific Plan updates for nearby cities (including the cities of Mendota and Firebaugh), Gill Ranch Gas Storage Project, and other various infrastructure and water improvement projects. At the local level, the city of Mendota General Plan Update also has implications for air quality near the Project area with its goals to expand residential housing, commercial buildings and industrial facilities.

The addition of industrial sources, construction equipment associated with new residential and commercial buildings, and vehicles on roadways in the Project area and vicinity would result in increases of criteria air pollutants and toxic air contaminants. These air pollutants would add to the current air quality problems, in particular for Reactive Organic Gases (ROGs), nitrogen oxides (NO_x), particulate matter with an aerodynamic resistance diameter of 10 micrometers or less (PM₁₀) and fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less (PM_{2.5}), which have caused the San Joaquin Valley Air Basin to be designated as non-attainment for Federal and State Ambient Air Quality Standards. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has several plans, regulations, and incentive programs to address the air quality problems. However, the reduction in emissions relies upon numerous agencies to assist in reducing the emissions in the air basin to an appropriate level. This includes Federal and State regulations to improve vehicle emission standards, driving habits of individuals, and pollution control of point sources by industry. Since the Project construction would mitigate on-site and off-set any remaining exhaust emissions, the Project alternatives would not contribute to an increase in regional emissions that conflicts with the budget used for regional air quality planning. Therefore, the Project would not provide a cumulatively considerable incremental contribution to the cumulative air quality impact.

The addition of industrial sources, construction projects, and vehicles on roadways can affect sensitive receptors in the Project Area. Because Project construction would result in a less than significant impact to sensitive receptors after implementation of mitigation measures, Project alternatives would not result in a cumulatively considerable incremental contribution to a significant cumulative air quality impact to sensitive receptors during Project construction.

The Project is not anticipated to have a significant amount of emissions once Project construction is complete. Therefore, implementation of Project alternatives (Project operation over the long term) would not provide a cumulatively considerable incremental contribution to a significant cumulative impact on air quality and sensitive receptors during Project operation.

The cumulative impact to odors would be less than significant since there are no major sources of odors associated with the Project.

In summary, there would **not be a cumulatively considerable contribution** to a significant cumulative air quality impact, due to the effect to sensitive receptors during Project construction.

25.5.2 Biological Resources – Fisheries

In the context of fisheries cumulative effects analysis, applicable plans and projects referenced in the PEIS/R (SJRRP 2011, pages 26-3 to 26-33) include:

- Bay-Delta Conservation Plan and Alternative Delta Conveyance Facilities.
- Lower San Joaquin Flood Improvement Project.

- North Delta Flood Control and Ecosystem Restoration Project.
- South Delta Improvements Program.
- Franks Tract Project.
- Two Gates Fish Protection Demonstration Project.
- North Bay Aqueduct Alternative Intake Project.
- In-Delta Storage Program (Delta Wetlands Project).
- North-of-the-Delta Offstream Storage Investigation (Sites Reservoir).
- Investigation (Shasta Reservoir Enlargement).
- Upper San Joaquin River Basin Storage Investigation.
- Long-Term CVP and SWP Operations.
- Red Bluff Diversion Dam Pumping Plant.
- Sacramento River Water Reliability Study.
- San Joaquin River Water Quality Improvement Project.
- Tracy Fish Collection Facility and Tracy Fish Facility Improvement Program.
- Central Valley Project Improvement Act (CVPIA).
- Ecosystem Restoration Program.
- Vernalis Adaptive Management Program (which expired in 2011).

At the local level, the Gill Ranch Gas Storage Project may also have implications for fisheries near the Project Area, but with construction complete and no incidental take permit required, only post-construction restoration of natural habitat disturbance remains.

None of the cumulative projects or plans referenced in the PEIS/R would likely adversely affect fisheries conditions in the Project area based on their location relative to the Project and their intention to improve aquatic habitat conditions. Many programs occur downstream within the Bay-Delta, while others occur elsewhere in the Central Valley (e.g., Sacramento River basin). Many activities currently underway or that are reasonably certain to occur in the future are intended to improve aquatic habitat conditions. These activities include the implementation of the CVPIA and the Ecosystem Restoration Program, which would improve and restore fish and wildlife habitat. Through these programs, the populations of aquatic resources are expected to improve in the long term. Other projects, programs, and plans that are currently underway or are reasonably certain to occur in the near future could further benefit salmonids and other native fish species. These projects, programs, and plans include resource management plans and the Vernalis Adaptive Management Program (if continued past 2011) to protect, restore, and enhance fish and wildlife in the Central Valley and the Bay-Delta ecosystems. None of the cumulative projects or plans referenced in the PEIS/R would adversely affect fisheries conditions in the Project area as all the potential effects would either be beneficial or would not impact fisheries.

As noted in Section 5.3.3, construction activity in the active channel under all the Project alternatives could result in small, incremental adverse impacts on aquatic species, including crushing, disturbance of organisms, release of sediment, and release of pollutants associated with ground disturbance or equipment operation. These effects would be minimized by the use of cofferdams installed during low flow conditions and fish removal from the construction areas prior to installation. Water from dewatered construction sites would be placed in settling basins or treated prior to release into the river or Mendota Pool. No other notable cumulative projects would contribute to this incremental effect; therefore, the effect is not cumulatively considerable.

As noted in Section 5.3.3, Alternatives A and D would allow for agricultural use on the expanded floodplains within the levees. The majority of the expanded floodplain would become inundated about every two years at flows of around 2,500 cubic feet per second (cfs) and higher. While flooding of a native floodplain may improve rearing habitat for outmigrating juvenile salmonids, agricultural activities may introduce contaminants (fertilizers, pesticides) directly to the floodplain where they could potentially become entrained in the flow and affect juvenile fish rearing in Reach 2B or in downstream reaches. No other notable cumulative projects would contribute to this effect.

Based on the information presented above, there are no projects or programs that when combined with the less-than-significant impacts anticipated with the Project (as outlined in Section 5.3.3) would result in cumulatively considerable impacts. In summary, **no cumulatively considerable contribution** to impacts to fisheries resources are expected under any of the Project alternatives incorporating floodplain agricultural activities (i.e., Alternatives A and D).

25.5.3 Biological Resources – Vegetation

Several future actions have the potential to affect special-status vegetation alliances in Reach 2B. These actions include a number of restoration programs and plans from which native vegetation resources in the area would benefit. In the context of sensitive vegetation alliances, applicable plans and projects identified in the PEIS/R and Section 25.2.2 include:

- Conveyance of Refuge Water Supply, South San Joaquin Valley Study Area, Mendota Wildlife Area.
- San Joaquin River Salinity Management Plan.
- San Joaquin River Water Quality Improvement Project.
- Comprehensive Conservation Management Plans for National Wildlife Refuges.
- Riparian Habitat Joint Venture.
- San Joaquin River Bank Repair Project.
- Fresno County General Plan.
- Madera County General Plan.

None of these plans is in conflict with the goals and intent of the Project. They include plans to ensure water deliveries to the Mendota Wildlife Area, improve water quality in

the San Joaquin River, coordinate efforts to restore habitats and manage wildlife, and develop agriculture, while protecting water quality and natural habitat. Implementation of these plans may be phased over many years, and may depend on the availability of funding or other resources. The benefits realized by these future plans may take years to be implemented.

In contrast, the adverse effects on sensitive vegetation alliances caused by the spread of non-native invasive plant species and further degradation of habitat are likely to increase over time. Other projects could facilitate the dispersal and establishment of invasive plants in several ways: through transporting invasive plants' propagules into the Project area; creating bare ground for them to establish, by altering hydrology in a manner that is advantageous to invasive plant species, and eliminating competing native vegetation.

The cumulative significant adverse impact on existing sensitive vegetation alliances are primarily caused by other past and present actions and inactions. However, some beneficial effects would occur in areas upstream of San Mateo Avenue crossing where riparian habitat would mature.

Implementing any of the Project alternatives would result in some less than significant adverse impacts, as well as in numerous beneficial effects on sensitive vegetation alliances. Most adverse effects to sensitive vegetation alliances would be local in scale and temporary, occurring during construction of Project infrastructure. The extensive conservation measures would reduce or minimize potential adverse effects. The beneficial effects of the Project alternatives would be regional and cumulative. For all Project alternatives, it is expected that restoration activities would improve sensitive vegetation alliance conditions within and along the river. Control of invasive plant species would enhance the diversity and extent of sensitive vegetation alliances throughout Reach 2B. Over time, native riparian vegetation would mature, prevent invasive exotic species to take hold by shading them out, and continue to contribute to the formation and expansion of high quality sensitive vegetation alliances in the area. As a consequence, the overall effect of the implementation of Project alternatives on sensitive vegetation alliances would be beneficial and the Project would not contribute incrementally to any significant adverse cumulative effects.

In summary, with implementation of the conservation strategy of the Project, the Project effects would be beneficial with a range from negligible to substantial benefits for sensitive vegetation alliances. There would **not be a cumulatively considerable contribution** to a cumulative impact on sensitive vegetation alliances.

25.5.4 Biological Resources – Wildlife

Past actions by humans have substantially changed wildlife populations and wildlife habitat in the Project area and vicinity, as compared to historical conditions. The most important of these past actions have been the conversion of natural vegetation to agricultural and developed land uses, water diversions, and the introduction of nonnative plant and animal species. These changes have resulted in overall significant adverse effects on ecosystems and the wildlife that depend on them.

Several reasonably foreseeable future actions also have the potential to affect wildlife populations and wildlife habitat in the Project area and vicinity. These actions include a number of restoration programs and plans from which vegetation and wildlife resources would benefit. In the context of wildlife, applicable plans and projects referenced in the PEIS/R and Section 25.2.2 include:

- Conveyance of Refuge Water Supply, South San Joaquin Valley Study Area, Mendota Wildlife Area.
- San Joaquin River Salinity Management Plan.
- San Joaquin River Water Quality Improvement Project.
- Comprehensive Conservation Management Plans for National Wildlife Refuges.
- Riparian Habitat Joint Venture.
- Fresno County General Plan.
- Madera County General Plan.

None of these plans is in conflict with the goals and intent of the Project. They include plans to ensure water deliveries to the Mendota Wildlife Area, improve water quality in the San Joaquin River, coordinate efforts to restore habitats and manage wildlife, and develop agriculture while protecting water quality and habitats. Implementation of these plans may be phased over many years and dependent on the availability of funding or other resources. The benefits realized by these future plans may take years to come about. The list of additional projects contained in Section 25.2.2 have been considered as well and, at the local level, general plan updates for nearby cities (including the cities of Mendota and Firebaugh) could also benefit wildlife in the Project Area.

In contrast, the adverse effects on vegetation and wildlife caused by the spread of invasive species and further degradation of habitat are likely to increase over time. Other projects could facilitate the dispersal and establishment of invasive plants in several ways: through transporting invasive plants' propagules into the Project area; creating bare ground for them to establish; by altering hydrology in a manner that is advantageous to invasive plant species; and eliminating competing native vegetation. These other past, present, and future projects would have a cumulative significant adverse effects on riparian vegetation and other sensitive habitats, wetlands, and special-status plant and wildlife species. However, some beneficial effects would occur in areas upstream of San Mateo Avenue crossing where riparian habitat would mature.

Implementing any of the Project alternatives would result in both adverse and beneficial effects on wildlife. Most adverse effects to wildlife would be local in scale and temporary, occurring during construction of Project infrastructure. Conservation measures would reduce or minimize potential adverse effects. The beneficial effects of the Project alternatives would be regional and cumulative. For all Project alternatives, it is expected that restoration activities would improve habitat conditions within and along the river. Control of invasive plant species would also enhance these habitats throughout Reach 2B. Over time, riparian vegetation would mature and continue to provide habitat. As a consequence, the overall effect of the implementation of Project alternatives on

wildlife would be beneficial, and would not make a considerable contribution to cumulative effects on wildlife. Thus, the Project would not contribute to a significant adverse cumulative effect.

In summary, with implementation of the restoration features/elements and Conservation Strategy of the Reach 2B restoration plan, the Project effects would be beneficial with a range from negligible to substantial benefits for wildlife species. There would **not be a cumulatively considerable contribution** to a cumulative impact on special-status animal species.

25.5.5 Climate Change and Greenhouse Gas Emissions

The emissions from one project, even a very large project, are miniscule in comparison to worldwide or even statewide greenhouse gas (GHG) emissions. However, the California State Lands Commission (CSLC) has concluded that the emissions from each project have an incremental contribution to the buildup of GHGs in the atmosphere and may have a significant environmental impact when analyzed on a cumulative basis.

Cumulative impacts are those resulting from the incremental impact of the project when added to other past, present, and reasonably foreseeable probable future projects (Cal. Code Regs., tit. 14, § 15355, subd. (b)). Therefore, CSLC practice on a case-by-case basis is to analyze the significance of GHG emissions as part of the cumulative impacts analysis (Cal. Code Regs., tit. 14, § 15130, subd. (f)).

Cumulative impacts associated with climate change and GHG emissions are discussed in Section 8.3.3. The Project could result in an incremental impact from GHG emissions associated with construction of the Project; however, mitigation measures would be implemented to reduce these impacts to a less than significant level. Therefore, there **would not be a cumulatively considerable contribution** to a significant cumulative impact on climate change.

25.5.6 Cultural Resources

Applicable plans and projects referenced in the PEIS/R and additional projects contained in Section 25.2.2 have been considered in the cumulative effects analysis and, at the local level, the San Joaquin River Bank Repair Project would have ground disturbing activities that have the potential to encounter cultural resources in riverbank and floodplain areas.

Under the cumulative condition, cultural resources would continue to be affected in the Central Valley rural areas due to growth, changes in land use, and ground disturbance. Adverse effects on eligible resources could result in the neglect, abandonment, or removal of historic properties. A given project is not likely to be able to avoid impacts to known or unknown cultural resources, especially in the case of a project that requires major ground disturbance. Development would likely result in further unearthing of sensitive archaeological resources, disturbance of traditional cultural properties, disturbance and possible damage to paleontological resources, and removal of—or changes to—the historic character and settings of historic resources. Potential cumulative impacts to archaeological resources were assumed to be significant for the purpose of this EIS/R.

Cultural resource archival and field survey investigations conducted within the Project area identified two previously recorded archaeological resource areas (considered historical resources under CEQA) that may be adversely affected by the Project. In addition, the Project area contains 13 buildings or groups of buildings and structures that required formal evaluations. All of these resources are located within Fresno or Madera counties and were constructed in or before 1965. Mendota Dam has been determined eligible for the National Register of Historic Places (National Register) and is listed in the California Register of Historic Resources (California Register). Additionally, Reclamation has found the Delta-Mendota Canal (DMC) individually eligible for the National Register (and California Register).

It is likely that known or unknown archaeological resources could be disturbed and cultural resources damaged or destroyed during construction activities for any of the Action Alternatives. Loss of a unique archaeological resource could occur where excavations encounter archaeological deposits that cannot be removed or recovered (e.g., under levees), or where recovery would not be sufficient to prevent the loss of the cultural material's significance. Although mitigation would be implemented to reduce effects on potentially significant cultural resources, adverse effects, particularly on archaeological resources, may still occur. Losses of archaeological resources would add to a historical trend in the loss of these resources as artifacts of cultural significance and as objects of research importance; therefore, there is an overall significant cumulative impact on cultural resources along the San Joaquin River. Even with implementation of mitigation measures, the Project alternatives have the **potential to make a cumulatively considerable incremental contribution** to a significant cumulative impact on cultural resources along the San Joaquin River.

25.5.7 Environmental Justice

There are no applicable plans and projects referenced in the PEIS/R that relate to cumulative effects on environmental justice. For this analysis, economic factors that could affect minority and/or low-income populations in the region disproportionately are considered in the context of environmental justice.

Generally, the cumulative effects of the Project on environmental justice considerations in the Project area and vicinity are difficult to evaluate. The agriculture sector comprised nearly 14 percent of total employment in the two-county region in 2012 (see Section 21.1.3). Accordingly, it is clear that local farm workers play a large role in the economic vitality of the region. However, the regional economy has been adversely affected by the statewide economic recession as evidenced by relatively high unemployment rates. Both the statewide impacts on the agricultural industry and overall poor performance of the regional economy have been especially difficult for minority and low-income populations living in the region.

All of the Project alternatives would generate both incremental economic benefits (attributed to construction and operations spending) and adverse effects (attributed to decreases in agricultural production) on the regional economy that, when combined with similar effects from restoration of the other reaches of the San Joaquin River and other projects and economic conditions, could affect minority and/or low-income populations.

However, the extent to which minority and/or low-income populations would realize these effects is unknown. Therefore, the cumulative effect of the Project on environmental justice considerations is difficult to ascertain, but it is conservatively assumed that implementation of the Project under all of the Action Alternatives (i.e., Alternatives A, B, C, and D) may cumulatively contribute to regional factors that are adversely affecting minority and/or low-income populations in the region and **potentially result in a cumulatively considerable incremental contribution** to disproportionately high and adverse effects on minority and low-income populations.

25.5.8 Geology and Soils

Impacts to geology and soils in the Project area could occur as a result of increased flows under the Program's reoperation of the Friant Dam for Restoration Flows. Impacts to geology and soils from implementing the Settlement in areas other than Reach 2B could include localized soil erosion, sedimentation, and inadvertent soil loss; loss of availability of a valuable mineral; and increased channel erosion, sediment transport, and meander migration; however, construction best management practices (BMPs) would be implemented to minimize the significance of these impacts.

Several potential changes could occur from other reasonably foreseeable probable future projects. In particular, U.S. Army Corps of Engineers (Corps) levee vegetation policy has the potential to affect geology and soils in the Project area. The April 2014 revised policy (Corps 2014) calls for the removal of vegetation from levees as necessary to maintain levee integrity and firefighting access. However, how the policy would be implemented in the Project area is not yet known. Implementation of this policy may result in removal of vegetation from the San Joaquin River channel that could result in localized erosion.

Implementing the Project alternatives would result in potential localized erosion and sedimentation in the Project area, particularly during channel construction, levee construction, and other ground-disturbing activities. Standard construction BMPs would be implemented in the Project area such as covering exposed slopes, installing silt fences, and placing straddles, among other accepted erosion control measures. Implementing the Project alternatives with these erosion control measures would result in some less-than-significant localized erosion and sedimentation transport. The Project alternatives, however, **would not result a cumulatively considerable incremental contribution** to the overall cumulative impact on San Joaquin River erosion and sedimentation

25.5.9 Hydrology – Flood Management

Projects that were identified in the PEIS/R and Section 25.2.2 that could have a cumulative effect on flood management include the Lower San Joaquin Flood Improvement Project, FloodSafe California, the South Delta Flood Bypass (see Table 25-1) and the San Joaquin River Bank Repair Project. The Lower San Joaquin Flood Improvement Project and the South Delta Flood Bypass projects would not be implemented near the Project area. FloodSafe California does not have any specific plans for Reach2B. San Joaquin River Bank Repair Project would be implemented near the Project area, but the effects of this project would be beneficial. Therefore, there are no past, present or foreseeable future projects that when combined with the effects from this Project would have adverse cumulative impacts to hydrology and flood management.

Therefore, implementing the Project would **not make a cumulatively considerable incremental contribution** to a significant cumulative effect on flood management; the incremental contribution would be minor and the overall cumulative effect on flood management would continue to be beneficial.

25.5.10 Hydrology – Groundwater

Based on past, present, and reasonably foreseeable probable future actions, groundwater levels in the San Joaquin Valley are generally substantially reduced from historical levels and an overall significant cumulative impact exists on groundwater basins. Land subsidence has occurred throughout the San Joaquin Valley primarily due to aquifer-system compaction when groundwater levels decline, including areas near Mendota Pool. Consequently, past, present, and reasonably foreseeable probable future actions have caused an overall significant cumulative effect on the groundwater basin. However, the Project would not require increasing groundwater extraction but instead convert irrigated agricultural lands to floodplain areas. Therefore, Project alternatives would not result in a cumulatively considerable incremental contribution to groundwater extraction.

Groundwater extraction in the San Joaquin Valley has also resulted in changes to groundwater quality. Irrigation of crops along the west side of the San Joaquin Valley has resulted in localized areas of increased salts and trace metals in the shallow groundwater table. The San Joaquin River Water Quality Improvement Project would be expected to have a beneficial effect in the San Joaquin Valley by expanding the In-Valley Treatment/Drainage Reuse Facility. In contrast to other areas in the San Joaquin Valley, the Project area has relatively high quality groundwater with low salt concentrations (see Section 13.1.4). Within Reach 2B, there is not an overall significant cumulative impact on groundwater quality because of past, present, and reasonably foreseeable probable future actions.

Seepage and waterlogging of crops along the San Joaquin River have historically been an issue. High periodic streamflows and local flooding combined with shallow groundwater near the San Joaquin River have resulted in seepage-induced waterlogging damage to low lying farmland near the river. Seepage is highly variable and depends on annual hydrologic conditions. Within portions of Reach 2B, depth to groundwater is relatively shallow and has ranged from approximately 8 feet to 20 feet below ground surface (see Section 13.1.4). In agricultural areas near the river, there is an overall significant cumulative impact on groundwater because of past, present, and reasonably foreseeable probable future actions (without consideration of any incremental change due to the Project).

In the context of groundwater, applicable plans and projects referenced in the PEIS/R and Section 25.2.2 include the Upper San Joaquin River Basin Storage Investigation, the California Water Plan, the 20-Year Extension of the 2005 Mendota Pool Exchange Agreement, and Common Restoration actions, which are physical actions to achieve the Restoration Goal that would be implemented in other reaches. Additional projects considered in Section 25.2.2 include general plan updates, transportation projects, a pipeline project and a levee repair project, which overall may result in small effects to

groundwater levels and groundwater quality that are not cumulatively considerable when taken together.

Under the Project alternatives, groundwater quality along the San Joaquin River in the Project area would not be substantially degraded. Therefore, Project alternatives would not result in a cumulatively considerable incremental contribution that would cause a significant cumulative impact on groundwater quality. Shallow groundwater levels along the San Joaquin River in the Project area would be monitored and flows would be managed to reduce potential waterlogging of crop root zones with implementation of the appropriate immediate mitigation measures. Therefore, Project alternatives would not cause a cumulatively considerable incremental contribution to a significant cumulative impact on shallow groundwater in the Project area. There are no other projects or programs that when combined with the less-than-significant groundwater impacts anticipated with the Project would result in cumulative impacts. In summary, the Project would **not result in a cumulatively considerable incremental contribution** that would cause cumulatively significant impacts to groundwater.

25.5.11 Hydrology – Surface Water Resources and Water Quality

Surface water quality in the Project vicinity has been affected by past and present projects through changes in land use and hydrologic conditions. Much effort has been expended to control discharges to the river and the levels and types of herbicides, fungicides, and pesticides that can be used in the environment. Over time, regulatory requirements for water quality in the river have become more stringent, and the number of locations along the river at which specific water quality objectives are identified and monitored has increased.

Impacts to surface water resources and water quality from implementing the Project would include localized soil erosion, channel erosion and sediment transport, and impacts to surface water quality from ground-disturbing construction activities. Construction BMPs would be implemented to minimize the significance of these impacts.

Future foreseeable projects included in the cumulative impacts analyses, including the Grassland Bypass Project and various total maximum daily load programs, would have a beneficial effect on surface water quality in the Project vicinity by managing the quality of runoff in the San Joaquin River watershed. In addition, other projects, such as the Upper San Joaquin River Basin Storage Investigation, could provide additional benefits. Construction activities within the watershed, however, could cause soil erosion and sedimentation of local drainages connecting to the San Joaquin River and the inadvertent introduction of construction-related substances into the San Joaquin River through site runoff or on-site spills. The effects of past, present, and reasonably foreseeable probable future actions have caused an overall significant cumulative impact on surface water quality in the San Joaquin River.

However, none of the projects or plans referenced in the cumulative analysis contained in the PEIS/R, or described in Section 25.2.2, would likely adversely affect surface water resources in the Project area based on their location relative to the Project and their intention to improve water quality conditions. Many programs occur downstream within

the Bay-Delta, while others occur elsewhere in the Central Valley. Therefore, these projects or programs, when combined with the less-than-significant surface water resources impacts anticipated with the Project (as outlined in Section 14.3.3), would not result in cumulatively considerable impacts. In summary, the Project would **not result in a cumulatively considerable incremental contribution** that would cause cumulatively significant impacts to surface water resources under any of the Project alternatives (i.e., Alternatives A, B, C, and D).

25.5.12 Hydrology – Wetlands and Aquatic Resources

Several future actions have the potential to affect jurisdictional wetlands in Reach 2B. These actions include a number of restoration programs and plans from which jurisdictional wetland resources would benefit. In the context of jurisdictional wetlands, applicable plans and projects referenced in the PEIS/R and Section 25.2.2 include:

- Conveyance of Refuge Water Supply, South San Joaquin Valley Study Area, Mendota Wildlife Area.
- San Joaquin River Salinity Management Plan.
- San Joaquin River Water Quality Improvement Project.
- Comprehensive Conservation Management Plans for National Wildlife Refuges.
- Riparian Habitat Joint Venture.
- Fresno County General Plan.
- Madera County General Plan.

None of these plans is in conflict with the goals and intent of the Project. They include plans to ensure water deliveries to the Mendota Wildlife Area, improve water quality in the San Joaquin River, coordinate efforts to restore habitats and manage wildlife, and develop agriculture, while protecting water quality and habitats. Implementation of these plans (and the plans for restoration of the other reaches on the San Joaquin River under the No-Action Alternative) may be phased over many years, and may depend on the availability of funding or other resources. The benefits realized by these future plans may take years to be implemented.

Adverse effects on jurisdictional wetlands caused by the spread of non-native invasive plant species and further degradation of habitat have resulted from past actions and inactions and are likely to increase over time without invasive species management. Other projects could facilitate the dispersal and establishment of invasive plants in several ways: through transporting invasive plants' propagules into the Project area; creating bare ground for them to establish; altering hydrology in a manner that is advantageous to invasive plant species; and eliminating competing native vegetation. However, Program-level actions include management of invasive plant species in all Restoration reaches.

Implementing any of the Project alternatives would result in some less-than-significant adverse impacts, as well as in numerous beneficial effects on jurisdictional wetlands. Most adverse effects to jurisdictional wetlands would be local in scale and temporary,

occurring during construction of Project infrastructure. The extensive conservation measures would reduce or minimize potential adverse effects. The beneficial effects of the Project alternatives would be regional and cumulative. For all Project alternatives, it is expected that restoration activities would improve jurisdictional wetlands conditions within and along the river. Control of invasive plant species would enhance the functions and values of jurisdictional wetlands throughout Reach 2B. Over time, native riparian vegetation would mature, prevent invasive exotic species to take hold by shading them out, and continue to contribute to the formation and expansion of high quality jurisdictional wetlands in the area. As a consequence, the overall effect of the implementation of Project alternatives on jurisdictional wetlands would be beneficial, and the Project would not contribute to significant adverse cumulative effects.

In summary, with implementation of the conservation strategy, the Project effects would be beneficial with a range from negligible to substantial benefits for jurisdictional wetlands. There **would not be a cumulatively considerable incremental contribution** to significant adverse effects on jurisdictional wetlands.

25.5.13 Land-Use Planning and Agricultural Resources

In the context of agriculture and land use, applicable plans and projects for the cumulative effects analysis referenced in the PEIS/R and Section 25.2.2 include, but are not limited to:

- Two Gates Fish Protection Demonstration Project.
- Conditional Waiver of Waste Discharge Requirements for Irrigated Lands.
- Comprehensive Conservation Management Plans for National Wildlife Refuges.
- San Joaquin River Parkway Plan.
- Fresno County General Plan.
- Madera County General Plan Policy Document.
- City of Mendota General Plan Update.
- 2030 Firebaugh General Plan.
- Grassland Bypass Project.

Many of the cumulative projects or plans referenced in the PEIS/R would not affect agricultural resources and land use in the Project area based on their lack of proximity relative to the Project. Plans and projects relevant to agricultural and land use in the vicinity of the Project area include the city of Mendota General Plan Update and the 2030 Firebaugh General Plan.

For this analysis, cumulative effects with respect to agriculture and land use are considered in the context of factors that affect agricultural production in the region, including conversion of agricultural land to non-agricultural uses. Agricultural land conversion has been ongoing throughout the region and State to accommodate growth and population expansion into rural areas. The California Department of Conservation (2013) estimates that approximately 8,500 acres of agricultural land was converted to

non-agricultural uses in Fresno County between 2008 and 2010; in Madera County, the total was almost 1,100 acres. Agricultural land conversion is driven by development projects and planning processes in rural areas where agricultural production is actively occurring, including county-wide general plans that are intended to guide future growth in both urban and agricultural areas. Other regional issues such as drought, environmental restrictions, and economic recession have also affected agriculture in the region. Recent droughts have reduced the amount of water available for redistribution throughout the state. Many farm operations in the Central Valley faced reduced or eliminated water supplies, which required agricultural land fallowing in many parts of California.

As described in this section, implementation of any of the Project alternatives (i.e., Alternatives A, B, C, or D) would result in significant and unavoidable impacts to agricultural resources in the Project area related to conversion of agricultural land to non-agricultural uses. Based on the information presented above, the Project would have an adverse cumulative effect on agricultural resources when considered in the context of downward trends in agricultural land (i.e., conversion to other uses) and agricultural production in the region. In summary, there **would be cumulatively considerable incremental contribution** to a significant cumulative impact to agricultural resources under all of the Action Alternatives.

25.5.14 Noise and Vibration

Noise is a localized occurrence and attenuates rapidly with distance. Therefore, only future projects in the immediate vicinity of the Project area would have the potential to add to noise generated by Project activities and result in cumulative noise impacts.

Future construction activities in the Project vicinity that are conducted concurrent with the construction of the Project would temporarily increase noise levels in surrounding areas. Although many of the projects or plans described in the PEIS/R and Section 25.2.2 occur within the Bay-Delta or elsewhere in the Central Valley, proposed development related to the buildout goals of the city of Mendota General Plan may generate types of noise similar to those of the Project and development in the Project area and local vicinity would have the potential to affect nearby sensitive receptors.

Simultaneous construction of these projects would increase noise levels, from onsite construction and transport of materials. The worst case assumption indicates that simultaneous construction could potentially increase source noise emissions by 3 A-weighted decibels (dBA). If construction projects are implemented concurrently, the combined cumulative effects could be above significance thresholds. If this were the case, each project would need to mitigate individual noise effects which would decrease overall cumulative effects. Construction involved with both the Project and any nearby concurrent projects are temporary in nature and Project-related construction activities are anticipated to be conducted during the daytime and during construction noise exempt hours.

Construction noise and stationary-source noise can be controlled on-site at the point of origin; however, traffic noise may extend beyond a project site along existing roadways, resulting in significant traffic noise impacts on sensitive uses along those roadways. A

noise increase of up to 16 dBA Community Noise Equivalent Level (CNEL) from construction-related truck traffic is anticipated with the Project, but these activities would occur during construction exempt times.

The primary noise source due to operation of the Project would be generated by the increase in traffic caused by the workers going to and from the Project site for operational and maintenance activities. However, due to the limited number of truck trips, these activities would not cause a noticeable change in traffic noise. Overall, the Project alternatives **would not result in a cumulatively considerable incremental contribution** that would cause a significant cumulative impact on noise.

Under Project Alternatives C and D, pile driving activities would temporarily increase ground-borne vibration levels near an identified sensitive receptor, but Project mitigation measures would reduce potential vibration-related effects to a less-than-significant level. Other future projects would not cause vibration impacts within the immediate vicinity of the Project work site. Therefore, the Project **would not result in a cumulatively considerable incremental contribution** that would cause a significant cumulative impact on vibration.

25.5.15 Paleontological Resources

The program Restoration Area is underlain by Pleistocene-age sediments of the Modesto and Turlock Lake formations, which are considered paleontologically sensitive rock units. The recovery of vertebrate fossils throughout the Sacramento and San Joaquin valleys in sediments referable to these formations suggests that the potential exists to uncover fossil remains during earthmoving activities of reasonably foreseeable future projects. These projects include those listed in the PEIS/R, and those described in Section 25.2.2 (e.g., build-out of general plans and local projects such as Gill Ranch Gas Storage Project and San Joaquin River Bank Repair Project).

If paleontological finds were to be encountered during Project construction, the potential for cumulative impacts would exist within the context of the overall Restoration Area (where other projects would proceed to construction). Project construction could potentially add to a cumulative impact on paleontological resources. However, mitigation measures would be implemented to salvage such resources within the Project area and reduce potential impacts to a level that is less than significant. The mitigation measure described in Section 18.3.2 (i.e., Mitigation Measure PAL-1) would effectively preserve the value to science of any significant fossils uncovered during Project-related construction.

Fossil discoveries resulting from excavation and earthmoving activities associated with development are occurring with increasing frequency throughout the State. However, unique, scientifically important fossil discoveries are relatively rare, and the likelihood of encountering them is site-specific and is based on the type of specific rock formations found underground, which vary from location to location. Furthermore, when unique, scientifically important fossils are encountered by construction activities, the subsequent opportunities for data collection and study generally provide a benefit to the scientific community. Because of the low probability that any project would encounter unique,

scientifically important fossils, development of related projects and other development in the region would not result in a cumulatively considerable impact on paleontological resources. Therefore, the Project alternatives **would not result in a cumulatively considerable incremental contribution** that would cause a significant cumulative impact on paleontological resources.

25.5.16 Public Health and Hazardous Materials

In the context of public health and hazardous materials, applicable plans and projects for the cumulative effects analysis referenced in the PEIS/R and Section 25.2.2 include, but are not limited to, the conveyance of refuge water supply in the South San Joaquin Valley Study Area to the Mendota Wildlife Area, habitat and conservation management plans, transportation development projects, and the Gill Ranch Gas Storage project.

Actions associated with implementation of the Project could result in potentially significant public health effects or safety hazards associated with exposure to hazardous materials and disease vectors prior to implementation of Project mitigation measures. However, Mitigation Measures HAZ-1 through HAZ-4 would be included to reduce potentially significant impacts of the Project alternatives related to exposure to hazardous materials and disease vectors. Implementation of these mitigation measures would serve to prevent the potential effects of the Project alternatives from contributing in a cumulatively considerable manner with other effects from past, present, or reasonable foreseeable probable future actions. The measures would reduce the contribution of the Project alternatives to these potentially significant cumulative effects. Therefore, the Project alternatives **would not result in a cumulatively considerable incremental contribution** that would cause a significant cumulative impact on public health and hazardous materials.

25.5.17 Recreation

In the context of recreation, applicable plans and projects for the cumulative effects analysis referenced in the PEIS/R include the Two Gates Fish Protection Demonstration Project, Lost Lake Park Master Plan, and San Joaquin River Parkway Plan. Additional plans and projects relevant to regional recreation include the America's Great Outdoors Initiative and the San Joaquin River Blueway. At the local level, the city of Mendota General Plan Update also has implications for recreation near the Project area (referenced in Section 25.2.2).

None of the cumulative projects or plans referenced in the PEIS/R would affect recreation conditions in the Project area based on their location relative to the Project. The Two Gates Fish Protection Demonstration Project is located in the Sacramento-San Joaquin Delta well downstream of Reach 2B. Lost Lake Park is located near the community of Friant in unincorporated Fresno County, and along with the San Joaquin River Parkway Plan, covers recreation uses and activity upstream in Reach 1.

Working in conjunction with one another, America's Outdoor Initiative and the San Joaquin River Blueway would improve recreation opportunities in the Restoration Area. The America's Outdoor Initiative was launched in 2010 and calls for multiple federal agencies, including the Department of Interior, to implement projects that would promote

conservation and recreation on public lands. One of the proposed projects under this initiative is the San Joaquin River National Blueway. The San Joaquin River National Blueway is an integrated system of “parks, wildlife refuges, and other publicly accessible places that provides the public an opportunity to explore and enjoy the San Joaquin River from its headwaters to the Delta” (San Joaquin River Partnership 2011). Recreation opportunities offered by the San Joaquin River National Blueway include boating, swimming, picnicking, walking and jogging, cycling, hiking, interpretive trails, wildlife viewing, bird watching, fishing and hunting. The San Joaquin River National Blueway plan identifies Fresno Slough (near the Mendota Wildlife Area) as an existing access site.

The city of Mendota General Plan addresses recreation uses within the city limits, which is located west of the Project Area. The Open Space and Conservation Element of the city of Mendota General Plan documents existing recreation resources in the planning area, including 26 acres of parks and recreation land. In addition, a range of goals, policies, and actions have been developed relative to parks, recreation, and open space, which generally are aimed at protecting recreation resources in an effort to meet the recreation demand of local residents. Implementation of these goals, policies, and actions would generate recreation benefits to the local area; no adverse effects on recreation resources are expected.

Based on the information presented above, there are no projects or programs that when combined with the less-than-significant recreation impacts anticipated with the Project (as outlined in Section 20.3.3) would result in significant cumulative impacts. In summary, the Project **would not result in a cumulatively considerable incremental contribution** that would cause any cumulative impacts to recreation resources.

25.5.18 Socioeconomics and Economics

In the context of socioeconomics, applicable plans and projects for the cumulative effects analysis referenced in the PEIS/R include the Bay-Delta Conservation Plan and Alternative Delta Conveyance facilities, DMC/California Aqueduct Intertie, DMC Project Recirculation, Two Gates Fish Protection Demonstration Project, Bay Area Water Quality and Supply Reliability Program, and South Bay Aqueduct Improvement and Enlargement Project. Additional plans and projects relevant to regional socioeconomic conditions in the two-county region (referenced in Section 25.2.2) include the Grassland Bypass Project. Many of the cumulative projects or plans referenced in the PEIS/R would not affect socioeconomic conditions in the Project area based on their distance to the Project.

The socioeconomic impact analysis presented in Chapter 21.0, “Socioeconomics and Economics” addresses several types of potential impacts associated with the Project, including changes in agricultural production values and new construction and operations and maintenance expenditures, as well as related effects on the regional economy covering Fresno and Madera counties. Chapter 21.0, “Socioeconomics and Economics” also addresses effects on property tax revenues and changes in population and housing demand. Of these impacts, the cumulative analysis focuses on regional economic effects attributed to the removal of land from agricultural production, which is cumulatively affected by other factors occurring throughout the region.

For the cumulative impact analysis, the Project's incremental small economic effects have been considered in the context of the regional economic impacts of changes in agricultural production occurring elsewhere in the region. Due to large fluctuations in available agricultural water supplies and declining soil quality elsewhere in the region (and due to urban growth), the number of acres in agricultural production has declined in the Central Valley over the past several years, including land in Fresno and Madera counties. Declines in agricultural production adversely affect regional economic conditions, including losses in jobs and income to local residents. These adverse effects are realized not only in the agricultural sector, including agricultural landowners and farm workers, but also have ripple effects throughout other agriculture-support industries and the overall economy. Declining agricultural production is one contributing factor to unemployment levels in the two-county region.

Implementation of the Project would result in relatively minor economic impacts associated with losses in agricultural production when considered in the context of the regional economy. The greatest impacts would occur under Alternative D, with total loss of about 103 jobs and \$4.3 million in labor income in the two-county region annually. However, when considered in the context of other economic drivers occurring elsewhere in the region, such as declines in agricultural production elsewhere and a stagnant housing market, the Project's incremental economic impacts are cumulatively considerable. Accordingly, the Project's cumulative economic impact is substantial in the short term; however, over the long term, the cumulative impact is moderated by economic growth anticipated as the regional economy recovers from the recent recession. In summary, the Project would result in a **cumulatively considerable incremental contribution** to cumulative impacts to economic conditions in the region under all of the Action Alternatives (i.e., Alternatives A, B, C, and D).

25.5.19 Transportation and Traffic

In the context of transportation and traffic, applicable plans and projects for the cumulative effects analysis referenced in the PEIS/R and Section 25.2.2 include transportation and development projects such as the SR 180 Westside Expressway Route Adoption Study and proposed development related to the build-out goals of the city and county General Plans.

In consultation with Fresno Council of Governments (COG) and coordination with County of Madera Planning staff, the latest approved version of the Fresno COG transportation model was used to develop 2035 baseline conditions (which were subsequently used to develop the No Action Alternative). The 2035 baseline condition traffic growth projections captured all reasonably probable future actions of regional significance within the Restoration Area and thus the traffic impact analysis conducted for the Project alternatives is conservative and reflects worst case cumulative impact conditions. Potential local unnamed future cumulative projects are also assumed to be captured in the ambient traffic growth of 1 percent per year derived from the Fresno COG' transportation model. Within the Restoration Area, there is a potential for concurrent construction activities, however potential individual site impacts would be dispersed due to timing, location and distance. The Project is not anticipated to cause an increase in traffic which is substantial in relation to the existing traffic load and capacity

of the roadway system. Therefore, implementation of Project alternatives would not provide a cumulatively considerable incremental contribution to traffic load.

However, the Project would result in a temporary or permanent road closure at river crossings that may affect emergency access or emergency response times for fire units and emergency responders providing mutual assistance to areas just north the river. This potential effect remains significant, even after implementation of mitigation measures. Therefore, all Action Alternatives **would result in one potentially significant and unavoidable cumulative impact** to transportation and traffic, effects to emergency access.

25.5.20 Utilities and Service Systems

For public utility and service systems, applicable plans and projects for the cumulative effects analysis include:

- Fresno County General Plan.
- Madera County General Plan Policy Document.
- City of Fresno General Plan.
- Gill Ranch Gas Storage Project.
- Kerman Walmart Project.

The Gill Ranch Storage Project is located approximately 8 miles northeast of Mendota Pool. The Kerman Walmart project is located 17 miles east of Mendota Pool. Past, present, and reasonably foreseeable projects must be consistent with specific goals, objectives, policies, and implementation measures of their respective county's general plan. Each of the past, present and reasonably foreseeable projects, and planned development generally, is required to evaluate whether sufficient public services and utilities would be available and mitigate for significant effects where necessary.

As discussed in Chapter 23.0, "Utilities and Service Systems," the Project would not increase demand for utility and service systems, such as fire protection, police protection, emergency, schools, parks, libraries, water supply, wastewater and solid waste services. However, fire and emergency response times to private property immediately north of the river would be permanently increased due to the proposed closure of San Mateo Avenue under Alternative D, and this would be a potentially significant, unavoidable impact.

None of the past, present, and reasonably foreseeable projects or plans referenced in the PEIS/R would contribute to the demand for public utilities and services in the Project area based on their location relative to the Project. Furthermore, the Project does not have growth inducing effects.

Based on the information presented above, there are no projects or programs that when combined with utilities and services impacts anticipated with the Project (as outlined in Section 23.3.3) would result in significant cumulative impacts. In summary, the Project **would not result in a cumulatively considerable incremental contribution** that would cause cumulative impacts to utilities and service systems.

25.5.21 Visual Resources

In the context of aesthetics/visual resources, applicable plans and projects for the cumulative effects analysis referenced in the PEIS/R and Section 25.2.2 include several large projects in various stages of planning and implementation. Those projects include the DMC Recirculation Project, the city of Stockton Delta Water Supply Project, implementation of the Corps' policy on levee vegetation, and various proposed residential, commercial, and industrial developments. Several large projects in various stages of planning and implementation may have adverse impacts on visual resources. Conversely, several projects in the planning stages within the Project area and vicinity could have a beneficial effect on visual resources.

Development is increasingly changing the visual character of the Project vicinity from vast areas of open space to urban uses, thus altering and limiting the views available to recreationists and residents living in the area. This trend will continue as reasonably foreseeable probable future projects are implemented in the Project vicinity. Substantial changes in visual conditions will continue as agricultural lands and open space are replaced by urban and industrial development and infrastructure projects, and as vegetation is removed to make room for future development.

The cumulative effect of these changes on visual resources from past, present, and reasonably foreseeable planned future projects would be significant. These cumulative impacts can be minimized to a degree through vegetative and topographic screening of structures, use of outdoor lighting that limits glare, appropriate building design, and other measures such as restoration of disturbed areas; however, in many cases, the significant cumulative impact cannot be mitigated to a less-than-significant level. Therefore, the cumulative change of agricultural and open-space views in the Project vicinity to urban landscape and the associated increase in nighttime light and glare and subsequent skyglow would be significant (without consideration of any incremental change due to the Project).

The release of Restoration Flows under the Project alternatives would provide a net beneficial effect on visual resources by improving habitat along the San Joaquin River. Less-than-significant Project impacts would occur due to construction of new infrastructure. Potentially significant Project impacts could occur due to construction related effects; however, mitigation measures would be implemented to reduce adverse visual effects to less than significant levels. Overall, the Project alternatives **would not result a cumulatively considerable incremental contribution** to the significant cumulative impact on visual resources from the past, present, and foreseeable projects and trends.

26.0 Other NEPA and CEQA Considerations

In addition to the factors described in the preceding chapters, the California Environmental Quality Act (CEQA) requires consideration of significant and unavoidable impacts, National Environmental Policy Act (NEPA) requires consideration of the relationship of short-term uses and long-term productivity, and both NEPA and CEQA require consideration of irreversible and irretrievable commitments of resources as well as growth-inducing impacts. These considerations are described below.

26.1 Significant and Unavoidable Impacts

Section 21100, subdivision (b)(2)(A) of CEQA provides that an Environmental Impact Report (EIR) shall include a detailed statement setting forth “any significant effect on the environment that cannot be avoided if the project is implemented.” Chapters 4.0 through 24.0 provide a detailed analysis of all potentially significant environmental impacts of implementing the Project, list feasible mitigation measures that could reduce or avoid the significant impacts of the Project alternatives, and specify whether these mitigation measures would reduce these impacts to a less-than-significant level. If a specific impact cannot be reduced to a less-than-significant level, it is considered a significant and unavoidable impact. As shown in Table 26-1, implementing the Project would have several significant and unavoidable environmental impacts.

**Table 26-1.
Summary of Significant and Unavoidable Impacts**

Impacts	Alternative	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Land Use Planning and Agricultural Resources				
LU-1: Removal of Land from Agricultural Production	No-Action	No Impact	--	No Impact
	A	S	LU-1: Preserve Agricultural Productivity of Designated Farmland to the Extent Possible	SU
	B	S		SU
	C	S		SU
	D	S		SU
LU-2: Conversion of Designated Farmland to Non-Agricultural Uses	No-Action	No Impact	--	No Impact
	A	S	LU-2: Preserve Agricultural Productivity of Designated Farmland to the Extent Possible	SU
	B	S		SU
	C	S		SU
	D	S		SU

**Table 26-1.
Summary of Significant and Unavoidable Impacts**

Impacts	Alternative	Level of Significance before Mitigation	Mitigation Measures	Level of Significance after Mitigation
LU-3: Conflict with Williamson Act Contracts	No-Action	No Impact	--	No Impact
	A	S	LU-3: Preserve Agricultural Productivity of Designated Farmland to the Extent Possible	SU
	B	S		SU
	C	S		SU
	D	S		SU
Transportation and Traffic				
TRA-4. Potential to Result in Inadequate Emergency Access	No-Action	No Impact	--	No Impact
	A	PS	TRA-4A: Provide Temporary Roadway and Crossing at San Mateo Avenue	SU
	B	PS	TRA-4B: Use Construction Sequencing to Provide Continuous Emergency Access at Drive 10 ½	SU
	C	PS	TRA-4A: Provide Temporary Roadway and Crossing at San Mateo Avenue	SU
	D	PSU	--	PSU

Key:

LTS = less than significant

PS = potentially significant

PSU = potentially significant and unavoidable

S = significant

SU = significant and unavoidable

Where feasible mitigation exists, it has been included to reduce these impacts; however, the mitigation would not be sufficient to reduce these impacts to a less-than-significant level. Chapter 25.0, “Cumulative Effects,” describes the contribution of the Project to effects caused, or would be caused, by past, present, and reasonably foreseeable future actions.

26.1.1 Agricultural Resources

Project actions would remove substantial amount of agricultural lands from production, including Prime Farmland, Farmland of Statewide Importance, and Unique Farmland, and potentially conflict with Williamson Act contracts. Mitigation measures would require the Project proponents to recognize and minimize adverse effects on agricultural lands to the extent practicable. Measures include selection of borrow areas to minimize fragmentation of agricultural lands; locating construction laydown and staging areas on sites that are fallow, disturbed, or to be discontinued for use as agricultural land to the extent possible, and using existing roads to access construction areas to the extent possible; stockpiling of topsoil in designated farmland areas to be used in subsequent habitat restoration, restoration of agricultural uses, or redistributed for agricultural purposes; coordinate with landowners and agricultural operators to minimize construction-related impairment of agricultural productivity; and providing access to

potential agricultural areas on the floodplain. The Project proponent would also acquire agricultural conservation easements to be held by land trusts or public agencies or provide funds to a land trust or government program that conserves agricultural lands. However, implementation of these measures would not avoid the conversion of agricultural land to non-agricultural uses or fully mitigate the loss of farmland and the residual effect is significant and unavoidable.

26.1.2 Emergency Response Times

Project construction activities would create temporary or permanent roadway closures that may affect emergency access/emergency response times to areas immediately north of the San Mateo Avenue crossing or near Drive 10 ½. For those alternatives that improve the San Mateo Avenue crossing, mitigation measures would require a temporary roadway and crossing to allow for thru-traffic and access across levee, canal, and river crossing construction areas, as applicable. The mitigation measure for Alternative B requires construction sequencing to provide continuous emergency access at Drive 10 ½. In both cases, local emergency dispatchers will be notified of temporary road closures. No feasible mitigation exists for long-term impacts to emergency response times near areas with permanent roadway closures.

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

NEPA requires that an Environmental Impact Statement (EIS) consider “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 Code of Federal Regulations [CFR] 1502.16). Such consideration involves using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, create and maintain conditions under which humans and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

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 26.3, “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 only during construction, and are not expected to alter the long-term productivity of the natural environment.

In the short term, implementing the Project would directly increase demand for construction and technical services. 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 increase 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 new jobs. Conversely, agricultural production would be reduced in the short term as a result of the loss and conversion of currently productive farm and rangeland to restoration uses. The reduction of productive agricultural land would result in fewer jobs in the agricultural sector. The effects of Project implementation on employment and economic activity are discussed in Chapter 21.0, “Socioeconomics and Economics.”

Long-term productivity resulting from implementing the Project would increase in some cases and would decrease or remain unchanged in others. The short-term increase in construction-related economic activity would not be sustained over the long term. Implementation of the Project would also permanently remove lands adjacent to the river from agricultural production.

Within the Project area, Project implementation would result in other long-term effects, such as increased riparian habitat, increased recreational opportunities and use of existing facilities, and improved visual experience both for recreationists and adjacent landowners. No identified adverse effects would pose a long-term risk to human health and safety.

In summary, the short-term uses would generate regional economic activity that would decrease over the long term as construction activities are completed. The benefits of aquatic and riparian habitat restoration, self-sustaining salmon populations, and increased recreational opportunities are substantial and would continue into the long term. Implementing the Project, including implementation of mitigation as described in this Environmental Impact Statement/Report (EIS/R), would foster and promote the general welfare, create and maintain conditions under which people and nature can exist in productive harmony, and fulfill social, economic, and other requirements of present and future generations.

26.3 Irreversible and Irretrievable Commitments of Resources

NEPA requires that an EIS include a discussion of the irreversible and irretrievable commitments of resources that may be involved should an action be implemented. Similarly, the State CEQA Guidelines (§ 15126, subd. (c)) require that an EIR include a discussion of the significant irreversible environmental changes that would be caused by a proposed project should it 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 and associated agricultural resources committed to restoration use.

Project activities under all Project alternatives would commit material resources to the construction of new facilities. Under all Project alternatives, construction materials would be committed to a variety of actions that would construct or modify existing facilities. With the exception of fill material, the San Joaquin River Restoration Program (SJRRP) would commit only a small quantity of these material resources relative to projected residential, commercial, industrial, and institutional development. Therefore, the commitment of these material resources would not result in a permanent loss of this resource for the future or alternative purposes.

A substantial amount of material resources committed as a result of the Project alternatives would be fill material (soil, and to a much lesser extent, rock aggregate) primarily for earthen levee construction. The Fresno area is projected to have less than 10 years of permitted aggregate resources remaining, based on projected population growth (Kohler 2006). The SJRRP is not accounted for in that 10-year estimate of demand for aggregate resources. Therefore, if aggregate material is obtained from commercially available sources, the commitment of this aggregate material to actions could result in a permanent loss of this resource for the future or alternative purposes, such as for private development. However, if aggregate material is not obtained from existing commercial sources, that is, if this fill material is obtained from private or public lands, the SJRRP would not commit aggregate resources that would deprive other purposes.

Implementing Project actions 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 Project are not expected to adversely affect other activities that require electricity, gasoline, diesel fuel, and oil.

The SJRRP would commit land to implementing the Project. Farm and rangeland (including designated Farmland) would be converted to nonagricultural uses (e.g., levee and bypass footprints, floodplain habitat). This conversion would be long-term but not necessarily irreversible or irretrievable.

26.4 Growth-Inducing Impacts

NEPA requires that an EIS consider indirect effects of a project, which are often the result of growth inducement. The State CEQA Guidelines require that an EIR discuss how a project may induce growth (Cal. Code Regs., tit. 14, §15126.2, subd. (d)). A project will have a growth-inducing impact if it directly or indirectly:

- Removes obstacles to population or economic growth.

- Requires the construction of additional community service facilities that could cause significant environmental effects.
- Encourages and facilitates other activities that would significantly affect the environment, either individually or cumulatively.

In *Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001) 91 Cal. App. 4th 342, 367–371 (110 Cal. Rptr. 2d 579), the California Court of Appeal, Fourth District, provided clear direction on the standards for disclosing growth-inducing effects. The EIR must describe the directness or indirectness of the effect. It must also describe the ability of the lead agency to forecast actual effects. Based on these factors, the lead agency may consider mitigation measures for the anticipated effects. Growth-inducing effects are evaluated for the alternatives in accordance with the California Court of Appeal’s finding in *Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001):

Neither CEQA itself, nor the cases that have interpreted it, require an EIR to anticipate and mitigate the effects of a particular project on growth on other areas. In circumstances such as these, it is sufficient that the Final Environmental Impact Report warns interested persons and governing bodies of the probability that additional housing will be needed so that they can take steps to prepare for or address that probability. The Final Environmental Impact Report need not forecast the impact that the housing will have on as yet unidentified areas and propose measures to mitigate that impact. That process is best reserved until such time as a particular housing project is proposed.

None of the Project alternatives removes an obstacle to population or economic growth. No utility (i.e., domestic water, wastewater treatment, sewer, or stormwater treatment) expansion is proposed under any of the alternatives. No new, additional transportation facilities are proposed, nor is there any proposal to increase the capacity of existing facilities. In summary, implementing the Project would not induce growth because the construction workforce would partially come from other areas and is expected to increase demand only for temporary housing, such as hotels, motels and apartments, and increased economic activity resulting from added recreation opportunities would not be of a magnitude that would drive demand for new housing. Because service systems would not be constructed or expanded, none of the alternatives would remove an impediment to growth.

Project actions would not remove obstacles to growth or require construction of additional community service facilities that could cause significant environmental effects. Project actions would result in recreation opportunities that would not exist under the No-Action Alternative. However, recreation opportunities would not be at a level that would encourage or facilitate other activities that would significantly affect the environment, either individually or cumulatively. Chapter 20.0, “Recreation,” describes existing recreation opportunities in the Project area and estimates opportunities under the No-Action condition. Chapter 20.0 “Recreation,” further describes how an increase in recreational activity, particularly in fishing, boating, and nature watching, could occur in

the Project area. There would be insufficient economic activity to increase demand for development above that anticipated by local land-use planning agencies.

26.5 Preferred Alternative

A meeting was held on January 29, 2013, in order to introduce the consensus-based alternative concept and approach to the adjacent landowners, canal companies, irrigation districts, levee districts, cities, and the Settling Parties. The consensus-based alternative approach gave these entities the opportunity to provide input on the Project course of action, and their input was considered during the identification of the preferred alternative. Following several meetings with the individuals and groups listed above, U.S. Department of the Interior, Bureau of Reclamation (Reclamation) and California State Lands Commission (CSLC) identified a preferred alternative, Alternative B, based on the input received on the Action Alternatives.

Stakeholder involvement by landowners was a critical component in the development of the preferred alternative. Without stakeholder involvement from landowners both adjacent to and within Project boundaries, it would be difficult to balance conflicting needs while acquiring the land necessary to construct the Mendota Pool Bypass, the expanded floodplain, the Mendota Pool water conveyance structure, and the necessary associated infrastructure. Because of the importance of stakeholder involvement in this Project, a consensus-based decision process was used to determine the best option for each component of the Project (Mendota Pool Bypass, floodplain, and Mendota Pool water conveyance structure). Other logistical and environmental factors were thoroughly considered, but landowner coordination and involvement in the decision-making process was vital.

Alternative B contains the landowner-preferred options for the Mendota Pool Bypass and the Mendota Pool conveyance structure, and minimizes impacts due to the floodplain alignment. Landowners preferred the Compact Bypass (Alternatives A and B) over the Fresno Slough Dam (Alternatives C and D). The wider floodplain alignments (Alternatives B and D) would maximize potential fish habitat, in comparison to the narrow floodplain levee alignment (Alternatives A and C). The consensus-based floodplain (Alternative B), which was developed by creating a levee alignment based on land that could be purchased from willing sellers, was preferred by landowners over the wide floodplain levee alignment (Alternative D). The alternatives that include construction of a long canal to convey water from Reach 2B to Mendota Pool (Alternatives A and D) would create access issues to farms and would require construction of bridges, while the Bifurcation Structure (Alternative B) would not create these issues.

Another consideration during the development of the preferred alternative was minimizing impacts to water management operations, where possible. Of the two Mendota Pool Bypass options, the Compact Bypass would not require a substantial change in Delta-Mendota Canal and Mendota Pool operations, while the Fresno Slough Dam would require more substantial changes to Mendota Pool operations. The Fresno

Slough Dam would cause greater reductions in the volume of Mendota Pool, making the timing of inflows and outflows from the Pool more critical. Therefore, the Compact Bypass (Alternatives A and B) was preferred over the Fresno Slough Dam (Alternatives C and D) with respect to water management needs. Levee alignment would not impact water management operations. The North and South Canal Bifurcation structures would serve a similar flood flow routing function as the San Joaquin River control structure of the Chowchilla Bifurcation Structure. Therefore, to reduce the number of structures requiring fish passage, the San Joaquin River control structure of the Chowchilla Bifurcation Structure was removed from Alternatives A and D. The use of the North or South Canal Bifurcation Structure for flood flow routing to the Chowchilla Bypass would create a change in flood operations. Use of the Bifurcation Structure (Alternative B) would not change flood operations. Overall, Alternative B contains the Mendota Pool Bypass and Mendota Pool conveyance structure options that would best preserve existing water management operations, and is identified as the preferred alternative.

Consistent with Council on Environmental Quality (CEQ) Guidelines for NEPA, 40 CFR Part 46.425, and State CEQA Guidelines, the Final EIS/R identifies the preferred alternative for implementation, Alternative B. The alternative selected for implementation will be articulated in the Record of Decision, which will be completed no less than 30 days following the release of the Final EIS/R, and in the findings and other documents to complete the CEQA process.

26.6 Environmentally Preferable/Superior Alternative

CEQ Regulations require identification of an environmentally preferable alternative, and the State CEQA Guidelines require identification of an environmentally superior alternative. However, the CEQ Guidelines and CEQA Guidelines do not require adoption of the environmentally preferable/superior alternative as the preferred alternative for implementation. The selection of the preferred alternative is independent of the identification of the environmentally preferable/superior alternative, although the identification of both is based on the information presented in this EIS/R.

Section 1505.2(b) of the CEQ Regulations requires the NEPA lead agency to identify the environmentally preferable alternative in a Record of Decision. The CEQ Regulations define the environmentally preferable alternative as "...the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources."

Similar to the environmentally preferable alternative under NEPA, the State CEQA Guidelines, sections 15120 and 15126.6, subdivision (e)(2), require identification of an environmentally superior alternative. If the environmentally superior alternative is the "no project" alternative, the State CEQA Guidelines, section 15126.6, subdivision (e)(2), require identification of an environmentally superior alternative among the action alternatives.

26.0 Other NEPA and CEQA Considerations

To identify the environmentally preferable/superior alternative, each of the Project alternatives is evaluated based on significance thresholds and the potential adverse impacts identified. The relative potential for each action alternative to benefit the resource areas is also identified. The action alternative(s) with the fewest adverse impacts and greatest benefits (where applicable) is identified for each resource category, as summarized below.

All of the Project alternatives would achieve implementation of Project goals. The alternatives contribute to the success of these goals to varying extents. Under all action alternatives, construction and long-term operations and maintenance impacts would occur related to air quality, biological resources – fisheries, biological – vegetation, biological – wildlife, climate change and greenhouse gases, cultural resources, environmental justice, geology and soils, hydrology – flood management, hydrology – groundwater, hydrology – surface water resources and water quality, land-use planning and agricultural resources, noise and vibration, paleontological resources, public health and hazardous materials, recreation, socioeconomics and economics, transportation and traffic, utilities and service systems, and visual resources, compared to the No-Action Alternative or existing conditions, as described in Chapters 4.0 through 24.0.

Alternative B is the environmentally preferable/superior alternative. All four Action Alternatives have the same significant and unavoidable impacts for air quality and land use. All four Action Alternatives have the same potentially significant and unavoidable impacts for reduced emergency access. The only differences between the alternatives are for less than significant impacts. Alternative A and Alternative B have less than significant impacts related to visual impacts at Bass Avenue and water quality impacts of agriculture on the floodplain. Alternative C has less than significant impacts related to water quality from Mendota Dam modifications and visual impacts to both Mendota Pool Park and the area around Mendota Dam. Alternative D has less than significant impacts related to water quality impacts of agriculture on the floodplain, water quality impacts due to Mendota Dam modifications, and visual impacts to both Mendota Pool Park and the area around Mendota Dam. Alternative D has the widest levee alignment, but also most environmental impacts due to its greater number of less than significant impacts. Alternative A and B have the least environmental impacts, and the same ones. Alternative B includes a wider floodplain levee alignment than Alternative A, improving Project benefits to the fishery and environment. The Alternative B levee alignments have been negotiated with landowners to minimize agricultural impacts while helping to meet fisheries goals. Agriculture on the floodplain allows for flexibility for floodplain management and minimizes the amount of agricultural land taken out of production. This minimizes but does not eliminate the significant and unavoidable impacts to land use. Agriculture in the floodplain adds less than significant impacts to water quality as a result of pesticide runoff. The preferred alternative balances the needs of the Chinook salmon fishery with local farming concerns.

26.7 Least Environmentally Damaging Practicable Alternative

The SJRRP is working closely with Federal, State, and regional agencies to meet regulatory requirements and to avoid and minimize impacts and, where necessary, to reach agreement on mitigation measures for impacts that cannot be avoided. One important process that integrates many of the applicable regulatory requirements is the Section 404(b)(1) process, as managed by the United States Army Corps of Engineers (Corps) with oversight from the U.S. Environmental Protection Agency (EPA). The 404(b)(1) process considers if the range of potential alternatives evaluated in the EIS/R is an appropriate range of “reasonable” and “practicable” alternatives using the best available information. The Corps then determines the Least Environmentally Damaging Practicable Alternative (LEDPA) to meet requirements of NEPA, Sections 401 and 404 of the Clean Water Act, and Section 14 of the Rivers and Harbor Act, with consideration of compliance with the Federal Endangered Species Act and the National Historic Preservation Act. The analysis information for the Corps' 404(b)(1) LEDPA determination is attached in Part VI – Appendices to the Responses of the final EIS/R.

26.8 Comparison of Action Alternatives

Table 26-2 provides a comparison of some of the features of the Action Alternatives. Table 26-3 summarizes some of the conditions that were used to evaluate impacts and benefits of the Action Alternatives. These features are discussed below by resource area in order to compare impacts and benefits among the Action Alternatives.

26.8.1 Air Quality

Action Alternatives would result in impacts to sensitive receptors due to temporary and short-term construction-related emissions of the toxic air contaminant diesel particulate matter. Alternative D would impact sensitive receptors (i.e., resident child and school child) to a greater degree than Alternatives A, B, and C. Alternative D would cause the greatest impact to the potential resident child, while Alternatives C and D would have the greatest impact to the school child (see Table 26-3).

All of the Project alternatives would have construction-related impacts associated with nitrogen oxides and reactive organic gas and long-term reductions in agricultural emissions. Without implementation of mitigation measures, Project alternatives could create significant amounts of construction-related criteria air pollutants and conflict with an applicable plans or policies related to air quality. Alternative D would have the most adverse impacts from construction emissions because it requires the most construction activity (i.e., activity associated with offroad construction equipment, material hauling vehicles, worker commute vehicles, and fugitive dust emissions). Conversely, Alternative B would have the least adverse impacts because it requires the least construction activity. Overall, Alternative B would provide the least adverse impact to air quality (Table 26-3).

**Table 26-2.
Levees, Land Acquisition, and Construction Duration**

Category	Unit of Measure	Alternative A	Alternative B	Alternative C	Alternative D
Left Levee Length	miles	8.7	8.1	7.7	7.2
Left Average Levee Height	feet	5.8	5.6	5.6	5.2
Left Fill Volume	cubic yards	345,200	328,600	317,500	272,000
Right Levee Length	miles	7.1	6.8	6.9	6.6
Right Average Levee Height	feet	5.4	4.7	5.2	4.2
Right Fill Volume	cubic yards	269,700	226,900	224,500	188,250
Land Acquisition ¹	acres	2,700	2,900	2,450	3,300
Time to Build ²	months	132	157	157	158

¹ Land acquisition total includes areas that may be State of California sovereign lands or public trust lands.

² Construction timeline does not include the time that would also be needed to obtain permits, appraise and acquire land, and perform pre-construction surveys.

**Table 26-3.
Features and Conditions of the Action Alternatives**

Resource Area	Category	Criteria	Unit of Measure	Alternative A	Alternative B	Alternative C	Alternative D
Air Quality	Construction Emissions	Average Annual Construction Emissions for NOx	tons per year	67	61	66	69
		Average Annual Construction Emissions for ROG	tons per year	5.8	5.3	5.7	6.0
	Sensitive Receptors	Maximum Cancer Risk for the Resident Child	in a million	108	105	97	125
		Maximum Cancer Risk for the School Child	in a million	15	13	18	18
Fisheries	Floodplain characteristics	Primary production (<1.0 feet inundation at 2,500 cfs)	acres	470	440	520	740
		Rearing habitat (>1.0 feet inundation at 2,500 cfs)	acres	380	560	230	310

**Table 26-3.
Features and Conditions of the Action Alternatives**

Resource Area	Category	Criteria	Unit of Measure	Alternative A	Alternative B	Alternative C	Alternative D
Fisheries	Fish passage conditions	Maximum number of steps at structures	number of jumps	43	54	59	36
		Potential predation sites	number of artificial structures	21	9	7	7
Vegetation	Potential impacts	Potential impacts to sensitive natural vegetation communities (infrastructure, floodplain, borrow, and other)	acres	306	306	360	356
	Restoration estimates	Habitat restoration estimates (includes sensitive and non-sensitive vegetation)	acres	≤1,420	≤1,970	≤1,450	≤2,000
Wildlife	Special-species wildlife habitat impacts	Special-status species habitat (average, excluding borrow)	acres	281	277	268	327
		Floodplain impacts (average)	acres	203	215	219	236
		Infrastructure impacts (average)	acres	65	40	26	70
		Other impacts (average, excluding borrow)	acres	13	22	24	21
		Giant garter snake (excluding borrow)	acres	394	364	455	459
		Swainson's hawk (excluding borrow)	acres	773	763	708	838
	Restoration estimates	Special-status species habitat extent	acres	≤1,070	≤1,640	≤1,050	≤1,630
		Wildlife habitat	acres	≤1,330	≤1,870	≤1,360	≤1,900
Greenhouse Gas	Construction emission	Average CO _{2e} emissions	metric tons per year	47,817	45,080	33,066	34,580
Cultural Resources	Potential impacts	Impacts to historical properties	number of listed properties	0	0	1	1
Groundwater	Shallow groundwater	Groundwater <5 feet	acres	320	360	330	330
		Groundwater 5-7 feet	acres	60	80	70	70

**Table 26-3.
Features and Conditions of the Action Alternatives**

Resource Area	Category	Criteria	Unit of Measure	Alternative A	Alternative B	Alternative C	Alternative D
Wetlands	Potential impacts	Wetlands and other waters of the United States (excluding potential borrow areas)	acres	606	587	703	707
	Restoration estimates	Hydric or partially hydric soils (floodplain area)	acres	≤1,124	≤1,460	≤1,162	≤1,155
Land Use	Permanent loss of designated Farmland	Future infrastructure/floodplain habitat	acres	1,000	884	1,218	1,143
		Other floodplain areas	acres	≤480	≤794	0	≤862
		Borrow areas	acres	≤350	≤350	≤350	≤350
Noise and Vibration	Potential impacts	Maximum change in community noise equivalent levels from construction traffic	dBA	16	16	15	15
Socioeconomics and Economics	Economic effects	Agricultural production annual values	millions	-\$6.6	-\$7.6	-\$6.0	-\$9.1
		Agricultural employment	number	-75	-85	-67	-103
		Construction output	millions	\$68	\$52	\$65	\$55
		Construction employment	number	293	244	287	258
Transportation and Traffic	Potential impacts	Maximum increase in traffic on Project roadway segments	ADT	6,036	5,688	4,383	4,377
Utilities and Service Systems	Relocations	Electrical Distribution	feet	43,500	48,500	48,000	68,000
		Gas Transmission	feet	10,000	11,000	9,000	11,500
		Water Pipeline	feet	31,000	41,000	33,000	50,000
		Canal	feet	32,500	31,500	32,500	56,000
		Culvert	number	1	1	1	1
		Diversion	number	3	3	3	3
		Barn/Shed	number	1	1	1	1
		Facility	number	1	1	1	1
		Groundwater Well	number	26	32	25	32
		Lift Pump	number	10	10	10	10
		Power Pole	number	144	162	166	239
Dwelling	number	2	2	2	2		

ADT = average daily traffic, dBA = A-weighted decibel(s), CO2e = carbon dioxide equivalents

26.8.2 Biological Resources – Fisheries

Action Alternatives provide benefits to fisheries, such as fish passage through Reach 2B and increased floodplain area for primary production (i.e., food) or rearing habitat. Alternative D provides the greatest benefits for primary production, Alternative B provides the greatest benefits for rearing habitat, and Alternative D provides the most advantageous fish passage conditions (e.g., the fewest structures and jumps) (Table 26-3).

Adverse impacts to fisheries include effects from in-channel construction activities and effects from agricultural activities on the floodplain. All Action Alternatives would include in-channel construction activities. Alternatives A, B, and D would allow agricultural activities on the floodplain after construction is complete which could impact fishery resources while Alternative C would not allow these activities.

26.8.3 Biological Resources – Vegetation

Action Alternatives would impact riparian habitat and other special-status vegetation alliances during construction of the Project and facilitate the increase in distribution and abundance of invasive plant species in the Project area. Alternatives C and D would impact more acreage of special-status vegetation alliances than Alternatives A and B (Table 26-3). However, conservation measures would be implemented that would offset potential adverse effects on special-status vegetation alliances and control the spread and introduction of invasive plants.

Project alternatives would provide benefits to riparian habitat and other sensitive vegetation resources and would enhance opportunities to implement conservation strategies and attain conservation goals for sensitive vegetation. Alternative B provides a wide, consensus-based floodplain with a mixture of active and passive riparian and floodplain habitat restoration and compatible agricultural activities. Alternative D also provides a wide floodplain which could provide substantial restoration opportunities (Table 26-3) but has passive restoration. The other alternatives provide a narrow floodplain and/or passive riparian habitat restoration and farming in the floodplain. Overall, Alternative B could provide the greatest benefits and least adverse impacts to vegetation.

26.8.4 Biological Resources – Wildlife

Action Alternatives would impact habitat used by special-status wildlife species. Alternative D could have the most adverse impacts to wildlife because, on average, this alternative would have the most potential impact to special-status wildlife species habitat prior to implementation of Project conservation measures. However, conservation measures would be implemented to avoid and minimize adverse impacts to special-status species and therefore estimates for habitat impacts are conservative for the Action Alternatives.

Alternative D would potentially impact species habitat with Project infrastructure to a greater extent than Alternatives A, B, and C. Alternative D would also have the greatest potential for impacting species habitat on the floodplain which would later be restored through passive restoration. Alternative C would, on average, have the least impact from

Project infrastructure. Alternative A would have fewer impacts to floodplain and temporary construction areas. Alternative C would have the least impact on species habitat considering all potential habitat impacts excluding borrow areas (Table 26-3).

Project alternatives would include long-term benefits to wildlife associated with enhanced riparian and floodplain vegetation within Reach 2B. Alternative C provides active riparian and floodplain habitat restoration, Alternative B provides a mixture of active and passive riparian and floodplain restoration and compatible agricultural activities, while Alternatives A and D provide passive riparian habitat restoration and agricultural practices in the floodplain. Alternative B could provide the greatest benefits associated with habitat restoration (Table 26-3).

Project alternatives would cause temporary and intermittent impacts on wildlife movement corridors as a result of Project construction. However, post-project conditions would most likely improve habitat for migrating species, particularly for Alternatives B and C which provide active habitat restoration or a mixture of active and passive habitat restoration.

26.8.5 Climate Change and Greenhouse Gas Emissions

Action Alternatives could create significant amounts of construction-related greenhouse gas (GHG) emissions without implementation of mitigation measures. Alternative A would have the most adverse impacts to climate change because it requires the most construction activity (i.e., activity associated with offroad construction equipment, material hauling vehicles, and worker commute vehicles). Conversely, Alternative C would have the least adverse impacts to climate change because it requires the least construction activity (see Table 26-3). Project operation-related GHG emissions would be similar for the Action Alternatives.

Project alternatives would provide benefits to climate change by increasing riparian and floodplain habitat, which has the capacity to absorb some GHGs. Over the long term, increased wetland and riparian zones would likely result in a decrease in GHG emissions relative to managed agriculture. Alternatives B and D would provide more floodplain habitat and potentially more carbon sequestration than Alternatives A and C.

26.8.6 Cultural Resources

Action Alternatives could impact archaeological resources if encountered during ground disturbing construction activities, particularly if borrow areas are located near identified archaeological resources, such as CA-FRA-45 and CA-FRA-106. Project mitigation measures would be implemented under all of the Action Alternatives to reduce potential impacts to archaeological resources.

Potential adverse effects to historical properties could occur through substantial alterations or changes to the historical setting. Of particular concern are properties listed or eligible for listing in the National or California Register. Alternatives C and D include changes to Mendota Dam and the outlet of the Delta-Mendota Canal, both of which are listed in the National and/or California Register, while Alternatives A and B do not modify these historical properties.

26.8.7 Environmental Justice

Project alternatives could have disproportionately high and adverse effects on environmental justice communities of concern (i.e., disadvantaged populations) as a result of removal of land from agricultural production, conversion of designated farmland to nonagricultural uses, cancellation of Williamson Act contracts, and the resultant changes in agricultural jobs and the regional economy. Alternative D would have the most adverse effects to farm-level jobs and the regional agriculturally influenced economy. Alternative C would have the least adverse effect to farm-level jobs and regional economy (see Table 26-3).

Project alternatives also have the potential for disproportionately high and adverse effects on environmental justice communities of concern as a result of construction-related emissions of criteria air pollutants and precursors and exposure of sensitive receptors to substantial concentrations of toxic air contaminants. Alternatives A and B would impact sensitive receptors to a greater degree than Alternatives C and D. Alternative A would have the most adverse impacts from construction emissions and Alternative C would have the least adverse impacts (see Table 26-3).

26.8.8 Geology and Soils

Action Alternatives would have similar impacts to geology and soils. Impacts from borrow areas would be similar for all of the Action Alternatives (up to 350 acres of land would be needed for borrow areas under any alternative). Erosion effects could occur, but standard erosion protection measures would be implemented under each alternative. Adverse soil conditions may also occur, but again, the Project would implement appropriate design measures under all Project alternatives.

26.8.9 Hydrology – Flood Management

Action Alternatives would have similar impacts and benefits to flood management. Project alternatives would impact flood management by temporarily limiting access to levees and facilities for maintenance and inspection staff. Diversion structures and fish passage facilities could also create localized backwater and redirection effects, though levee heights would be designed to accommodate such effects. Project alternatives would provide flood management benefits by increasing flood conveyance capacity in Reach 2B.

26.8.10 Hydrology – Groundwater

Project alternatives would have similar impacts to groundwater. Construction associated with channel and structural improvements could lead to changes in groundwater quality, however, mitigation measures would be implemented to reduce or avoid impacts.

Project alternatives could cause increased groundwater levels in areas outside of the floodplain levees. Alternative B may cause more areas to have shallow groundwater than the other alternatives (i.e., depth to groundwater less than 5 feet) (Table 26-3). However seepage management measures would be implemented during Project design and operations and would be included, as necessary, in Project areas where under-seepage is likely to affect adjacent land uses. Seepage control measures could include slurry walls,

seepage wells, seepage berms, land acquisition (fee title or seepage easements), and other measures.

26.8.11 Hydrology – Surface Water Resources and Water Quality

Alternatives C and D could have more adverse impacts to geomorphology than Alternatives A and B because additional channel bed degradation may occur during Restoration Flows as the upstream channel adjusts to the lowered base-level control resulting from modifications to Mendota Dam. This potential effect would be minimized by floodplain grading during construction.

Similarly, Alternatives C and D could have more adverse impacts on water quality than Alternatives A and B because of mobilization of contaminated sediments in the San Joaquin arm of Mendota Pool. However, long-term agricultural activities in the floodplain would have more adverse effects on water quality in Alternatives A, B, and D than in Alternative C. Agricultural fields in the floodplain could convey agricultural return flows (if not recaptured for reuse) and runoff to the river which can contain nutrients and pesticides.

26.8.12 Hydrology – Wetlands and Aquatic Resources

Alternatives C and D would potentially result in the most adverse impacts to wetlands because these alternative could impact more wetland area than Alternatives A and B (Table 26-3). However, conservation measures would be implemented to avoid, minimize, or compensate for adverse effects on waters of the United States and waters of the State, including wetlands, and these measures would be implemented as part of the Action Alternatives. Alternative B would provide more opportunities for restoration of wetlands and other waters with hydric soils than other Action Alternatives (see Table 26-3). Overall, Alternative B would have the least adverse impacts to wetlands and other waters of the United States while providing more restoration opportunities for wetlands and other waters with hydric soils.

26.8.13 Land-Use Planning and Agricultural Resources

Action Alternatives would impact land-use planning and agricultural resources as a result of removal of land from intensive agricultural production, conversion of designated farmland to nonagricultural uses, cancellation of Williamson Act contracts, degradation of agricultural land productivity, and conflicts with applicable land use plans. Alternative B would have the least adverse impact to land-use planning and agricultural resources due to the permanent loss of designated Farmland (see Table 26-3).

26.8.14 Noise and Vibration

Action Alternatives have similar noise-related impacts, with Alternatives A and B having slightly more adverse effects than Alternatives C and D due to traffic-related noise during construction activities (Table 26-3). Alternatives C and D have greater vibration-related impacts than Alternatives A and B due to proximity of pile driving activities near sensitive receivers.

26.8.15 Paleontological Resources

Action Alternatives could impact paleontological resources if encountered during ground disturbing construction activities. Project mitigation measures would be implemented to reduce potential impacts and therefore potential impacts from Project alternatives are similar.

26.8.16 Public Health and Hazardous Materials

Action Alternatives could impact public health and hazardous materials by creating or exposing new hazards or by exposing construction workers or the public to existing hazards. Mitigation measures would be implemented under the Action Alternatives to avoid or minimize these effects. Therefore Project alternatives would have similar effects.

26.8.17 Recreation

Action Alternatives would have some beneficial impacts to recreation through enhanced fisheries-based recreation opportunities. Alternatives B and D would have more adverse impacts to recreation than Alternatives A and C because these alternatives have the longest construction periods (see Table 26-2). Alternative A would have the least adverse impacts to recreation because this alternative has the shortest construction period.

26.8.18 Socioeconomics and Economics

Action Alternatives would provide some employment benefits and beneficial regional economic effects due to construction activities and Project operation, with Alternative A providing the most benefits. Project alternatives would impact agricultural production and agricultural related employment. Alternative D would have the most adverse long-term effects on agricultural production and employment, while Alternative C would have the least adverse long-term effects (Table 26-3).

26.8.19 Transportation and Traffic

Alternative A would have the most adverse impacts to transportation and traffic due to added construction-related traffic to the roadway circulation system (i.e., San Mateo Avenue, SR 33, and SR 180). Alternatives C and D would have the least adverse impacts to transportation and traffic due to construction-related traffic (see Table 26-3).

Action Alternatives would also create a temporary roadway closure that may affect emergency access/emergency response times to areas immediately north of the San Mateo Avenue crossing. Alternatives D and B would also create a permanent roadway closure at San Mateo Avenue crossing and Alternative A would result in a permanent roadway closure at Drive 10 ½ (which is only used for emergency access). Overall, Alternative C would provide the least adverse impacts to transportation and traffic.

26.8.20 Utilities and Service Systems

Many of the Project impacts to utilities and service would be the same for the Action Alternatives. To minimize and avoid disruption of subsurface utilities from ground disturbing activities, Project proponents would confirm the location of existing underground utilities; coordinate with the owners of transmission lines and pipelines; design restoration actions to avoid affecting underground facilities, if feasible; and

coordinate with the utility owner to shut off and relocate the utilities, if necessary. Therefore Project alternatives would have similar effects.

26.8.21 Visual Resources

Action Alternatives would create similar construction-related impacts to visual resources and mitigation measures would be implemented to minimize these effects. Long-term effects to visual quality at the San Mateo Avenue crossing would improve with any of the Action Alternatives. Alternatives C and D would impact visual resources at Mendota Pool Park and the Mendota Dam area while Alternative A and B would not impact visual resources in these areas. Conversely, Alternatives A and B would impact visual resources at the Bass Avenue Residential Area, while Alternatives C and D would not cause impacts in this area.

26.9 Mitigation Monitoring and Reporting Program

The requirement for a mitigation monitoring or reporting program is introduced in the State CEQA Guidelines (Cal. Code Regs., tit. 14, §15091). This section of the State CEQA Guidelines directs the public agency approving or carrying out the Project (CSLC, as the State lead agency) to make specific written findings for each significant impact identified in the EIR. When making the required findings, the agency will also adopt a program for reporting on or monitoring the changes that it has either required in the Project or made a condition of approval to avoid or substantially lessen significant environmental effects. These mitigation measures must be fully enforceable through permit conditions, agreements, or other measures.

Section 15097 was added to the State CEQA Guidelines on October 23, 1998. It requires the public agency to adopt a program for monitoring or reporting on the revisions that it has required in the Project and the measures it has imposed to mitigate or avoid significant environmental effects. Reporting or monitoring responsibilities may be delegated to another public agency or private entity. However, until mitigation measures have been completed, the State lead agency (CSLC) remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program.

The CSLC may choose whether its program will monitor mitigation, report on mitigation, or both.

- Reporting generally consists of a written compliance review that is presented to the decision-making body or authorized staff person. A report may be required at various stages during project implementation or upon completion of the mitigation measure. It is suited to projects that have readily measurable or quantitative mitigation measures or that already involve regular review.
- Monitoring is generally an ongoing or periodic process of project oversight. It is suited to projects with complex mitigation measures that are expected to be implemented over a period of time.

The public is allowed access to records and reports used to track the monitoring program. Monitoring records and reports will be made available for public inspection by the CSLC or its designee on request.

26.9.1 Matrix

The mitigation monitoring and reporting program for the Project is provided in Table 26-4, below. Table 26-4 includes all Project impacts that were identified as significant or potentially significant. Impacts that are significant or potentially significant, but unavoidable, are those where no mitigation can reduce the impact to a less-than-significant level. For impacts that are less than significant, mitigation is not required by CEQA. A complete description of each impact and mitigation measure is found in the previous chapters of this EIS/R.

For each impact and mitigation measure, the matrix identifies the location where the impact occurs and where the mitigation measure should be applied; the monitoring/reporting action to be taken by the monitor or lead agency; the effectiveness criteria; the agency responsible for ensuring that the action occurs; and the timing requirements for implementation. In most cases, the Reclamation and/or the CSLC are responsible for evaluating monitoring data and compliance with program requirements.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Biological Resources – Fisheries, Biological Resources – Vegetation, Biological Resources – Wildlife, Climate Change and Greenhouse Gas Emissions, Geology and Soils, Hydrology – Flood Management, Hydrology – Wetlands and Aquatic Resources, Socioeconomics and Economics and Utilities and Service Systems – These sections contain no mitigation measures for the Project impacts.						
Air Quality						
Impact AQ-1: <i>Create Excess Amounts of Construction Related Criteria Air Pollutants that Exceed SJVAPCD Thresholds of Significance or Cause or Contribute to Exceedances of the AAQS.</i>	Mitigation Measure AQ-1A: <i>Reduce Criteria Exhaust Emissions from Construction Equipment.</i>	The mitigation will apply to all construction areas.	Adequacy of the proposed practices will be confirmed with Reclamation construction managers and CSLC monitors as detailed in the Monitoring and Reporting Schedule submitted to the SJVAPCD. The SJVAPCD would prepare a Monitoring and Reporting Schedule Compliance letter upon completion.	Effectiveness will be based on the emissions calculated based on actual equipment used and operating hours with a minimum performance criteria equal to the average fleet mix as set forth in the ARB's latest Off-road Construction Emission Database. This will be detailed in the Air Impact Assessment and Monitoring and Reporting Schedule submitted to the SJVAPCD in conjunction with ISR Rule 9510.	Reclamation and CSLC.	Mitigation will be ongoing over the construction timeframe.
	Mitigation Measure AQ-1B: <i>Reduce Criteria Exhaust Emissions from Material Hauling Vehicles.</i>	The mitigation will apply to all construction areas.	Adequacy of the proposed practices will be confirmed with Reclamation construction managers and CSLC monitors as detailed in the Monitoring and Reporting Schedule submitted to the	Effectiveness will be based on the emissions calculated based on actual equipment used and operating hours with a minimum performance criteria equal to the average fleet mix as set forth in the ARB's latest EMFAC emission	Reclamation.	Mitigation will be ongoing over the construction timeframe.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
			SJVAPCD. The SJVAPCD would prepare a Monitoring and Reporting Schedule Compliance letter upon completion.	database. This will be detailed in the Air Impact Assessment and Monitoring and Reporting Schedule submitted to the SJVAPCD in conjunction with ISR Rule 9510.		
	Mitigation Measure AQ-1C: <i>Offset Project Construction Emissions through a SJVAPCD Voluntary Emission Reduction Agreement.</i>	The mitigation will apply to all construction areas.	Adequacy of the proposed practices will be confirmed with the SJVAPCD as detailed in the Monitoring and Reporting Schedule submitted to the SJVAPCD. The SJVAPCD would prepare a Monitoring and Reporting Schedule Compliance letter upon completion.	Effectiveness will be based on actual equipment used and operating hours for any emissions that are not reduced by on-site mitigation. This will be detailed in the Air Impact Assessment and Monitoring and Reporting Schedule submitted to the SJVAPCD in conjunction with ISR Rule 9510.	Reclamation.	Mitigation will be ongoing over the construction timeframe.
Impact AQ-2: <i>Conflict with Applicable Plans or Policies Related to Air Quality.</i>	Mitigation Measure AQ-2: <i>Reduce or Offset Project Emissions.</i>	The mitigation will apply to all construction areas.	Adequacy of the proposed practices will be confirmed with the SJVAPCD or Reclamation construction managers and CSLC monitors, as detailed in the Monitoring and Reporting Schedule submitted to the	Effectiveness will be based on actual equipment used and operating hours for any emissions that are not reduced by on-site mitigation. This will be detailed in the Air Impact Assessment and Monitoring and Reporting Schedule	Reclamation.	Mitigation will be ongoing over the construction timeframe.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
			SJVAPCD. The SJVAPCD would prepare a Monitoring and Reporting Schedule Compliance letter upon completion.	submitted to the SJVAPCD in conjunction with ISR Rule 9510.		
Impact AQ-3: <i>Expose Sensitive Receptors to Substantial Air Pollutants Associated with Construction.</i>	Mitigation Measure AQ-3A: <i>Reduce Diesel Particulate Matter Emissions from Construction Equipment.</i>	The mitigation will apply to all construction areas.	Adequacy of the proposed practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on use of ARB certified after-market control devices or EPA certified engines.	Reclamation.	Mitigation will be ongoing over the construction timeframe.
	Mitigation Measure AQ-3B: <i>Reduce Diesel Particulate Matter Emissions from Material Hauling Vehicles.</i>	The mitigation will apply to all construction areas.	Adequacy of the proposed practices will be confirmed with Reclamation construction managers and CSLC monitors as detailed in the Monitoring and Reporting Schedule submitted to the SJVAPCD. The SJVAPCD would prepare a Monitoring and Reporting Schedule Compliance letter upon completion.	Effectiveness will be based on the emissions calculated based on actual equipment used and operating hours with a minimum performance criteria equal to the average fleet mix as set forth in the ARB's latest EMFAC emission database. This will be detailed in the Air Impact Assessment and Monitoring and Reporting Schedule submitted to the SJVAPCD in conjunction with ISR Rule 9510.	Reclamation.	Mitigation will be ongoing over the construction timeframe.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Cultural Resources						
Impact CUL-1: <i>Effects on Archaeological Resources from Ground Disturbing Activities during Construction.</i>	Mitigation Measure CUL-1A: <i>Comply with Section 106 of the NHPA or Equivalent.</i>	In Project areas with subsequent site-specific studies and where additional access is granted.	Reclamation would report to SHPO and the consulting parties.	Successful compliance with Section 106 of the NHPA or Public Resources Code sections 5024 and 5024.5, as applicable.	Reclamation.	Site-specific environmental reviews will be conducted prior to ground-disturbing activities. Coordination will continue with the relevant Native American tribes in the area, as necessary to complete compliance processes.
	Mitigation Measure CUL-1B: <i>Conduct Subsurface Testing and/or Archaeological Monitoring in Proximity to Identified Sites or Areas of Sensitivity.</i>	Construction areas with ground-disturbing activities occurring in native sediments/soils near known archaeological resources, as well as any areas of proposed disturbance in areas determined to be highly or very highly sensitive for buried archaeological resources by Byrd et al. (2009) or a subsequent Project-specific geoarchaeological sensitivity analysis.	Geoarchaeological testing will occur prior to, and/or archaeological monitoring will occur during, specified ground-disturbing activities. Reclamation will report to SHPO and the consulting parties.	Performance tracking of this mitigation measure is based upon successful implementation and the approval of the documentation by SHPO and appropriate consulting parties.	Reclamation.	Geoarchaeological testing will occur prior to ground disturbing activities. Active archaeological monitoring, as necessary, will occur throughout the duration of these specific ground-disturbing activities.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	Mitigation Measure CUL-1C: <i>Halt Work in the Event of an Archaeological Discovery.</i>	Active construction areas during ground-disturbing activities.	Reclamation and/or CSLC will report to SHPO and the consulting parties.	Performance tracking of this mitigation measure will be based on successful implementation and approval of documentation by SHPO and appropriate consulting parties.	Reclamation and CSLC.	Mitigation will be ongoing over the construction timeframe.
	Mitigation Measure CUL-1D: <i>Plan an Intentional Site Burial Preservation in Place.</i>	Active construction areas in the event of an archaeological discovery where avoidance is not feasible and capping can be designed to effectively minimize Project effects to the discovery.	Reclamation and/or CSLC will make provisions with the archaeologist to monitor the site after the burial process is complete. Reclamation and/or CSLC will report to SHPO and the consulting parties.	Performance tracking of this mitigation measure will be based on successful implementation and the approval of the documentation by SHPO and appropriate consulting parties.	Reclamation and CSLC.	Mitigation will occur in the event of an archaeological discovery where avoidance is not feasible and would be ongoing over the construction timeframe.
	Mitigation Measure CUL-1E: <i>Avoid Soil Borrowing in the Vicinity of Known Archaeological Resources.</i>	Within the vicinity of known archaeological resources, including CA-FRA-45 and CA-FRA-106.	Reclamation and/or CSLC will report to SHPO and the consulting parties.	Avoidance of areas within delineated site boundaries.	Reclamation and CSLC.	At least 90-days prior to proposed borrowing activities.
Impact CUL-2: <i>Effects on Historic Properties Listed or Eligible for Listing in the National or California Register.</i>	Mitigation Measure CUL-2: <i>Follow the Secretary of the Interior's Standards for the Treatment of Historic Properties.</i>	Construction activities at Mendota Dam.	Reclamation and/or CSLC will report to SHPO and the consulting parties.	Secretary of the Interior's Standards are met.	Reclamation and CSLC.	Prior to and during construction activities at Mendota Dam.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Hydrology – Groundwater						
Impact GRW-1: <i>Temporary Construction-Related Effects on Groundwater Quality.</i>	Mitigation Measure GRW-1A: <i>Prepare and Implement a Stormwater Pollution Prevention Plan.</i>	Project areas with active construction or used by construction personnel, including access roads, staging and storage areas, borrow sites, within the river channel and on adjacent uplands.	At a minimum, annual reports will be submitted to the State Water Resources Control Board via the Storm Water Multiple Application and Report Tracking System.	Performance tracking will be based on successful compliance with the Statewide NPDES Construction General Permit.	Reclamation and the construction contractor.	The SWPPP will be developed prior to construction and will be implemented during construction.
	Mitigation Measure GRW-1B: <i>Prepare and Implement a Construction Groundwater Management Plan.</i>	Project areas with active dewatering.	At a minimum, annual reports will be submitted to Reclamation managers summarizing the monitoring data obtained during the previous year(s).	Performance tracking of this mitigation measure will be based upon successful compliance with the Statewide NPDES Construction General Permit and/or General Permit for Low Threat Discharges.	Reclamation and the construction contractor.	The Construction Groundwater Management Plan will be developed prior to construction and will be implemented during construction.
Hydrology – Surface Water Resources and Water Quality						
Impact SWQ-1: <i>Construction-Related Effects on Water Quality.</i>	Mitigation Measure SWQ-1: <i>Development and Implementation of SWPPP.</i>	Project areas with active construction or used by construction personnel, including access roads, staging and storage areas, borrow sites, and areas within the river channel and on adjacent uplands.	At a minimum, annual reports will be submitted to the SWRCB via the Storm Water Multiple Application and Report Tracking System.	Performance tracking will be based on successful compliance with the Statewide NPDES Construction General Permit.	Reclamation and the construction contractor.	The SWPPP will be developed prior to construction and will be implemented during construction.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Impact SWQ-3: <i>Long-Term Effects on Water Quality from Floodplain Inundation of Prior Agricultural Soils.</i>	Mitigation Measure SWQ-3: <i>Minimize Use of Pesticide and Herbicide Contaminated Soil.</i>	Floodplain areas or areas used for borrow materials.	Adequacy of the proposed construction practices will be confirmed with Reclamation managers and CSLC monitors.	Effectiveness will be based on compliance with testing and risk assessment guidelines.	Reclamation and the construction contractor.	Prior to construction of Project levees or floodplain grading.
Land Use Planning and Agricultural Resources						
Impact LU-1: <i>Removal of Land from Agricultural Production.</i>	Mitigation Measure LU-1: <i>Preserve Agricultural Productivity of Designated Farmland to the Extent Possible.</i>	Agricultural lands within the Project area.	Adequacy of the proposed activities will be confirmed with Reclamation project managers and CSLC monitors.	Effectiveness will be based on annual reporting of the number of acres removed from agricultural production during implementation.	Reclamation and CSLC.	Mitigation will be ongoing over the construction timeframe.
Impact LU-2: <i>Conversion of Designated Farmland to Non-Agricultural Uses.</i>	Mitigation Measure LU-2: <i>Preserve Agricultural Productivity of Designated Farmland to the Extent Possible.</i>	Agricultural lands within the Project area.	Adequacy of the proposed activities will be confirmed with Reclamation project managers and CSLC monitors.	Effectiveness will be based on annual reporting of the number of acres removed from agricultural production during implementation.	Reclamation and CSLC.	Mitigation will be ongoing over the construction timeframe.
Impact LU-3: <i>Conflict with Williamson Act Contracts.</i>	Mitigation Measure LU-3: <i>Preserve Agricultural Productivity of Designated Farmland to the Extent Possible.</i>	Agricultural lands within the Project area.	Adequacy of the proposed activities will be confirmed with Reclamation project managers and CSLC monitors.	Effectiveness will be based on annual reporting of the number of acres removed from agricultural production during implementation.	Reclamation and CSLC.	Mitigation will be ongoing over the construction timeframe.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Impact LU-5: <i>Conflict with Applicable Land Use Plans Regarding Agricultural Lands.</i>	Mitigation Measure LU-5: <i>Notify County Planning Agencies of General Plan and Zoning Ordinance Inconsistencies.</i>	Agricultural lands within the Project area.	Notifications of zoning and land use plan inconsistencies will be confirmed with Reclamation project managers and CSLC monitors.	Effectiveness will be based on whether updates can be made by county planning agencies.	Reclamation and CSLC.	Formal notification of any zoning and/or land use plan inconsistencies would occur after project approval.
Noise and Vibration						
Impact NOI-1: <i>Exposure of Sensitive Receptors to Temporary Construction Noise.</i>	Mitigation Measure NOI-1: <i>Reduce Temporary and Short-Term Noise Levels from Construction-Related Equipment Near Sensitive Receptors.</i>	Project areas where construction activities will be conducted within 2,000 feet of noise-sensitive receptors.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on public complaints to the SJRRP.	Reclamation and the construction contractor.	Ongoing when construction activities occur outside of construction noise exempt hours.
Impact NOI-2: <i>Exposure of Sensitive Receptors to Temporary Construction Vibration.</i>	Mitigation Measure NOI-2: <i>Minimize Vibration Related Effects.</i>	Project areas where pile driving construction activities will be conducted within 300 feet or less of sensitive receptors.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on public complaints to the SJRRP.	Reclamation and the construction contractor.	Ongoing during pile driving construction activities within 300 feet or less of residential structures.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Impact NOI-3: <i>Increased Off-Site Vehicular Traffic Noise due to Construction Related Trips.</i>	Mitigation Measure NOI-3: <i>Reduce Temporary Noise Levels from Construction-Related Traffic Increases Near Sensitive Receptors.</i>	Haul routes near sensitive receptors along San Mateo Avenue.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on public complaints to the SJRRP.	Reclamation and the construction contractor.	Ongoing when construction activities occur outside of construction noise exempt hours.
Paleontological Resources						
Impact PAL-1: <i>Possible Damage to or Destruction of Unique Paleontological Resources.</i>	Mitigation Measure PAL-1: <i>Stop Work if Paleontological Resources Are Encountered During Earthmoving Activities and Implement Recovery Plan.</i>	Construction areas with active excavation.	Preparation of a recovery plan in accordance with SVP Guidelines, if paleontological resources are discovered during earthmoving activities and notification of CSLC monitors if find is on land under the CSLC's jurisdiction.	Performance tracking of this mitigation measure will be based on the stoppage in work in the vicinity of the find and meeting the recommendations in the recovery plan.	Reclamation.	Mitigation would be ongoing over the construction timeframe.
Public Health and Hazardous Materials						
Impact HAZ-2: <i>Increased Exposure to Hazardous Materials for People Residing or Working in the Project Area.</i>	Mitigation Measure HAZ-2A: <i>Follow General Hazardous Materials Guidelines.</i>	Location: Project areas with active construction or used by construction personnel including access roads, staging and storage areas, and borrow sites.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on incidence of hazardous material spills.	Reclamation and CSLC.	Ongoing over the construction timeframe.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	Mitigation Measure HAZ-2B: <i>Properly Dispose of Hazardous Building Components.</i>	Construction areas with potential hazardous building components.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on compliance with health and safety guidelines.	Reclamation, CSLC, and the construction contractor.	Ongoing over the construction timeframe.
	Mitigation Measure HAZ-2C: <i>Properly Dispose of Pesticides.</i>	Project areas with active construction or used by construction personnel with pesticide or herbicide containers.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on compliance with disposal guidelines.	Reclamation, CSLC, and the construction contractor.	Ongoing over the construction timeframe.
	Mitigation Measure HAZ-2D: <i>Properly Manage Discolored or Odiferous Soils.</i>	Project areas with active construction or used by construction personnel with discolored or odiferous soils.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on compliance with regulatory guidelines.	Reclamation, CSLC, and the construction contractor.	Ongoing over the construction timeframe.
	Mitigation Measure HAZ-2E: <i>Properly Remove Underground Storage Tanks.</i>	Project areas with active construction or used by construction personnel including access roads, staging and storage areas, and borrow sites with underground storage tanks.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on compliance with regulatory guidelines.	Reclamation, CSLC, and the construction contractor.	Ongoing over the construction timeframe.
Impact HAZ-3: <i>Creation of a</i>	Mitigation Measure HAZ-3: <i>Minimize</i>	Project areas with active construction or	Adequacy of the proposed construction	Effectiveness will be based on compliance	Reclamation, CSLC, and the	Ongoing over the construction

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
<i>Substantial Hazard from Disturbance of Known Hazardous Material Sites.</i>	<i>Disturbance to Known Hazardous Material Sites.</i>	used by construction personnel including access roads, staging and storage areas, and borrow sites that have abandoned oil and gas wells or asbestos containing material.	practices will be confirmed with Reclamation construction managers and CSLC monitors.	with regulatory guidelines.	construction contractor.	timeframe.
Impact HAZ-4: <i>Creation of a Substantial Hazard from Mobilization of Soil Contaminants on the Floodplain.</i>	Mitigation Measure HAZ-4: <i>Minimize Use of Pesticide and Herbicide Contaminated Soil.</i>	Project areas with active construction or used by construction personnel including borrow sites.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on compliance with testing and risk assessment guidelines.	Reclamation, CSLC, and the construction contractor.	Ongoing over the construction timeframe.
Impact HAZ-5: <i>Exposure of People to Increased Risk of Diseases.</i>	Mitigation Measure HAZ-5A: <i>Minimize Exposure to Potential West Nile Virus Carrying Vectors.</i>	Project areas with active construction or used by construction personnel.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on evidence of mosquitos and complaints of mosquito bites.	Reclamation, CSLC, and the construction contractor.	Ongoing over the construction timeframe.
	Mitigation Measure HAZ-5B: <i>Minimize Exposure to Potential Hantavirus Vectors.</i>	Project areas with active construction or used by construction personnel, particularly in enclosed buildings.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on implementation of construction training.	Reclamation, CSLC, and the construction contractor.	Ongoing over the construction timeframe.
	Mitigation Measure HAZ-5C: <i>Minimize Exposure to Valley</i>	Project areas with active construction or used by construction	Adequacy of the proposed construction practices will be	Effectiveness will be based on compliance with dust control	Reclamation, CSLC, and the construction	Ongoing over the construction timeframe.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	<i>Fever.</i>	personnel.	confirmed with Reclamation construction managers and CSLC monitors.	measures.	contractor.	
Impact HAZ-6: <i>Creation of a Substantial Hazard from Decommissioned Wells.</i>	Mitigation Measure HAZ-6: <i>Minimize the Disturbance of Idle or Abandoned Wells.</i>	Project areas with active construction or used by construction personnel, including borrow sites.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on implementation of the pre-construction measures.	Reclamation, CSLC, and the construction contractor.	Ongoing over the construction timeframe.
Recreation						
Impact REC-1: <i>Construction-Related Effects on Recreation Opportunities and Facilities.</i>	Mitigation Measure REC-1: <i>Minimize Construction Effects on Recreation Uses.</i>	The location of proposed construction area security modifications will vary as construction activities move throughout the Project area but would be focused primarily at Mendota Pool.	Adequacy of the proposed construction practices will be confirmed with Reclamation managers and CSLC monitors.	Effectiveness will be based on public complaints to the SJRRP.	Reclamation and CSLC.	Mitigation will be ongoing over the construction timeframe.
Impact REC-2: <i>Permanent Displacement of Existing Recreation Uses and Access Restrictions from Project Facilities.</i>	Mitigation Measure REC-2: <i>Establish Boat Portage Facilities Around Project Facilities.</i>	The location of the new portage facilities will be at Project structures (i.e., between the fish barrier and Mendota Pool, at the Mendota Pool Dike, and at the South Canal bifurcation structure).	Adequacy of the proposed portage facilities will be confirmed with Reclamation managers and CSLC monitors.	Effectiveness will be based on public complaints to the SJRRP.	Reclamation and CSLC.	Mitigation will be completed at the time of structure installations.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Transportation and Traffic						
Impact TRA-4: <i>Potential to Result in Inadequate Emergency Access.</i>	Mitigation Measure TRA-4A: <i>Provide Temporary Roadway and Crossing at San Mateo Avenue.</i>	Active construction areas along San Mateo Avenue.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on access availability.	Reclamation and the construction contractor.	Ongoing over the construction timeframe.
	Mitigation Measure TRA-4B: <i>Use Construction Sequencing to Provide Continuous Emergency Access at Drive 10 ½.</i>	Active construction areas at Drive 10 ½.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on access availability.	Reclamation and the construction contractor.	Ongoing over the construction timeframe.
Visual Resources						
Impact VIS-1: <i>Construction Related Effects on the Visual Quality of the Project Site and Its Surroundings.</i>	Mitigation Measure VIS-1: <i>Minimize Visual Disruption from Construction Activities.</i>	The location of proposed construction area modifications will vary as construction activities move throughout the Project area but will be focused primarily at Mendota Pool Park and San Mateo Avenue. Fencing will be implemented where topography and Project area activities allow.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on public complaints to the SJRRP.	Reclamation, CSLC, and the contractor.	Mitigation will be ongoing over the construction timeframe.

**Table 26-4.
Mitigation Monitoring and Reporting Program**

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Impact VIS-6: <i>Substantial Changes in Light or Glare.</i>	Mitigation Measure VIS-6: <i>Require Conformance to Lighting Standards.</i>	The location of proposed construction area modifications will vary as construction activities move throughout the Project area but will be focused primarily at the Mendota Dam area and the Bass Avenue residential area.	Adequacy of the proposed construction practices will be confirmed with Reclamation construction managers and CSLC monitors.	Effectiveness will be based on public complaints to the SJRRP.	Reclamation, CSLC, and the contractor.	Mitigation will be ongoing over the construction timeframe.

Key:

AAQS = ambient air quality standards
 ARB = California Air Resources Board
 CSLC = California State Lands Commission
 EPA = U.S. Environmental Protection Agency
 ISR = indirect source rule
 NHPA = National Historic Preservation Act

NPDES = National Pollutant Discharge Elimination System
 Reclamation = U.S. Department of the Interior, Bureau of Reclamation
 SHPO = State Historic Preservation Officer
 SJRRP = San Joaquin River Restoration Program
 SJVAPCD = San Joaquin Valley Air Pollution Control District
 SWPPP = stormwater pollution prevention plan

26.9.2 Environmental Commitments

The following section summarizes the environmental commitments detailed in Section 2.2.10 that would be implemented with the Action Alternatives to avoid potentially adverse environmental consequences. These commitments are consistent with those commitments provided in the PEIS/R.

Conservation Strategy

As part of Program implementation, a comprehensive strategy for the conservation of listed and sensitive species and habitats has been prepared, and will be implemented in coordination with U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and California Department of Fish and Wildlife (DFW). The goals of the strategy are as follows:

- Conserve riparian vegetation and waters of the United States, including wetlands
- Control and manage invasive species
- Conserve special-status species

The Program’s Conservation Strategy includes conservation measures for biological resources that may be affected by Project actions (listed in Table 26-5). These measures are similar to those presented in the PEIS/R (SJRRP 2011a, pages 2-55 to 2-79) and are the same as those detailed in Table 2-8 in Section 2.2.10 of this EIS/R.

**Table 26-5.
Conservation Measures for Biological Resources**

Identifier	Conservation Measure
VELB	Valley Elderberry Longhorn Beetle
<i>VELB-1</i>	<i>Avoid and Minimize Effects to Species</i>
BNLL	Blunt-Nosed Leopard Lizard
<i>BNLL-1</i>	<i>Avoid and Minimize Effects to Species</i>
PLANTS	Other Special-Status Plants
<i>PLANTS-1</i>	<i>Avoid and Minimize Effects to Special-Status Plants</i>
GGS	Giant Garter Snake
<i>GGS-1</i>	<i>Avoid and Minimize Loss of Habitat for Giant Garter Snake</i>
<i>GGS-2</i>	<i>Compensate for Temporary or Permanent Loss of Habitat</i>
WPT	Western Pond Turtle
<i>WPT-1</i>	<i>Avoid and Minimize Loss of Individuals</i>
SWH	Swainson’s Hawk
<i>SWH-1</i>	<i>Avoid and Minimize Impacts to Swainson’s Hawk</i>
<i>SWH-2</i>	<i>Compensate for Loss of Nest Trees and Foraging Habitat</i>
RAPTOR	Other Nesting Raptors
<i>RAPTOR-1</i>	<i>Avoid and Minimize Loss of Individual Raptors</i>
<i>RAPTOR-2</i>	<i>Compensate for Loss of Nest Trees</i>
RNB	Riparian Nesting Birds: Least Bell’s Vireo
<i>RNB-1</i>	<i>Avoid and Minimize Effects to Species</i>
MTBA	Other Birds Protected by the Migratory Bird Treaty Act
<i>MBTA-1</i>	<i>Avoid and Minimize Effects to Species</i>

**Table 26-5.
Conservation Measures for Biological Resources**

Identifier	Conservation Measure
TRI	Tricolored Blackbird
<i>MBTA-1</i>	<i>Avoid Nesting Colonies</i>
SWA	Cliff Swallow
<i>MBTA-1</i>	<i>Avoid Nesting Colonies</i>
BRO	Burrowing Owl
<i>BRO-1</i>	<i>Avoid Loss of Individuals</i>
<i>BRO-2</i>	<i>Minimize Impacts to Species</i>
BAT	Special-Status Bats
<i>BAT-1</i>	<i>Avoid and Minimize Loss of Individuals</i>
<i>BAT-2</i>	<i>Compensate for Loss of Habitat</i>
FKR	Fresno Kangaroo Rat
<i>FKR-1</i>	<i>Avoid and Minimize Effects to Species</i>
SJKF	San Joaquin Kit Fox
<i>SJKF-1</i>	<i>Avoid and Minimize Effects to Species</i>
PL	Pacific Lamprey
<i>PL-1</i>	<i>Avoid and Minimize Effects to Species</i>
RHSNC	Riparian Habitat and Other Sensitive Natural Communities
<i>RHSNC-1</i>	<i>Avoid and Minimize Loss of Riparian Habitat and Other Sensitive Natural Communities</i>
<i>RHSNC-2</i>	<i>Compensate for Loss of Riparian Habitat and Other Sensitive Natural Communities</i>
WUS	Waters of the United States/Waters of the State
<i>WUS-1</i>	<i>Identify and Quantify Wetlands and Other Waters of the United States</i>
<i>WUS-2</i>	<i>Obtain Permits and Compensate for Any Loss of Wetlands and Other Waters of the United States/Waters of the State</i>
INV	Invasive Plants
<i>INV-1</i>	<i>Implement the Invasive Vegetation Monitoring and Management Plan</i>
CP	Conservation Plans
<i>CP-1</i>	<i>Remain Consistent with Approved Conservation Plans</i>
<i>CP-2</i>	<i>Compensate Effects Consistent with Approved Conservation Plans</i>
CVS	Central Valley Steelhead
<i>CVS-1</i>	<i>Avoid Loss of Habitat and Risk of Take of Species</i>
<i>CVS-2</i>	<i>Minimize Loss of Habitat and Risk of Take of Species</i>
EFH	Essential Fish Habitat (Pacific Salmonids)
<i>EFH-1</i>	<i>Avoid Loss of Habitat and Risk of Take of Species</i>
<i>EFH-2</i>	<i>Minimize Loss of Habitat and Risk of Take from Implementation of Construction Activities</i>

Minimize Flood Risk from Interim and Restoration Flows

The Program's strategy for minimizing flood risk is to limit the maximum downstream extent and rate of Interim and Restoration flows for the given reach to then-existing channel capacities. This strategy is incorporated by reference from the PEIS/R (SJRRP 2011a, pages 2-22 through 2-28) and summarized in Section 2.2.10 of this EIS/R. These Program-wide commitments are documented in the PEIS/R Record of Decision (ROD), and no new Project-level actions to minimize flood risk from Interim and Restoration flows are being proposed.

Other Environmental Commitments

Environmental commitments are measures or practices adopted by a project proponent to reduce or avoid adverse effects that could otherwise result from project construction or operations. The other environmental commitments that will be implemented by the Project proponents to avoid potentially adverse environmental consequences are detailed in Section 2.2.10 and summarized here. Many of these measures are consistent with those specified in the PEIS/R ROD.

Air Quality

- The Project proponents will comply with San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII.
- The Project proponents will comply with SJVAPCD Rule 9510, “Indirect Source Review.”

Biological Resources – Fisheries

- The Project proponents will require a NMFS-approved Worker Environmental Awareness Training Program for construction personnel.
- The construction contractor will use a vibratory hammer, where feasible, to avoid acoustic impacts to Federal Endangered Species Act (ESA)-listed fish when pile driving.
- The construction contractor will use turbidity curtains during in-water work activities, where feasible, to minimize the release of sediment that may be stirred up by the construction activities.
- Construction work will be conducted under the guidance of a stormwater pollution prevention plan that requires in-water turbidity sampling.
- The Project proponents will require mulches used for hydroseeding in the future floodplain area to contain low concentrations of fertilizer, to the extent feasible.

Geology and Soils

- Site-specific geotechnical exploration, testing, and analysis will be conducted prior to final design.
- The Project proponents will prepare and implement a stormwater pollution prevention plan that complies with applicable Federal regulations concerning construction activities. (This measure is the same as GRW-1A and SQW-1.)
- Excavation of borrow materials will be done in accordance with Reclamation design standards, and comply with provisions of the Clean Water Act Section 402 and the National Pollutant Discharge Elimination System Construction General Permit.

Public Health and Hazardous Materials

- The Project proponents will comply with the California Environmental Protection Agency's (Cal/EPA's) Unified Program.
- The Project proponents will comply with Federal, State, and local hazardous materials regulations, as applicable, monitored by the State (e.g., California Occupational Safety and Health Administration [Cal/OSHA], Department of Toxic Substances Control, California Highway Patrol) and/or local jurisdictions.
- The Project proponents will adopt reasonable wildland fire safety strategies and have the firefighting equipment required by Cal/OSHA during all phases of construction.

Transportation and Traffic

- The Project proponents will comply with Department of Motor Vehicles codes by requiring contractors and employees to be properly licensed and endorsed when operating commercial vehicles.
- The Project proponents will comply with California Vehicle Code section 35551 by enforcing compliance with weight restrictions on vehicles traveling on freeways and highways and by requiring heavy haulers to obtain permits, if required, prior to delivery of any heavy haul load.
- The Project proponents will comply with California Vehicle Code section 35780 by requiring heavy haulers to obtain a Single-Trip Transportation Permit prior to delivery of any oversized load.
- The Project proponents will acquire the necessary permits and approval from the California Department of Transportation (Caltrans) for relocation of any structures or fixtures necessary to telegraph, telephone, or electric power lines or of any ditches, pipes, drains, sewers, or underground structures located in the public rights-of-way.
- As required by the PEIS/R ROD, the Project proponents will prepare and implement a traffic management plan that identifies the number of truck trips, time of day for arrival and departure of trucks, limits on number of truck trips, and traffic circulation control measures. During project construction, access to existing land uses will be maintained at all times, with detours used as necessary during road closures. The traffic management plan will be submitted to the appropriate county public works, fire, police, and sheriff departments for comments.

Utilities and Service Systems

- As required by the PEIS/R ROD, to minimize and avoid disruption of subsurface utilities from ground disturbing activities, Project proponents will (1) confirm the location of existing underground utilities, (2) coordinate with the owners of transmission lines and pipelines, (3) design restoration actions to avoid affecting

underground facilities, if feasible, and (4) coordinate with the utility owner to shut off and relocate the utilities, as necessary.

- The location of public utilities will be confirmed and appropriate notifications will be made by contacting utility providers (e.g., power and communication utility service, and irrigation district service) who operate, maintain or own utilities in the Project area.
- Construction contractors will request an underground service alert from Underground Service Alert North in advance of earthmoving activities to locate and avoid underground utilities.
- Solid waste removed from the Project area will be disposed of in a permitted landfill. The operator of the recycling/disposal location will be notified and Project proponents will obtain approval for the type and amount of solid waste that will be generated.

Permitting

Reclamation will obtain all necessary permits, as required by law. The permits and approvals that may be required for implementation of the Project are described in Section 2.2.10, Table 2-10. In general, Federal and State actions (permit issuance) will require a signed ROD (NEPA) and findings, EIR certification, and Notice of Determination (NOD) documents (CEQA). Additional information on permit acquisition procedures, submittal package requirements, critical issues, timing, and permit fees is discussed in the Project's Regulatory Compliance TM (SJRRP 2011b).

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27.0 Consultation, Coordination, and Compliance

This chapter summarizes the activities undertaken by U.S. Department of the Interior, Bureau of Reclamation (Reclamation), California State Lands Commission (CSLC), and California Department of Water Resources (DWR) to satisfy National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), and other regulatory requirements, as well as activities undertaken for public and agency involvement. In addition, this chapter lists the needed permits, petitions, compliance documents, etc. for the Project-level actions. For a complete list of Project-level actions, see Chapter 2.0, “Description of Alternatives.” This chapter also describes the public scoping process used to involve the public and agencies in the development of the Draft Environmental Impact Statement/Report (EIS/R). Section 27.4, “Distribution List,” lists the entities receiving a copy of this EIS/R.

Reclamation and DWR jointly conducted initial public outreach and agency involvement efforts related to development of this EIS/R. Reclamation and CSLC continued these public outreach and agency involvement efforts throughout development of this EIS/R. These consultations assisted Reclamation, CSLC, and DWR in determining the scope of the EIS/R, developing Project components, identifying the range of alternatives, defining potential environmental impacts and the significance of those impacts, and identifying appropriate mitigation measures. These efforts consist of public scoping meetings and ongoing meetings with stakeholders to obtain their input and comments. Reclamation and CSLC will continue to solicit public and agency input by encouraging review of this EIS/R. Past and future public involvement, consultation, and coordination efforts are discussed in Section 27.3.

27.1 Compliance with Related Laws, Rules, Regulations, and Executive Orders

Federal and State laws, rules and regulations, Executive Orders (EOs), and compliance requirements for implementation of the Project alternatives are described in the following sections. Descriptions are organized by Federal, State, and local requirements.

27.1.1 Federal Requirements

Compliance with Federal laws, rules and regulations for implementation of the Project alternatives are summarized below. A total of 27 Federal requirements are identified.

San Joaquin River Restoration Settlement Act

The San Joaquin River Restoration Settlement Act authorizes and directs the Secretary of Interior to implement the Settlement. Sections of the San Joaquin River Restoration Settlement Act, and the relationship between the San Joaquin River Restoration

Settlement Act and Program implementation, are described in Section 28.1 of the Program Environmental Impact Statement/Report (PEIS/R) (San Joaquin River Restoration Program [SJRRP] 2011a, pages 28-1 to 28-9).

National Environmental Policy Act

NEPA is the Nation’s broadest environmental law, applying to all Federal agencies and most of the activities they manage, regulate, or fund that affect the environment. It requires Federal agencies to disclose and consider the environmental implications of their proposed actions. NEPA establishes environmental policies for the Nation, provides an interdisciplinary framework for Federal agencies to avoid or minimize environmental effects, and contains action-forcing procedures to ensure that decision makers at Federal agencies take environmental factors into account.

Council on Environmental Quality (CEQ) has adopted regulations and other guidance providing detailed procedures that Federal agencies follow to implement NEPA. The U.S. Department of the Interior has also developed regulations for the implementation of NEPA (43 Code of Federal Regulations [CFR] Part 46). Reclamation prepared this EIS/R to comply with NEPA, CEQ regulations, and U.S. Department of the Interior regulations. Project-level actions are analyzed in this EIS/R, and once this EIS/R is finalized and combined with the Record of Decision, it will comprise the complete NEPA compliance for these project-level actions.

Clean Water Act, Section 401

Under Clean Water Act (CWA) Section 401, applicants for a Federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification for the discharge. The certification must be obtained from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate. Therefore, all projects that have a Federal component and may affect state water quality (including projects that require Federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

In California, the authority to grant water quality certification has been delegated to the State Water Resources Control Board (SWRCB), and applications for water quality certification under CWA Section 401 are typically processed by the Regional Water Quality Control Board (RWQCB) with local jurisdiction — in this case, the Central Valley RWQCB. Water quality certification requires evaluation of potential impacts in light of water quality standards and CWA Section 404 criteria governing discharge of dredged and fill materials into waters of the United States. Coordination with the Central Valley RWQCB relative to compliance with CWA Section 401 is discussed below, under Section 27.1.2, “State Requirements.”

The proposed action would result in fill and/or dredging of jurisdictional waters of the State, including wetlands, particularly in the San Joaquin River and nearby channels such as the Fresno Slough and Little San Joaquin Slough. As a result, a Section 401 Water Quality Certification would be required for these actions.

Prior to initiating any project-level actions that could result in discharge of pollutants into jurisdictional features, Reclamation will apply for a Section 401 water quality certification from the Central Valley RWQCB.

Clean Water Act, Section 402

Dischargers whose projects disturb 1 or more acres of soil or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activity (Construction General Permit, 2009-0009-DWQ). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. In California, the authority to regulate compliance with CWA Section 402 requirements is shared between the SWRCB and the nine RWQCBs. Most enforcement responsibilities are delegated to the RWQCBs; therefore, the lead agency will coordinate with the Central Valley RWQCB to ensure compliance.

To acquire a Construction General Permit, applicants must submit Permit Registration Documents, including a Notice of Intent Form to discharge stormwater, a Stormwater Pollution Prevention Plan (SWPPP), and other documents. The Stormwater Pollution Prevention Plan must be prepared by a Qualified SWPPP Developer and must list best management practices (BMPs) the discharger will use to protect stormwater runoff. Implementation of these BMPs must be overseen by a Qualified SWPPP Practitioner.

Compliance with the General Permit also requires on-site visual monitoring of stormwater and non-stormwater discharges and the submission of annual reports throughout the duration of the Project. Depending on the risk level of the Project, additional monitoring may be required. Once the final stabilization of the Project area is achieved, Reclamation or the contractor will submit a Notice of Termination to be approved by the SWRCB.

The proposed action would result in discharges of waste into waters of the State, which include “any surface water or ground water, including saline waters, within the boundaries of the State.” A National Pollutant Discharge Elimination System (NPDES) permit will be required for construction-related discharges to surface waters.

Clean Water Act, Section 404

Section 404 of the CWA requires that a permit be obtained from the U.S. Army Corps of Engineers (Corps) for the discharge of dredged or fill material into “waters of the United States, including wetlands.” Waters of the United States include traditionally navigable rivers and their tributaries and adjacent wetlands that have a significant nexus to waters of the United States. Waters of the United States are defined for regulatory purposes, at 33 CFR 328.3 (a), as follows:

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;

(2) All interstate waters, including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams, (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce...

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (a)(1) through (4) of this section;

(6) The territorial seas; and

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

CWA Section 404(b) requires that the Corps process permits in compliance with guidelines developed by the U.S. Environmental Protection Agency (EPA). These guidelines, the CWA Section 404(b)(1) Guidelines, require analysis of alternatives available to meet a project's purpose and need, including those alternatives that avoid and minimize discharges of dredged or fill materials in waters. Once alternatives deemed to be practicable have been identified, the Corps must permit the least environmentally damaging practicable alternative.

Actions typically subject to Section 404 requirements are those that would take place in wetlands or stream channels, including intermittent streams, even if they have been realigned or otherwise altered in the past. Activities that require a permit under Section 404 include, but are not limited to, placing fill or riprap, grading, mechanized land clearing, and dredging in waters of the United States. Within stream channels, a permit under Section 404 would be needed for any discharge activity below the ordinary high water mark. The term "ordinary high water mark" refers to "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR 328.3(e)). The *Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* is used to determine the Ordinary High Water Mark (Corps 2008).

The Corps Regulatory Branch issues several types of Section 404 permits. Those most applicable to the proposed action are Nationwide Permits and Individual Permits. Projects

with only minimal adverse effects (i.e., fills of less than 0.5 acre of nontidal waters of the United States) can typically be authorized under the Corps' Nationwide Permits program to expedite the environmental compliance process, provided the Project satisfies the terms and conditions of the particular Nationwide Permits. Since the Project would have more than minimal impacts, it would require an Individual Permit.

The CWA and guidelines outlined in a Memorandum of Agreement (MOA) between the EPA and the Corps dated November 15, 1989, set forth a goal of restoring and maintaining existing aquatic resources. This MOA directs the Corps to strive to avoid adverse impacts and offset unavoidable adverse impacts to existing aquatic resources, and for wetlands, to strive to achieve a goal of no overall net loss of values and functions. The MOA also noted the value of other waters of the United States, including streams, rivers, and lakes. Under the guidelines, all jurisdictional waters of the United States are afforded protection and requirements are outlined for practicable mitigation based on values and functions of the aquatic resources that will be affected.

EPA develops regulations with which the Corps must comply and reviews the permits issued by the Corps. Section 404(c) of the CWA authorizes EPA to veto a Corps decision to issue a permit if a proposed action "will have an unacceptable effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas."

The proposed action would result in fill and/or dredge of jurisdictional waters of the United States, including wetlands, especially within the San Joaquin River during any in-river construction activities (e.g., levee removal and construction of the San Mateo Avenue crossing) and at other locations, including Fresno Slough and Little San Joaquin Slough. As a result, this Project will require authorization from the Corps pursuant to Section 404 of the CWA.

Reclamation and DWR consulted early in the planning process with the Corps regarding Section 404 CWA compliance. Reclamation and CSLC have continued the consultation process. Before initiating any project-level actions that could result in discharge into jurisdictional features, the Project proponents will apply for a CWA permit from the Corps. The Corps will evaluate the proposed action to determine whether it is the least environmentally damaging practicable alternative pursuant to Section 404(b)(1) Guidelines.

This EIS/R evaluates the environmental effects on jurisdictional features resulting from the discharge of dredged and fill material to support a Section 404(b)(1) analysis. Additional details specific to restoration and other actions will be submitted during the permitting process. The Corps will determine whether the specific proposed action would be authorized under the Nationwide Permit Program or whether an individual permit would be applicable. Early and ongoing coordination with the Corps, and the requirement to obtain permits from the Corps before initiating any actions, demonstrates that Reclamation is committed to complying with the CWA. Reclamation, DWR, and the Corps have been meeting regularly to discuss Section 404 compliance issues.

Note that Section 404 of the CWA does not apply to authorities granted to the Corps under the Rivers and Harbors Act of 1899 (RHA), except that some of the same waters may be regulated under both statutes. The Corps typically combines the permit requirements of Section 10 of the RHA and Section 404 of the CWA into a single permitting process.

Rivers and Harbors Act of 1899, as Amended (Sections 14 and Section 10)

RHA addresses activities that involve the construction of, among other structures, dams, bridges, and dikes across any navigable water. The act also addresses placement of obstructions to navigation outside established Federal lines, as well as the excavation or deposition of material in such waters. All of these actions require permits from the Corps. Navigable waters are defined in 33 CFR 329.4 as follows:

Those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity.

Sections of the RHA applicable to the Project alternatives are described below.

Section 14. Under RHA Section 14 (33 United States Code [USC] 408), referred to as “Section 408,” the Secretary of the Army, on the recommendation of the Chief of Engineers, may grant permission for alteration of the Federal levee system if the alteration would not be injurious to the public. These actions could include degradations, raisings, realignments or other alteration or modifications to the Federal levee system which would cause significant changes to the authorized flood control project’s scope.

Major alterations to a Federal flood control project, including alterations to channels and levees that change the Federal project’s authorized geometry or the hydraulic capacity, would require a Section 408 permit. Section 408 requires authorization from the Corps for the alteration of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by a Federal agency for the preservation and improvement of any of its navigable waters or to prevent floods. The types of alterations or modifications that require Section 408 approval include degradations, raisings, and realignments to the flood protection system or any modification where engineering analysis indicates that the system performance is adversely impacted. To receive authorization, the applicant must establish that the proposed alteration will not be injurious to the public interest and will not impair the usefulness of such work.

Section 208.10 (33 CFR 208.10) provides regulations regarding encroachments on Federal flood control structures and facilities that are constructed for local flood protection. Minor, low impact modifications of Federal flood control projects which do not adversely affect the function of the protective system can be approved by the Corps under Section 208.10. These modifications cannot change the authorized geometry or the hydraulic capacity of the Federal project. Small alterations are typically approved under a

Central Valley Flood Protection Board (CVFPB) Encroachment Permit and are reviewed and approved by the Corps in accordance with Section 208.10. The Corps would initiate formal actions under Section 408 and Section 208.10 at the request of the CVFPB. The Corps is also consulted prior to initiating formal actions.

If the Project alters a Federal flood control project by relocating or modifying an existing Federal project levee, the Corps approval under Section 14 of the RHA (33 USC 408, referred to as Section 408) or under Section 208.10 (33 CFR 208.10) is required prior to proceeding with the Project.

Section 10. Under RHA Section 10 (33 USC 403), the Corps regulates work in, over, or under; excavation of material from; or deposition of material into navigable waters. Structures or work outside the limits defined for navigable waters would require a Section 10 permit if the structure or work affects the course, location, condition, or capacity of the water body.

The jurisdiction of the Corps under CWA overlaps and extends beyond the geographic scope of its jurisdiction under the RHA. The Corps permitting authority under the RHA is not subject to EPA oversight or any other restrictions specific to the CWA and, in some cases, the RHA alone will apply to waters. A permit from the Corps is required prior to any work in, over, or under; excavation of material from, or deposition of material into, navigable waters.

The San Joaquin River is navigable for a length of 236 miles from its mouth to a point approximately 7 miles downstream from State Route (SR) 99, encompassing Reaches 1B downstream through Reach 5 and the San Joaquin River from the Merced River to the Delta. Restoration actions are proposed in the navigable Reaches 1B through 5 (inclusive of Reach 2B).

A Section 10 permit would be required prior to any activity that would alter these waters. Reclamation would apply for a Section 10 permit from the Corps' Sacramento District prior to construction, and that application would be processed simultaneously with the Section 404 CWA permit application. This EIS/R evaluates project-level environmental effects on waters of the United States, including navigable waters. This evaluation would be needed to support issuance of a Section 10 permit.

The proposed action would result in construction in, over, or under; excavation of material from; or deposition of material into "navigable waters," such as the San Joaquin River. As a result, the Project will require authorization from the Corps pursuant to Section 10 of the RHA (33 USC 403) for the construction of certain elements of the Project.

Reclamation and DWR consulted early in the planning process with the Corps regarding the Section 10 CWA compliance. Reclamation and CSLC have continued the consultation process. Before initiating any project-level actions that could result in discharge into jurisdictional features, Reclamation will apply for a Section 10 permit from the Corps.

Federal Endangered Species Act of 1973, as Amended

The Federal Endangered Species Act (ESA) (16 USC 1531 et seq.) is a mechanism for the protection and recovery of species threatened with extinction and includes, but is not limited to, the following:

- A process to list species in danger of becoming extinct (Section 4).
- A prohibition on “take” of threatened and endangered species (Section 9).
- Processes for exemption from Section 9 take prohibitions when take is incidental to, and not the purpose of, otherwise lawful activities (Section 7 and Section 10).

U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) share responsibility for regulatory implementation and enforcement of the ESA. USFWS has jurisdiction over non-anadromous freshwater fish, wildlife and plant species, and NMFS has jurisdiction over marine and anadromous species (e.g., Chinook salmon). Both agencies, upon request, evaluate the effects of proposed projects to determine if the proposed project will jeopardize the continued existence of a federally listed (threatened or endangered) species or adversely modify designated critical habitat.

Section 7 of the ESA outlines procedures for Federal interagency cooperation for implementation of the ESA. Section 7(a)(2) requires Federal agencies consult with USFWS and/or NMFS to ensure that “any action authorized, funded, or carried out by such agency” does not jeopardize the continued existence of a listed species or adversely modify designated critical habitat. Regulations jointly issued by USFWS and NMFS guide the consultation process.

When implementing Section 7(a)(2), there are three possible determinations that a Federal agency can make: No Effect, may affect but is Not Likely to Adversely Affect, and May Adversely Affect. If the Federal agency determines that the proposed action will have No Effect upon listed species or designated critical habitats, and documents a logical rationale and reasoning for that determination, then the agency’s ESA compliance for that project is complete. If the agency makes a determination of Not Likely to Adversely Affect, then it must seek concurrence from USFWS and/or NMFS with that determination. Such determinations are made when the project is wholly beneficial to a listed species, or the anticipated effects are insignificant and/or discountable (not likely applicable for this proposed action). If the agency makes a May Adversely Affect determination, then it must enter into a formal consultation which usually concludes with the issuance of a Biological Opinion on whether the proposed activity will jeopardize the continued existence of a listed species. Under the ESA, an action is determined to jeopardize the continued existence of a species when it is reasonably expected, directly or indirectly, to diminish a species’ numbers, reproduction, or distribution so that the likelihood of survival and recovery in the wild is appreciably reduced.

Section 9 of the ESA prohibits the “take” of federally listed species. Take is defined, under Section 3 of the ESA, as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Under Federal regulations, “take” is further defined to include habitat modification or degradation when it actually

results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. A Biological Opinion issued under Section 7(a)(2) will include an Incidental Take Statement, which, among other purposes, when fully implemented, serves as a formal exemption to the Section 9 prohibition for that project.

Section 10 of the ESA addresses exceptions to the requirements found elsewhere in the ESA. Section 10(j) permits establishing and maintaining experimental populations. The Secretary of the Interior or the Secretary of Commerce may authorize the release (and related transportation) of any population (including eggs, propagates, or individuals) of an endangered or a threatened species outside the current range of such species, if the Secretary determines that such release would further the conservation of such species. Before authorizing the release of any experimental population, the Secretary must identify the population and determine, on the basis of the best available information, whether such a population is essential to the continued existence of an endangered or a threatened species.

Several species that are federally listed as threatened or endangered potentially occur in the Project area and implementation of the proposed action may result in adverse effects to these species or their habitat. Because the action is proposed by a Federal agency and requires Federal permits and approvals, and because Project implementation could adversely affect federally listed species, formal Section 7 consultation with USFWS and NMFS is required. Any necessary compliance with the ESA (whether a "no affect" concurrence or Biological Opinion) must be obtained prior to issuance of the record of decision (ROD) and any requirements of that consultation process would be incorporated into the Project through the ROD.

Reclamation and DWR coordinated with USFWS and NMFS early in the planning process to incorporate ESA Section 7(a)(2) consultation for listed species. Reclamation is continuing this process on an ongoing basis. An analysis of the anticipated effects of the proposed action upon listed species and designated critical habitats has been transmitted by Reclamation to USFWS and NMFS in a Biological Assessment. USFWS and NMFS are each expected to issue a Biological Opinion to address those actions. Reclamation will not initiate any action that may affect a species federally listed as endangered or threatened, without first completing the appropriate consultation(s) with USFWS or NMFS and receiving formal notice that the action would not jeopardize the continued existence of the listed species or adversely modify designated critical habitat.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) establishes a management system for national marine and estuarine fishery resources. The purpose of the MSFCMA is to take immediate action to conserve and manage the fishery resource off the United States coasts, and United States anadromous species, and promote the protection of Essential Fish Habitat (EFH). NMFS requires that Federal projects avoid adversely affecting EFH, as defined in the 1996 Sustainable Fisheries Act (Public Law 104-297), and to stop or reverse the continued loss of fish habitats through the goals of habitat protection, conservation, and enhancement.

This legislation requires that all Federal agencies consult with NMFS regarding actions or proposed actions permitted, funded, or undertaken that may adversely affect “essential fish habitat.” EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The MSFCMA states that migratory routes to and from spawning grounds of anadromous fish are considered EFH. The phrase “adversely affect” refers to the creation of any impact that reduces the quality or quantity of EFH. Although the concept of EFH is similar to that of designated “critical habitat” under the ESA, measures recommended to protect EFH by NMFS are advisory, not prescriptive. Federal activities that occur outside EFH but that may, nonetheless, have an impact on waters and substrate constituting EFH must also be considered in the consultation process.

The MSFCMA requires all Federal agencies to consult with NMFS on activities or proposed activities that are authorized, funded, or undertaken by that agency that may adversely affect EFH. NMFS would then provide recommendations to conserve and reduce impacts to EFH. Federal agencies are required to respond to EFH conservation recommendations.

The MSFCMA states that consultation regarding EFH should be consolidated, where appropriate, with the interagency consultation, coordination, and environmental review procedures required by other Federal statutes, such as NEPA, Fish and Wildlife Coordination Act (FWCA), CWA, and ESA. Consultation requirements for EFH requirements can be satisfied through concurrent environmental compliance if the lead agency provides NMFS with timely notification of actions that may adversely affect EFH, and if the notification meets requirements for the EFH assessment.

Since the proposed action may have adverse effects to EFH, Reclamation will consult with NMFS under the MSFCMA. Project-level EFH consultation would be included with the consultation for Section 7 of the ESA.

Fish and Wildlife Coordination Act of 1934, as Amended

Coordination under the FWCA is intended to promote conservation of fish and wildlife resources by preventing their loss or damage and to provide for development and improvement of fish and wildlife resources in connection with water projects.

Compliance with the FWCA involves assessing the impacts of the proposed action on preservation, conservation, and enhancement of fish and wildlife habitat. Reclamation will consider USFWS recommendations for preserving affected habitats, mitigating their loss, and enhancing such habitats, which may be provided by USFWS in a Fish and Wildlife Coordination Act Report. Documentation of compliance with the FWCA is a separate analysis of habitats of concern to USFWS, NMFS, and DFW, and does not replace the analysis required by Section 7 of the ESA.

Because the proposed action would affect surface waters, the FWCA is applicable. Program-level compliance with the FWCA was documented in the SJRRP programmatic Fish and Wildlife Coordination Act Report prepared by USFWS (SJRRP 2012a). Subsequent FWCA reporting may also occur for project-level actions.

Federal Clean Air Act of 1963, as Amended

The Federal Clean Air Act (CAA) was enacted to protect and enhance the Nation's air quality to promote public health and welfare and the productive capacity of the Nation's population. The CAA requires an evaluation of any Federal action to determine its potential impact on air quality in the project region. California has a corresponding law, which also must be considered during the preparation of the EIS/R. Most regulatory responsibilities under the CAA are delegated to State, regional, or local government bodies.

The CAA requires areas with unhealthy levels of ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and inhalable particulate matter to develop State Implementation Plans (SIPs) to comply with the national ambient air quality standards (42 USC 7410 et seq.). Federal agencies must conform to SIPs, meaning they must ensure that federally supported activities will not cause or contribute to a new violation, increase the severity of an existing violation, or delay timely attainment of any standard in any area (42 USC 7506(c)(1)(B)).

Proponents of specific projects must demonstrate that the actions will conform to the CAA and the SIP. A Federal action conforms with an applicable SIP if (1) the total of direct and indirect emissions from the action are compliant and consistent with the requirements of the SIP, and (2) one of a list of enumerated, pollutant-specific requirements is satisfied (such as accounting for the Federal action's projected emission of any criteria pollutant in the SIP, or offsetting ozone or nitrogen dioxide emissions within the nonattainment area) (42 CFR 93.158(a)). In general, a conformity analysis could require revising a SIP, implementing mitigation measures to bring the Federal action's emissions levels down, or altering the action, possibly by reducing the magnitude of the action, to reduce emissions to levels within the budgets established by the SIP for specific pollutants. The Project will implement measures to reduce emissions and would also enter into a contractual agreement to mitigate emissions above the *de minimis* threshold by purchasing offsets for ROG and NOx.

Section 176 of the CAA prohibits Federal agencies from engaging in or supporting an action or activity that does not conform to an applicable SIP. Actions and activities must conform to a SIP's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards, and in attaining those standards expeditiously. By reducing emissions and purchasing offsets, the Project would conform to the applicable SIPs.

Any Federal agency providing financial assistance, issuing a license or permit, or approving or supporting in any way a proposed project located in a nonattainment or maintenance area for a criteria air pollutant is required to issue a conformity analysis. The conformity analysis must certify that the federally permitted project is consistent with the SIP developed pursuant to the CAA. A conformity analysis is required unless the proposed action's emissions are below the federally established *de minimis* emissions thresholds, and the proposed action's emissions do not reach the level of 10 percent or more of the regional emissions budget for any given pollutant in the nonattainment area.

This is also applicable to short-term, construction-related emissions, and therefore applies to the Project.

A conformity analysis is typically performed concurrently with the permitting process of the Federal permit being sought. Project-level actions would conform with CAA and SIP as described in Chapter 4.0, "Air Quality."

Federal Water Project Recreation Act of 1965, as Amended

The Federal Water Project Recreation Act requires Federal agencies with authority to require water projects to include recreation development as a condition of approving permits. Recreation development must be considered along with any navigation, flood control, reclamation, hydroelectric, or multipurpose water resources project that affects water-related recreation on federally owned or operated land and waters. The Federal Water Project Recreation Act states that "full consideration shall be given to the opportunities, if any, which the project affords for outdoor recreation and for fish and wildlife enhancement and that, wherever any such project can reasonably serve either or both of these purposes consistently with the provisions of this Act, it shall be constructed, operated, and maintained accordingly." Planning for a project's recreation potential must be coordinated with existing and planned federal, state or local public recreation developments.

Compliance with the Federal Water Project Recreation Act is achieved through documented consideration of recreation opportunities in NEPA documents and is addressed in this EIS/R.

Safe Drinking Water Act of 1974, as Amended

The Safe Drinking Water Act mandates that EPA establishes regulations to protect human health from contaminants in drinking water. The law authorizes EPA to develop national drinking water standards and create a joint Federal-State/Tribal system for compliance with these standards. The Safe Drinking Water Act also directs EPA to protect underground sources of drinking water through the control of underground injection of liquid wastes.

EPA developed primary and secondary drinking water standards under the authority of the Safe Drinking Water Act. EPA and authorized states and tribes enforce the primary drinking water standards, which are contaminant-specific concentration limits that apply to certain public drinking water supplies. Primary drinking water standards consist of maximum contaminant-level goals, which are nonenforceable health-based goals, and maximum contaminant levels, which are enforceable limits set as close to maximum contaminant-level goals as possible, considering cost and feasibility of attainment.

Water used for domestic purposes is required to be treated by the local or regional water supply in accordance with Federal and State standards. Reclamation is in compliance with the Safe Drinking Water Act because implementing the Project would not change existing license requirements or impede enforcement of primary drinking water standards. Therefore, it is assumed no further analysis is needed for project-level actions.

National Historic Preservation Act of 1966, as Amended

Section 106 of the National Historic Preservation Act of 1966 and its implementing regulations (36 CFR Part 800, as amended) require Federal agencies to consider the effects of their actions, or those they fund or permit, on properties that may be eligible for listing or are listed in the National Register of Historic Places (NRHP). The NRHP is a register of districts, sites, buildings, structures, and objects of significance in American history, architecture, archaeology, engineering, and culture.

During this process, the Federal agency is usually required to consult with the State Historic Preservation Officer (SHPO) and in some instances the Advisory Council on Historic Preservation, an independent Federal agency that advises the President and Congress on national historic preservation policy and administers the National Historic Preservation Act's Section 106 review process. The National Historic Preservation Act also requires that, in carrying out the requirements of Section 106, each Federal agency must consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by the agency's undertakings.

The proposed action would affect properties that are listed or eligible for listing on the NRHP (16 USC 470 as amended). Project-level actions could also result in the disturbance or destruction of cultural resources, as described in Chapter 9.0, "Cultural Resources." To mitigate these potential impacts, Reclamation is developing a Programmatic Agreement with the SHPO and consulting parties, including Native American Tribes, through the Section 106 consultation process.

Farmland Protection Policy Act of 1981

The Farmland Protection Policy Act requires that a Federal agency examine the potential impacts of a proposed action on prime and unique farmland, as defined by the Natural Resources Conservation Service and, if the action would adversely affect farmland preservation, consider alternatives to lessen the adverse effects. As a Federal agency preparing environmental compliance documents, Reclamation is required to conduct a farmland assessment designed to minimize adverse impacts on prime and unique farmlands and provide for mitigation, as appropriate.

This EIS/R evaluates the conversion of prime and unique farmland to other uses that would result from any project-level actions, as described in Chapter 16.0, "Land Use Planning and Agricultural Resources." Mitigation measures have been identified for farmland conversion, and include avoidance to the maximum amount practicable and feasible. Reclamation has demonstrated compliance with the Farmland Protection Policy Act through avoidance and mitigation for project-level actions.

Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, implements domestically a series of treaties between the United States, Great Britain (on behalf of Canada), Mexico, Japan, and the former Soviet Union, and provides for international migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds; the act provides that it shall be unlawful, except as permitted by regulations, "to pursue, hunt, take, capture, kill, attempt to take, capture, or kill... any

migratory bird, [or] any part, nest, or egg of any such bird ...” (16 USC 703). This prohibition includes both direct and indirect actions, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA includes several hundred species and essentially all native birds. The act offers no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of nongame migratory birds.

This EIS/R evaluates potential project-level impacts to migratory bird species and identifies conservation strategies to avoid direct and indirect take of birds, active nests, or eggs. Reclamation would comply with the MBTA through implementing the conservation strategies described herein before and during implementation of any project-level actions.

Executive Order 13186 (Migratory Birds)

EO 13186 directs Federal agencies to take certain actions to further implement the MBTA and outlines the responsibilities of Federal agencies to protect migratory birds. Specifically, this order directs Federal agencies with direct activities that will likely result in the take of migratory birds, to develop and implement a Memorandum of Understanding (MOU) with the USFWS that shall promote the conservation of migratory bird populations, with emphasis on species of concern. Reclamation has not finalized the MOU required in this order pending Department of Interior guidance. Reclamation has begun implementing the conservation measures set forth in this order, however, as appropriate and applicable.

Birds protected under the MBTA include all common songbirds, waterfowl, shorebirds, hawks, owls, eagles, ravens, crows, native doves and pigeons, swifts, martins, swallows, and others, including their body parts (feathers, plumes, etc.), nests, and eggs. A complete list of protected species is found at 50 CFR 10.13. Project activities that are most likely to result in take of migratory birds include, but are not limited to, clearing or grubbing of migratory bird nesting habitat during the nesting season when eggs or young are likely to be present. Efforts will be made to remove nesting habitat or inactive nests of migratory birds outside of the bird breeding season, and such activities will occur in coordination with the USFWS office with local jurisdiction.

Bald and Golden Eagle Protection Act

The Bald Eagle Protection Act (16 USC 668 668d, 54 Stat. 250) as amended, provides protection for the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) by prohibiting the taking, possession, and commerce of such birds, their nests, eggs, or feathers unless expressly authorized by permit pursuant to Federal regulations. This EIS/R includes an environmental commitment to avoid and minimize effects to bald and golden eagles, as defined in the Bald and Golden Eagle Protection Act (see Conservation Measure EAGLE-1).

Indian Trust Assets

All Federal agencies have a responsibility to protect Indian Trust Assets. Indian Trust Assets are legal interests in assets held in trust by the Federal government for Native American tribes or individuals. Assets may be owned property, physical assets, intangible

property rights, a lease, or the right to use something, and typically include lands, minerals, water rights, hunting and fishing rights, natural resources, money, or claims. If Indian Trust Assets are affected by the project-level actions, Reclamation would identify mitigation or compensation measures so that no net loss is incurred by the Native American beneficial owners of the asset. As described in Section 3.3, project-level actions would not affect Indian Trust Assets.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (25 USC 3001 to 3013) sets provisions for the removal and inadvertent discovery of human remains and other cultural items on Federal and tribal lands. The Native American Graves Protection and Repatriation Act clarifies the ownership of human remains and sets forth a process for repatriation of human remains and associated funerary objects and sacred religious objects to the Native American tribes or tribes likely to be lineal descendants or culturally affiliated with the discovered remains or objects.

Executive Order 11988 – Floodplain Management

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

This EIS/R evaluates potential project-level modifications to floodplains. The Project alternatives include commitments to minimize adverse effects to floodplains.

Executive Order 11990 – Protection of Wetlands

EO 11990 is an overall wetlands policy for all agencies that manage Federal lands, sponsor Federal projects, or provide Federal funds to State or local projects. This EO requires Federal agencies to follow avoidance, mitigation, and preservation procedures with public input before they propose new construction in wetlands. EO 11990 can restrict the sale of Federal land containing wetlands; however, it does not apply to Federal discretionary authority for non-Federal projects (other than funding) on non-Federal land.

This EIS/R evaluates potential impacts to wetlands from project-level actions. The alternatives include conservation measures which incorporate avoidance and preservation procedures, including restoration enhancement and replacement of wetlands.

Note that projects requiring compliance with EO 11990 are likely to require a permit under CWA Section 404 and the assessment of effects of the proposed action on wetlands is closely coordinated with the Section 404 process.

Executive Order 12898 – Environmental Justice in Minority and Low-Income Populations

EO 12898 requires Federal agencies to identify and address disproportionately high and adverse human health and environmental effects of Federal programs, policies, and activities on minority and low-income populations. These effects are to be considered in terms of both their frequency and magnitude. The requirements of EO 12898 apply to all Federal actions that are located on Federal lands, sponsored by a Federal agency, or funded with Federal monies, and that may affect minority or low-income populations.

To demonstrate compliance with EO 12898, the lead agency must show that it has considered the effects of the proposed action on minority and low-income populations and must design the proposed action to ensure that the action does not result, either directly or indirectly, in discrimination on the basis of race, color, or national origin. In all cases, the agency must undertake specific outreach to any identified minority and low-income populations. This outreach is to be specifically targeted to allow environmental justice populations to fully participate in the public involvement process.

This EIS/R evaluates whether the identified adverse human health and environmental effects from project-level actions would disproportionately affect minority and low-income populations. With publication of the socioeconomic analysis and environmental justice evaluations in this EIS/R, Reclamation solicits public comment and further inclusion of these populations in the planning process. Reclamation's compliance with EO 12898 has been accomplished thus far in the planning process and will continue through Project implementation.

Executive Order 13007 (Indian Sacred Sites) and April 29, 1994, Executive Memorandum

EO 13007 requires that Federal agencies with land management responsibilities accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners. This EO further requires that those agencies avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies also must maintain the confidentiality of sacred sites. Other requirements stipulate that the agencies provide reasonable notice of proposed actions or land management policies that may restrict future access to or ceremonial use of sacred sites, or that may adversely affect the physical integrity of sacred sites. The agencies must comply with the April 29, 1994, executive memorandum, "Government-to-Government Relations with Native American Tribal Governments."

Reclamation received information from Native American Heritage Commission about which Native American groups would be interested in Project actions. Reclamation mailed letters requesting their comments on November 30, 2010. Also, these Native American groups were notified of the public scoping meetings and are included in the distribution list for this EIS/R. Reaching out to Native American groups, including the groups that participated in scoping and review of this EIS/R, demonstrates that Reclamation has complied with EO 13007. If an Indian sacred site is encountered within the Project area, measures will be implemented to prevent any restriction of access or

effect on the site's physical integrity. Continued compliance with this EO would be demonstrated through implementation of mitigation measures, as needed.

Executive Order 13112 – National Invasive Species Management Plan

EO 13112 directs all Federal agencies to prevent and control introductions of invasive nonnative species in a cost-effective and environmentally sound manner and to minimize economic, ecological, and human health impacts. EO 13112 established a national Invasive Species Council made up of Federal agencies and departments and a supporting Invasive Species Advisory Committee composed of State, local, and private entities. The Invasive Species Council and Advisory Committee oversee and facilitate implementation of the EO, including preparing a national management plan for invasive species.

An invasive species management plan is included in the PEIS/R and includes methods for managing the spread of invasive plant species from project and program-level actions. Project-level restoration activities and planning will be integrated with the programmatic invasive species management plan. Reclamation would demonstrate continued compliance with this EO by implementing the methods described in the invasive species management plan.

Federal Transit Administration

To address the human response to groundborne vibration, Federal Transit Administration (FTA) has set forth guidelines for criteria related to maximum acceptable vibration for different types of land uses. For frequent events, these include 65 vibration decibels (VdB) for land uses where low ambient vibration is essential for interior operations (e.g., hospitals, high-technology manufacturing, and laboratory facilities), 72 VdB for residential uses and buildings where people normally sleep, and 75 VdB for institutional land uses with primarily daytime operations (e.g., schools, churches, clinics, and offices) (FTA 2006).

Standards have also been established to address the potential for groundborne vibration to cause structural damage to buildings. These standards were developed by the Committee of Hearing, Bioacoustics, and Biomechanics at the request of EPA (FTA 2006). For fragile structures, the Committee of Hearing, Bioacoustics, and Biomechanics recommends a maximum limit of 0.25 in/sec peak particle velocity (FTA 2006). Peak particle velocity is a measure of the intensity of ground vibration, specifically the time rate of change of the amplitude of ground vibration.

This EIS/R evaluates potential groundborne vibration impacts on sensitive receptors, including the maximum sensitivity of 65 VdB described above. The rate of 65 VdB could be generated by pile-driving activities. Reclamation has demonstrated consistency with this policy by evaluating project-level actions that would generate the maximum possible groundborne vibration at the highest sensitive uses. Reclamation also has included mitigation measures to reduce the impact in accordance with this policy. Implementation of the mitigation measures would demonstrate that Reclamation would be consistent with the FTA policy for groundborne vibration.

27.1.2 State Requirements

Compliance with State laws, rules, and regulations for implementation of the alternatives are summarized below.

California Environmental Quality Act

Prompted by the passage of NEPA in 1969, CEQA was signed into law in 1970 as California's counterpart to NEPA. CEQA is a statute that requires State and local agencies to identify the significant environmental impacts of their actions and avoid or mitigate those impacts, if feasible. The objectives of CEQA are to do all of the following:

- Disclose to decision-makers and the public the significant environmental effects of proposed activities.
- Identify ways to avoid or reduce environmental damage.
- Prevent environmental damage by requiring implementation of feasible alternatives or mitigation measures.
- Disclose to the public reasons for agency approval of projects with significant environmental effects.
- Foster interagency coordination in the review of projects.
- Enhance public participation in the planning process.

Depending on the potential impacts of a proposed project, environmental information is presented in one of three CEQA documents: a Notice of Exemption, an Initial Study supporting either a Negative Declaration or Mitigated Negative Declaration, or an Environmental Impact Report (EIR).

As NEPA and CEQA lead agencies, respectively, Reclamation and CSLC collaborated to prepare this joint EIS/R. Project-level actions are analyzed in this EIS/R at a project-specific level. This document identifies anticipated and probable significant effects of the project-level actions, as well as feasible mitigation measures. This document also compares No-Project (No Action) Alternative and project (action) alternatives to existing conditions to allow evaluation of their relative environmental consequences.

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA) (Fish and G. Code, § 2050 et seq.), a permit from DFW may be required for projects that could result in the take of a plant or animal species that is State-listed as threatened, endangered or as a candidate species. Under CESA, the term "endangered species" is defined as a species of plant, fish, or wildlife that is "in serious danger of becoming extinct throughout all, or a significant portion of, its range" and is limited to species or subspecies native to California. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but unlike the Federal ESA, the CESA definition of take does not include "harming" or "harassing." Section 86 of the California Fish and Game Code defines take as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Sections 2080 and 2081 of the California Fish and Game Code cover the “take” of State threatened and endangered species. One of two CESA-compliance processes is generally followed when take of a State-listed species may occur, the Section 2080.1 consistency determination or Section 2081 incidental take permit processes. Section 2080.1 allows an applicant who has obtained a Federal incidental take statement through Section 7 consultation to request that DFW issue a consistency determination stating that the Federal document is “consistent” with CESA. A Section 2081 incidental take permit is used if agreement cannot be reached about consistency.

Several State-listed threatened or endangered species potentially occur in the Project area and particularly near the San Joaquin River and in adjacent waterways such as the Fresno Slough, Little San Joaquin Slough, and the Mendota Pool. Implementation of the proposed action may result in adverse effects to these species or their habitat. Reclamation has involved DFW at the early stages of planning to incorporate avoidance measures for State-listed species that may be affected.

California Fish and Game Code sections 3503 and 3503.5 state that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, and that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders *Falconiformes* and *Strigiformes*), including their nests or eggs. Typical violations of these codes include destruction of active nests resulting from removing vegetation in which the nests are located. Violation of section 3503.5 could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction. This statute does not provide for issuing any type of incidental take permit.

This document identifies actions that would potentially disturb nesting birds. To comply with sections 3503 and 3503.5, this EIS/R describes conservation strategies to avoid disturbing nesting birds per the requirements in the SJRRP 2012 Record of Decision (SJRRP 2012b). These measures include conducting preconstruction surveys, ceasing vegetation removal activities if the vegetation is occupied by active nests, and establishing environmentally sensitive areas around nesting birds to minimize construction disturbance of any nesting pair, and to avoid forced fledging.

California Fish and Game Code – Fully Protected Species

Protection of fully protected species is described in Fish and Game Code sections 3511, 4700, 5050, and 5515. These statutes prohibit take or possession of fully protected species. DFW is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species. Reclamation and CSLC are working closely with DFW to evaluate methods to avoid take of fully protected species.

This EIS/R evaluates potential project-level effects to blunt-nosed leopard lizard, a fully protected species. The Project alternatives include environmental commitments for this species (see Conservation Measures BNLL-1 and BNLL-2). These conservation measures are designed to avoid any direct take of blunt-nosed leopard lizards.

California Fish and Game Code Section 1602 – Streambed Alteration

Diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by DFW under Fish and Game Code section 1602. Under section 1602, as applicable, it is unlawful for any person, governmental agency, or public utility to do the following without first notifying DFW:

...substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

A stream is defined as a body of water that flows at least periodically or intermittently through a bed or channel that has banks and supports fish or other aquatic life. This definition includes watercourses with a surface or subsurface flow that supports or has supported riparian vegetation. DFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. As applicable, a DFW streambed alteration agreement is obtained for any project that would result in an impact on a river, stream, or lake.

This EIS/R identifies potential project-level actions that would alter stream features subject to Fish and Game Code section 1602. The proposed action will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of a river, stream, or lake or use materials from a streambed. Project proponents will, if appropriate, apply for a Streambed Alteration Agreement from DFW.

Central Valley Flood Control Act of 2008

In 2007, the Governor signed five interrelated bills (flood legislation) aimed at addressing the problems of flood protection and liability and helping to direct use of the voter-approved bond funds provided by 2006 Propositions 1E and 84. These included Senate Bill (SB) 5 and 17, and Assembly Bills (AB) 5, 70, and 156. A sixth bill passed in 2007, AB 162, required additional consideration of flood risk in local land use planning throughout California. These bills, effective January 1, 2008, collectively added or amended sections in the California Government Code, Health and Safety Code, Public Resources Code, and California Water Code. Together, these bills outline a comprehensive approach to improving flood management at the State and local levels, with elements to address both the chance of flooding and the consequences when flooding does occur.

The major piece of the flood legislation is the Central Valley Flood Protection Act of 2008, enacted by SB 5. This legislation seeks to address flood management problems in the Sacramento-San Joaquin Valley by directing DWR to prepare a Central Valley Flood Protection Plan by mid-2012 for adoption by the CVFPB. The Central Valley Flood Protection Plan is intended to establish a system-wide approach to improving flood management in areas currently receiving some amount of flood protection from existing facilities of the Federal-State flood management system. The flood legislation also

establishes the 200-year flood event (flood with a 1-in-200 chance of occurring in any year) as the minimum level of flood protection to be provided in urban and urbanizing areas in the Sacramento-San Joaquin Valley.

The flood legislation also requires DWR and the CVFPB to adopt a schedule for mapping flood risk areas in the Central Valley, and sets deadlines for cities and counties in the Central Valley to amend their general plans and zoning ordinances to conform to the Central Valley Flood Protection Plan within 24 months and 36 months, respectively, of its adoption by the CVFPB. Once the general plan and zoning ordinance amendments are enacted, the approval of development agreements and subdivision maps is subject to restrictions in flood hazard zones. Central Valley counties are obligated to develop flood emergency plans within 24 months of CVFPB adoption.

Reclamation and CSLC have jointly developed the proposed action in a manner that is consistent with the Central Valley Flood Control Act, and which would not inhibit development of the Central Valley Flood Protection Plan.

Central Valley Flood Protection Board Encroachment Permit

Under Title 23 of the California Code of Regulations, the CVFPB issues encroachment permits to maintain the integrity and safety of flood control project levees and floodways that were constructed according to flood control plans adopted by CVFPB or the California Legislature. The CVFPB has jurisdiction over the levee section, the waterward area between project levees, a 10-foot-wide strip adjacent to the landward levee toe, within 30 feet of the top of the banks of unleveed project channels, and within designated floodways adopted by the CVFPB. Activities outside of these limits that could adversely affect the flood control project also fall under the jurisdiction of the CVFPB. In accordance with the provisions of Title 33, CFR Section 208.10, all permit requests for construction of improvements of any nature within the limits of a Federal project right-of-way would be referred to the Corps District Engineer for review.

Project-level actions will require work along the San Joaquin River in areas that may be subject to Title 23 because the river is managed for flood control and thus contains features subject to the jurisdiction of CVFPB. The San Joaquin River is a regulated stream and the proposed action could have an effect on the flood control functions of project levees just east and north of the Chowchilla Bifurcation Structure or downstream project levees. Project proponents will complete an encroachment permit application, as needed, before performing any work along relevant reaches of the San Joaquin River that contain flood control features subject to CVFPB jurisdiction.

California Water Code (Water Rights)

A water right is a legally protected right, granted by law, to take control of water and to put it to beneficial use. Under the California Water Code, the SWRCB is responsible for allocating surface water rights and permitting the diversion and use of water throughout the State. Through its Division of Water Rights, the SWRCB issues permits to store and to divert water for new appropriations and it authorizes changes to existing water rights. SWRCB attaches conditions to these permits to ensure that the water user prevents waste,

conserves water, does not infringe on the rights of others, and puts the State's water resources to the most beneficial use.

An applicant, permittee, or licensee who wishes to change the point of diversion, place of use, or purpose of use from that specified in an existing permit or license must petition SWRCB to amend a water right. When considering a petition for a water right amendment, SWRCB considers the same factors as those it considers when a water user applies for a new permit, such as waste prevention, water conservation, infringement on the rights of others, and public trust values.

Reclamation has filed petitions with the SWRCB for changes to its San Joaquin River water rights permits and license to facilitate Program-level activities implementing the SJRRP. Those petitions have already been approved. If Project actions require Reclamation to request changes to its San Joaquin River water right permits, Reclamation will review any comments submitted by the SWRCB on this EIS/R and would coordinate with the SWRCB regarding this matter. If the SWRCB determines that the Project requires changes to its San Joaquin River water rights permits, Reclamation would file the appropriate petitions with the SWRCB. Any other entities claiming pre-1914 appropriative rights, for which changes to water rights are determined necessary, would make those changes pursuant to California Water Code section 1706.

California Wild and Scenic Rivers Act

The California Wild and Scenic Rivers Act of 1972, as amended (Pub. Resources Code, § 5093.50 et seq.), aims to preserve designated rivers possessing extraordinary scenic, recreation, fishery, or wildlife values. Implementation of the Project alternatives would not affect any State-designated wild and scenic river.

California Harbors and Navigation Code

The California Harbors and Navigation Code details the jurisdictions of the California Department of Parks and Recreation, Division of Boating and Waterways, which focus development of public access to waterways, safety of vessels and boating facilities, and on-the-water safety. Coordination with the Division of Boating and Waterways regarding design standards for future boating facilities could be required for installing new or modifying existing boating facilities, such as boat ramps, docks, or marinas.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, "waters of the State" fall under the jurisdiction of the appropriate RWQCB (in this case, the Central Valley RWQCB). Under the act, the appropriate RWQCB must prepare and periodically update water quality control basin plans. Each basin plan sets forth water quality standards for surface water and groundwater, as well as actions to control point and nonpoint sources of pollution to achieve and maintain these standards. Projects that affect wetlands or waters of the State must meet the RWQCB's waste discharge requirements, which may be issued in addition to a water quality certification under Section 401 of the CWA. Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the State (Wat. Code, § 13050, subd. (e)) which include all waters within

the State’s boundaries, whether private or public, including waters in both natural and artificial channels.”

Project-level actions that have the potential to adversely affect water quality are identified in this document. Actions would be implemented consistent with implementation programs under the water quality control plan for the Sacramento River and San Joaquin River basins, as revised (Central Valley RWQCB 2011), and with the RWQCB’s waste discharge requirements. Implementing some Project-level actions would include application for NPDES permits and a Section 401 water quality certification.

California Land Conservation Act of 1965 (Williamson Act)

The California Land Conservation Act of 1965 (Gov. Code, § 51200 et seq.), commonly known as the Williamson Act, is the principal method for encouraging the preservation of agricultural lands in California. The Williamson Act enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use for 10 years. In return, landowners receive property tax assessments based on farming and open space uses as opposed to full market value. Local governments receive an annual subvention (subsidy) of forgone property tax revenues from the State via the Open Space Subvention Act of 1971.

The Williamson Act empowers local governments to establish “agricultural preserves” consisting of lands devoted to agricultural and other compatible uses. On establishment of such preserves, the locality may offer to owners of included agricultural land the opportunity to enter into annually renewable contracts that restrict the land for at least 10 years. In return, the landowner is guaranteed a relatively stable tax base, founded on the value of the land for agricultural/open space use only, and unaffected by its development potential.

Williamson Act contracts are for 10 years and longer. The contract is renewed automatically each year, maintaining a constant, 10-year contract, unless the landowner or local government files to initiate nonrenewal. Should that occur, the Williamson Act would terminate 9 years after the filing of a notice of nonrenewal.

Because a public agency would acquire lands within agricultural preserves, including lands under contract, the Project is exempt from the normal cancellation process for Williamson Act contracts. This is because the contract is nullified for the portion of the land actually acquired by a public agency (Gov. Code, § 51295). The lead agency must provide notice to the California Department of Conservation (DOC) before acquiring such lands (Gov. Code § 51291, subd. (b)). A second notice is required within 10 working days after the land is actually acquired (Gov. Code, § 51291, subd. (c)). The lead agency would be exempt from the findings required in California Government Code section 51292 (Gov. Code, § 51293, subd. (e)(2)) for the acquisition of lands under Williamson Act contracts. Preliminary notice to DOC, provided before lands are actually acquired, would demonstrate the purpose of the project and exemption from the findings. DOC was provided a copy of this EIS/R, along with a request for comments.

Project-level actions would result in the need to acquire Important Farmland including lands under Williamson Act contracts. The extent of lands that could be affected due to proposed actions is described in Chapter 16.0, "Land Use Planning and Agricultural Resources."

California Clean Air Act

The California Clean Air Act (CCAA) of 1988 requires nonattainment areas, such as the San Joaquin Valley Air Basin, to achieve and maintain State ambient air quality standards by the earliest practicable date. The CCAA also requires local air districts to develop plans for attaining State ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide standards. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has the authority to issue permits and ensure compliance with air quality regulations in the Project area, as appropriate.

The SJVAPCD is required by the CCAA to develop "indirect source" control programs in their attainment plans. The SJVAPCD is committed to reducing PM₁₀ and nitrous oxides emissions from indirect sources in the 2003 PM₁₀ Plan and the 2004 Extreme Ozone Attainment Demonstration Plan. The SJVAPCD's Governing Board adopted District Rule 9510 as a result of this commitment. In accordance with SJVAPCD Rule 9510, Indirect Source Review, applicants mitigate project impacts through the incorporation of on-site emission reducing design elements and/or the payment of fees that would be used to fund off-site emissions reduction projects.

In accordance with SJVAPCD Rule 8021 – Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities, the owner or operator of a construction project would submit a dust control plan to SJVAPCD if at any time the project would involve:

- Residential developments of 10 or more acres of disturbed surface area.
- Nonresidential developments of 5 or more acres of disturbed surface area.
- Moving, depositing, or relocating of more than 2,500 cubic yards per day of bulk materials on at least 3 days of the project.

A dust control plan identifies the fugitive dust sources at the construction site and describes the dust control measures to be implemented before, during, and after any dust-generating activity for the duration of the project. The owner or operator would comply with applicable rules under Regulation VIII.

This EIS/R evaluates the contribution of project-level actions to any violation of air quality standards and identifies mitigation measures to help achieve consistency with the SIP attainment goal before implementation of project-level actions.

Finally, because the proposed action would likely involve the construction of a nonresidential development of more than 5 acres of disturbed surface area and could involve moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least 3 days, a dust control plan is required. Construction activities would

not commence until the dust control plan has been approved or conditionally approved by the SJVAPCD.

Executive Order B-30-15

EO B-30-15 was signed by Governor Brown in April 2015. This EO establishes a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030. This target is in line with levels needed in the U.S. to limit global warming below 2 degrees Celsius and will also facilitate reaching the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050. The EO also specifically addresses the need for climate adaptation and directs State government to factor climate change into State agencies' planning decisions and to implement measures under existing agency and departmental authority to reduce greenhouse gas emissions.

This EIS/R evaluates project-level effect to climate change and greenhouse gas emissions. Implementation of mitigation measures for air quality would also result in GHG emission co-benefits and further reduce GHG emissions.

California Native Plant Protection Act

The California Native Plant Protection Act of 1977 (Fish and G. Code, §§1900 – 1913) establishes criteria for the preservation, protection, and enhancement of endangered or rare native plants of the State. This act requires all State agencies to use their authority to carry out programs to conserve endangered and rare native plants. The California Native Plant Protection Act provides protection to “endangered” and “rare” plant species, subspecies, and varieties of wild native plants in California. The California Native Plant Protection Act’s definitions of “endangered” and “rare” closely parallel the CESA definitions of endangered and threatened plant species. All project-level actions are evaluated in this EIS/R for consistency with this act.

California Native Plant Society Species Designations

California Native Plant Society (CNPS) is a statewide nonprofit organization that seeks to increase understanding of California’s native flora, and to preserve this rich resource for future generations. CNPS has developed and maintains lists of vascular plants of special concern in California. CNPS-listed species have no formal legal protection, but the value and importance of these lists are widely recognized. CNPS List 1 and 2 species are considered rare plants pursuant to section 15380 of CEQA, and it is recommended that they be fully considered while preparing environmental documents relating to CEQA. This EIS/R identifies plants of concern on CNPS lists that may be affected by project-level actions, using these lists as a method of identifying species of concern.

State Lands Commission Land Use Lease

The CSLC was given authority and responsibility to manage and protect the important natural and cultural resources on certain public lands within the State, and the public’s rights to access these lands. The public lands under the commission’s jurisdiction are of two distinct types: sovereign lands and school lands. Sovereign lands encompass approximately 4 million acres. These lands include the beds of California’s naturally navigable rivers, lakes, and streams, as well as the State’s tidal and submerged lands

along the coastline, extending from the shoreline to 3 nautical miles offshore. A project cannot use these State lands unless a lease is first obtained from the CSLC.

The San Joaquin River is defined as “navigable in fact” from its mouth upstream to Friant Dam near Fresno, and is therefore subject to the jurisdiction of the CSLC. Project-level actions that require work on the San Joaquin River would require a lease from the CSLC.

California Department of Transportation

California Department of Transportation (Caltrans) is responsible for planning, designing, construction, operating, and maintaining all State-owned roadways in California. The Caltrans Highway Design Manual (2013a) establishes uniform policies and procedures to carry out the Caltrans highway design functions. The highway design criteria and policies in the manual provide a guide for applying standards in the design of projects and, rather than implementing enforceable regulations, present information and guidance.

Highway improvements or modifications, as may be needed for implementation of this project, may require an encroachment permit as issued through Caltrans. The project may involve modifications to roadways that Caltrans considers “complex” and require extensive communication with the Caltrans Department of Engineering Services or structure-specific encroachment permits. These are detailed in the Caltrans Encroachment Permits Manual (2013b), which is available at the Caltrans website. Any improvements to roadways subject to Caltrans jurisdiction would be subject to Caltrans design standards, which would include standards for protecting cultural resources and structures.

Project-level actions may require improving or modifying roadways subject to Caltrans jurisdiction. SR 30 and SR 180 are located within the Project area and are addressed in a regional roadway traffic analysis completed for the Project. The analysis found that Project construction would not affect existing levels of service on these routes.

California Public Resources Code

The Public Resources Code contains several sections relevant to the project. Some examples include the California Park and Recreational Facilities Act of 1984 (§ 5096.225) and the Federal Water Project Recreation Act (§ 5094). Compliance with these acts is achieved by analyzing in this EIS/R (Chapter 20.0, “Recreation”) the impact of project-level actions on recreation opportunities.

California Surface Mining and Reclamation Act

The California Surface Mining and Reclamation Act of 1975 (SMARA) (Pub. Resources Code, § 2710 et seq.) addresses surface mining. Activities subject to SMARA include, but are not limited to mining of minerals, gravel, and borrow material. SMARA applies to an individual or entity that would disturb more than 1 acre or remove more than 1,000 cubic yards of material through surface mining activities, including the excavation of borrow pits for soil material. The SMARA statute requires mitigation to reduce adverse impacts on public health, property, and the environment and requires that mined lands are reclaimed to a usable condition. SMARA also encourages the production, conservation, and protection of the State’s mineral resources.

SMARA is implemented through ordinances for permitting developed by local-government lead agencies that provide the regulatory framework under which local mining and reclamation activities are conducted. The State Mining and Geology Board of reviews the local ordinances compliance with the procedures established by SMARA.

In general, SMARA permitting requires the lead agency to approve a permit and reclamation plan, and post approved financial assurance for reclamation of the mined land. Compliance with reclamation plans may include, but is not limited to, revegetation and landscaping requirements, restoration of aquatic or wildlife habitat, restoration of water bodies and water quality, slope stability and erosion and drainage control, disposal of hazardous materials, and other measures, if necessary.

This EIS/R analyzes anticipated impacts of project-level actions, including impacts associated with removing borrow material. The project proponent will comply with SMARA where appropriate. Reclamation has invited Fresno and Madera counties to be cooperating agencies on this Project.

California Register of Historical Resources

Public Resources Code section 5024.1 establishes the California Register of Historical Resources (CRHR). The CRHR lists all properties considered to be significant historical resources in the State. The CRHR includes all properties listed or determined eligible for listing on the NRHP, including properties evaluated under Section 106. The criteria for listing are similar as those of the NRHP. CEQA section 21084.1 requires a finding of significance for substantial adverse changes to historical resources and defines the term “historical resources.” CEQA section 21083.2 and State CEQA Guidelines section 15064.5, subdivision (c) provide further definitions and guidance for archaeological sites and their treatment. The lead agency is required to follow the established guidelines during the CEQA process and is addressed in this EIS/R.

California Native American Graves Protection and Repatriation Act

The California Native American Graves Protection and Repatriation Act (Health & Saf. Code, § 8010 et seq.) establishes a State repatriation policy intent that is consistent with and facilitates implementation of the Federal Native American Graves Protection and Repatriation Act. The act strives to ensure that all California Indian human remains and cultural items are treated with dignity and respect, and encourages voluntary disclosure and return of remains and cultural items by publicly funded agencies in California. If human remains are encountered during Project construction, Reclamation will comply with applicable laws and regulations regarding notification and disposition of the remains.

Executive Order B-10-11

EO B-10-11 was signed by Governor Brown on September 9, 2011. This EO establishes the role and responsibilities of the Governor’s Tribal Advisor and directs State agencies and departments under the Governor’s executive control to communicate and consult with Federally recognized tribes, other California Native Americans, and representatives of tribal governments to provide meaningful input into the development of legislation, regulations, rules, and policies on matters that may affect tribal communities.

Assembly Bill 52

AB 52, signed on September 25, 2014, amends CEQA, creates a new category of environmental resources: “tribal cultural resources,” and imposes new requirements for consultation for projects that may affect a tribal cultural resources (Public Resources Code sections 5097.94, 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3).

Reclamation received information from Native American Heritage Commission about which Native American groups would be interested in Project actions. Reclamation mailed letters requesting their comments on November 30, 2010. Also, these Native American groups were notified of the public scoping meetings and are included in the distribution list for this EIS/R. Reaching out to Native American groups, including the groups that participated in scoping and review of this EIS/R, demonstrates compliance with this EO B-10-11 and AB 52.

27.1.3 Local Plans and Policies

This EIS/R analyzes alternatives for consistency with the general plan policies of the relevant counties and cities. These jurisdictions include the counties of Fresno and Madera and the cities of Mendota and Firebaugh. Compliance with local plans and polices for implementation of the alternatives is summarized below.

California Government Code General Plan Requirement

Government Code section 65300 et seq. requires California cities and counties to adopt and implement general plans. A general plan is a comprehensive, long-term strategy document that sets forth the expected location and general type of physical development expected in the city or county preparing the document. The general plan also may consider land outside its boundaries that, in the city’s or county’s judgment, may affect land use activities within its borders. The general plan addresses a broad range of topics, including, at a minimum, land use, circulation, housing, conservation, open space, noise, and safety. In addressing these topics, the general plan identifies goals, objectives, policies, principles, standards, and plan proposals that support the city’s or county’s vision for the area. The general plan is a long-range document that typically addresses development over a 20-year period.

Reclamation would notify the counties of Fresno and Madera, and their respective planning and public works departments, of any inconsistencies with local plans and ordinances, such as County general plans, zoning ordinances, grading requirements, and various use permits. Each county would determine the need for potential changes to the affected parcels’ land use designations and the applicable zoning categories (for implementing the land use designations) as well as the need for a general plan amendment if there is a conflict between existing and proposed land uses.

27.2 Consultation and Coordination

Consultation and coordination for the Project included project scoping and consultation with agencies and organizations, as described in the following sections. Future consultation and coordination are also described in this section.

27.2.1 Project Scoping

Public scoping activities are conducted as part of compliance with both NEPA and CEQA. The scoping process helps to identify areas to be studied and to eliminate issues from detailed study that are not critical to the decision at hand. Additional information on Project scoping is discussed in the Public Scoping Report (SJRRP 2010).

Notice of Intent

Reclamation published the Notice of Intent to prepare an EIS/R in the Federal Register (Vol. 74, No. 132, Monday July 13, 2009), as required by NEPA. The Notice of Intent is available at www.restoresjr.net.

Notice of Preparation

DWR initiated the CEQA process by issuing a Notice of Preparation on July 13, 2009, and the Project was assigned State Clearinghouse Number 2009072044. The Notice of Preparation is available at www.restoresjr.net. Although initial CEQA actions were conducted by DWR, subsequent actions during the EIS/R process have been conducted by the CSLC as the State lead agency.

Public Scoping Meetings

Reclamation and DWR held two public scoping meetings in July 2009, regarding preparation of an EIS/R for the Project. The first meeting was held in Fresno, California, on Tuesday, July 28, 2009, from 6:00 p.m. to 8:00 p.m. The second meeting took place in Firebaugh, California, on Wednesday, July 29, 2009, from 6:00 p.m. to 8:00 p.m. The location of the July 29, 2009 scoping meeting in Firebaugh was changed the morning of the meeting to accommodate an anticipated increase in audience numbers based on the preceding evening's scoping meeting in Fresno. The venue was moved from the Firebaugh Community Center to the Firebaugh Middle School, a distance of about 0.5 mile. An email was sent at 1:30 p.m. to two primary stakeholder groups informing them of the change of location. They, in turn, sent notifications to their members which reached almost all of the evening's attendees. Additionally, a scoping meeting staff person remained at the original location to direct people to the new location. Approximately 130 people attended the two meetings, including members of the public, landowners, elected officials, and representatives from public agencies.

To publicize the meetings, the lead agencies distributed notices (including a copy of the Notice of Intent and Notice of Preparation) to approximately 960 interested parties in the Project mailing list database, including Federal, State, and local agencies, elected officials, irrigation districts, county planning departments, landowners, academics, and other individuals that have shown an interest in the Project. A certified mailing was sent out to specific State, Federal, and local agencies to meet CEQA requirements.

Print ads displaying the time, date, and location of the scoping meetings were published in local area newspapers including the main sections of the *Fresno Bee* (July 15), *Visalia Times-Delta* (July 15), *Firebaugh-Mendota Journal* (July 15), *Merced Sun-Star* (July 15), and *Los Banos Enterprise* (July 17).

A press release was distributed by Reclamation on July 13, 2009, to Reclamation's media lists, other newspapers and media outlets in the Reach 2B area (both English- and Spanish-speaking), Farm Bureau publications for the counties of Fresno, Merced, and Madera, the California Farm Bureau Federation's "Ag Alert" weekly newspaper, the California Farmer, and the Capitol Press. Updated information on the scoping meetings was also posted to the SJRRP website (www.restoresjr.net).

Meeting participants were greeted at the door and asked to sign in. All names were entered into a database for the exclusive purpose of keeping participants up-to-date on future activities, meetings, and Project information. Meeting materials available to participants included:

- Agenda.
- PowerPoint presentation.
- Project press release.
- Spanish translation of the project press release.
- Notice of Intent and Notice of Preparation.
- SJRRP Update Newsletter.
- Speaker card.
- Comment card with an area map.

Both public meetings began with a PowerPoint presentation by Reclamation and DWR. The presentation explained the purpose of the meeting, provided a history of the Settlement, presented an overview of the key components of the Project, and described the public scoping process. Following the presentation, participants were able to walk around the room and discuss the project with Program staff members for the "open house" portion of the meeting. Three stations with displays were set up and included:

- Project Process and Timeline.
- Project Information.
- Comments and Public Involvement.

A staff person was available to each station to talk with the public and answer questions related to the project or overall Program. A Spanish-speaking interpreter was present at both meetings.

Verbal and written comments were accepted by Reclamation and DWR during both scoping meetings. A public comment session was held after the open house portion of the meeting. Meeting participants were invited to provide verbal and written comments.

Participants were invited to submit written comments on the provided comment cards and attached map. A court reporter attended both meetings to record all verbal comments. Twelve verbal public comments were made at the Fresno scoping meeting, and ten verbal comments were made at the Firebaugh scoping meeting.

Additionally, the agencies accepted written comments through mail, e-mail, and fax, throughout the scoping period of July 13, 2009, through August 14, 2009. A total of 21 written documents were received and 11 participants provided verbal comments during the scoping period.

The agencies, individuals, and nongovernmental organizations that provided comments are presented in Table 27-2 and Table 27-3, respectively. Subsequent CEQA actions during the EIS/R process have been conducted by the CSLC as the State lead agency.

**Table 27-1
List of Public Agencies That Provided Comments**

Public Agencies	Comment Type
Federal	
U.S. Department of the Army, Corps of Engineers, California South Branch – Paul Maniccia, Chief	Written
U.S. Environmental Protection Agency, Communities and Ecosystems Division, Environmental Review Office – Kathleen M. Goforth, Manager	Written
State	
California State Lands Commission – Marina R. Brand, Assistant Chief, Division of Environmental Planning and Management	Written
San Joaquin Valley Air Pollution Control District – Arnaud Marjollet, Permit Services Manager	Written
Regional and Local	
Central California Irrigation District – Chris White, General Manager	Verbal
City of Firebaugh – Jose Ramirez, City Manager	Verbal
Grassland Water District – David Widell, General Manger	Written
Mendota City Council – S. Les Capuchio	Written
Mendota Planning Commission – Ed Petry	Written
San Joaquin River Resource Management Coalition and San Joaquin River Exchange Contractors Water Authority – Mari Martin, RMC, and Steve Chedester, SJRECWA	Written and Verbal
San Joaquin River Exchange Contractors Water Authority – Steve Chedester, Executive Director	Written

**Table 27-2
List of Individuals and Nongovernmental Organizations that Provided Comments**

Individuals and Nongovernmental Organizations	Comment Type
1986 Mitigation Lands Trust – Steven Haugen, Trustee	Written
Bart Bohn, Fresno, CA	Written
Bill Ward, BB Limited, Landowner	Verbal
Carl Janzen, Madera, CA	Written

**Table 27-2
List of Individuals and Nongovernmental Organizations that Provided Comments**

Individuals and Nongovernmental Organizations	Comment Type
Chris Acree, Revive the San Joaquin	Verbal
Columbia Canal Company – Roy Catania and Chris Cardella	Verbal
Columbia Canal Company – Randy Houk, General Manager	Written
Donna Duckworth, Fresno, CA	Written
Ed Howard, Fresno, CA	Written
Fresno County Farm Bureau - Ryan Jacobsen, Executive Director	Written
Ken Samarin, Samarian Farms, Kerman	Verbal
Oscar and Marcia Sablan, Firebaugh, CA	Written
Paramount Farming Company – Mike Widhalm & Kimberly Brown	Written and Verbal
Richard Knight, Fresno, CA	Written
Rudolfo Rulloda	Written
San Luis Canal Company – Chase Hurley, General Manager	Written
Sandra Flores, Fresno Regional Foundation, Sr. Program Officer	Verbal
Walter Shubin, Individual, Kerman	Verbal

Other Public Outreach

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

- Issued public scoping report in February 2010 (SJRRP 2010).
- Requested comments on the Project from Native American groups identified by the Native American Heritage Commission on November 30, 2010.
- Hosted regularly scheduled technical feedback meetings with subject-matter experts, Settling Parties, affected stakeholders, and the general public to obtain information or viewpoints from individual attendees.
- Gathered feedback on Project documents to discuss potential opportunities and constraints that may have arisen.
- Developed and distributed a wide variety of Project information, including quarterly program updates, two annual reports, news releases, fact sheets, and brochures to keep the public informed.
- Developed a process and form for obtaining landowner permission for temporary access to private property in support of field surveys.
- Established a landowner coordinator to serve as a technical resource and liaison for program staff and landowners to conduct all field activities necessary for successfully implementing the Settlement, and to inform potentially affected property owners of field activities on their land.
- The Reach 2B floodplain pre-appraisal level themes and Mendota Pool Bypass alignments were presented by DWR at the November 17, 2009, meeting.

- Project status updates, overview of the publically available project-specific documents, concept refinement of the San Mateo Avenue crossing design and use of Little San Joaquin Slough, and the alternatives development process were presented and discussed, and comments were accepted at the May 27, 2010, meeting.
- Project status updates, overview of new publically available project-specific documents, and DWR's land acquisitions process were presented and discussed, and comments were accepted at the March 24, 2011, meeting.
- The CSLC draft administrative maps for Reach 2B, a brief Program update, and a Project update were presented at the October 3, 2011, meeting.
- The Project effects on Mendota Pool and other operations, details of Project components, and effects on infrastructure using large-scale maps were presented at the November 14, 2011, workshop.
- Overview of borrow material needs and the status of geotechnical explorations was presented during the December 16, 2011, conference call.
- Project overview, status, and a brief review of the alternatives were presented to stakeholders associated with Fresno Slough at the May 31, 2012, meeting.
- A meeting was held on January 29, 2013, to introduce the consensus-based alternative concept and approach to the adjacent landowners, canal companies, irrigation districts, levee districts, cities, and the Settling Parties. The consensus-based alternative approach gives these entities the opportunity to provide input on the Project course of action, and their input will be considered during the selection of a preferred alternative.
- In addition, many calls and emails were exchanged with individual landowners to discuss specific issues.

Engagement of local governments, nongovernmental organizations, and individuals, as well as coordination between the SJRRP and agencies, has been and continues to be facilitated through SJRRP Work Groups. Continuation of scheduled meetings and open sharing of information via the SJRRP website are evidence of this commitment. MOUs were prepared, as required, for cooperating agencies under NEPA, and continued collaboration with responsible agencies, especially those with a trust responsibility, is a goal and commitment of the SJRRP (see Section 27.3.2 regarding the role of cooperating and responsible agencies). Continued involvement and open sharing of information through the SJRRP website show that the comments raised regarding public outreach are recognized. The need to balance open sharing of information with adherence to agency responsibilities will continue to be a goal.

Public Issues and Major Areas of Controversy

A public scoping report dated February 2010, summarizes the results of the scoping meetings and comments received), and is available to the public on the SJRRP website. The comments received assisted Reclamation and DWR in identifying the range of actions, alternatives, site design options, environmental resources, and mitigation

measures that are analyzed in the EIS/R. Subsequent CEQA actions during the EIS/R process have been conducted by the CSLC as the State lead agency.

This section presents a summary of the comments received during the scoping process. If a similar comment was received from multiple participants, the comments were combined and reported as one comment.

Agriculture Related Comments

- Several landowners request a river restoration program with sustainable agriculture.
- Evaluate crop use, seepage, drainage, delivery systems, and access on both sides of Reach 2B on properties to be purchased for the project.
- Address current and/or potential drainage issues as related to crops and other land uses.
- Develop mitigation measures to eliminate impacts to crop loss and property destruction due to flooding and seepage.
- Outline a process for Project-related land purchases.
- Identify a manageable process for recourse for individual landowners that have been damaged by the Project and identify funding to alleviate potential lawsuits.
- Cooperate with local landowners and use local inherent knowledge.

Air Quality Related Comments

- Describe existing air quality conditions.
- Describe the regulatory environment.
- Include a discussion of the project including existing and post-project emissions and short-term and long term activities emissions.
- Evaluate significant impacts to air quality from construction detours around Mendota Pool Bypass.
- Evaluate potential health impacts of Toxic Air Contaminants to near-by receptors.
- Include a discussion of nuisance odors.
- Discuss feasible measures that will reduce air quality impacts.
- Include a discussion of cumulative air impacts.
- Include a discussion of greenhouse gas emissions consistent with the California Global Warming Solutions Act (AB 32).

Canal Distribution System Comments

- Ensure no interruption in water deliveries as a result of the Project.
- Ensure priority of the Exchange Contractor deliveries from the Friant system through the river channel.
- Discuss necessary relocations of pumps on the river and the necessity to be screened so as to be operable at all times.

- Evaluate and address relift wells and tailwater return systems.
- Evaluate the Columbia-Mowry Distribution System including the redesign of facility access, facility operation and maintenance, pumps, pipelines, and power (Pacific Gas and Electric Company/Western Area Power Administration).

Economic Development Comments

- Identify a method to quantify loss of farmlands in regional dollars.
- Evaluate the cumulative effects of taking primary farm land out of production to the economy of Firebaugh and Mendota.
- Acquire land to support recreation, tourism, flora, fauna and groundwater recharge.
- Evaluate the temporary and permanent loss of recreation resources in the specific areas during the construction of levees and flood control facilities.

Flood Control and Levee Comments

- The Project may be subject to 33 CFR 208.10 (encroachment of Federal flood control feature) or 33 USC 408 (alteration of Federal project).
- The Project may require a CVFPB encroachment permit as well as geotechnical analysis of the Project locations.
- Evaluate access from public roads and operation and maintenance costs on land purchased for the project.
- Identify who is responsible for cost of levee construction/maintenance.
- Evaluate shortening the channel distance to reduce levee length and maintenance costs.
- Evaluate the installation of cutoff channels before the river bends just downstream of the existing bifurcation structure to reduce flooding toward Highway 180.
- Evaluate channel capacity and flooding.
- Include an evaluation of flood protection (Reclamation, Lower San Joaquin Levee District, the Corps, Kings River) and/or seepage control.
- Evaluate Reach 2B flood waters that may intercept the little San Joaquin Slough and enter into the Fresno Slough.
- Evaluate the noise and vibration impacts on fish and birds from construction activities in the water, on the levees, and land-side supporting structures and flood control facilities.

Groundwater and Wells Comments

- Evaluate the relocation and reconnection of existing wells.
- Include a model and quantitative analyses of shallow ground water to evaluate potential river impacts.
- Use existing monitoring wells and production wells to assess rising groundwater as a result of this project.

- Include modeling and real time data collection before, during, after project completion.
- An ongoing ground water seepage monitoring and management plan should be included for Reach 2B and Mendota Pool.
- Benefits to ground water that are the result of the program flows should stay as a right to the overlying landowner.

Interim Flows Comments

- Interim flows are not similar to historical flow conditions.
- Interim flows do not simulate natural flooding conditions and analysis of Reach 2B should not proceed until flow data are available.
- Interim flows were not to be started until design and costs of all fish screens were determined and financial resources available.

Project Alternatives

- The Project needs to explore all alternatives that allow fish passage while taking least amount of prime farm land out of production.
- Use existing river channels.
- Evaluate the shortest route for the Mendota Pool Bypass.
- Evaluate the construction of a 1-mile bypass channel just north of Mendota Pool.
- Some local landowners support the planning and design of the alternative proposed by the Columbia Canal Company.
- Evaluate the installation of a wall across the river and north of Mendota Pool, with gate to divert water to Mendota Pool.
- Produce options that look at creative ways to put water into the Mendota Pool.
- Identify options that include water circulation through the Mendota Pool.
- Instead of digging new channels use the original channels and remove all obstructions in the river.
- Evaluate constructing the river channel deeper instead of building taller levees.
- The Project should include a fish diversion and fish screen facility for flows in the Mendota Pool as well as other fish screen locations along Reach 2B.
- Several landowners support the installation of fish screens on the inlet to the Mendota Pool at the new Bifurcation Structure near the head of the new Mendota Pool Bypass.
- The Program needs to adhere to the San Joaquin River Settlement Agreement and the San Joaquin River Restoration Settlement Act which calls for no third party impacts and outlines third party protections.
- The Project must maintain senior surface water diversion rights.
- Identify a process for continued channel capacity maintenance.

- Farmers who have farmed over the original river or made levees up to it should be made to help with restoration.
- The Mendota Pool Bypass will increase pollution.
- Several landowners do not believe the Mendota Pool Bypass is cost effective.
- Address and identify Project funding sources and assurances.
- Project should include an exit plan if funding and lawsuits halt the project.
- Evaluate the sequencing of construction events.
- The Project must address impacts of NMFS "Biological Opinions."
- Query the Natural Diversity Database and the USFWS Special Status Species Database to identify any special-status plant or wildlife species.
- Address cumulative impacts from loss of riparian vegetation and shaded riverine aquatic habitat and potential secondary impacts to listed runs of salmonids and listed avian species.
- Evaluate a range of alternatives for prevention programs for terrestrial and aquatic invasive species to slow the introduction of invasive species, such as the Quagga mussel, into high demand and sensitive areas. The alternatives should also consider current and proposed aquatic invasive species prevention programs.
- Examine if the project would favor non-native fisheries within the San Joaquin River.
- Analyze how to integrate proposed flows with existing water operations and activities.
- Evaluate agreements with all affected agencies for the operation, maintenance, repair, replacement, and liability issues.
- Analyze additional Mendota Dam maintenance responsibility.
- Evaluate Mendota Dam structural integrity in relation to Project operations.
- Explain how flows from Mendota Dam will be curtailed to permit dam maintenance.
- The Project must define actions, facility operations, agreements, permits, and environmental impacts of the Mendota Pool capturing restoration flows.
- Lead agencies should cooperate with local landowners and use their inherent knowledge.
- Several landowners would like to be involved with the design of channels and levees.
- Several landowners would like to be involved with evaluation of land acquisitions for mitigation purposes prior to final decision making.
- Several local agencies would like to review preliminary data prior to public distribution in order to protect private information.
- Native American or other potential terrestrial cultural sites need to be assessed within potential bypass areas (CFR Section 106).

- Evaluate the potential submerged cultural resources.
- Include cost and impact analysis of pumping, air pollution, and the project itself.
- Discuss the maximum amount of water that will be sent down the river.

Restoration Program Comments

- Include a complete Restoration Program summary and project specific relationships and benefits.
- Consider opportunities to offset some of the pumping from the Delta-Mendota Canal into the Mendota Pool, whether its flood flows or other, to reduce the pumping load.
- Use local firms, teams, and organizations that are familiar with the cultural and social landscapes.
- All communications and materials should be available in Spanish.
- Use all of the mediums that the Spanish-speaking populations use to gain feedback and encourage community engagement (i.e., Radio Compenseno, Radio Bilingue).
- There is a strong interest in providing work force opportunities for professional and non-professional labor for Hispanics and Latinos.
- The Restoration Program should remove the existing dam and improve the channel and restore the area for public access.
- Explain how the amount of proposed water will reach Reach 3.
- Identify funding for the entire Restoration Program.
- Reclamation should acknowledge delay in SJRRP implementation due to delayed legislation.
- Lead agencies should return to the timeline included in the Initial Program Alternatives Report - issuance of programmatic environmental impact analyses addressing the Settlement prior to issuing project specific EIS/R.
- Consider temporary programs outside the Restoration Program or Settlement Agreement that would evaluate local values and other societal benefits that could restore Valley wildlife, groundwater, and clean surface water.

Schedule Comments

- The Final EIS/R completion date is inconsistent with the 2012 fisheries reintroduction date.

Surface Water Comments

- Explain how the project addresses differences in elevation and water temperature between the Mendota Pool and the river channel.
- Avoid bifurcation of future flows and rely on the Chowchilla Bypass.
- Discuss the protection of the public water supply.
- Address the city of Mendota's public water supply intake relocation.

- Discuss and evaluate the priority of amount and timing of flows.

Traffic Comments

- Must submit traffic and detour plans for construction.
- Discuss the potential changes, impacts and mitigation measures to current transportation routes into and out of areas during the construction of project facilities.

Water Quality

- Include a spatial and temporal analysis of water quality problems/remedies.
- Address the issues of potential degradation of water quality and quantity to relocated river pumps.
- Consider increased turbidity and sedimentation of proposed construction activities along water-side river banks.
- The lead agencies should coordinate with the Central Valley RWQCB for the sharing and use of existing resources, information, data and monitoring networks.
- Evaluate existing local, State and Federal agency programs that reduce water quality concerns and the integration of such.
- Project must be in compliance with CWA.
- Project alternatives should evaluate how to increase irrigation water quality.

Wetland and Riparian Environment

- Include wetland and riparian delineation and analysis.
- Include wetland mitigation and compensation plans.
- Discuss wetland and riparian areas considerate of water quality, habitat and ecosystem.
- Maximize restoration and enhancement of functioning floodplains and riparian habitat.
- Discuss the Mendota wildlife area problems of water quality, temperature and current maintenance costs of existing riparian habitats.
- Evaluate all alternatives that avoid impacts to existing wetlands.
- Avoid dredging or filling waters of the United States.
- Some local landowners protest the re-introduction of salmon and the potential resultant negative impacts on the existing riparian habitat, especially in the Millburn Pond area.
- Protect endangered species.

27.2.2 Agencies and Organizations Consulted

As previously described, Reclamation is the lead NEPA agency and CSLC is the lead CEQA agency in preparing this EIS/R. The actions identified in this EIS/R include actions to be undertaken by Reclamation, as approved by CSLC.

The Settlement identifies the Secretary as the lead Federal entity responsible for implementation of the terms and conditions of the Settlement and USFWS as the lead Federal agency responsible for reintroduction of spring-run and fall-run Chinook salmon. The Secretary has designated Reclamation to act as the lead Federal entity responsible for implementation of the Settlement. The Settlement also identifies the Secretary of the U.S. Department of Commerce, through NMFS, as a necessary participant to allow for permitting the reintroduction of spring-run Chinook salmon. The Settlement also anticipated involvement of the California Natural Resources Agency through DWR and DFW. Therefore, the Settlement Implementing Agencies are Reclamation, USFWS, NMFS, DWR, and DFW. Reclamation and CSLC have coordinated with the Settling Parties and Implementing Agencies in preparation of this EIS/R.

Although the implementing agencies responsible for the SJRRP are Reclamation, USFWS, NMFS, DWR, and DFW, Reclamation has taken the lead role in development and implementation of the Project. Reclamation is currently working on the Project design and is responsible for Project construction. It was originally anticipated that DWR would be a construction partner for the Project, but this could not be realized due to State funding constraints. Although DWR would continue to have a lead role in SJRRP implementation, including levee stability in downstream reaches, DWR does not have the principal responsibility for Project implementation, nor does it have responsibility for permit issuance for the Project.

CSLC is a State land-owning agency with discretionary approval for permit issuance in the Project area in areas of sovereign and public trust lands. CSLC became the CEQA lead agency because of this Project-specific relationship.

This section discusses agency consultations and coordination that occurred during the development of the EIS/R and summarizes the agency involvement activities undertaken by Reclamation, CSLC, and DWR to satisfy NEPA and CEQA. Although initial CEQA actions were conducted by DWR, subsequent actions during the EIS/R process have been conducted by the CSLC as the State lead agency.

NEPA Cooperating Agencies

Reclamation invited eligible governmental entities to participate as cooperating agencies, in accordance with 43 CFR Part 46.225(3)(b), in developing the EIS/R. Several agencies requested identification as cooperating agencies under NEPA, including the EPA, Corps, NMFS, and Central California Irrigation District. These cooperating agencies were given the opportunity to review and comment on the Administrative Draft EIS/R and provide input to be considered during preparation of this EIS/R.

Reclamation, as one of five Implementing Agencies, follows the public involvement/public outreach plan, adopted in April 2007, to guide outreach. Stakeholder involvement has been and continues to be facilitated through SJRRP stakeholder meetings. As defined in 43 CFR Part 46.110, Reclamation is ultimately responsible for ensuring that consensus-based alternatives, if any, are fully consistent with NEPA, CEQ regulations, and applicable statutory and regulatory provisions.

CEQA Responsible Agencies

DWR initially contacted the responsible agencies through circulation of the Notice of Preparation, as required under CEQA. Comments were received from CSLC and SJVAPCD.

Native American Consultation

On behalf of Reclamation, Davis-King & Associates contacted the Native American Heritage Commission to request a Sacred Lands File search for sacred sites within the Restoration Area. The Native American Heritage Commission responded that its records show an absence of sacred sites, but provided an extensive contact list of Native Americans who may have information about the Restoration Area.

27.2.3 Future Public Involvement

In accordance with NEPA and CEQA review requirements, this EIS/R will be circulated for public and agency review and comment for a 60-day period following the date when the EPA publishes the Notice of Availability in the Federal Register, and the CSLC staff files the Notice of Completion with the State Clearinghouse. Similar to the approach to public scoping, public meetings will be held to receive public input on the Draft EIS/R. These hearings will be held during the public comment period so that any comments received at the hearings can be addressed in the Final EIS/R. In addition, written comments from the public, reviewing agencies, and stakeholders will be accepted during the public comment period.

The Final EIS/R will be prepared and circulated in accordance with NEPA and CEQA requirements, and will include responses to comments. Reclamation will then issue its Record of Decision no less than 30 days after the final EIS/R is made available. The Record of Decision will identify Reclamation's decision regarding the alternatives considered, and address substantive comments received on the Final EIS/R.

Following lead agency consideration of all comments received during the public review period of the Draft EIS/R and circulation of the Final EIS/R, CSLC will hold a public meeting to consider certification of the Final EIR and decide whether to approve the Project. A NOD documenting the decision will be issued if the Project is approved. To support a decision on the proposed action, CSLC must prepare and adopt written findings of fact for each significant environmental impact identified in the Draft EIS/R, a statement of overriding considerations for any significant and unavoidable impacts, if needed, and a mitigation monitoring and reporting program for implementing the mitigation measures and project revisions, if any, identified in the Draft EIS/R.

27.3 Distribution List

This section provides a list of those Federal, State, and local agencies, as well as Indian Tribes, organizations, and individuals that will be notified of this EIS/R. A notice of availability will also be widely distributed, indicating the document is available for viewing on the SJRRP public website at www.restoresjr.net.

Federal Agencies

- Bureau of Indian Affairs
- Bureau of Land Management - San Joaquin River Gorge
- Federal Emergency Management Agency, Region IX
- National Marine Fisheries Service
- National Park Service, Pacific West Region
- Natural Resources Conservation Service
- Office of Environmental Policy and Compliance, Department of the Interior
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- U.S. Coast Guard, Division of Boating Safety
- U.S. Department of Agriculture, Forest Service - Sierra National Forest
- U.S. Environmental Protection Agency, Region 9, CED-2, Com. & Ecosystem Division
- U.S. Environmental Protection Agency, WTR-3
- U.S. Fish & Wildlife Service
- U.S. Fish & Wildlife Service, Central Valley Joint Venture
- U.S. Geological Survey - California Water Science Center

United States Congress

- U.S. Congressional Representatives, 16th District Rep. Jim Costa and 21st District Rep. David Valadao
- U.S. Congressional Senators, Sen. Barbara Boxer and Sen. Dianne Feinstein

State Agencies

- California Air Resources Board
- California State Transportation Agency
- California Delta Protection Commission
- California Department of Conservation
- California Department of Fish and Wildlife
- California Department of Fish and Wildlife, Region 4
- California Department of Food and Agriculture
- California Department of Forestry and Fire Protection
- California Department of Parks and Recreation
- California Department of Parks and Recreation, Division of Boating and Waterways

- California Department of Toxic Substances Control
- California Department of Transportation
- California Department of Water Resources
- California Environmental Protection Agency
- California Highway Patrol
- California Natural Resources Agency
- California Office of Emergency Services
- California Office of Historic Preservation
- California State Lands Commission
- Central Valley Flood Protection Board
- Central Valley Regional Water Quality Control Board
- Native American Heritage Commission
- San Joaquin River Parkway and Conservation Trust
- San Joaquin Valley Air Pollution Control District
- State Clearinghouse
- State Water Resources Control Board
- University of California, Water Resources Center Archives

California Legislature

- California State Assembly, 5th District Asm. Frank Bigelow and 31st District Asm. Henry Perea
- California State Senate, 14th District Sen. Sen. Andy Vidak and 16th District Sen. Jean Fuller

Tribes

- Amah/Mutsun Tribal Band
- Big Sandy Rancheria of Mono Indians
- Choinumni Tribe
- Choinumni Tribe of Yokuts
- Chowchilla Tribe of Yokuts
- Cold Springs Rancheria of Mono Indians
- Dumna Tribal Government
- Dumna Wo-Wah Tribal Government
- Dunlap Band of Mono Indians
- Eshom Valley Band of Indians/Wuksachi Tribe

San Joaquin River Restoration Program

- Kings River Choinumni Farm Tribe
- Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- North Fork Mono Tribe
- North Valley Yokuts Tribe
- Ohlone Indian Tribe
- Picayune Rancheria of Chuckchansi Indians
- Santa Rosa Rancheria
- Sierra Nevada Native American Coalition
- Southern Sierra Miwuk Nation
- Table Mountain Rancheria

Libraries

- Fresno County Public Library – Firebaugh Branch Library
- Fresno County Public Library – Mendota Branch Library
- Los Banos Library
- University of California Riverside, Water Resources Center Archives
- Bureau of Reclamation, Mid-Pacific Region, Regional Library
- U.S. Department of the Interior, Natural Resources Library

Local Agencies

- City of Firebaugh
- City of Mendota
- Fresno County Public Works and Planning Department
- Madera County Resource Management Agency
- Fresno County Clerk
- Madera County Clerk
- Fresno County Agricultural Commissioner
- Madera County Agricultural Commissioner
- Fresno County Department of Public Works and Planning
- Madera County Department of Public Works

County Board of Supervisors

- Mr. Brian Pacheco, Fresno County Board of Supervisors, District 1
- Ms. Andreas Borgeas, Fresno County Board of Supervisors, District 2
- Mr. Henry Perea, Fresno County Board of Supervisors, District 3

- Ms. Buddy Mendes, Fresno County Board of Supervisors, District 4
- Ms. Debbie Poochigian, Fresno County Board of Supervisors, District 5
- Mr. Brett Frazier, Madera County Board of Supervisors, District 1
- Mr. David Rogers, Madera County Board of Supervisors, District 2
- Mr. Rick Farinelli, Madera County Board of Supervisors, District 3
- Mr. Max Rodriguez, Madera County Board of Supervisors, District 4
- Mr. Tom Wheeler, Madera County Board of Supervisors, District 5

Organizations

- California Farm Bureau Federation
- Central California Irrigation District
- Chowchilla Water District
- Columbia Canal Company
- Farmers Water District
- Firebaugh Canal Water District
- Friant Water Authority
- Gill Ranch Storage
- Grassland Water District
- James Irrigation District
- Kings River Conservation District
- Kings River Water Association
- Lower San Joaquin Levee District
- Mendota Pool Group
- Mitigation Lands Trust
- Natural Resources Defense Council
- Resources Management Coalition
- River Partners
- San Joaquin River Conservancy
- San Joaquin River Exchange Contractors Water Authority
- San Joaquin Tributary Association
- San Luis & Delta-Mendota Water Authority
- The Nature Conservancy, California Field Office
- Tranquility Irrigation District
- Westlands Water District

Individuals

- Barry Baker, Baker Farming
- Thomas M. Berliner, Duane Morris LLP
- Bart Bohn
- Robert Brewer, Mitigation Lands Trust
- Kimberly Brown, Paramount Farming Company
- Juan Calderon, Baker Farming
- Chris Cardella, Chris Cardella Ranch
- Roy Catania, Paramount Farming Company
- Shawn Coburn
- Joe Coelho, Terra Linda River Ranch
- Jason Dean, Meyers Water Bank & Wildlife Project
- Vince Dimaggio, City of Mendota
- Donna Duckworth
- Arlow Ekhard, Gill Ranch Storage
- Steve Emmert, Emmert Farms
- John Foseid, Gill Ranch Storage
- Dennis Fox
- Robert Frusetta , Frusetta Ranch
- Ed Howard
- Carl Janzen
- Tom Johnson, Restoration Administrator
- Thomas Keene, Linneman, Burgess, Telles, Van Atta, Vierra, Rathmann, Whitehurst & Keene
- James Lopes
- Joe MacIlvaine, Paramount Farming Company
- Don Peracchi, DJP Farms
- Marcia Sablan
- Jim Stillwell, Logoluso Farms
- Rob Tull, CH2M HILL
- Darrell Vincent, Darrell Vincent Farms
- Bill Ward, BB Limited
- Mike Widhalm, Paramount Farming Company
- John Ziegler

28.0 References

28.1 Chapter 1 – Introduction

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No references.

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30.0 Index

This index is intended to provide a listing of key names, places, and topics to help the reader find information. The page numbers listed are for sections in the document where the item is the focus of discussion. For some entries, the first several page listings are followed by “various” to indicate that the topic is discussed at a number of points after the listed points of discussion.

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